Successful Part-time Farming

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SUCCESSFUL
PART-TIME FARMING

Books by HAYDN S. PEARSON

THE COUNTRYMAN'S COOKBOOK

SUCCESS ON THE SMALL FARM

COUNTRY FLAVOR

FIFTEEN WAYS TO MAKE MONEY IN THE COUNTRY

HOW TO RUN A ONE-MAN POULTRY FARM

PRINTED IN THE UNITED STATES OF AMERICA

"We are at the beginning of what bids fair to be a rural renaissance. Country living is receiving attention and interest in the United States unequalled since colonial days. For the first time in 100 years we are recognizing the desirable qualities of the countryside."

Farmers in a Changing World:
Yearbook of Agriculture, 1940
U. S. Department of Agriculture

PREFACE

There's a way of living that means more security and added happiness for many American families.

The name "part-time farming" has become attached to this way of life that combines country-living with city-working. There are many men who are making $1000 or more profit from the operations of their part-time farms. There are many more who are adding $500 or more to their incomes in terms of produce raised and consumed by the family.

It's difficult to define accurately a part-time farm, but for our purposes let's agree that it means a place with a few acres on a main or secondary road that radiates from a town or city. It represents a home rather than a farm, for the head of the household earns the majority of his income at a trade, profession or business in a center of population within reasonable commuting distance.

In the years ahead, hundreds of thousands of families will want homes. Surveys show that many of them want to build or buy outside the urban centers. They want to live a different type of life from that offered by cities and large towns.

They want space and freedom and peace. They want a chance for a big garden and a home orchard, a cow or goats, a pig, a few chickens, and perhaps rabbits.

They know that today, with electricity available, homes in the country can have all the comforts and conveniences of city living. With electricity, one can have running water and a bathroom, an oil furnace, and all the tools and equipment for home and shop that are powered by this utility. One can have a refrigerator, and a deep-freeze locker to hold meats, vegetables and fruits for future use.

There are two angles that this book will try to cover. In covering them, it will try to be specific and practical, rather than deal in generalities. The author won't say much about the joys of country living as contrasted with life in the brick and steel jungles of cities. It's assumed that if a family likes country life it is aware of these points. The two angles will cover many of the questions that beginners or those already established should know.

One angle has to do with the cash crops or products a man and his family can raise or make to help increase the income. The second has to do with matters that are concerned with pleasant and efficient living in the country.

Beginners always ask, "Can I make money by raising certain specialty crops, by keeping hens or raising turkeys?"

You can make money—if your schedule of work permits it. Your job or profession should come first. For example, if you can get a 4-week vacation beginning the middle of June (in the latitude of Boston), you can perhaps handle a half acre of strawberries and make $500 cash profit. That's the selling period—the biggest rush time. If you take a vacation in July, you can do the same with raspberries. You can

also raise annual cash crops such as melons, sweet corn and squashes.

But—the beginner must realize that if he raises a half acre or more of strawberries, for example, that a new area has to be plowed, harrowed and set to plants each spring. The new setting has to be cultivated and hoed. Raising crops isn't just setting out plants or planting seeds. It isn't just harvesting. There's work to be done through the season.

Therefore, the first advice to the part-time farmer is to go slowly, and develop a program that will fit his working schedule. If he is to make $500 to $1000 cash income, his products must be sold through a roadside stand at retail prices. If he raises 3000 quarts of strawberries and sells them at wholesale at 20¢, the gross is $600. If he sells them at retail for 40¢, the gross is $1200.

Furthermore, the part-time farmer who wants to make a fair sum on a side line must have irrigation available. It's an absolute necessity if he is to get big crops. There are ways of controlling the frost menace, as will be explained.

You can make money in part-time farming. Thousands are doing it. But it requires the right equipment, efficient planning, and a roadside stand.

Don't go into poultry or turkeys unless there's someone to help do the work. These are highly specialized lines, and need someone on the job all day. Eight or 10 hens for the family's eggs, yes. If your wife likes to work with chickens, start 50 or 100 baby chicks under an electric brooder, and eat and can them as they reach sufficient size. But observation of conditions in the northeastern states for 20 years leads to just one conclusion: don't try hens or turkeys on a

part-time farm unless you are willing to put in the necessary work.

For many families, life in the country will emphasize the production of food for home use. A goal of $500 to $600 worth in a typical family of man, wife, and two children is entirely reasonable. More and more communities will have frozen-food locker plants where meats, fruits and vegetables can be stored at a cost of $10 to $20 a year. More and more individual homes will have frozen-food lockers as increased production brings the price down.

One cannot give exact figures, but here's a general summary that may help in doing the financial planning. If one buys or builds a place that costs $7000, the interest on the money at 4 per cent is $280. Let's assume taxes are $150, insurance and maintenance $150, a total of $580. There are always other expenses, so to be on the conservative side, let's say annual costs are $700. This means, in effect, your rent, or the cost of a roof over your head, is about $58 a month. The writer has studied the financial operation of many places used for part-time farms, and for whatever his observations are worth to you in planning, the cost is often about $100 a year for each $1000 of capital invested.

It's the author's hope that this book will help those who want to combine country-living with city-working and those who already know the satisfaction of living outside the centers of population.

HAYDN S. PEARSON

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SUCCESSFUL PART-TIME FARMING

CHAPTER ONE

Importance of Location, Electricity, Water, and Soil

WHETHER YOU want to make $1000 profit income from your part-time farm or whether you think of your place primarily in terms of a home in the country, the location is vitally important.

It's one of the Big Four—and if you overlook any one of the four, the chances are you'll regret it. The Big Four are: location, water supply, electricity, and soil. The matter of buildings is an important one and will be discussed in the next chapter. Location, water supply, and soil are natural resources. Electricity is so important for comfortable and efficient living in the country that no one should even consider buying a place unless it has this utility or there is a power line near by to which you can connect.

It's necessary for us to understand what is meant by "in the country" in this book. As applied to part-time farming, it means a place outside a large town or city and not more than 15 miles from the place where the head of the family works. A new term is needed in our vocabulary to express the type of living that is increasing so rapidly in popularity. It's a combination of urban and rural life. There's been an

attempt to use the word "rurban" but it's stilted and artificial, so we'll stick to "part-time farming."

Surveys made in the past 20 years show two points above all others in the matter of location. First, the successful part-time farms are located on hard-surfaced roads; second, 15 miles is about the limit for distance if a man is driving back and forth to work. Those who use trains and busses often go 20 to 30 miles or more from the city.

This matter of locating on a hard-surfaced road is one that often troubles the beginner because of the price differential between places on macadam or concrete and those on the side dirt roads. The usual pattern is for a series of all-year roads to radiate from cities and towns. These are the main highways from town to town and city to city. There are also the so-called secondary roads, usually of black macadam. Then there are side roads, dirt or gravel, that branch off from these other roads.

Investigation shows a situation that's about the same everywhere. Small farms on the hard-surfaced roads will average from ⅓ to ½ more in price than the same type of place on dirt roads. On the main or secondary roads, there's usually electricity available. By sticking to the hard roads, therefore, one is fairly sure of getting two of the Big Four: year-round efficiency in traveling and electricity.

This isn't to say that one cannot find high-crowned gravel roads in some locations that lead from the black roads. Some gravel roads that have been constructed for year-round use are perfectly satisfactory as a location. But unless one has lived in the country on a dirt road, he doesn't understand what is meant by the terms "spring mud-time" and "fall mud-time."

A major part of the success of part-time farming depends directly on transportation for the worker. Five or 6 days a week, he is going to travel back and forth. He'll use his car (or ride with a neighbor), take a bus, or the train. Traveling becomes a part of the day's work. A family that locates on a hard road is doing the only sensible thing. If you buy a place on a dirt road, the chances are 99 to 1 you'll regret it inside of a year. It's infinitely easier to buy a place than to sell it—if it's on a dirt road. When you begin to look for your home in the countryside, keep in mind that you'll have to travel from it to work in the spring, fall and right through the heart of winter. If you live on a black road, you can forget the rainy season of spring and fall. You'll not need to worry about snowstorms, for the plows clear the main roads immediately.

Second, don't go out into the country too far. In one survey of part-time places, the families queried stressed over and over that 15 miles was the limit. Most of those who were living at the end of the 15-mile radius from towns and cities said they wished they were not more than 10 miles away.

There are many successful part-time farms beyond the 15-mile radius. But we must talk about what's best for the majority. If a man wants to add $1000 to his income from part-time farming operations, then the matter of distance has to be translated into terms of time spent traveling. From early spring until into the fall a man needs all the time possible for his fruits and annual crops. Time consumed going to and from work in the city is time that he cannot use to increase his income.

You cannot handle strawberries, raspberries, muskmelons, sweet corn and squashes without time given to plowing, har-

rowing, setting out plants, cultivating, hoeing, harvesting and selling. If it takes an hour each way on the road, instead of half that time, in the course of the season from April through October, a man will consume some 150 hours more of good daylight time that he could—and should—use on his cash crops. If a man is simply raising a big family garden and keeping some livestock for family use, the time isn't so vital; but even in this case, studies show that a shorter distance to commute is much more preferable. Therefore, keep the distance factor in the forefront when hunting for a home.

Next, don't choose a location that has a questionable water supply.

If you've lived in town or city all your life and think that water is merely a matter of turning a faucet, you don't understand what water means in happy country living. The average city family doesn't know that less than ¼ of the 6,000,000 farms in the United States have running water. A farm, as defined by the Bureau of the Census, is a place of 3 acres; or a place of less than 3 acres if it produces $250 worth or more of products. Since many of the small-acreage places are located on the outskirts of population centers, the chances are that the places farther out don't average more than 1 in 5 or 6 with running water.

Water supply for farms usually comes down to a question of wells or springs. Both are perfectly satisfactory—provided they are good producers. Wells and springs that go dry in the summer, or during spring or fall drought, are an abomination.

You can have an efficient running water supply with either a gasoline engine or an electric motor to pump it—if you

have the water. The mechanical and engineering part is easy. But the source of supply must be dependable all the year round. Many times there's a spring that is a good source. Probably 70 per cent or more depend on wells. Wherever one goes in rural areas, he can find a man or firm that specializes in driving artesian wells. Almost everywhere one can be drilled that will furnish year-round water.

The writer was brought up on a New Hampshire farm; he has owned a small farm in Massachusetts. And of all the essentials needed for pleasant and efficient country living, nothing comes ahead of running water. Electricity is an essential too, and we'll speak of it in a moment. But running water is at the top of the priority list. It means a bathroom, running water at the kitchen sink, running water for the cow and hens in the barn, and water for the garden. If one is raising fruits and annual crops, it means a tremendous difference in the profit income. Year in and year out the writer's experiments indicate that available water increases strawberry and raspberry production from ⅓ to ½. It means a big difference in profit for melons and squashes. In a very dry season, it means a great difference in sweet corn production. You *must* have a dependable water supply—and with either gasoline engine or electricity, you can have running water. Either one will pump water to a big storage tank or to a pressure tank. But check and double-check the reliableness of the supply.

This leads to the point on electricity. You can get along with kerosene lamps and lanterns; a good ice refrigerator is by no means to be scorned. You don't absolutely need electric washing machines, irons, vacuum cleaners, toasters, or an oil-burning, electrically fired furnace. You can get

along with kitchen and parlor stoves heated by oil. The friendly wood-burning stove in the kitchen and the shining nickel-plated base burner in the living room are pleasantly nostalgic subjects for essays, but wives and mothers know that an electric stove or gas stove supplied by a tank from the outside are infinitely best. Second best are the oil-burning stoves for kitchen and living room. The chances are good that even if you have 100 acres of woods, you won't cut any except for the fireplace. Wood and coal have gone by. Farms will use electricity, gas, and oil from now on.

Electricity is the kingpin of happy and comfortable living in the country. If there's no community freezer-locker plant near, the chances are that you'll want a freezer on the place. In the near future, great numbers of freezers will be going onto farms and part-time farms. A deep freezer means the part-time farmer can raise a young beef to yearling age and put down 300 or 400 pounds of prime beef; each fall a 200-pound hog can be put down; roasting chickens can be dressed off. Fruits and vegetables can be kept for months ahead. If one has a cow it's easy to raise a beef and pig. (The importance of acreage in this connection will be discussed later.) Long-time food preservation depends upon electricity.

An electric motor means automatic water pumping into the pressure tank. Electricity means lights around the barn and shop as well as home. It means a motor in the farm shop to operate machinery. After living with both sides of the question and studying both types of places, there's no hesitancy in saying *don't* buy a place unless it has electricity, or unless there's a power line near by to which you can connect.

The last point has to do with soil. Later we'll discuss the fundamental facts in detail, but here we should think of a few points in connection with the purchase of the place.

It's a point where many beginners go wrong. A man may say, "Soil doesn't matter. I'm going to live in the country, but I'm not going to farm. I'll have a garden, yes, and I want to keep a cow and a few chickens, but I'm not going to do any farming."

This reasoning has several fallacies. If you're going to have a garden of any size, you want good soil to get high production for your labor. On a quarter-acre garden (100 by 100 feet approximately—an acre is 43,560 square feet), you can raise $250 to $300 worth of produce at the prices you'll pay for it in the stores. If you have a garden approaching the ½-acre size (20,000 square feet), and raise asparagus, strawberries, raspberries, sweet corn, and squashes to use in season and can or freeze for the year's supply, your garden can return you up to $500 worth of food with a family of four.

That's one angle—the family food from a garden. The other is in regard to the livestock. In the Preface, we spoke of garden and livestock combined returning $500 to $600 worth of food. We were deliberately being conservative. If a man wants to, he can increase this by a considerable margin. If he keeps a cow, raises a yearly beef, a pig, and 20 or 30 chickens to can or freeze, the meat, plus the milk, cream, butter, and eggs, can bring the food produced on the part-time farm close to the $1000 mark.

But to make the dairy products, poultry products and meat worth this much there must be an acre of decent soil

for pasture, an acre of good soil to produce 3 tons of hay, and an acre to produce 100 bushels of hybrid field corn.

The point here is that the part-time farmer needs good soil just as much as does the full-time farmer.

You can't raise good crops in poor soil. If you don't know soils, get the advice of someone who does before you sign that document that makes you the owner of some of this earth's surface. Bulletins from the United States Department of Agriculture will help, as will the bulletins from the Experiment Station of your state university or college.

There are a number of other points that the buyer should investigate. As a matter of common sense, check up on the tax rates. For one reason or another some communities get into difficulties economically; small manufacturing plants may close up, water supply systems may have to be rebuilt or enlarged. Even if you are outside the limits of the town or village, some of this cost may be assessed against all the property of the town. A survey in a northeastern state shows one interesting point. While the tax rate itself in small places may be approximately the same as in cities and large towns, the valuation in country towns is lower on comparable properties. Thus a $7000 place in a city suburb may be assessed for practically that amount, while a $5000 place in the country may be assessed at $3000 or $3500.

Check the mail service. Most places have Rural Free Delivery once a day but if one has to drive a mile or more for mail, it's a point that should be considered. Make certain a telephone is available. This is one of the conveniences that gives a family a sense of security.

A point that puzzles many is the matter of fire protection. If you are outside the water supply limit of the town,

one of the first things to do is prepare for emergencies. The chimneys in older houses should be inspected by an expert, and repairs should be made if needed. You'll want to keep ladders available for quick use, and have 2 or 3 good-sized fire extinguishers, perhaps 1 in the house, 1 in the barn, and 1 in the shed. *Don't* sign the deed until a fire insurance policy is in effect. In many areas, the Farm Bureau and Grange have agents who handle the fire insurance of farm property. You'll be able to get adequate protection at reasonable rates in most localities.

There's another point here connected with location. It's an intangible one but vital to happy living in the country. Some neighborhoods seem to be friendly and to possess a wholesome community spirit. It means much to the family to locate in such an area. One wife and mother, who has made good on a part-time farm, said this, "Tell the beginners never to buy a place that is not reasonably near good neighbors. The man of the house is away all day. Children over 6 years old are in school. It means a great deal to have friendly neighbors near. If we were beginning to look for another place tomorrow, the first thing I would do would be to talk with the neighbors." A house all by itself, with no neighbors in sight, can be very lonesome to a woman who has lived where houses are close together.

Nothing takes the place of experience. The wise beginner will get the advice of the County Agent. (You can get the name and address of the County Agent for the town by writing to the Extension Director at your State Experiment Station. A list of addresses for all the states is given at the end of the book.) In many localities, there are farm consultants who will help you for a reasonable fee. Oftentimes

the real estate specialist of the local bank is a good source of advice.

In conclusion, there's one word of caution. Don't be in a hurry. There are an amazing number of places for sale in the country. Real estate agents are friendly, eager to help (their living depends on it), and are almost always delightful optimists. No matter what's wrong with a place, a rural realtor knows how it can be overcome or minimized!

There'll be areas and communities that for some reason appeal to you; there'll be others that for no tangible reason you do not like. Check the churches, schools and stores of the community. Talk with the people who may be your neighbors.

You are planning a major move in your life. You hope it will be the last one. You're looking ahead to years of happiness and a part-time farm that will help you enjoy life and feel a sense of security you do not have in the midst of city pressures and tensions. Somewhere there's a part-time farm that's about what you want. It's always a compromise among factors when you do decide. Don't put your money into a place you don't instinctively like, or one that doesn't measure up in location, water, soil, and electricity. These are the Big Four in choosing the right location for happiness and success in the years ahead.

HELPFUL POINTERS

Spend some Saturdays and Sundays riding around through the villages and countryside in the area where you expect to locate. It means exploring a circle around the city or town where the man will have his regular work. Inevitably,

you will find that one or more localities appeal. Then intensify your search in this region.

If you do find a place on a gravel road that appeals as just the home and part-time farm for which you are looking, make sure, first of all, that it's an all-year road without a period in the spring when mud halts traffic. In the years immediately ahead, the Federal government in conjunction with the states is planning a big increase in the so-called "farm to market," all-year, gravel-surfaced roads. As the program gets under way, it will open up many roads to the part-time farming program.

In addition to the character of the soil, check the drainage. Low-lying spots may have fertile loam soil, but if water stands on the fields late in the spring it may kill out small fruits and delay planting of annual crops. A long period of rain in midsummer may make it impossible to cultivate.

Don't be misled into buying a home that is situated several hundred feet from the road. Its approach may be picturesquely lined with beautiful old maples or elms. In the North the snow can be a problem. If you're doing farming enough so you have a tractor and can have a snowplow, that's one thing. If you're primarily interested in subsistence farming and have only one of the little garden tractors, snow removal from a long driveway becomes a major matter from December to April.

Don't spend all your capital. Keep some in reserve for repairs, remodeling and buying equipment. A mortgage that isn't too unwieldy may be a wise thing. Financing is a major problem with most families and one that each man and his wife should discuss in detail.

CHAPTER TWO

Farm Buildings—Old and New

LEARNING TO judge older buildings accurately is not a difficult task. A beginner can quickly learn certain standards of comparison:

We should also consider the increasing number of people who in the years ahead are planning to build their own homes on lesser or larger acreages outside the populated centers.

This chapter will point out some of the factors both groups should consider. Living on a part-time farm is vastly different from living on a full-time farm. Not that the mechanics of living are so different but a part-time family, if the writer's observations are correct, is apt to be much more demanding about comforts and conveniences. In the case of farming for a livelihood, the farm comes first; in part-time farming, the home comes first.

When a city or town family makes up its mind to move to the countryside, there's one thing to do first of all from the financial angle. Drive through the towns where you might locate, and look over a goodly number of the places that are for sale.

A family whose breadwinner works in a certain community can cover the possible area in a reasonable time. If

the situation is typical, there'll be roads in half a dozen or more small towns and villages which will be possible locations for the new home.

These first few trips around the countryside are the preliminary survey. They should accomplish one main result; they should show approximately what you can expect in the $4000, $5000, and $6000 brackets. You'll see the condition of buildings that go with each price range; you'll see the improvements—running water, furnace, electricity, etc.—that come in each price group. You'll pick up an idea of what good location means in terms of dollars.

The one thing you may miss unless you're on the watch will be the essential acreage of good soil (Chapter Four).

Beginners always ask this question, "Why can't I buy one of the older, more or less run-down places that are advertised in the $3000 range? I like to do carpentering, plumbing, and work with tools. Over a year or two or three, I could fix the place up. Perhaps $1000 worth of materials plus my time will change a $3000 place into a $5000 or $6000 one."

There are two angles to this. First, let it be said that this is a possible approach if the whole family is willing to cooperate. A considerable number of families have done it—and are doing it today. If the family is willing to get along with some discomforts and inconveniences, a $3000 place can frequently be increased 100 per cent in value by $1000 or $1500 worth of materials—plus plenty of labor.

There are cases where capital is limited and where both husband and wife are so eager for countryside living that the chances of success are good. The writer has seen many heart-warming examples of it. Three and 4 rooms have

grown to homes of 6 and 7 rooms; hand pumps have changed to pressure tanks and running water. Woods and brushy fields have been cleared. Since the decentralization movement really got under way in the early Thirties, tens of thousands of people all over the nation have literally made homes for themselves along the roads that branch out from the cities and manufacturing towns.

But if the family has sufficient financial resources, observation shows that the better way is to buy a place with more room and better buildings at the start. Thinking in terms of an average family (husband, wife and 2 children), it's cramped living to get along in 3 or 4 rooms. One extra room, women have told me, makes all the difference in the world, and 6 rooms mean a great deal in privacy and comfort.

The family which starts on a search will undoubtedly see that no place is perfect. One has certain advantages; another has other favorable points. As the search progresses, it becomes a matter of weighing the good points and poor points of one place against the good and poor of another.

What are some things to watch for in buildings? In looking at older places, the most essential point is to learn the difference between genuine structural weaknesses that cost considerably in money and labor to repair and the surface run-down conditions that a family can repair with a smaller amount of money plus plenty of elbow grease.

Such things as rotten sills, weak floor timbers and rotted rafters are major affairs. It's true a handy man can repair them if he has the time. One can cut maple or oak trees, hew them to 6 inches or whatever size is needed, and with a few jacks, and perhaps a man to help for a day or two, replace

sills. The same goes for the cross timbers under the floor and for the rafters. But it takes time. The part-time farmer who works 5 or 6 days a week the year round is in a different position from the man who follows the Six Months' Plan outlined in *Success on the Small Farm.* If a man has the winter months for repairing buildings, he can do a great number of these tasks.

The superficial weaknesses are in another category. After being vacant for a year or more, many a farm has a woe-begone, dilapidated look. Shingles and clapboards hang at angles, windows may be broken; perhaps weeds and brush fill the yard. Paint and paper may be peeling from the inside walls. Before you conclude such a place is impossible, look it over carefully. Use your imagination. Think how it will look if it's painted a pleasing color scheme on the outside; think how the inside will look freshly painted and papered. Don't arbitrarily pass over these places that look run-down and lonesome. For the family with limited capital, some of these houses are the best guarantee of an increase in the value of the investment.

Try to find a place with a barn or at least a big roomy shed. The highest degree of success in part-time farming for the greatest number of families comes when the family keeps a cow, or goats, and a few hens. It costs a surprising amount of money to build even a small barn. A barn big enough for the cow, hens, perhaps a pig, and for a corner or room to be made into a farm shop is a great advantage. A thousand dollars doesn't build a very big barn.

This is a good place to mention an important fact. If you buy an older type of house and have the least doubt about the chimney, get a mason to inspect it for you. A few dollars

spent for expert advice and perhaps some pointing up and repair may save you grief. In houses 50 years old or older, there's a tendency for the mortar between bricks to crumble and eventually there are holes through these spaces. *Don't* take a chance on an old chimney.

"Is there such a thing as an ideal place for part-time farming?" a letter writer asked recently.

The answer is, "No, there's no ideal place." But here's a list of points for a beginner to use as a guide. When the decision comes, it is always a matter of compromise. The amount of available capital, location, condition of buildings, etc., all play their parts in determining the final choice. Some persons don't care about being at the edge of a village; some who plan only subsistence farming for the family are not so concerned about water or acreage. But here, for argument's sake, is a setup that we'll label the ideal part-time farm:

Location—at edge of a village or town
Water—town supply under pressure
Acreage—6 acres of good loam soil
Buildings—at least a 6-room house in fair condition and a barn 20 by 30 feet or larger
Electricity—house and barn wired

It might be well also to consider the following points before you buy:

1. Look at many places.
2. Don't pay much attention to realtors—judge things for yourself.
3. Think of the distance you'll commute. An older place that needs major repairs, but is nearer your work, may be a better buy for you than first-class buildings several miles farther out. It costs money to commute.

Now let's consider the family that wants to build a new home on some acreage in the countryside.

Experts claim that America needs 10 million new homes before 1955. Surveys have shown that many city and town dwellers are planning to build outside the population centers. It's all a part of the increasing movement toward decentralization. Practically all the roads that lead out from larger communities have electricity. The country towns are spreading a network of water mains more and more, so that on the edges of villages there's an opportunity to build and have running water under pressure.

There are two sides to the total picture. The decentralization movement means that the large centers lose some population; it also means that the villages and country towns add taxable property and have increased revenues from the stores and service vocations. A generation ago such everyday problems as laundry, dry cleaning, tailoring, beauty shops, etc., were a more or less determining factor in what city people established as their standard of living. Now, all small villages within 30 miles of larger places offer these services.

In choosing a site for a new home, a family must consider the same factors that govern the purchase of a place already built: location, electricity, soil, and the distance for commuting. After watching the program of the decentralization movement in the Northeast for 20 years, and following the experiences of certain families that have built new homes instead of buying places already established, here are main points that need emphasis.

First, choose a location with good drainage. Many low-lying spots along the road look attractive, but the poor

drainage will be an ever-present problem if the buildings are located in a low spot. Second, make sure of the water supply. Good wells are perfectly satisfactory and with an electric motor and pressure tank, you'll have an efficient system. But given a choice, buy a location on the outskirts of a village or town where you can join the municipal water main. Third, many people in the next decade will build the type of house to which additions can be made.

That is, the first building job will be a kitchen, bathroom, living room and one bedroom. A big shed may serve for the livestock until a barn can be built. More than one wife and mother has said this to me, "We made a big mistake in having our kitchen and living room too small. When you write about this way of building a homestead, emphasize the need for a big kitchen and big living room. Bedrooms can be as small as you wish, but for comfortable everyday living have the kitchen and the living room large." If you build, plan to give yourself space in these two rooms.

Shall one have a cellar or not? Many experts say, "No, don't put money into a cellar." But the writer still favors it. Not only is it a place for the oil furnace and the hot-water heating system, but you will also want to board off and isolate one section for the storage of potatoes, apples, beets, carrots, cabbage, etc. Year after year, a cellar will pay you dividends in holding vegetables and fruits through the winter. You may have a frozen-food locker, as most will, but you'll find you will also need cellar storage space.

If you build a new home, don't make the mistake of trying to economize by going without the service of an architect. You'll be building the home that you hope to make

the center of activities for the rest of your life, and it is well worth this investment.

The other day a letter came from a man who had read *Success on the Small Farm.* He wrote, "We have bought 12 acres on a paved road. We're going to build a home, and I'll do part-time farming. Will you list the main points we should at least think about?"

Here are 10 main points:

1. The right location for commuting.
2. Good drainage and good soil for garden and crops.
3. A big modern kitchen and a big living room. (I know many experts talk about small, compact kitchens. The writers in magazines and newspapers like to use newfangled terms: food laboratories, women's workshops, etc. Don't be misled. A kitchen for a city apartment is one thing. A kitchen on a farm is another. I've asked many women about this matter, and the vote is 9 to 1 or more for a spacious kitchen. Make it large enough for a dining nook or alcove. It's a tremendous laborsaver for women, and there's no reason why people shouldn't eat food in the same room in which it's prepared. The American dining room is one of the most useless and overrated places in our contemporary plan of living.)
4. Hire an architect to make plans and supervise building.
5. Plan a sizable hall or utility room near the back entrance, where work clothes and household equipment, such as brooms, vacuum cleaner, etc., can be stored.
6. Make the pen for the hens a part of the shed, barn, or garage. The less you have to be out-of-doors in bad weather, the better. The chicken coop can be attached to the barn, or it can be a corner of the barn on the south side. It's senseless to have a little chicken coop set off by itself, when one has to walk 50 or 100 feet through rain, sleet or snow.
7. If your water supply comes from a well pumped by motor and sewage goes to a septic tank, have the complete outfit installed by

a local, reputable firm. Then in case of any trouble, you have a man who will take an interest in making things right. One doesn't need to be afraid of a well, electric motor, pressure tank and septic tank. Correctly installed, the unit will give year after year of trouble-free service.

8. Pay a little more and get a first-class heating system. Here in the Northeast, heat is necessary from September until May. There are many good systems. The writer's preference for a country home is hot water heated by an oil furnace with a circulator.

9. Build closets and cupboards enough. In 20 years of asking questions about the ideal country home, I don't believe that I've talked with a woman who hasn't emphasized this point.

10. Last of all, and this is the writer's personal opinion, build a complete living unit on one floor. Have an upstairs if you want it—and when you can afford it—but for year-round comfort and ease of living, have a bedroom and bathroom on the first floor. Prophecy may be risky, but the writer doesn't hesitate to predict that more and more homes will be built as one-floor living units. The amount of energy wasted in this nation tramping up and down stairs is staggering.

These are 10 main points. I should want a fireplace, not for efficiency but because a fireplace is something that most people enjoy. By all means use the best insulation possible; weather strip the windows. Use a "picture window" or two in the right places. Plan the lawn carefully—but remember while a big spacious lawn is pretty to look at, every square yard of it means just so much more work from April until fall.

If you can buy your land and build your home, you will have a great experience. If you buy older buildings and repair and remodel, that also is a great experience.

Whether you buy or build, it's a major affair of a life-

time. Go slowly; make plans carefully; figure finances. Somewhere there's a place or location that means years of happy living for you.

HELPFUL POINTERS

When looking at older buildings, use a strong flashlight to inspect the sills and floor timbers. If the buildings are wired for electricity, the bulbs in the cellar are often grimy and dirty. Use a sturdy jackknife blade or a screw driver to test the condition of the sills. Oftentimes a sill looks all right, but the knife or screw-driver test shows that the beams are punky and soft.

If you have any suspicion that water stands in the cellar after heavy rains or in the spring, let the flashlight beam play on the wall a foot or so above the floor level. If water has stood in the cellar, you'll notice a line on the wall.

If you're inspecting a house that hasn't been lived in for a period, go down the cellar stairs carefully, testing each step as you go. Wooden cellar stairs rot out quickly in the moist air and cause many accidents annually.

If the roof line of the house sags, it indicates trouble somewhere, either in rafters, roof plates, or the house sills.

Before you use water from a well or spring, have it tested for quality. In most states, the State Health Department tests water without charge. Some Departments furnish the container in which the water may be sent. Write to your State Department of Health for information and directions.

If you build a new home, be sure to have the builder use poured, waterproofed cement for the foundation. There has been great improvement in waterproofing materials for ce-

ment. A poured concrete wall and floor can be made in the cellar of an older house if trouble is caused by water seeping in.

If you do your own painting, don't paint the floors on your hands and knees. Use one of the long-handled brushes, with a 6- or 8-inch brush and a 4- or 5-foot handle. You can do just as good a job standing up as you can kneeling.

CHAPTER THREE

Remodeling and Repairing Older Houses

FAMILIES WHO move to the countryside and purchase an older type of house are almost certain to want alterations and repairs. As one examines properties for sale, two points will probably stand out. First, many of the houses built between 1890 and 1920 were well constructed. They are solidly built with big sills, heavy floor timbers and strong rafters. They show evidences of honest craftsmanship in the building.

On the other hand, you'll probably be dismayed at the floor plans. The rooms are likely to be small. Often there are narrow halls with many doors opening at difficult angles; the stairs to the second floor are often very steep and narrow; or they go to the other extreme and take up too much room. The kitchens are rarely shaped for convenience; some may be very large; others are dark, small rooms at the rear of the house. A good many farms of the earlier part of the era had a small, so-called "front parlor," as well as a "sitting room" that was used regularly by the family.

In older, square colonial-type houses and the story-and-a-half Cape Codders, one is likely to find a huge center

chimney with its foundation on the cellar bottom. This chimney may take a space 8 by 8 feet or as much as 12 by 12 feet in the center of the house. In the olden days, there was a huge fireplace in the kitchen with the Dutch oven beside it, and with additional fireplaces in dining room, living room, and in upstairs bedrooms.

Depending upon whether or not you approve of bay windows, you'll be happy or displeased over the great numbers of these built in dining rooms and living rooms. Most of the Cape Cod type houses have ells. Often these, the square colonials and just plain houses of no particular type, have ells or sheds that connect with the barn. Some of the 1900-era places have peculiarly narrow porches; they often have "gingerbread" trimming around the eaves and small porches tacked onto the front or side of the house.

The First Step in Remodeling an Older Place

Unless a man has had experience in remodeling, the only practical thing to do is to call in a local contractor or carpenter who has done this sort of work, and ask if your plans are feasible.

The beginner should do this whether he intends to do most of the work himself, or whether he intends to hire the bulk of the work done. A man or woman who likes to work with tools can do all or most of the work. But the point is this: You don't want to take out partitions and beams if they are part of the structural strength of the building. Carrying timbers, both horizontal and vertical, must be considered carefully. The inexperienced man may do serious damage if he starts working without having the plans checked by a competent person.

The writer has just seen one of the best second-floor remodelings that he's run across in a long time. All the work was done by a man and wife who had moved to a place of 5 acres. The plan was to change 3 small-sized bedrooms plus a big closet into 1 big bedroom, 1 small bedroom, 2 big closets, and a modern bathroom. Two partitions were taken down; 2 huge closets were built at one end of the master bedroom. The closets have sloping roofs, but they don't affect the storage space to any considerable degree. The big closet with its unusually large window will be the bathroom. A small linen closet has been built in the upstairs hall. The wife did all the papering and painting, even to papering the slanting ceiling. This major change was possible without affecting the structural strength. Before the work was started, an expert told them the partitions were simply divisions between rooms. You can rip off porches and wooden steps; you can pull down bric-a-brac decorations. You can even cut new doors and windows. But don't start tearing out partitions or rebuilding stairs until you're sure you won't injure the framework.

The Problems of Plumbing and Heating

A great many of the homes in the countryside have wells as a source of water. Sometimes the well is located in the cellar; sometimes it is a rod or several rods from the kitchen. Perhaps 20 per cent of the homes along country roads have furnaces; the other 80 per cent depend on coal, wood or oil.

This question is often asked, "If a family's capital is limited, where should money be spent first, so far as remodel-

ing the house is concerned?" The answer is: in plumbing and heating.

Unless a man has unusual qualifications, there's only one way to handle this problem. Give the contract to a local man or firm. You'll have to have an electric motor, pressure tank, septic tank and the piping to connect to bathroom and kitchen. *But*, and this is very important, don't go ahead and move partitions or do any carpentering until the plumber has completed the job. Usually there are no complications in the process, but sometimes it's necessary for the soil pipe or the water pipes to run in a certain space or at certain angles. The water supply and plumbing pipes are one unit.

It was mentioned before that hot-water heat from an oil-burning furnace with a circulation pump is the writer's idea of the best and most efficient heat for farm homes. But they are comfortably warmed in many ways. Some have one-pipe heaters; others have hot-air pipes that conduct heat to different rooms on both floors.

Many homes are warmed by a capacious, coal or wood-burning range in the kitchen. A surprising number of houses in the northern states still use coal or wood in living room stoves.

A frequent query is this, "If I put in a bathroom and running water, and can't afford a hot-water system for a while, what is the next best thing in heating?"

From what the writer has seen, he has no hesitancy in saying, "If you can't afford a furnace, use oil burners in the kitchen range and an oil-burning cabinet in the living room."

For comfort and efficiency, here are a couple of important points. Get good-sized burners for the kitchen stove.

Remember you'll want day and night warmth when the temperature is below zero, as well as heat for cooking. A burner fits under each of the first two covers of the stove. The oil comes from a 2-, 3-, or 4-gallon container that rests in a frame behind or at the side of the stove.

If one has a furnace and cannot afford an electric or gas stove, the logical cooking arrangement is to use these 2 burners in the kitchen range from September to May. From May to September, the writer's family has found a 3-burner oil stove the most efficient and comfortable arrangement. This stove has 2 metal ovens; one to fit over 1 burner; a larger oven to fit over 2 burners. But if one can afford it, countryside dwellers are almost unanimous in saying that an electric stove or bottled gas are the two best cooking outfits. A good many families use a combination range in the kitchen to furnish heat in spring and fall. That is, a combination of electricity and coal or wood, or a combination of gas plus coal or wood. There's about a month in the late spring and a month in the early fall when a fire in the kitchen stove takes the chill from the house.

Space in Kitchen and Living Room

Many older type houses have a small dining room that's on the south or east side. Many times it's the most pleasant room of the house as far as sunlight is concerned. It's often possible to remove one partition and have a good-sized kitchen with a dining alcove or a small table. It changes the kitchen from a dark, gloomy place to a livable room, and gives ample space for cupboards and closets to be built for storage.

A large living room is not only pleasant, but adds to the

efficiency of living for the family. If there are both living room and so-called "front parlor," these two can frequently be combined. Often a superfluous hall can be remodeled and included in the living room.

Sometimes as one contemplates the changes desirable to remake an older house into a modern, comfortable house, he is apt to ask, "Wouldn't it be better to forget about buying an older house and build an entirely new one?" The answer is a matter of economics. In the great majority of cases, if the sills, floor timbers, frame-carrying uprights and horizontals are in decent shape, it is considerably cheaper to remodel. If one has the financial resources, it may be more satisfactory to build. Here again, however, personal preference enters the question. Many families who move to part-time farms thoroughly enjoy making over a house.

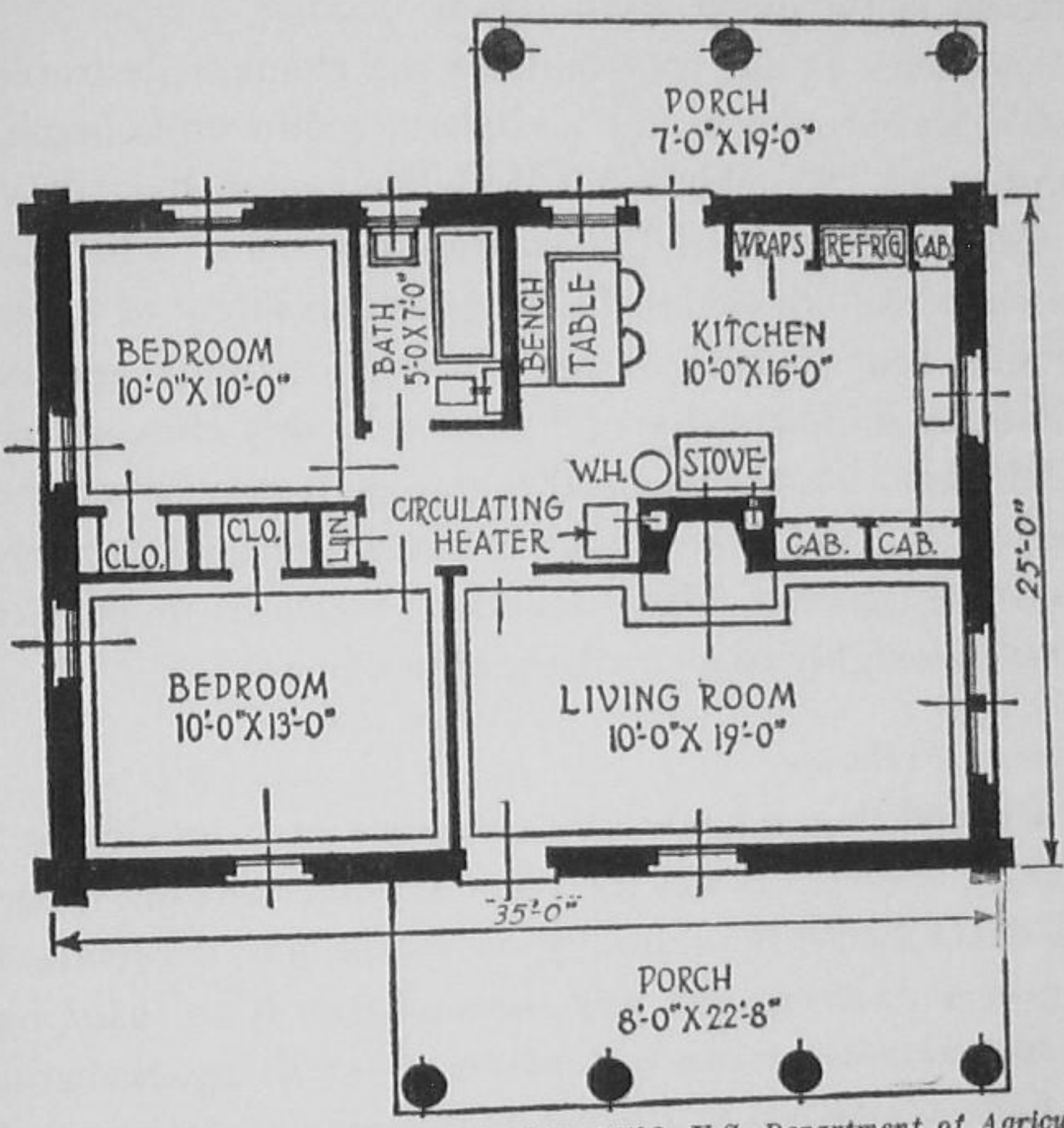
Chimney Problems

In remodeling a house, it's necessary occasionally to rebuild the chimney to get the room arrangement one desires. Unless the house is unusually roomy or has a certain arrangement that one can work around, the space used by a big central chimney can better be used for living. Sometimes one finds a home where a metal flue comes from stoves to the second floor, and then the chimney is built on a wooden platform. Most part-time farmers can use their time to better advantage than rebuilding chimneys, though one can do it with guidance from the bulletins. Usually, however, it's better to call in a local mason for the job.

Addition of Another Ground-floor Room

The writer has looked over scores of farm homes, both those for sale and those where a family is making plans for

remodeling. One thing always seems to come up. Families want another room on the ground floor for one purpose or another. Some want to build on in order to get a bigger



Farmers' Bulletin 1738, *U.S. Department of Agriculture*

Excellent basic plan. Back porch can be made into utility room.

living room; others want a bedroom on the first floor; and still others who have both a living room and a bedroom need a bathroom on the ground floor.

The addition of another first-floor room is not a difficult job; it's one that a man handy with tools can do himself. It can be made as a lean-to type of construction, with a slight pitch to the roof and a small storage space above the

room. From talking with families that have added a room or a room and bath so as to have a living unit on the first floor, one precaution should be taken. It seems as though 90 per cent of the people say, "We wish we'd made it larger."

Insulation

Very few older country homes are insulated. It pays in dollars-and-cents' savings in fuel to have the side walls and the attic insulated. In a 10-year period you will save the cost of the job, and the house will be more comfortable both winter and summer. You can easily insulate the attic floor yourself. You'll need to hire an insulating firm to blow the material into the side walls. Weather stripping of the windows is almost an essential in older houses where there has been some shrinkage between windows and the window casings. This is a job a man can do himself.

Utility Room

No room is more important on a farm or a part-time place than one where farm clothes can be kept and certain tasks done. It's the writer's opinion that the room should be large enough to use for storage of household equipment, set tubs for washing or a washing machine, space to iron clothes, etc. If the remodeling plans allow for such a room, so much the better. Sometimes an ell or shed that's attached to the house can be inexpensively made over into such a room, with heating connections and running water. But if one cannot have such a room until finances permit, here's the next best bet: build a storage closet either in a corner of the kitchen near the outside door or in the back hall that leads to the outside door.

Remedying Damp Cellars

The best treatment of this subject the writer knows is Farmers' Bulletin No. 1572, *Making Cellars Dry.* (See list at end of book.)

Putting in Electricity

Most men will hire this work done. Be sure to put in plenty of base outlets. Have 2-way switches wherever you'll need them: kitchen and cellar; kitchen and garage; kitchen and barn. Put a couple of double outlets at the back of the kitchen counter. If you keep a cow or goats and make butter, you'll probably use one of the small glass electric churns. In hot weather and sometimes in cold, an electric plate is a great help to the housewife. If you make toast on the kitchen table, you'll need an outlet within reach.

Painting and Papering

A handy man and handy woman can do the outside and inside painting, and put on the wallpaper. If you're a beginner, start with a spot that's a bit out of the way. A little experience will show you the tricks of the trade. In buying paint and wallpaper, ask for booklets of instructions. Farmers' Bulletin No. 1452, *Painting on the Farm*, describes paint and painting and the treatment of various surfaces: wood, metal, tile, plaster, etc.

Small-type Oil Burners

Two new types of oil heating are worth investigating by the family who cannot afford a regular type of oil furnace. The first is the large cabinet type that is usually set in the living room and is fed oil from a tank outside the house. The

second is often called the "floor oil burner." This is a small oil burner that fits in a metal-enclosed case or box just under the floor, directly beneath a register. The case or box is fastened to the under side of the floor boards. The oil is fed automatically from an outside tank and is serviced by an oil company. This type of heater throws a surprising amount of heat. Registers in the bedroom floors permit heat to go into the upstairs rooms.

HELPFUL POINTERS

Sometimes it's possible to narrow the cellar stairs and build closets or cupboards along one side of a kitchen wall.

Build a bulkhead wide enough so that you can lay down a plank and wheel in a load of vegetables. For convenience over the years it's worth the little extra expense and time it requires to construct a bulkhead 4 feet wide instead of 3.

Very few older houses have linen closets. Modern homemakers want them. It's often possible to build them into partitions. Usually you can remove one stud (2 by 4) without weakening the framework. A closet with shelves no wider than 8 or 9 inches is a great help to the housewife.

In many older houses, the cross timbers under the first floor are a considerable distance apart. Even if the timbers are sound, there's a jounce in the floor as one walks over it. This can be remedied by setting posts or 2 by 4's under the timbers from 4 to 6 feet apart. Set the bottom on a rock and have the post just long enough so one will have to drive it hard with a sledge hammer to get it vertical.

You can eliminate the musty, dank smell of an old earth-floored cellar by sprinkling 50 to 100 pounds of hydrated

lime and then covering it with 2 inches of fine sand. Use wide wooden planks as walks to the storage bins, furnace, etc.

For those who have to plan finances carefully, the following statement will be encouraging. It is from Farmers' Bulletin No. 1749, *Modernizing Farmhouses*. "Improvements can be made a step at a time, as income and farm work permit. Often the work can be done by members of the family, with materials obtained in the neighborhood. With little or no cash outlay for labor, and with lumber, brick, stone, sand and gravel from near by . . . the cash required should be hardly half as much as if both labor and materials were obtained at commercial prices."

Many men have bought materials needed at secondhand lumber yards; they've bought boards and dimension timbers from wrecking concerns. Some have bought old buildings on back roads, taken them down and used the lumber in remodeling or building barns or sheds. There are always ways to save a dollar, or stretch one, if one looks around a bit and isn't afraid of work.

In remodeling older houses, there's often more space in the bathroom than in modern ones. Housewives tell me that a storage closet here is a great help and a step saver.

CHAPTER FOUR

How Much Acreage?

A MAN WHO has always thought of land in terms of city lots often finds it difficult to talk and think in terms of acres.

Many city and suburban lots are 70 by 80 feet, 80 by 100, or 60 by 90. An area 70 by 80 is 5600 square feet. An acre is 43,560 square feet. It will help us as we talk about acreage, and later about gardens and crops, if we visualize 2 plots. Think first of a square plot, 209 by 209 feet. That is 43,681 square feet, a bit more than one acre.

Now think of a rectangle: 400 feet long, 109 wide. That's 43,600 square feet, 40 more than an acre. One needs to think in terms of rectangles instead of squares because it's more efficient in cultivating the gardens and cash crops. If you should decide to raise half an acre of small fruits, or a cash crop such as muskmelons, sweet corn, or winter squashes, you will want irrigation. It is more economical to install an overhead pipe system with a long plot, rather than a square one (less fittings). And with the new portable "water gun" types of revolving irrigators, the rectangle means that one setting will irrigate the full width of an acre laid out 109 feet wide.

Beginners with whom the writer has talked are always

torn between two ideas. About 75 per cent are thinking primarily of part-time farming as a home and large garden. They may want a small flock of chickens. But, in general, 3 out of 4 people who are planning to move into the countryside want about an acre. They want a lawn, a few fruit trees and a big garden. They are planning to get a power lawn mower and a small power cultivator for the garden. They don't think they want to raise fruits or crops to sell.

But—and this is the crux of the situation—I think 9 out of every 10 say something like this, "I'd like land enough so that if another bad depression comes along and lasts a few years, and I lose my job, or work only 2 or 3 days a week, I can keep a cow or a couple of goats and do enough farming to make $1000 or so cash profit. If I'm situated so I can do this, I'll have a sense of security I have never had before. If this happens, how much land do I need?"

This defines the problem. If a man has in the back of his mind that he may want to do some farming for cash profit income, then he obviously needs more land than the family which is interested in just a home and garden.

On the basis of observing a good many families who have moved outside the city, the writer has no hesitancy in saying that the first big mistake many beginners make is not getting land enough. There are illustrations galore of people who thought 1 acre was ample. After living on a 6000 square foot plot, an area of 43,560 square feet seemed huge. "No one," so these folks reasoned, "could possibly need or want more than that size."

Here's what frequently happens. The family buys its acre lot on a road in the countryside. They either buy a house already built or build for themselves. Then in 6

months or a year someone comes along and builds right next to their line. The newcomers may not put up a very attractive place. And if the first family builds in the center of a 200 by 200 plot, the next house may be only 100 feet distant.

City people and those in large towns are accustomed to zoning ordinances. But out in the countryside there are few if any such regulations.

This isn't saying a word against those who have started with 2 rooms and gradually built on. I know families who began by building a combination garage and barn; they lived in this while accumulating capital. There are many heartening examples of people who have cut their living expenses by starting in at the bottom. They are pioneers in every sense of the word and when the next business recession comes along there will be thousands more.

But these people have told me that same story over and over. They thought an acre was a big space on the earth's surface. Many of them have since bought more land to add to their original holding and usually they had to pay more per acre than they would have if they had bought a larger area in the first place.

In the last few years, there's been a tremendous flood of literature about homestead places, where a man can apparently raise all kinds of livestock and do all sorts of farming on an acre or two.

Don't fall for this! If you're going outside the population centers for a home in the country, get land enough.

How much? That's a fair question, and the writer is willing to offer an opinion. First, for those who are certain that the thing they are after is a home and garden, plus the

values of countryside living, don't buy less than 2 acres, and don't buy a plot of ground that doesn't offer you privacy and protection for at least 200 feet on all sides of the house. It isn't enough to be sure of that distance on the street or road.

This movement toward countryside living is just beginning to gather real momentum. If you should happen to buy 2 acres of a good location and there's open space behind you, someone is going to buy the area, put in another road, and then there'll be homes built along the new road.

Why 2 acres instead of 1½ or 3? Observation shows a few interesting facts about this. Most men and women who move to the areas outside cities want privacy and a feeling of being able to wander over their property. Two acres isn't much in terms of real farming but it's land enough for those who want a home and garden. There is room for a quarter acre of small fruits and vegetables for home use, as well as for a few apple, plum, cherry, peach and pear trees.

Now, for the man who plans to make from $500 to $1000 a year from his place, or the man who thinks he may want to do some farming if his other income drops off, we have a totally different picture. This group is divided into two categories: one type wants to grow $500 worth or more of food. This may include a cow, or a couple of goats, a flock of hens, a big family garden, perhaps a pig or rabbits, and some tree fruits.

This group we'll call the subsistence type of part-time farming. A man can add $500 to $700 to his real income by doing subsistence farming. In a family with 2 or more children, the total value of dairy products, poultry products, other meat, fruits, and vegetables can easily go over the

$600 mark. If the family has a frozen-food locker or there's a community locker, a 6- to 10-month-old beef and a pig can be butchered each year. The community locker organizations do all the work. If a man has his own locker in his home, most communities have one or more men who will take the beef or pig, butcher it, and cut it up ready to be wrapped for freezing.

However, for this subsistence group there's one great secret in adding that $500 to $700 to the family's real income. There must be land enough so all the hay and a good part of the grain for the livestock can be raised.

One can keep a couple of goats on ½ acre of good pasture; ½ acre of good soil will produce the hay for 2 goats. But with a first-class cow that produces from 16 to 20 quarts when fresh, you'll need 1 acre of pasture, 1 acre of good clover and timothy, and 1 acre to raise 75 to 100 bushels of hybrid field corn. If you have plenty of corn to grind in a grinder powered by an electric motor, it means not only meal for the cow, but also grain for the pig, and part of the grain for the hens. With hay, corn, and some mangel-wurzels or turnips for winter feeding, all you'll have to buy for the cow is a little protein concentrate, such as cottonseed meal.

So the subsistence farmer who wants to add to his income by raising food for the family needs 3 acres or more of good soil for the low-cost production of dairy, meat, and poultry products. The skim milk means cheap feed for the growing calf, pig, and chickens.

There's no question but that goats are increasing rapidly in popularity. For a family consisting of man and wife,

there's much to be said in their favor. But in a family where there are children, the writer holds to the opinion he has expressed many times: a good cow is better than 2 good goats.

There is always the question of power for this type of subsistence farming. There is only one answer: buy one of the small riding tractors. In the immediate future we shall see many models of this type on the market—tractors of 4, 5, or 6 horsepower. The price range may be from $400 to $700. The prices will lower as the production gets under way. These tractors will plow, harrow, cultivate, and mow hay. One represents an investment of several hundred dollars, but it will be cheaper in the long run than owning a horse. A good tractor, well cared for, will last 20 years. It's abuse, not use, that wears out farm machinery. (More about this in the chapter on "Power for Part-time Farming.")

A part-time farmer may not only want to add $500 to his real income by production of food for his family but, in addition, he may want to make $500 or more cash profit income from the sale of crops. This brings us to the second type of part-time farmer.

His best insurance of profit is to sell at retail prices from a roadside stand. We'll discuss this later. Suffice it to say here that the farm for this type of operation must be on a road where there is a fair amount of traffic.

How much acreage for this type of part-time farming? It requires a new piece for strawberries each year. The piece set in April or May bears its crop the following year. It doesn't pay to hold a strawberry bed for the second crop; it gives only a third or half the production of the first year.

Raspberries use the same area about 7 years. Asparagus is good indefinitely. You'll need space for annuals: melons, corn, and squashes. However, on the part-time farm a man has to decide which crops he'll specialize in. His time is the limiting factor. Strawberries are harvested in a 4-week period; raspberries in about 4 weeks, also. Melons and sweet corn can be stretched over 8 weeks by successive plantings; winter squash can be harvested and sold over many weeks.

Therefore, the man who wants to make a substantial sum from part-time farming, in addition to the $500 from home-raised food, has this problem. First, he needs 3 acres for the cow; then he should have 3 acres additional for crops. While he uses some of the land, he'll want to be growing green crops to turn under for humus on the rest. And, furthermore, it's always good business to raise more than an acre of field corn. The more grain there is for the cow, growing beef, pig and hens, the less cost there is in producing these foods for the family.

The part-time farmer who wants to do some farming in addition to subsistence homesteading needs 6 acres of good soil. Theoretically, 1 acre planted half in strawberries one year, and half the next, will give a man his $500 cash profit. But observation shows that 1 acre isn't enough land for the safest program. In the future, a man may want ¼ acre in asparagus; he may want to raise an acre of squashes in addition to the strawberries. If his wife or some other member of the family is interested, perhaps both strawberries and raspberries will fit the program.

If you're thinking of part-time farming as such, get land enough. Maybe 5 acres will do; perhaps you'll want to put out an acre or two in tree fruits. Each man must make his

own plans. But, if observation is correct, 6 acres is the minimum as shown by the experience of many who have tried it.

HELPFUL POINTERS

One of the great pitfalls for the beginning part-time farmer is the cute little cottage with a quarter acre or so of land on the edge of some pretty little village. If a man and wife want village life and just a small garden, this may fit their program. But most families who move to the countryside are thinking in terms of big gardens and some livestock. If there are children in the family and the idea is to raise $500 worth of food, or to make cash profit in addition to the subsistence farming, look further and get more acreage.

Remember that the addition to the family income in terms of food is the difference between what it costs you to produce it and what you would pay for it in the stores. You don't get milk and eggs free by keeping a cow and hens. If a man has a good quality cow and buys all the feed, hay and grain, the cost may be from 6¢ to 8¢ a quart for milk. You can count the butter and cream as costing nothing if you've included all costs in the milk production. The cost of a 3-year-old second-calf cow has to be amortized over an 8- or 10-year period. The skim milk is cheap feed for the pigs, hens, and the calf that's raised to be butchered. The point is: Have acreage enough to raise all the hay and much of the grain. An acre of good pasture means very low cost of milk production from May to September or October. A patch of oats or Sudan grass for green feed helps maintain production during the hot months. But you can't produce low-cost

milk, beef and pork *without land enough* to raise fodder and grain.

It's always wise for the beginner to keep this fact in mind. Many part-time farmers regret not having bought more land. Very few ever feel they have too much.

CHAPTER FIVE

Important Points for Beginners

Buy or Rent?

A SURPRISINGLY SMALL per cent of those with whom the writer has talked have considered renting instead of buying. This is understandable. The vast majority have made up their minds they are going to live outside cities and towns. They expect to put both capital and labor into making their countryside home comfortable.

Many have said they were perfectly willing to buy an old house and remodel to suit their own ideas. They felt, and the writer believes correctly, that a $3000 to $5000 place can often be improved $1000 to $3000 by repairing and modernizing. Perhaps half the increased valuation will be for materials bought and half for the labor. The great majority of those attracted to countryside living are the type who want to own their homes.

However, there is this to be said. If there's any doubt about the wisdom of the move, renting is the sensible step. Often a deal can be made whereby one pays rent for a year or more, and then has an option of buying at a price agreed upon when the renting began. The renting program may be essential for a period while a family accumulates more capital for the down payment on a home.

Legal Matters

There's only one logical way to buy real estate, irrespective of what one may hear, and perhaps contrary to the advice of well-meaning friends. Have a lawyer search the title of the property to be sure it is clear. Perhaps a bank already has a mortgage and you may be tempted to save $25 because you feel the bank has looked up the title. That's a natural assumption, and if dealing with a bank that has a mortgage, the chances, of course, are that the title is good.

But even here, for peace of mind over all the years ahead, it is a good investment to have your own lawyer check the title in the registry of the county. It's an absolute essential if you are buying outright from a family, and no mortgage or bank connection is involved.

When one is buying real estate in the country, oftentimes peculiar situations arise, not necessarily about the title per se. It's more likely to be in regard to boundaries that are indefinite. Some of the old deeds mention corners of property in terms of tree stumps, rocks, ditches, etc. Most sellers will be willing to have lines run by a local surveyor and all corners determined. If not, it's one of the first things the new purchaser will want to do. In buying acres of land instead of lots of so many square feet, one doesn't usually deal in straight lines and square corners. Boundaries are at queer angles, jogs and juttings. If you're buying a country home, make sure of these two points: clear title and known boundaries.

Financing

This is a major problem with many families and one which needs to be considered from several angles if a family

is planning to secure a home with less capital than is required for outright purchase.

If ample capital is available, the purchaser usually buys outright. But probably more than 50 per cent of those now planning to move to part-time farms will have to make arrangements to hire money for a period of years.

There are two usual ways of financing a home. First, the seller, or other individual, may take a mortgage for the balance after the original payment has been made. Second, a bank may take a mortgage for the unpaid balance.

Great numbers of people carry mortgages on their homes and farms, but most of us want to own our homes free and clear as soon as possible. There's one very vital point here, however, that beginners must watch if they are planning some enterprise to add to the family income. Keep capital enough in reserve to finance the project. If a man is planning just a big garden, a few hens and a goat or two, it doesn't require much. But if he's going into crops, hens, capons, or turkeys, he'll need a sizable amount. It's a problem for each man to decide for himself.

There is another point about mortgages that should be mentioned. Some mortgages are written so that one pays a certain interest plus $100 or more on the principal each year. This is a fixed mortgage. You have to abide strictly by its terms. The other type, in addition to fixing the interest rate, permits one to pay off anything over the required principal payment. Thus, if a family has a good year and wants to reduce the mortgage principal, it's essential to have the second type.

(Veterans who qualify for loans for business purposes

under the "G.I. Bill of Rights" [a farm is classified as a business] should talk with the Veterans' Information Bureau of their city or county.)

The Whole Family Must Like the Country

It cannot be too strongly emphasized that part-time farming is a family enterprise and that the family, especially husband and wife, must be agreed on the desirability of country life. Usually the children are all in favor of it. Country life is different from city life, even with all modern conveniences. A person who has only spent vacations in pleasant weather in the country doesn't always realize the situation in late fall, winter and early spring. There are no grocery stores or drugstores just around the corner. The author is strongly opposed to emphasizing country life as a "way of living"—as if it were something entirely different from urban life. Nevertheless, one must face facts. It *is* different from city life. True success comes only when the whole family likes the country.

Drainage of Soil

One of the important problems that many part-time farmers face is the drainage of land for garden or cropping. More than a tenth of all the improved acreage of farms in the United States has ditches or tile drains. Prospective purchasers of country homes will often discover that places which otherwise seem suitable have fields that prove to be damp-soiled.

The first thing to do in such a situation is to secure competent advice about drainage possibilities. In purchasing, many factors need to be considered, and often for the sake

of securing good buildings, electricity and the right location, one has to undertake a soil improvement program. This is discussed in the chapter on soils, but here we consider a separate problem—not changing the physical characteristics of the soil, but draining it.

In many instances when a field slopes, drainage ditches at the low side will take care of the surplus water. In most localities, one can engage a man to dynamite such a ditch at reasonable cost. More and more communities have men who own ditch-digging machines and who work on contract or by the hour with them.

When it comes to a tile drainage system (rows of tile drains laid beneath the surface of the soil), the major essential is a suitable outlet for the water. Without this channel to carry it away, the tile drain simply fills up and then no drainage is effected. Observation shows that in a great majority of cases there's an adequate natural watercourse or slope at the end or side of a field.

The beginner should write the Farm Engineering Department of his State College. The County Agent is also a good source of help. If there's a Soil Conservation District in your section, and you join it, government officials will help lay out the drainage sites without charge.

If you are going to use a quarter or half acre for a family garden, or half an acre or more for cash crops, it pays to spend whatever is necessary, within reason, to assure yourself of a well-drained area.

Eliminating Witchgrass

Of all the questions that come up, this is one of the most frequent, "How can you get rid of witchgrass?" In the fam-

ily's annual garden spot or the permanent garden, the best way is to use a long-handled spading fork and spade the area, tossing out all the long roots. You'll never have to do the job again if you do it thoroughly the first time.

Farmers use two other means. A few pigs, kept confined by a portable fence, will dig up a surprisingly large area in a week, and eat the roots. Or one can keep 200 or 300 growing pullets on a place 100 by 100 feet for a 3- or 4-week period, and move them to a new spot after they have killed out the grass in the first area. Witchgrass, or Johnson grass as it's sometimes called, is the worst of weeds. Repeated shallow plowings and harrowings with a spike-tooth harrow will help kill it. Two or three crops of densely planted buckwheat help. It pays to put in special effort to get it out of the family garden. You can raise melons, sweet corn, and squash if there's some witchgrass. You can even get a fair strawberry crop if it isn't too thick. But it's impossible to do anything with raspberries or asparagus unless this pestiferous weed is killed off first.

A Shower Bath for $5

If one doesn't have running water at first, here's a practical way to have a shower bath. With a portable oil heater or an electric sunbowl, one can use it in cold weather as well as in summer if it's located in a small room or a corner enclosed by canvas or wooden partitions.

The base is a sheet-metal pan, about 4 feet long, 3 feet wide, and with sides 6 inches high. At one end have an inch hole flush with the bottom. A pipe goes from this hole through the side of the building to carry away the water.

Set the pan at a sufficient slope to drain well. At the high end put a 2 by 4 upright in the pan and fit it tightly against the ceiling or a timber overhead.

Then drive a big spike in this 2 by 4 about 5½ or 5¾ feet from the bottom of the pan. It's on this spike that one hangs a 10-, 12-, or 14-quart watering can with a spray-type nozzle. It's a bit difficult for the uninitiated to believe, but 12 quarts of water will give one a good bath. Hang a regular shower curtain around the pan; make certain the curtain is long enough to extend inside the pan about 1 or 2 inches.

Sanitary Arrangements for Harvesters

If one is raising strawberries, raspberries, or a tree fruit like peaches, it means a considerable number of workers at the height of the picking season. If there's running water and one is specializing in these crops year after year, the most satisfactory arrangement is a toilet and washbowl in the shed, barn or other building. It may cost a fair sum, even with secondhand fittings, to set the place up and install the septic tank. But where one has from 6 to 12 people for the harvesting season, it's worth it not to have the traffic in the house. Be sure to install a large septic tank. This equipment will last indefinitely.

If there is no running water, build a privy at the edge of the woods and during the picking season provide pails of water, basins and paper towels. If there is no natural concealment, build the privy in an out-of-the-way corner and set pines, spruces or hemlocks around it.

Installing the Water Supply

A few farms have running water by gravity from springs. The great majority depend on wells. The best way to handle the problem is to let a local plumber or firm put in the system for you. One can use either a gasoline engine or an electric motor for power to pump the water into a pressure tank, but the latter is far more satisfactory.

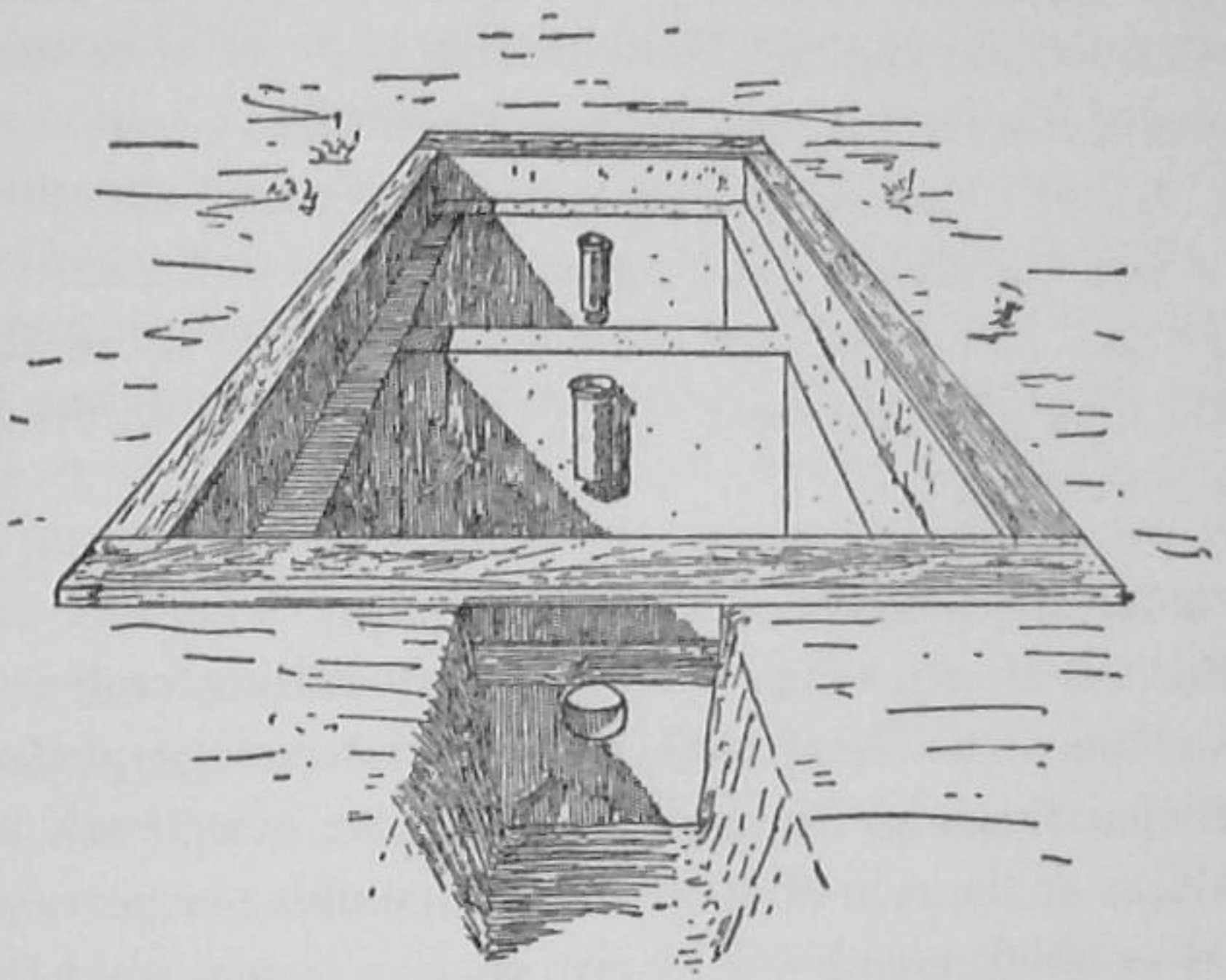
There are some men, handy with tools, who can do the plumbing themselves if they have the time. Basically, it is a simple operation to set up a motor or gasoline engine for power, pump the water to a pressure tank, and put in a system of pipes to the house for the bathroom, kitchen, and set tubs, and run a line to the barn.

Practically, however, if a man can afford the cost, it's advisable to hire men who have made a specialty of the work; and as mentioned before, if a local firm does a job for you, they have an interest in maintenance. Once a system has been put in, a handy man can usually make minor adjustments and repairs.

Sometimes beginners are puzzled over the question of cesspool versus septic tank for sewage. There's no doubt in the writer's mind, confirmed by a great majority of people to whom he has talked, that a septic tank is the more satisfactory system. If correctly installed, it is good for years of trouble-free service. One of the most vital points is to be sure the tank is large enough. It costs a few dollars more to get the size for 8 people instead of 4, but it's money well spent.

The U.S. Department of Agriculture Bulletin No. 1950, *Sewage and Garbage Disposal on the Farm*, reads, "Septic

tank systems, if installed and maintained properly, provide the most sanitary method of sewage disposal for farmhouses equipped with running water." This bulletin is an excellent treatise of the subject. Briefly, so that a city family moving



New Jersey Experiment Station,
Rutgers University, New Brunswick

A septic tank in construction.

to the country may understand, this is the principle by which a septic tank works.

The septic tank system has three parts: the inlet system which transfers sewage from toilet to tank; the tank itself; and the outlet system which distributes the liquid, or effluent, from the tank into the filter bed around it—that is, into the soil. In the tank, the sewage is acted upon by anaerobic bacteria. These bacteria change the sewage waste into liquids and gases. The mineral matter sinks to the bot-

tom of the tank. Therefore, once in 5 to 7 years the septic tank should be cleaned.

A heavy, greasy scum forms on the top of the sewage and this protects the anaerobic bacteria which die if exposed to air. The liquid flows from the tank through the distribution outlet into the soil. Here another type of bacteria goes to work, the aerobic, and renders the overflow liquid harmless. A septic tank should not be located closer than 100 feet to a well supplying drinking water. It doesn't need to be more than 18 inches below the surface as the bacterial action in the tank generates heat enough for protection in the most severe weather.

Fertilizer Experiments

For the family which is interested in raising cash crops, this is one of the most important and interesting phases of part-time farming. Many men go on year after year using fertilizer at the rate of 1000 or 1500 pounds per acre, when 2000 or 3000 pounds would give enough larger yield to increase profits materially over the cost of the additional fertilizer.

The writer has been running experiments for years on certain cash crops—both fruits and annuals. The figures given in the later chapters are the results of these experiments in good loam soil well filled with humus.

But every man should run his own experiments. It's easy and practicable to set aside 2 or more rows of crops for experiments. Figure the square feet involved and it's easy to make calculations on the basis of an acre. If one's soil is a type where 2 tons of fertilizer bring big yields, it's sense-

less to refrain from buying $60 to $75 worth of plant food if the return is a couple of hundred dollars extra profit. It's an efficient system to have a loose-leaf notebook divided into sections according to crops. Year by year you can make experiments and jot down the yields. Admittedly, there comes a time when the law of diminishing returns sets in, but in most cases familiar to the writer, growers do not use enough fertilizer to get the maximum profit possible.

Storage of Vegetables

If one has an earth-floor cellar, or a section of cellar away from the heater, it's neither much work nor very expensive to board in a space for winter storage of root vegetables and fruits. Coolness and a reasonable degree of moisture, plus some ventilation, are the essentials. Use matched boards and make a tight door. Usually there's a window in the cellar that can be opened on days when the temperature ranges between 35 and 45 degrees.

The writer has built a storage cellar beneath his kitchen porch. The walls of the cellar and garage serve as two sides. The other sides are made of cement blocks. The top is creosoted planks, covered with heavy building paper and 6 inches of sand over this. The door is made of a double thickness of matched boards. The floor is earth, and the side walls extend 3 feet below the surface. This serves excellently, except when the temperature holds below zero for more than 24 hours. Then a 100-watt electric light bulb is used to maintain the temperature at 36 or 38 degrees. A storage cellar 8 feet long, 6 feet wide and 8 feet deep can be built for less than $50 if a man does the work himself. With careful plan-

ning, a tremendous amount of vegetables and apples can be stored in this size space.

Get-Rich-Quick Baits

These include growing such crops as ginseng and other drug-producing plants, squab raising, frog raising, unusual and little-known crops, canaries, rabbits for fur, fancy breeds of poultry, cats or dogs.

One cannot be too dogmatic. There are families who make a profit with these things. But from what has been observed over 20-odd years, there's no hesitancy in saying, "Go slow with these lines."

If you are attracted by glittering advertisements and hints of tremendous profits, just ask yourself this question: "Where can I go to talk with someone who is making this great success?" If you'll write the advertisers and ask for the names of some people within a 100-mile radius who are successful, the answers will afford amusing reading.

The Roadside Stand

Whether one is a part-time farmer or a full-time operator, the roadside stand offers the producer a chance to get 100 cents of the consumer's dollar. The point will be strongly stressed in this book, for the simple reason that the selling end is more important than the production. In many crops, there's a difference of 100 per cent between the wholesale price and the retail price. If one sells a quality product and gives good measure, it is easy to build up a steady clientele.

Here are some points to keep in mind about the stand. Remember the customer's comfort is as important as an efficient stand is for you.

1. Build the stand off the road so customers will have space to park out of traffic.

2. Slant the parking surface enough to carry off rains. Use macadam or rolled gravel.

3. Build a stand large enough. If you're selling hundreds of quarts of berries a day, it requires space. The person who tends the stand will want a chair for use in slack periods.

4. Have a wooden porch, or concrete slab, for customers to stand on. Build overhang enough to the roof for protection in rain.

5. A simple, neat building is better than one which is too pretentious. A few shrubs and native evergreens are enough for "dressing up."

6. Keep the stand neatly painted.

7. A pleasant, unusual sign attracts customers, but remember it is a first-class product that brings steady business.

8. As you ride around the countryside, watch the roadside stands. Study and observation will show you the essential points for yours.

9. Don't try to get by with displaying produce on a table or boards by the roadside. You need a substantially built stand that offers both you and your customer protection in nasty weather.

Storing and Handling Manures

A huge amount of valuable chemical and humus material is wasted each year because farmers and part-time farmers do not take care of the animal manures produced on the place. The droppings from the hens are not a problem. One can wire in the roosting perches and let the droppings accumulate for a year. This is called the "dropping pit." A little hydrated lime scattered periodically over the dropping pit keeps down odors. The "built up" litter system means that the litter is kept for a year with occasional additions of shavings, peat moss or straw.

But if one keeps a cow, goats, or a pig, there should be a covered place where the manure can be stored until time

to use it on the family garden. The manure should be protected against rain and snow. A little superphosphate scattered daily behind the cow helps preserve the nitrogen. The manure from a cow, a pig and a few hens represents $100 worth or more of plant food per year.

CHAPTER SIX

Landscaping the Country Home

THEORETICALLY, THE 6 million farm homes of the nation should be attractive places. One would think that with plenty of space, native trees and shrubs to be gotten without cost and with backgrounds of fields, woods and meadows, the homes in the countryside would be universally appealing.

That's far from the actual situation. A trip through any rural region or on the roads outside small towns and villages will show many farm homes where little or no attempt is made at beautifying the premises. Often you will see heaps of cultch and debris, old machinery and tin cans in helter-skelter piles around the buildings.

The part-time farmer and his family should make a resolution that they will keep up the appearance of the homestead. In general, there seem to be two types of part-time farm families. The first type takes pride in the looks of things; the second seems more the "squatter" type whose lackadaisical methods mean eyesores.

Before we consider some actual landscaping principles as applied to lawns, shrubs and flowers, let's discuss a few other points that have much to do with the attractiveness of a countryside home.

First, let's think of the farm buildings. Of course, it's a good idea to have the barn and sheds painted or stained. But there's nothing wrong with weather-grayed shingles as such. The thing that's wrong is the tendency of so many part-time farmers to leave farm equipment and miscellaneous tools out of doors. Some of these homesteaders don't even take the trouble to put things out of sight behind the barn or shed. They simply leave them scattered around in the farmyard or barnyard.

If a farm family is in earnest about maintaining an attractive home, the first thing is to keep tools in a given place. That means, if one is doing some part-time farming for cash income, there must be a place where equipment can be kept—and then the equipment must be kept there. Economically it's the only sensible thing to do. Tools and machines that are left outdoors rust, and it's this abuse, not use, that wears out farm machinery and keeps the implement manufacturers prosperous.

In the chapter on buying a part-time farm, it was emphasized that a barn or large shed was a desirable feature. Oftentimes the barn is big enough to use as a storage place for machinery. But if it isn't, you can easily and inexpensively build a lean-to type of shed on the back or side of the barn. If you happen to have a wood lot, you can get out your own rafters and sills by using 4- or 5-inch trees, peeled and hewed flat on one side. If you build a shed for the tools, be sure to build it large enough. If you have a tractor and all the implements with it for plowing, harrowing, cultivating and haying, it requires a space about 16 feet long and 8 feet wide to house the equipment conveniently.

You can probably set aside a corner of the barn or shed

for smaller equipment: grindstone, shovels, crowbars, hand cultivator, buckets, baskets, etc. Plenty of shelves, plus plenty of spikes from which to hang things, is one secret of efficient storage. (See Chapter Ten on Efficient Tools and the Farm Shop.)

Here are some pointers about landscaping and planting. First of all, don't go berserk and set out trees indiscriminately just because you can get all you want free or at little cost. You'll notice many farm homes are hemmed in with them. Pines, spruces and hemlocks are planted closely around the house, or the yard is full of maples, oaks and elms.

It may be that you'll want to eliminate many or all the trees around the place you buy. If you're building a new house, you are fortunate in that you can arrange the planting. There's a place for both evergreens and deciduous trees around many farms, but choose the locations carefully. Maples are probably the best all-around deciduous trees. They are vigorous, not subject to many pests, and make pleasing shapes. There are some who prefer oaks, but remember oaks mean acorns that are a nuisance to rake up. Acorns, in turn, mean gray squirrels that delight in digging holes in the lawn where they bury the nuts. In many sections, elms are subject to the Dutch Elm disease. The native white pines and spruces are beautiful trees. The hemlock is liked by some but it tends to grow more scraggly than the other two.

Study the grounds carefully before deciding on the place to plant, remembering that little trees grow eventually into big ones. If you take up trees in the woods, choose specimens from 4 to 6 feet in height and dig well around them so as to

get the majority of the root system. Fill the planting hole with good soil, not the worthless subsoil that you dig out at the bottom. Work the soil firmly around the roots with the fingers and press it down constantly with the palm of the hand as you fill in the hole. Don't stamp on the soil with your heel or use a 2 by 4 to pound it down. Don't fill the hole quite level; this leaves a space for a bucket of water. You can transplant either in the fall or spring, and unless a rain comes, water the trees night and morning for 2 weeks. (The writer has set out many native trees, and in the latitude of Boston has had better success with trees set in April than in the fall.)

In many places, a windbreak of evergreens 75 to 150 feet on the north, northeast or northwest of the house is a good practical feature, and often can be made a pleasing background. Native white pines are excellent for this. Three staggered rows, with the trees 15 feet apart in the row and the rows 10 feet apart, will make a dense windbreak.

Old-fashioned shrubs seem to fit particularly well into the farm scheme. Lilacs, forsythia and syringa are favorites. A clump of shrubs at building corners often breaks sharp lines. Many times a few of these shrubs in a line will soften a displeasing object. A grape arbor can be used with good effect along the sides of a barn or shed, and it often furnishes a good background for a garden plot.

The writer used old-fashioned purple lilacs to make about 200 feet of hedge around two sides of the family garden. The shoots came from an old clump, and the hedge cost nothing but the time to set out the shoots.

Sometimes a family wants to use fruit trees as a part of the landscaping plan. You can use apples, pears, cherries,

plums and quinces. You'll want fruit as well as foliage, so be sure there's good drainage. Pears and plums will grow well and bear fruit in lower-lying places than apples and cherries. For the family that's thinking of country living in terms of home-raised vegetables and fruits rather than commercial crops, it may be that fruit trees can be used extensively around the grounds.

Often it's a pleasant touch to have a rambler rose climbing a trellis by a kitchen or shed door. It's admittedly old-fashioned, but somehow some morning glories growing up the porch posts have a place on a farm home. If there's a stone wall about the place, red ramblers make a spectacular showing in blossom time if they're allowed to climb along it.

Many beginners go strong for evergreen hedges, but to the writer these manicured and trimmed hedges seem out of place in country living. They are too typical of cities and suburbs. But if you do use evergreen hedges, make certain they are planted far enough from the driveway and walks so they won't crowd needed space as they develop.

In making the landscape plans, give special attention to the driveway and walks. If the drive is on a slant and has a dirt or gravel surface, you'll have the problem of filling in the ruts and gullies after every heavy rain. You can get by nicely with a gravel surface if the driveway to garage and barn is on the level. But if there's a slope of any appreciable degree, it's a great comfort to have a cement or rolled macadam drive. There's no law that says you must follow the common pattern and plant a row of flowers or shrubs on either side of the drive. Remember this: Whenever you plant shrubs in the lawn, you've got to get down on your knees every few days and do some clipping if you want to

keep things neat. In making your landscaping plans, be sure to provide for a hard-surfaced walk from the back door of the house to the barn. It saves bringing mud into the house after storms, and in spring and fall.

A too-large lawn is the Waterloo of many part-time farm homes. Theoretically it sounds right. A big spacious lawn all around the house sets the house off. Grass walks around the gardens and through them are a very pleasant feature.

But it may help restrain your enthusiasm if you remember that every square foot you seed down, or reclaim, has to be mowed every few days from early spring until late fall. A couple of hours of lawn mowing, even with a power mower, represent time that you could have spent on something else.

You'll want a lawn, yes. A fair-sized one has its place. By all means have a clipped backyard where the housewife can hang out clothes in comfort. But in planning the grounds, keep both these facts in mind. The hours you spend on the lawn have an esthetic value; the hours you spend in the garden have an economic value. The other point is this: the fewer shrubs and perennial plant clumps you have scattered about the lawn, the faster you'll do the lawn mowing.

Many people are especially fond of perennial flowers and want a perennial border. Over the years the author and his wife have experimented with perennials and have come to several general conclusions that may help. Since a perennial border is good for many, many years, choose the location carefully. A good width is 6 feet. This means you can have 3 rows of plants on a staggered system of planting and still have room to do most of the cultivating with the hand cultivator instead of using a hoe. Dig the trench to a depth

of 2 feet, and if there's any question at all of drainage, fill in the bottom 4 inches with stones, old bricks, cinders or very coarse gravel. As you dig, put the good topsoil in one pile and the less valuable subsoil in another.

Sift the good soil as it goes back into the trench. You'll need to bring in more loam than was taken out to make up for the discarded subsoil. As the sifted soil goes back, scatter in 2 pounds of organic 6-6-6 fertilizer for approximately each bushel of soil. Keep filling in the trench until it's 3 or 4 inches higher than the surrounding soil. *Don't* tramp it down; let it settle naturally by its own weight, plus rain or waterings from the garden hose. A perennial border built this way will last for years. With a careful selection of plants, you can have color in the garden and blooms in the house from spring to fall. You'll probably want such flowers as Oriental poppies, peonies, delphiniums, coreopsis, the veronicas, irises, and perennial phlox. A perennial border 6 by 25 feet will furnish an amazing amount of flowers.

Whether or not you are interested in birds will determine your reaction to this suggestion. If you do like them, you'll want a bird bath or two. The writer's were made by putting rims of cement on rocks and boulders. If you can locate a bird bath near the porch or terrace, it will be a source of interest and amusement for many months.

There's one other point that should be mentioned because beginners so often make a mistake about it. Theoretically, it usually looks best to have a home in the country nestle close to the ground. And there's no need at all for some of the homes we see being stuck up high in the air on foundations that extend 3 or more feet aboveground.

But—and this is important in many locations—there

should be a slope away from the farm home so there will be a minimum of water seepage into the cellar. If you are building a new house and planning to do the grading yourself, make the grade so that the land slopes from the house in all directions. In many instances when older type houses are purchased, a few loads of good loam around the foundation will give this slope. It doesn't need to be much, but a slope away from the house, instead of level ground, is cellar insurance.

To those who like the country and country life, landscaping the farmstead will be a challenge. It's good fun, provided you go at it easily and don't try to do everything in a week—or a month—or a year. Take your time, make plans carefully, and plant for years of enjoyment.

HELPFUL POINTERS

When you transplant trees and shrubs, do not put any fertilizer in the holes. This simply means that the roots will bunch up in the one feeding area. The second spring drive holes with a crowbar, 3 or 4 holes per tree, about 2 feet deep, and 2 or 3 inches in diameter, and fill these holes with 6-6-6 organic base fertilizer. Do this with all kinds of newly set trees, including the fruit trees. It gives good growth. Make the holes each season at the outside edge of the branches.

If you buy an older place where the area you want for a lawn looks like a neglected hayfield, it's best to have it plowed up and harrowed half a dozen times. Rake off all the big stones, turfs and weed clumps. Spread 2 pounds of the fertilizer mentioned above to each 100 square feet. Rake this into the soil and let it stay a week before seeding. Test

the soil to see if it needs lime. If so, spread dehydrated lime at the rate per acre recommended by the State College. You can't raise a good lawn in acid soil. Buy the best of grass seed and sow at the rate of 1 pound for each 100 square feet.

Many times you'll want to kill out patches of poison ivy. The writer has tried a dozen ways and likes the following one best. It involves two processes. First, immediately after a rain sprinkle fuel oil generously over the area (an old watering can does a good job), and touch a match to it. Second, once the foliage has been burned off so you can see where the root stems are located, throw a couple of pounds of rock salt around these root stems. Repeat if necessary, but 2 or occasionally 3 doses of this treatment will kill the stuff.

If you have an old stump to get rid of, and don't want to dig it out, pour a pint of kerosene or fuel oil on it each day for 2 or 3 weeks. Then build a little bonfire around it. It will burn up easily.

A handy soil sifter is made of 2 by 4's, 4 feet square, covered with heavy, ½-inch mesh screening. Have 2 props for the rear so it can be set on a slant. Creosote the framework and it will last for years.

A wide-circling driveway has some esthetic points, but don't forget there's snow in the wintertime in the northern half of the country. There are many more interesting things to do on the part-time farm than to shovel snow.

A deciduous tree at the edge of the barnyard on the south side, means welcome shade for cow or goats in summer. If the pasture isn't connected to the barnyard, be sure you plant a few trees in the pasture for shade. A cherry or plum tree is good shade in the poultry run. These fruits do not

fall off readily. Don't plant an apple or peach tree there, for the windfalls of these fruits are good for family use.

If you have areas around the buildings where you want a lawn, but cannot get grass to grow, try Wild White Clover. Use 1 pound per 1000 square feet. It's extremely hardy, low-growing, and will crowd out crab grass. Wild White Clover is different from the usual White Dutch Clover. It keeps a solid mat of green all summer.

CHAPTER SEVEN

A Primer on Soils

WE'LL TRY to make this chapter helpful and practical and not get into technical aspects of the subject. Whether you have just a family garden or whether you decide to try for a $1000 cash profit income from the part-time farm, a knowledge of soils is one of the essentials of success.

One of the difficult and perplexing problems about buying a place in the countryside is that so often one can find fairly good buildings in a satisfactory location but the soil is not what one would call even second-class. Especially in the Northeast, there are stretches of light sandy or gravelly soils alternating with stretches of low-lying, heavy clay soil.

It's a good idea for the beginner to send to the U.S. Department of Agriculture, Washington, D. C., for the bulletins available on soils. It's peculiar that little is written in the farm papers, either weeklies or monthlies, about this basic resource of farming. Every progressive part-time farmer will build up his own library file of clippings on various subjects, but he'll discover that agricultural and country-life writers talk a great deal about crops, fertilizers, irrigation, cultivation and caring for livestock, and neglect to write informational articles on soil.

Perhaps it's safe to say that 90 per cent of the problem of soil for the average gardener and crop grower is improving what he has. Very often a man finds that the farm he can afford has second-rate soil. Very often, too, just the location a family wants to build a home on has soil on the poor side. The problem is a bit different for the part-time farmer than it is for the man who wants to succeed in full-time farming. In the latter case, there's no question: good soil comes at the top of the list, along with location for a roadside stand and a water supply for irrigation.

Fortunately, most soils can be improved without undue cost. But we should first understand why a given soil type needs changing.

There are three main soil types: the light type which has much sand and gravel; the heavy type characterized by clayey composition; and the type we call good loam.

A good loam is different from the other two in that it has plenty of organic material. Organic material, or humus, means the soil is well supplied with decayed organic substances. When plants, animals, grasses, turfs, clods, twigs, etc., decay, they form the humus.

A beginner will ask, "Why is humus so important?" It's important in growing good crops for a vital reason.

Plants throw out many tiny feeding rootlets from the main roots. These rootlets take in the food. But no food can be used by a plant unless it is in soluble form. It's the humus, decayed organic material, that holds the moisture in the soil for these feeding rootlets.

Most of us think of plant food in terms of the three main chemicals needed: nitrogen for leafy growth, phosphorus for seeds and fruits, and potassium for stems and stalks. It's

the presence of these three in sufficient quantity that has a determining bearing on our crops, provided there's moisture in the soil to make them available for the roots.

(There are many more elements in the soil—usually called "minor" elements by the scientists. In the 1938 *U.S. Department of Agriculture Yearbook*, five are considered significant for the normal development of plants. These are iron, manganese, boron, copper and zinc. It may be in the years ahead that fertilizer manufacturers will take more notice of these minor elements, and if soil testing shows a deficiency in one or more of them, they will produce fertilizers to remedy the lack.)

There are all kinds of gradations in the three chief soil types. We commonly hear of sandy loam, heavy loam and light loam; we hear of red soil and black soil. The color has nothing to do with fertility. The reddish color usually indicates iron content. Black, peaty soil or "black muck" is often very fertile. Sizable areas have what are labeled the "limestone" soils.

For our purposes, we need to think of soil that has humus. Plenty of humus is what makes profitable crops and good gardens. The presence of some inorganic material is beneficial, because soil needs to be aerated—that is, have air in it to help hasten decomposition of organic substance and to permit water to seep through. Clay soil, for example, is made up of very fine particles. It packs very closely. It holds water on the surface in the spring and during heavy summer and fall rains. In the heat of summer and during droughts, it bakes into a very hard surface layer. The difference in the fineness of particles is shown by this table:

Sand particles ..	1/25 to 1/500 inch in diameter
Gravel	Larger than 1/25 inch in diameter
Silt	1/500 to 1/12,500 inch in diameter
Clay	Smaller than 1/12,500 inch in diameter

The first thing to do if one wants to improve his garden or crop area soil is to dig samples of the soil and send them to his State Experiment Station for analysis. Write to the Station for directions. You will get a report from them, describing the soil and telling you what chemicals are needed to increase its value.

A beginner in part-time farming or one who is planning just a big home garden should by all means get acquainted with his County Agent. (The County Agent is paid from public funds. There's a County Agent and a Home Demonstration Agent in most counties of the states. Their advice is free, and since they are traveling around among farmers most of the time, you will discover that their advice is practical as well as technical.)

Unless there's some unusual condition, it's neither expensive nor difficult to improve unsatisfactory soils. The new type organic-base fertilizers offer tremendous possibilities for soil improvement. For many years, most fertilizers have been made of an inorganic base. The chemicals, nitrogen, phosphorus, and potassium, were added to this base.

The new-type bases are made of dehydrated, sterilized and pulverized sewage and garbage. The three chemicals are added to this. But the point is: decayed garbage and sewage make humus, and humus improves the composition of the soil and adds water-holding material. Many fertilizer bases simply add inorganic substance to soils which already may have too much inorganic material.

As a general rule, the best way to improve poor soils (in addition to adding chemicals through fertilizers as determined by soil tests) is to grow "green manure" crops and plow them under to decay and increase humus content. One of the tragedies of American farming practices in the past has been the neglect of green crops for humus, and leaving fields and gardens bare over winter instead of planting a crop in the fall for soil cover—a crop that can be plowed under in the spring.

Farmers and gardeners go on year after year, never realizing the economic implications of soil improvement. In the smaller home gardens of a quarter acre, about 100 by 100 feet, first-class soil can mean the difference between harvesting $100 worth of food products and $200. (In gardening, part-time farming or full-time, the big profits come from first-class soil handled on an intensive basis.)

Take two cases for illustration. Both are part-time farmers; both commute about 10 miles to city jobs. The first, with ¼ acre of asparagus, ½ acre of strawberries and ½ acre of winter squashes, makes considerably more than $1000 cash profit year after year. He harvests between 4000 and 5000 quarts of strawberries a season from that ½ acre. Admittedly, it's way above average, but strawberries are a high-price specialty, worth intensive cultivation. He fertilizes the crops heavily. He has irrigation for the berries and squashes.

But that isn't the whole secret. This first man, who gets the big yield, has followed a soil improvement program for years. As soon as the berries are harvested, a green crop goes in. When it's high enough it's plowed under, the land harrowed to mellow tilth, and another green crop put in.

Then, in the fall, he plants domestic rye grass for winter cover and this is plowed under in spring, and the land fitted for another setting of strawberries. This program, plus heavy fertilization with organic-base fertilizer, gives tremendous yields and is constantly improving the soil. In mid-September, as soon as the squashes, the last crop, are harvested, that land is plowed, harrowed, fertilized, and seeded to domestic rye grass.

(Perhaps a word ought to be said here about this domestic rye grass, since so many think of winter rye, or winter rye and vetch, as cover crops for winter. The writer's experiments with winter cover crops lead to the conclusion that domestic rye grass is better than winter rye for many farms. The domestic rye grass doesn't make a particularly showy display aboveground, but it has tremendous root systems which, when plowed under and decayed, add much humus.)

The second man who wants to take $1000 profit from his part-time operations fails in two ways. First, he doesn't have irrigation for his berries, a major secret of success with small fruits. And second, he's never on time with his work, so that he fails to get a sufficient amount of humus into the soil. His soil is a light sandy loam, very similar to the first man's. But whereas the first now has an acre of excellent soil, using 1 acre each year, the second is struggling along with grade B soil. He gets from 1500 to 2500 quarts of berries a year, depending on the seasonal conditions.

How should one go about a soil improvement program? Let's consider, first, the family who want a first-class home garden. The first question beginners ask is, "Can the same plot of ground be used year after year?"

The answer is, "Yes, it can be used year in and year out,

and furthermore the humus and fertility content can be improved year after year while the soil is being used."

Remember this. The chemicals in the soil are being used only by plants from the areas where their roots extend. Therefore, if the rows are changed a foot or so each season, one is, in effect, using new soil with many plants. Some plants have small root systems. Others, of course, have larger and more extensive systems. But if the rows are 2½ or 3 feet apart, so the small garden tractor can do the cultivating, you are not using *all* the soil *every* year with many crops.

The home vegetable garden will be discussed in detail in Chapter Eleven. But with a heavy fertilizing program of the organic-base type, plus the winter cover crop of domestic rye grass, plus compost, one can get big yields year after year from the same plot.

This is a good place to mention compost since it's top-grade material for improving soil. Every gardener should keep a compost heap going all year round. A compost heap is the place where one throws everything and anything that will decay, except oak leaves which are too acid.

Choose a spot at the rear or side of the garden, behind the barn or henhouse. If there's no secluded spot for it, make one by planting a few evergreen trees or high-growing shrubs. The writer has found that a rectangular heap about 12 feet long and 8 feet wide is a good size. Throw on the compost heap all the family garbage, weeds, lawn clippings, leaves, twigs and garden cleanings. Build the heap up with vertical sides. Every once in a while climb on it and tramp it down. The firmer it's packed, the faster the ma-

terial will decay. During drought times give it an occasional soaking. Some gardeners add a few pounds of high nitrogen-content fertilizer from time to time. There are commercial preparations available to add to the heap which hasten decay and increase nitrogen. After a year or two as the heap gets higher, one can start digging out the decayed humus material from the bottom. Year after year the process goes on. One adds new material on the top; he digs out the compost from the bottom.

This compost is pure humus. It's a wonderful soil improver and because it is so valuable its logical use is on the family garden. You can spread it in the spring and plow it under. It can be used for mulch. It is excellent to put around tomatoes, hills of cucumbers, melons and squashes. Spread it along either side of the late-planted carrots, beets and turnips. It will help give tender roots for winter storage. Good gardeners make it a rule not to waste any organic material.

In improving larger soil areas for commercial production, there are several important points to keep in mind. If the soil needs nitrogen, phosphorus and potassium, one will have to buy fertilizers with formulas that fit the situation. (Fertilizer has 3 numbers on each bag. If it reads 6-8-10, it means 6 per cent nitrogen, 8 per cent phosphorus and 10 per cent potassium. In soils well filled with humus, the writer's experiments tend to the belief that a 6-6-6 formula for strawberries, melons, sweet corn, asparagus and squashes is a good combination. (Raspberries require very little fertilizer in good loam soil. More about this in Chapter Twenty-two.)

Let's assume you have an area you want to improve. In the early spring, it is plowed and harrowed thoroughly. A good many farmers don't harrow the soil sufficiently. Instead of harrowing the usual 2 or 3 times, harrow 5 or 6 times. Get the soil bed into fine, mellow tilth. It's one of the chief requirements in getting soil ready for high production.

In late April or early May (in Boston latitude), sow oats. When this crop is about 18 inches high, along July 1, plow it under, harrow thoroughly again, and sow buckwheat. Make certain the oats (or any green manure crop) are completely plowed under so bacterial action will start. Buckwheat is an excellent crop, often called "poor soil" grain. It's a vigorous grower. If planted according to the table which follows, it produces a dense cover crop, and the shade will kill out many weeds that sprout. Then when the buckwheat is in full bloom or a little later, perhaps mid-Septemwheat is in full bloom or a little later, perhaps mid-September, plow this under and sow the winter cover crop of domestic rye grass.

In getting a good cover crop, there are, in addition to the plowing and thorough harrowing, two points that the writer believes in, although some authorities differ on the first. After the first harrowing, spread 500 pounds per acre of 6-6-6 organic fertilizer. You are planning intensive farming; you want to make all the profit possible from a small area. You will probably discover that you can't raise big crops without more fertilizing than is commonly recommended in bulletins and pamphlets.

The writer believes that it pays to spread fertilizer and harrow it in between cover crops, as well as to use very big amounts just before planting annual crops, or before setting strawberry plants.

The second point in securing a good "stand" or germination in a cover crop is to roll the area after the seed has been harrowed in. A roller is just as important a farm tool as a plow, harrow or cultivator. It firms the soil around the seeds and hastens germination. If you're growing 2 or 3 cover crops a year, it's very essential to have them start quickly. The goal is to get all the green manure possible into the soil.

If the soil tests show it is lacking in nitrogen, you may want to grow legumes for cover crops. The most common legumes used for this purpose in the Northeast are: field peas, hairy vetch, soybeans, or clover (medium red, alsike or sweet clover). Legumes have the power to take nitrogen from the air and store it in the nodules on their root systems. If you use a legume for a cover crop, be certain to read and follow the directions for inoculating the seeds. The legumes cannot take nitrogen from the air and store it, unless the correct nodule-forming bacteria are in the soil. Inoculating the seed means mixing the chemical preparation with the seed before it's planted. You can get this material for legume inoculation from the seed companies.

A general chart for amounts in sowing per acre follows:

Oats	2 bushels
Buckwheat	1 bushel
Domestic rye grass	30 pounds
Winter rye	2½ bushels
Cowpeas	2½ bushels
Soybeans	2 bushels

The following table is from the Rhode Island State College Extension Bulletin No. 85, *Cover Crops and the Conservation of Nitrogen on the Farm:*

COVER CROPS: RATES AND DATES OF SEEDING

Kind	*Rate per Acre, lb.*	*Seeding Dates*
Winter Vetch	35	August 1 -September 10
Soybeans	60-90	June 1 -July 15
Red Clover	15	March 1 -April 15
Alsike Clover	8	March 1 -April 15
Field Peas	60-90	April 20 -May 1
Field Peas (*with Oats 40 lb.*)	60	April 20 -May 1
Domestic Rye Grass (*Spring Seeding*)	20-25	April 20 -May 30
Domestic Rye Grass (*Fall Seeding*)	20-25	August 1 -October 1
Rye	80	August 15-October 10
Wheat	90	August 15-September 20
Wheat and Vetch (*25 lb.*) *	75	August 15-September 10
Rye and Vetch (*25 lb.*) *	75	August 15-September 10
Sudan Grass	20-25	June 1 -June 30
Sudan and Soybeans (*100 lb.*) †	15	June 1 -July 15
Millet and Soybeans (*100 lb.*) †	15	June 1 -July 15

* Amount of Vetch seed to add to amount of companion crop seed listed in rate column.

† Amount of Soybean seed to add to amount of companion crop seed listed in rate column.

There's been a great deal written about lime in recent years and beginners are often puzzled over the pH symbol, as well as some of the details of the written materials.

If your soil needs lime, the soil tester at the State Experiment Station will tell you so, and give you directions about how much to spread per acre.

The technical term pH simply means either acidity or alkalinity in the soil. The neutral point is pH 7. Figures above 7 mean the soil is alkaline; if below 7, it indicates acidity. The size of the figure indicates degree. A reading of pH 10 is definitely alkaline; a reading of pH 4 is definitely acid. If

you get a reading of pH 5, you'll probably need to spread 2 tons or more of ground limestone per acre or 3000 pounds of hydrated lime. In deciding whether to use the coarser limestone or the very finely pulverized, dehydrated lime, remember that 1500 pounds of the latter is equal to 2000 pounds of the former.

In average soils, one treatment of lime will last perhaps 3 or 4 years before more is needed. The only safe way is to test. You can't have real success if you try to raise crops that need either a neutral or alkaline soil where a reading shows acidity.

(Spreading lime or dehydrated lime is a dusty job. If a neighboring farmer has a lime-spreading machine, it's usually good business to spend a few dollars and have the job done.)

If the family has a cow, chickens, pig or other livestock, the question always comes up of where to use animal manures to best advantage. There's one definite answer. Use these valuable animal manures on the family garden. They are the finest form of humus, as well as containing some chemical values. Store the animal manures under cover and plow the manure under in the spring and fall.

HELPFUL POINTERS

Lime has to be applied at periodic intervals because the calcium and magnesium, the two chief ingredients, leak down through the soil beyond the reach of feeding rootlets.

If you have never sowed grain by hand for a cover crop, here's a little plan that may help. Suppose you're sowing ½ acre to buckwheat. You're using ½ bushel of seed for the

half acre, but you don't know how thick or thin to spread the seed. Pace off the area and divide it into approximate fourths. Then divide the seed into 4 equal parts and use one part of the seed for each quarter of the area. This will result in fairly even distribution.

Even if your soil looks like first-class loam and seems well filled with humus, the chances are you can increase production materially by using plenty of organic-base fertilizers, plus plowed-under green manure.

In most areas, buckwheat is the best crop for midsummer growth. It thrives in hot, dry weather, especially if you've harrowed in 500 pounds of fertilizer. If weeds are bad, use seed at the rate of 1½ bushels per acre to produce a very dense shade.

Inorganic-base fertilizers improve the chemical condition of the soil. Green manure, organic fertilizers, plus plowing and harrowing, improve the physical condition as well as add chemicals for food. A disk harrow or a spike-tooth can be used to harrow in the seeds, but don't neglect to roll the plot afterwards.

Peat moss is good for mulch in the garden and then can be plowed in for added humus. Dried animal manures are good, but often too expensive to justify extensive use.

Nitrogen is usually derived from ammonium nitrate; phosphorus from acid phosphate; and the potash from muriate or sulphate of potash.

Light soils need heavier applications of fertilizers to produce big crops than do heavier loams.

Don't use lime on that section of the garden where you intend to raise potatoes. Lime tends to increase scabbiness.

There are soil-testing kits on the market. Some of them are excellent. But good ones cost money. Generally, it's better to send soil samples to the State Experiment Stations.

Your soil is a bank account. Crops draw on it each season. You have to put in capital (chemicals and humus) if you're going to maintain and increase your account.

CHAPTER EIGHT

Irrigation—Major Secret of Big Profits

OTHER THAN frost protection, the one greatest handicap to big crop production is lack of water when it's needed most. Countless farmers prepare soil thoroughly; they grow green manure crops to plow under and increase humus; they use a generous amount of fertilizer and cultivate carefully. Then in June, July or August, there come periods without rain. In unusually dry seasons, when there is a drought of a month or more, production may be cut below the 50 per cent mark.

The part-time farmer who wants to make several hundred dollars profit on one or more crops should plan the irrigation carefully. There are certain crops that one can get production from without supplying water. Asparagus, for example, is harvested in May and June, two months when there's likely to be moisture enough for full production. Many sweet corn growers get good crops; the corn roots go far and surprisingly deep for moisture. Some growers get fair crops year after year with melons and squashes. These plants have broad root systems and once they start trailing, the leaves shade the ground and help keep it moist.

But experiments prove that water on melons and squashes increases the crop almost a half over a period of years. When it comes to producing strawberries at the rate of 8000 or 10,000 quarts per acre and raspberries at the rate of 8000 pints per acre, water is an absolute essential.

The background of the problem is one of plant nutrition. It makes no difference how much fertilizer is in the soil or how much one cultivates, the nitrogen, phosphorus and potash have to be in soluble form before they, and the minor chemicals, are available to the many feeding rootlets. Here in the Northeast, in at least 2 years out of 4, available water makes the difference between a big profit and a small one—or even none at all.

Usually it's not too complicated nor unduly expensive to provide water for the crops on a part-time farm. One can use wells, springs, a pond or a brook. The essential point is that there should be dependable sources right through the summer.

The writer has been studying various types of irrigation used in his area. There are two that the part-time farmer should investigate.

All things considered, the best and most efficient system developed to date is the overhead sprinkler type with a permanent piping system. Lines of pipe are set up the length of the field; the lines are commonly from 20 to 40 feet apart. The water comes into the pipes under pressure and is distributed through holes, or nozzles, set into the pipes a few feet apart.

If a man decides to make his cash profit from berries or melons or squashes, this overhead system is most favored by growers of these high-priced crops. It is a permanent in-

stallation. If one is growing half an acre of strawoerries a year, he should install piping on an acre, for while one half acre is fruiting, he sets out another half acre in new plants for the following year's crop. If one is using the same area for melons or squashes or corn, the irrigation system not only means big crops, but also when the land is plowed, rolled and seeded to domestic rye grass as a winter cover crop, a watering after the seeding means quick germination and consequently more humus to plow under the following spring. An approximate acre area, 440 feet long and 100 feet wide, could be irrigated under strong pressure with 2 lines of pipes.

Many part-time farmers are up against the problem of limited capital. It takes money (more than one originally plans for) to remodel or build. Here is a method that many have found workable while accumulating enough cash to finance a permanent irrigation system.

If the water supply system is under pressure, with water pumped either by a gasoline engine or electric motor to a large storage tank, it's neither impractical nor expensive to get hold of a few hundred feet of hose and use one of the larger type circular sprinklers. Those who have only used the small-area sprinklers that operate on city and suburban lawns do not realize there are sprinklers that cover a diameter of 80 feet under 40 pounds of water pressure; if one can have 50 pounds of pressure, the diameter is stepped up to 115 feet.

These are the sprinklers that are placed on the ground. For a large home garden, it's perfectly possible to use such a sprinkler, let it irrigate for an hour or two, and then pull it along to the next spot. A home garden 75 feet in

width can be covered by pulling the sprinkler along the center if the pressure is 50 pounds. With pressure of 20 to 30 pounds, 2 bands of watering will be needed.

This is also a possible method of irrigating a single crop or more meant for sale at the stand. To be sure, it means several hundred feet of hose. If the area is the 440-foot length and 100-foot width mentioned above, it means pulling the sprinkler along 2 paths to give the soil a real soaking, perhaps about 30 feet in from each side of the field. The writer used this system of watering for years. It does mean work in the evenings during dry spells. But, and this is the point, it also guarantees big yields. It is much easier in the end to raise 4000 quarts of berries on ½ acre with water, than to set out, cultivate and handle a full acre and get the same production.

Before the part-time farmer invests in irrigation equipment, he should do several things. In addition to talking with farmers who use the overhead system, he should investigate the new-type systems that are being perfected at the present time. They are usually called "portable sprinkler systems." In the immediate future, farm and garden equipment companies will have them on the market. They consist of lightweight metal alloy pipes in long strips of about 40 feet which are easily disconnected and moved around. One man can handle a 40-foot section without trouble. The sprinklers are on high standards, often 6 to 8 feet above ground level. The water comes under pressure into the metal pipes, up to sprinklers, and the whirling sprinklers cover a large area. According to pressure and size of sprinklers, an outfit of this sort will irrigate a quarter acre to half an acre at one setting. In the not distant

future, these "water guns" will be developed to cover an acre without having to be moved around. Then we shall see them on many general farms, irrigating crops, hayfields and pastures. The beginning farmer and the part-time farmer must make no mistake: This matter of irrigation is the crux of big profits.

These portable sprinkler systems can be worked with an old automobile engine or tractor. A centrifugal pump that will throw 500 gallons a minute will cover 1 acre an hour with an inch of water.

For the family that is planning just a big home garden and not a commercial crop, the writer believes that the overhead pipes are best. Once installed, they will last indefinitely. Oftentimes one can locate pipe at second hand and save a material sum on the expense.

Cornell Extension Bulletin No. 647, *Irrigating Vegetables*, reads as follows: "Nevertheless, on well-drained land suitable for vegetables, the long-time trend is toward more and more acreage under irrigation. In most years, the application of water at some time during the growing season greatly increases yields. During very dry seasons the difference between irrigating and not irrigating may mean the difference between the success or the failure of the crop. In such seasons, the supply of vegetables is usually reduced and a good crop sells at a premium."

That last sentence is very important. The business of growing crops is one that's tremendously influenced by Nature. If frosts kill the strawberries in your neighborhood, and you save yours, the price goes way up. If a long drought cuts down both production and quality of berries, melons, corn and squashes, and you have irrigation, not only do

you get maximum production, but you also benefit from the law of supply and demand that means higher prices in a short-crop year.

When to Water and How Much

Experience is the best guide for learning when to use water. It also makes a difference with various crops. The writer has found, for instance, that a heavy soaking once in 8 days will produce big yields of corn, melons and squashes. On the other hand, the biggest crops of strawberries may need water every 3 or 4 days if the soil is the light, sandy loam type. Soil composition has much to do with the frequency of watering; the heavier loams, with plenty of humus material in them, do not need an application so often as the lighter loams. Many of the best strawberry and raspberry growers use water frequently from the time the berries are about ⅓ formed until the end of the fruiting season.

A little experience and observation will tell you when water is needed. Dig down beneath the surface to a depth of 6 inches. If there's moisture enough to make a fairly solid ball when the soil is squeezed in the hand, there's probably water enough. But if a little pressure makes the ball crumble readily, the chances are that irrigation will be helpful.

The only safe rule about amount is to be sure you give enough water to soak down to the feeding rootlets. One generous soaking a week in a dry spell is much better than 2 lighter waterings. It means a sizable amount of water when one is dealing with crops to sell—or a half-acre home garden. (It takes about 64 tons to cover the half acre with 1 inch of water.)

HELPFUL POINTERS

If you install the permanent system of overhead pipes on a half acre or acre, put them on standards high enough so you can plow and harrow beneath them. You may have the standards and pipes in line with a crop row, but over the years it's an efficient plan to be able to cross-harrow and roll. The few dollars saved by using 2- or 4-foot uprights to hold the pipes is unwise economy.

The U.S. Department of Agriculture Bulletin No. 1846, *Supplemental Irrigation*, has this statement, "Although many irrigation outfits have increased profits enough in the first year of operation to pay the entire cost of installation, most outfits require a number of years to recover the cost of original investment." The chances are more than even that the part-time farmer with the cash crops emphasized in this book will get back his original investment inside of 2 years. It may come back the first year if it happens to be a dry season with short crops and above average prices. If you raise a couple of thousand extra quarts of strawberries or raspberries, or a big crop of melons or squashes, it doesn't take long to be able to invest $1000 in an irrigation system.

The equipment will last for many, many years if given good care.

One interesting new angle that is developing on irrigation is the increasing number of farm ponds that are being built. If there's a low spot toward which several acres drain, it's probably a safe bet that a pond can be built here. Big bulldozers are becoming more common in rural areas. Indi-

vidual men may own them and do work by contract or by the hour. In some areas, farm-cooperative groups own the big machines. A pond a few feet deep and an acre or more in size may be the best solution to the irrigation problem. A centrifugal pump powered by a gas engine will furnish pressure to either the overhead pipes or the sprinklers on high standards.

The part-time farmer should get in touch with the Engineering Department of his State College before installing a system. A little advice from those who have had wide experience will save trouble and expense.

It all sums up to this. If you want to make a big profit on a half acre or acre of a specialty crop, you must, by one method or another, have water available.

CHAPTER NINE

Power for Part-time Farming

TO ANYONE who is firmly convinced that the day of horse-power in farming is just about over, it is amazing and somewhat disconcerting to receive so many letters in defense of the horse from both prospective and practicing part-time farmers.

The evidence is all on one side. The part-time farmer has no logical reason for keeping a horse. Even as this is written, the farm implement companies are building small tractors to fit the situation. In terms of regular farms, the larger type places have, in the past, enjoyed an economic benefit that small farmers could not. Now, the companies are giving attention to two types of power machines that will fit the requirements of the part-time farmer.

A beginner's logical question is, "Why isn't a horse all right for the man who is planning to raise 1, 2 or 3 crops on half-acre areas? One horse will do all the plowing, harrowing and cultivating on this size area without any trouble. A horse costs $150; a small riding tractor costs $400 or more."

Let's consider, first of all, the group of part-time farmers who plan to do enough farming to make a profit income of $500 to $1000. We'll assume that the family is planning to

buy a horse. A good horse will cost at least $150, and for a young, strong, chunky type, the price is likely to be $200. There's the cost of harness and farm tools. Though one may get them at auction sales, the cost of plow, cultivators, harrows, roller and farm wagon will probably come to $200 or more.

The expense is really a minor matter as far as the part-time farmer's program is concerned. In a previous chapter, we stressed the importance of time. A man who drives 10 to 15 miles back and forth to work each day and tries to do cash-profit farming has to learn to use every minute most advantageously from spring until fall.

A horse means work night and morning. It has to be fed. The stall has to be cleaned out and bedding put down. A man who has any pride in the looks of his animal will want to groom the horse daily. Twice a day it has to be watered; it will need new shoes periodically.

Every day, 3 times a day, 7 days a week and 365 days a year, the horse has to be cared for. It costs money to buy hay and grain. True, one doesn't need to feed much grain when the horse isn't working, but it needs some all the time to keep in decent condition.

A fair question is, "Why not raise the hay and part of the grain for the horse, the same as you recommend for the family cow or the goats?"

The answer is, of course, hay and field corn can be raised, *but* the part-time farmer must always keep the time factor in mind if he's trying to make a cash profit. There's a limit to what one man can do when he has a full-time job off the farm. It's the writer's judgment, corroborated by many families who have had years of experience, that it often

pays to grow hay and some grain for the family cow, but there isn't time to do this for a horse.

There's another angle the beginner often forgets when he's planning the power requirements to handle an acre or two of crops. If one owns a horse, the chances are that the horse will not be used more than 50 full working days out of the entire year. The expense of feeding continues. The time consumed in caring for the horse is constant all the days of the year.

Let's consider conditions when one has a small tractor. First, let's define "small tractor." For the small full-time farm, the tractor recommended in *Success on the Small Farm* was a regular type model of 10 to 18 horsepower. There will be many styles of these in the near future, and they are perfectly capable of doing the work required.

For the part-time farmer, however, we're dropping down a notch in horsepower. A riding tractor of 4 to 6 horsepower is the right machine.

This brings up a point that puzzles many. If a 10-horsepower machine is required to do the work on the small full-time farm—the plowing, harrowing and cultivating—why isn't it necessary to have the same horsepower for an acre or two?

The answer is this. On the small but full-time farm, a man is handling from 6 to 10 acres. He needs power to work fast in rush seasons. If a man is handling 1 or 2 acres, he can plan his time without trouble to get his land in shape.

The 4-horsepower machine, admittedly, may not be powerful enough to turn heavy sod the first time. For the first plowing and perhaps the first disk harrowing of the acre or two, it may be necessary to hire a neighboring farmer

with a larger tractor. After this first working of the soil, however, the program outlined in this book means that the same acre or two will be used year after year. Correctly handled, with green manure crops and liberal fertilization, the soil can actually be improved in fertility and humus as it is used, and grow more mellow all the time.

The new type, small riding tractors of 4, 5, and 6 horsepower will be on the market in increasing numbers and models. These will pull one plow and make a 6 or 7-inch furrow in reasonably soft soil. They will pull a small disk harrow or a wider spike-tooth harrow. They will do all the cultivating and hilling. They have cutter-bar attachments for mowing hay and they'll pull the hayrake and a farm wagon.

There's no question in the writer's mind that these smaller riding-type tractors are the logical solution to the power requirements of the family that wants to do part-time farming for profit income.

When the tractor isn't working, it isn't eating. It can be put up for the winter—and forgotten. A reliable concern's product will last 15 or 20 years. In the spring and summer, on a Saturday or week end, if a man needs to use his machine for a 10-, 12- or 16-hour day of work, the tractor doesn't get tired. In the spring, work comes with a rush. At the very time a horse is needed most, it has to be handled with the greatest care. A sore that develops on a shoulder may mean the horse can't be worked for a week.

With every tractor comes a book of directions. The operator should read this over and over. If you take care of the machine, it will last indefinitely. Keep it oiled and greased. Drain off the water when it's put up for the winter. Keep

the tires inflated as recommended. If you're tempted to buy a horse, stop and figure every angle, and then perhaps you won't hesitate at spending $400 to $600 for a tractor with its equipment.

So much for the man who wants to do some part-time farming. What about the family that plans a big garden for food?

There's a definite answer. Buy one of the small, walking-type garden tractors. These come in a wide range of horse-power, from 1 to 4. The larger power machines will turn a furrow of 6 or 7 inches; they will pull a harrow. But unless there's some unusual reason, the 1½ to 2½ size will do the work of cultivating efficiently.

A great many families in the countryside, who specialize in a half acre of garden or so, have the plot plowed and harrowed by a farmer. The chief advantage of the small garden tractor is that it will do the cultivating. If the family has a permanent garden, it may be good business to have the farmer who plows the vegetable garden go between the rows of the permanent plot when he comes. If he uses a deep cultivator, it will stir the soil so that it can be handled easily by the garden cultivator for the rest of the season.

Many families who just raise vegetables and fruits for home use have gotten along with the hand cultivators. If money is scarce and a man's back muscles strong, he can care for a surprisingly large plot. But it's hard work to push a hand cultivator up and down between the rows. There's nothing to it with a power machine! The teeth will stir the soil to a depth of 2 or 3 inches. The teeth are adjustable and the cultivation can be more shallow close to the rows of plants. On many of the newer models, the

spread between wheels can be increased or decreased to fit the width of rows. It makes for convenience and is a time saver if the rows are all the same width apart for the common vegetables. Make them at least 6 feet apart for squashes, melons and cucumbers.

The same principle of good care applies here as with all farm machinery. Follow directions and take care of it, and a small garden tractor will last many years.

Having said all this about tractors, the writer realizes that many beginners with limited capital on part-time farms will buy a horse to use until financial conditions permit purchase of a tractor. Here are some words of caution.

Don't buy a horse that the seller is unwilling to have you take home and use during a try-out period of a week or 10 days. There's a strange but potent philosophy about "horse trading." Otherwise good and honest men enjoy putting over a "deal" in horseflesh. *Caveat emptor* applies 100 per cent in horse transactions. If you know little or nothing about horses, get someone to go with you.

Buy as young a horse as you can for the money you have available. Get a chunky, short-legged one, rather than a tall, gangly one. Don't buy a great big horse, however handsome he is. Keep to the smaller types. Don't get a spirited, mettlesome animal. For efficient, comfortable working, you need a plodding, faithful type. A slow walker may exasperate you when you're in a hurry, but that's a minor evil compared to the situation if you have a horse that walks too fast. You can do neither good plowing nor cultivating at fast speed.

If you do buy a horse, write to your State College for bulletins on caring for him. There are many points you need

to know. Here we'll simply mention a few general facts. The horse collar is the most important part of the harness. It must fit correctly or shoulder sores develop. It costs money if the horse can't be worked for a week or two in the spring rush. "A horse is only as good as his feet" is an old-time adage. When the horse has been working hard in hot weather and is covered with lather, don't let him drink until he's cooled out a bit—20 minutes or half an hour. The best all-around hay is mixed timothy and clover. In the northern part of the country, a horse needs a blanket in winter. There's no better advice to give a beginner with a horse than this: Make friends with a neighboring farmer who knows horses, and ask your questions of him. But we'll repeat this word of warning. *Don't* buy a horse that the seller is not willing to let you try out a week or so on the farm. If you pay your good money without this trial period, you may find you have a balker, a cribber, a kicker, a wheezer, a runaway—or half a dozen other things that are associated with the old-fashioned game of horse trading.

HELPFUL POINTERS

Don't forget to drain the water from your tractor when it's time for hard freezes in the fall. Each year many farmers have a burst cylinder head because of lack of foresight in this essential matter.

Oil and grease plus storage under cover are the Big Three when it comes to long years of life for farm machinery.

Never leave a tractor faced against a wall or building. Each year men are killed or injured when they crank a machine that was left in gear by mistake.

If, by chance, you get stuck in the mud, here is an efficient and easy way of getting out. Have ready ahead of time, as a permanent safeguard, a triple fold, 3-foot width of heavy half-inch mesh wire. Make the length about 6 feet. Put this wire matting under each rear wheel, pushing it down in the mud to the rubber. Then the tractor will usually come out under its own power.

If you have a long driveway and live in a northern state, it will pay you to rig up a plank snow remover to put on the front of the tractor. If you use the tractor in winter, put anti-freeze in the radiator early in October.

Here is a pointer about starting the small garden tractor. Push it out into the sun for a half hour before you plan to use it. Then when you spin the flywheel, you'll get a good spark much quicker.

In winter, or cold weather in spring or fall, if you have electricity in the shed or barn, hitch up a sunbowl electrical heater and place it so that the heat is concentrated on the carburetor. A few minutes of this means not only quicker ignition, but it also means the engine block gets warm and that, in turn, warms the oil so the engine will start easier. On zero days, or from zero to 20 degrees or so above, this is a great time saver—and a saver on the machinery.

Here's another efficient little plan for winter-starting of the tractor. Build an incline of heavy planks and keep the tractor on this slope. When you want to start it, let it roll a few feet and then put it in gear. Even if it does not start on this run, the momentum while in gear will loosen the oil, and make starting easier.

Buy your tractor, of whatever type, from a local dealer. If any part breaks, you can then get a replacement quickly.

CHAPTER TEN

Efficient Tools and the Farm Shop

ONE OF the secrets of efficient living on a part-time farm is to have equipment enough to handle the building, repairing and remodeling jobs that are constantly coming up. If one builds a new home in the countryside, the number of such jobs will be comparatively few as far as the dwelling house is concerned. But there are always jobs to do and changes to make in the barn arrangement, henhouse and sheds.

Whether one buys land alone and builds, or buys an older house and remodels, there are certain things he will want to make. For example, if livestock is kept, he will build a covered shed in which to store the manure. If the barn is a fair distance from the house, it's often efficient to build a lean-to behind the spot where the cow stands or behind the goats' pen. Sometimes there are cellars beneath the barn and the manure can be hoed or shoveled through a hinged trap door. There will be shelves and bins to build in the house cellar, barways and gates to construct outside, equipment for the henhouse, etc.

A handy man can save himself many dollars over the years if he has the right tools. When one stops to think of the cost per hour for carpenters, plumbers, and masons, it's

evident that it's good business to have a reasonably complete assortment of tools. This subject also includes the equipment needed for gardening and farming. Let's discuss that angle first.

Equipment for Garden and Farm Work

If a family is planning a sizable home garden of approximately half an acre, the major tool is the walking-type tractor. If this is all the farming that's planned, many part-time families will purchase a smaller type, 1 or 2 horsepower, and use it for the cultivating. The plowing and harrowing will be done by a neighbor whose tractor or team is hired for this special purpose. There are a number of models of these small cultivator tractors; they are economical to use and do a good job. It pays to spend a few more dollars and get one that has more power than the smallest models, in the writer's opinion. The ½ or ¾ horsepower will cultivate if the soil is light and porous, but in the heavier loams, especially if it's a clayey type, the full horsepower or larger is better.

If money is short and a man must get along with a hand cultivator for a while, be sure to buy one with a fairly large wheel, yet one that is light in weight. The writer has tried a number of hand cultivators and, in the past, has kept a half-acre garden cultivated with them. The easiest to push and the one that does the best work is the lightweight type with a big diameter wheel and cultivator teeth that are about ¾ of an inch wide and which come to V points. Keep these points filed sharp and thin. They cut off weeds cleanly below the soil and, with a little extra pressure, will dig up weed clumps.

One needs two kinds of hoes. One should be narrow-bladed with sharp ends as well as a sharp blade. If the soil is in good tilth, 90 per cent of the hoeing can be done with this. If the blade is about 2 inches wide, one can use a sharp end to do part of the thinning of beets, carrots, turnips, etc. This sharp end will cut off the secondary runners of strawberry plants and take out most of the superfluous plants in hills of melons, cucumbers and squashes. The other hoe should be the regular type with a 5-inch blade to use for hilling potatoes or hoeing in turfy and rough spots. But this type hoe can be reasonably light. (Make it a rule to use as lightweight tools as possible for all tasks. It makes a vast difference in the amount of energy that has to be expended.)

For the garden, one needs a regular iron rake and a fine-toothed rake to gather up smaller stones. For spading, use a long-handled fork, usually called a "stone" fork; you'll need, on occasion, a short-handled shovel, a long-handled, pointed shovel, and a regular garden fork.

Get together a collection of various-sized baskets with handles. It's a great help to have a collection of these hanging in the shed or shop when you want to pick several kinds of vegetables.

If the program includes growing one or more cash crops, the part-time farmer should buy the plow, disk harrow, spike-tooth harrow, cultivators and roller to fit the size tractor he gets. The companies that put out the 4-, 5-, and 6-horsepower riding tractors as well as the 10- or 12-horsepower machines have a full line of equipment to go with them. You will find that you need a small wagon or trailer. There'll be loads of one thing or another that you will want to haul about the place: sand, gravel, wood, rocks, manure.

If you keep a cow or goats and raise hay and corn, those crops will have to be hauled in. If one is planning to raise hay, he should get the cutter bar and attachments that come with the tractor. Over the years it will be cheaper than hiring a man to come and mow. Usually one can pick up a horse rake to use behind the tractor at a local auction.

Whether you are a beginner or already operating a part-time place, make it a rule to get as good equipment as you can afford. Your time for farming and gardening is limited. Other things being equal, the better your equipment, the more you will get from your time.

Equipment for Handling Livestock and Poultry

We have already mentioned the vital importance of running water. Make the feeding arrangements the most efficient you can devise. You'll need measures and buckets. Figure the best tools for handling the manure, and the easiest way to dispose of it. A big scoop shovel to spread sawdust or shavings will save thousands of steps a year. A bushel basket may be better than a scoop shovel, but try to have the bedding convenient to the cow or goats. If you have only 6, 8, or 10 hens and carry the water, be sure to have a bucket large enough so that one trip a day will be sufficient. Every tool or piece of equipment that saves time and energy is important.

Care of Tools and Farm Machinery

First of all, a lost tool is money that's gone. So on all hammers, screw drivers, wrenches, pliers, etc., paint the handle a bright red or yellow. If, by chance, you leave a tool in the field or around the edge of the garden after doing a

bit of adjusting or repairing, you can find it more easily.

The next point is: have a place under cover for your tools. A yard cluttered with farm machinery is too common a sight on American farms. But entirely aside from the looks of things, machinery left out of doors is taking money from one's pocket.

Machinery needs greasing and oiling—even wheelbarrows and hand cultivators push much easier if the axle is oiled frequently. If a man invests a couple of hundred dollars in a garden tractor, or several hundreds in a 4- or 5-horsepower riding outfit, it's only common sense to follow the book of directions for greasing and oiling. When cold weather comes and the tractor is put up for the winter, be doubly sure to follow instructions. Every year many farmers lose $50 or so because they forget to drain off the water or forget to put in anti-freeze in time if they use the machine in the winter.

The Farm Shop

The shop is one of the most important places on the part-time farm. One could argue that it's more vital to the part-time farmer than to the full-time one, because the former's time is limited.

No one knows the reason, but most farmers will agree that something breaks or a repair is needed when work is most pressing. No matter how careful or how forehanded a man may be in planning his work, the unexpected is sure to happen when operations are busiest. Therefore, a farm shop with a few essential tools is vital to the man whose time is precious. A power drill, taking up to ½-inch bits, is adapted to an amazing number of repair or building jobs.

An 8-inch circular saw will do jobs in a twinkling that might consume a long period with a hand saw.

This brings us to a point where a great many part-time farmers make a serious mistake. If a man is equipping a farm shop to do efficient work and to last for years, don't buy one of the ¼- or ½-horsepower electric motors. These do the job for small home shops where a man uses a 4-inch saw or a small-type power drill to bore through thin metal or wood. But on the farm you will have some rugged jobs. You'll have pieces of ⅜-inch iron or steel through which you want to put holes for bolts, or you'll have pieces of 2-inch planking, perhaps hard woods like maple or oak. It takes power to do these jobs connected with repairing machinery or building something about the farmstead. A few dollars more for a larger motor and the shafts and pulleys will be money well invested.

In planning the farm shop, other than getting together the tools and equipment needed for work, there are three points to keep in mind. Maybe you'll remodel an old shed or part of an ell; perhaps you'll fix up a section of a barn. Keep these three points in mind as you plan.

First, locate the shop in a spot where there will be room to work in comfort. A small corner isn't enough. Ideally, the place should be big enough for the tractor or the trailer so one can work on these at periodic intervals. If you're building a cupboard, grain bin or soil sifter, it's a great help to be able to do at least a major part of the work right in the shop. You can call a spot a few feet square a tool closet or a storage space but it's not a shop. Some part-time farmers, as well as full-time ones, have built substantial lean-to sheds against barns or garages for the farm

shop. An area 12 by 14 feet, or 10 by 16, is usually a good size for smaller farms.

Second, make the tool bench wide enough so you can do all kinds of work on it in comfort. Many times a man makes his bench 14 to 16 inches wide. It should be 3 feet wide. The space underneath should be divided by shelves or cupboards into convenient places for storage of lumber and equipment. Above the bench one should have 2 or 3 shelves for holding glass jars of all sizes of nails, screws, bolts, washers, tacks, etc. If you'll use discarded jelly jars, pint and quart jars of glass, you can see at a glance what you need without reaching up and taking down several tin cans or wooden containers. Above these shelves have 2 by 4's, some horizontal, some vertical. Ten- and 12-penny nails in these will give places to hang hammers, augers, wrenches and other small tools.

From the 2 by 4's or 4 by 4's around the shop, you can hang shovels, spades, forks, etc. Don't neglect the space overhead. Run some timbers across and build a framework to hold boards and dimension stuff. Make wire hooks and hang baskets, buckets and bags from these. This is a good place to dry out the onions in the fall. If you raise Golden Bantam sweet corn and save your own seed, hang it here in mesh bags on at least 12 inches of wire so rats cannot get at it.

Third, have some means of heating the shop so you can work in comfort from October to May. A small stove from a mail order company is inexpensive, and a little wood or trash will give a surprising amount of heat. You'll have electricity for light, and a sunbowl of the type commonly used in bathrooms will keep the temperature above 65 de-

grees except in the most severe weather. Many men use an ordinary portable oil stove.

An important point to remember in setting up the shop is to have a large window that throws light on the work bench. In the warm months, when you're working in the shop on rainy days or evenings, ventilation is also essential.

HELPFUL POINTERS

If you are like most people, you'll enjoy going to auctions throughout the countryside. Many times you can pick up good tools at very reasonable prices, but be careful in the enthusiasm of bidding lest you pay as much for old tools as new ones may cost. (It's probably some form of Yankeeism, but the writer has found the best times to go to auctions is on nasty, cold, stormy days of early spring or late in the fall.)

Commercial concerns are now producing rust inhibitors. If these are painted on cultivators, plows, etc., it prevents rust. Used once a year, they prolong the life of equipment.

Every winter it's good practice to go over all tools carefully and make any necessary repairs. When equipment is put up in the fall, after the season's work is over, rub oil over the metal surfaces.

By all means, buy a small grindstone and an emery wheel. It means one can keep axes, hatchets, cultivator teeth, hoes, and spades sharp all the time. With an electric motor it's little work to keep a good edge on tools.

New tools for farm and shop work are being developed constantly. A tool that saves time and energy is worth considering.

Finally, there's one point to be stressed. No matter how many tools or how much equipment you have, or whether they are in good shape or poor, they're of no use unless you can put your hands on them when you need them. And at that time you're usually in a hurry. Most men enjoy setting up and equipping a shop. When you get it organized, have a place for every tool—and then keep the tools in that place. If you'll make this an invariable rule, you'll invariably be able to find the tool you want when you need it!

CHAPTER ELEVEN

The Vegetable Garden

A FIRST-CLASS VEGETABLE garden is essential for the part-time farm family who hope to grow $300 worth or more of food. Many families have discovered that a big garden cuts the cost of living to an appreciable degree. It's especially important for the family that has growing children. It's not merely a question of having fresh fruits and vegetables in season. To get the most value from the home garden, enough must be raised so that products may be canned and preserved for use during the fall, winter and early spring.

In the years ahead, more and more farm families will have the frozen-food lockers in their homes. They will be especially valuable for holding meats until they are needed. It's probable, also, that for a long time to come a great deal of food from the garden will be canned.

There are a number of fundamental points that the part-time farmer needs to recognize if he's going to get maximum production from the garden.

First, the home garden is going to be used year after year. By growing a green cover crop of domestic rye grass in the fall, by using all the animal manures and the compost, and by purchasing organic-base fertilizers, the fertility and hu-

mus content of the soil can be increased, even as the soil is used. Don't make the mistake that so many do of thinking that the ground must be rotated. Theoretically, one can make out a case for rotation. Each crop takes more of certain chemicals from the ground, and by changing ground, one can offer a situation where there will be more of certain elements.

Practically, it's much more sensible to provide the needed elements and use the same plot. The home garden is so important that the soil should be made completely free from large stones and rocks; it should have all turf clumps and clods removed; it should be a spot of deep, fertile, reasonably drained loam that year by year improves in mellowness.

The next chapter will discuss the permanent garden for asparagus, raspberries, strawberries, blackberries, rhubarb, grapes, etc. For those families who do not intend to raise any of these crops commercially, the logical thing is to set aside an area for them.

Since the practicable method is to use the same area for the home garden each year, the location is important. Choose a spot for its fertility, drainage and convenience to the house.

Don't have the garden come right up to the back door or to the side of the house. Leave room for a grass plot and space to turn around with the hand cultivator or the small power cultivator. By locating the garden near the house (or the barn if there's running water in it), it's easy to use a sprinkler or two for irrigation when the soil gets dry.

This matter of availability of water is one of the top secrets of raising big crops. A home garden without water

is at the mercy of the weather. If the family is not raising crops commercially and time is not such a pressing matter, one can get along very well with one or two hose lines and the ordinary whirling-type lawn sprinkler. Remember, in giving water to the soil, that a long, thorough sprinkling once a week is much better than two lighter sprinklings. Light waterings simply keep the roots in the top inches of soil instead of making them go down deeply where there's moisture stored.

In starting a garden in soil that hasn't been used for years, certain procedures are important. Have it plowed deeply, 9 or 10 inches, so the turf will be buried and rot to form humus. Let the furrows dry a few days before harrowing. If the soil is dry, it crumbles into a friable mass and gives a smoother surface. New ground should be harrowed 6 or 8 times. If you hire a local farmer to get this spot ready, don't let him set the disk-harrow cutting blades too deeply. Make the top 4 or 5 inches a soft seed bed, but don't let him pull up the turfs. After a plot has been used one season, you can plow it with your own walking garden tractor if it has horsepower enough. If your only farming is a big home garden, it may be more logical to hire the plowing and harrowing done each spring and fall, and buy one of the ½ or ¾ horsepower, lightweight garden cultivators. Each man will have to be governed by his own situation. (More about this in Chapter Nine.)

The shape of the garden plot is important. Sometimes, of course, one doesn't have much choice. Walls and boundaries may be determining factors; low spots or sandy hummocks may regulate shape. But insofar as you have a choice, make the plot rectangular in shape instead of square. It's

easier to plow, harrow, cultivate, and water. You don't have to plant an entire row, if you want a succession of crops. Plant a third or a half early in the season and the rest later.

Beginners are always puzzled about the matter of size. How much land is needed for a family of four?

There are two points here. A good many beginners are thinking in terms of rows 12 or 18 inches apart. They've read the newspapers and magazines about the tremendous yield from a plot 50 by 50 feet, where very intensive methods were employed.

This line of thinking is one of the worst mistakes a beginner can make. Think in terms of rows that are 2½ and 3 feet apart—wide enough for the power cultivator to do a good job. If you're going to get along with a hand cultivator until finances permit the purchase of a power machine, then many of the rows can be 18 to 24 inches apart.

(There's a tricky little point here about the hand cultivators that gardeners should know. There are all kinds and styles, and many of them are efficient tools. A man can cultivate a very sizable area with one in a couple of hours. Great numbers of gardeners use them and will continue to do so. However, have the rows far enough apart so that you'll go twice in each row when cultivating. For example, your cultivator covers a 15-inch strip in use, so you figure, "I'll put my rows 18 inches apart. One trip will do the job, and I'll finish the work close to the plants with a hoe." One trip isn't enough for first-class work. If you make the rows 20 inches apart, you'll go as closely as you can to each row, cover much of the surface area twice, and reduce the amount of hand-hoeing. With many crops—onions, beets,

carrots, turnips, cabbages, etc.—a careful worker can get very close to the plants, and save himself much hoeing.)

It's difficult to offer specific directions as to size. But as a guide for a family of four, plan on ½ acre. (This means the space for the annuals. The space for the permanent garden is another matter.)

An area 300 feet long and 75 feet wide has 22,500 square feet, a bit more than half an acre. It's an excellent-shaped plot for efficient operation. If your rows are 3 feet apart, you can have 25 of them. The chances are that you'll want one strip of 6 or 7 feet for the squashes, cucumbers and melons. To the beginner, 25 rows may not seem very many, but remember that the rows are 300 feet long. That's quite a distance when you're cultivating on a hot summer's day, but it's the length that assures big production in a rectangular-shaped garden.

This matter of ½ acre for the family garden bothers some beginners. It seems like a tremendous area. But one must keep in mind certain facts if this garden is to return $300 worth or more of produce. There have to be root vegetables enough to store for fall and winter use. You'll want 2 or 3 complete rows of potatoes, depending on how much the family eats of this staple. If you're fond of sweet corn, and want plenty to can, you'll need 3, 4, or 5 rows. You'll want 2 rows of string beans to insure plenty for winter use. Lima beans and French horticultural beans are excellent in season and are delicious canned. You may find you would like to have 2 rows of each. You'll want 2 rows of carrots, 1 of beets, and half a row of parsnips.

If the family likes squash, raise 10 to 15 hills of the Butternut variety. It will keep until February in a dry,

cool place. You'll want a row for successive plantings of lettuce and Swiss chard. It's always a good idea to raise extra carrots, cabbages and mangel-wurzels for the hens, cow and pigs if you keep livestock.

Planning the garden is a most enjoyable task for a winter evening. If you're interested in country living, you already know the fun of studying the seed catalogs. Plan the garden carefully. Don't think you need 100 tomato plants; 4 dozen will give the average family all it wants in late summer and fall, and provide enough to can as a vegetable, or to use for tomato juice, tomato butter and tomato marmalade.

After a season or two, you will learn which crops are needed and liked most, and you can govern yourself accordingly.

In addition to good care, good soil and availability of water, the other cornerstone of a successful vegetable garden is a generous amount of fertilizer. It pays in dollars and cents to use large amounts. On the part-time farm where livestock is kept, the animal manures should go onto the family garden. In addition, one should use plenty of the organic-base fertilizers.

Conditions vary as to soil fertility and the amount of humus. But in average loam, if there's no animal manure available, don't be afraid to put 1000 pounds on a half-acre plot. If you have the year's manure from a cow and flock of hens, it may be that 500 pounds will give good production. Use this amount year after year, and you'll have no trouble getting big yields of fruits and vegetables. It's poor judgment to skimp on $30 or $40 worth of fertilizer when the half-acre garden can return you $300 worth of food.

There are varying opinions as to the best time to apply

manures and commercial fertilizers. After experiments, the author prefers to plow under the animal manures in the spring and to spread the commercial fertilizer after the garden is plowed. This fertilizer is harrowed or cultivated into the topsoil. A good way to use the compost is as mulch. In the fall, this is plowed in when the soil is fitted for the green cover crop that protects it over winter.

HELPFUL POINTERS

If your garden is near a woods or brushy area where rabbits and woodchucks live, plant a long row of lettuce along the edge of the garden near the woods. Many times the wild life will be satisfied with this and leave the other crops alone.

Pests, bugs, insects, and blight are constant problems. But they can be controlled by sprays or dusting. Get bulletins on these subjects from your State College. Conditions vary in different sections of the country. Most home gardeners have come to the conclusion that dusting is much easier and just as efficient as liquid sprays. The local hardware, feed and grain stores, or co-operatives carry a full line of dusting and spraying materials.

When you are dusting or spraying the string beans to control the bean weevils, have someone go along the row and pull the vines over with a wooden rake so the spraying material will cover the undersides of the leaves where the clusters of yellow eggs are attached.

Use paper hotcaps, or 18-inch square, 10-inch high wooden boxes with sliding glass tops, under which to start early cucumbers, melons and squashes. In the latitude of

Boston, these crops can be started from April 25 to May 5, gaining 3 or 4 weeks on the season. Every home garden should have a cold frame for starting lettuce, Swiss chard, cabbage, broccoli, and tomato plants.

If the soil is full of small stones, the size of a pea to a pullet's egg, get hold of a fine-toothed rake and rake them up, and dispose of them. One of the best tools for this purpose which the writer has had in his garden over the years is a homemade rake. The head is a piece of soft wood about 2 inches deep and 1½ inches wide. Through this have been driven 4-inch, slender finishing nails, ½ inch apart, for teeth. The handle is fitted into a slanting hole in the middle of the head.

It's wise to plant favorite crops at successive dates so as to enjoy a long season. Beets, carrots and turnips can be planted from June 20 to July 1, to have vegetables for the winter. One needs to make plantings of lettuce every 14 days. Plant it where it will be shaded by tomatoes or corn most of the day, and you can have tender lettuce right through the season until frost comes. But many beginners greatly overdo this business of successive plantings. When the tomatoes, sweet corn, lima beans, and horticultural beans come along, the family is likely to say it's had enough of beets, carrots, Swiss chard and early cabbage.

Remember peas are a cool-weather crop. Get them into the ground just as soon as the soil can be worked. Cabbage, broccoli and Brussels sprouts may be set close to peas and use the land when the pea vines are pulled up. One pound of seed plants about 100 feet.

Don't economize when buying seeds. Buy the best quality and from a reputable firm.

When setting out tomatoes, lettuce, cabbage, etc., leave a small circular depression around the stem so you can put in a cupful of water night and morning for a few days. This is the major secret of successful transplanting.

The quart-sized hand duster is efficient on the home garden. Do the dusting early in the morning or late in the evening so the moisture on the leaves will catch and hold the dust.

Borers in sweet corn can be controlled. Read the method in Chapter Twenty-six on this annual crop.

Raise plenty of cabbages. They keep well in a moist, cool cellar. In the writer's opinion, they are the best green food of all for hens during the winter. Also, cabbage and raw carrot is an excellent combination for the family table as a salad.

Every farmer, full- or part-time, should constantly run experiments and check the results. One of the subjects about which too little is known is mulching. We've already spoken of using compost as a mulch. Peat moss is excellent if one can get it at a reasonable price. Lawn clippings are good if not used so thick that the underpart becomes a sodden mass. You can use grass or hay if you cut it before the seeds have matured. Experiments tend to the conclusion that mulch around melons, squashes and cucumbers promotes faster maturity. Mulching also keeps down weeds and reduces cultivation and hoeing.

Finally, in the home garden that's planned for use year after year, keep the weeds out. It may seem for 3 or 4 years that you're not making much headway. Remember that many weed seeds can stay for several years in the soil without losing their vitality, but you will win the battle eventu-

ally. The time to get rid of weeds is when they are small. Hoe them out, cultivate them up, and then rake them away and toss them onto the compost heap. If you're going to use a garden spot for a long time, do everything you can to make the work easy and efficient.

Watch the farm journals and gardening pages of the papers for news about the newly developed chemical weed killers. New preparations are constantly being evolved. One of these days a gardener can spray his rows of plants and not have to do much hand-hoeing and hand-weeding.

CHAPTER TWELVE

The Permanent Garden

THE PERMANENT garden, as contrasted with the annual, can best be defined by listing the crops of the former: asparagus, raspberries, blackberries, grapes, rhubarb, strawberries, currants, gooseberries, and perhaps a few herbs if one is interested in their culture.

If the part-time farmer is raising any of these fruits on a quarter-acre or half-acre basis for sale at his roadside stand, then he does not need to include them in the permanent garden. Many of the crops that should be included in this garden are among the best for growing commercially, and they are discussed in detail in other chapters. The cultural directions given in those chapters should be followed, even if one has just one row, for example, of strawberries or asparagus.

In this chapter, we will discuss specific points that apply to the establishment of this type of garden. Very few part-time farmers will handle more than two or three cash crops. Many will handle only one. But all part-time farms should have an area laid out to include these satisfying crops.

Asparagus is good for 20 or more years once it is in production; raspberries for about 7; blackberries for 8 or 10; grapes for an indefinite period of years; currants and goose-

berries for 12 or 15; rhubarb for many years; but strawberries have to be set each year for maximum production.

The permanent garden is important to the family that has set a goal of producing $500 worth or more of produce from the garden and livestock. This type of garden means produce in season; one of correct size supplies ample to can and preserve for winter use. Everyone apparently likes raspberries and strawberries and they are excellent for winter uses, both as a fruit and in pies and puddings.

But many beginners do not realize, for instance, that asparagus (in Boston latitude) provides a fresh vegetable for table use from the first of May until the first of July. That's only a part of the story for the family that's increasing its real income by home food production. Asparagus is easily canned and makes an excellent hot vegetable for winter and a delicious salad.

Currants and gooseberries are not so important economically, but many families are fond of jams and jellies made from these fruits.

Rhubarb can play an important role in the family's diet. It's a healthful early spring "fruit" (edible stem, the same as asparagus). The family that's been accustomed to spending a dollar or two a week just for fruit can eliminate the expense for a long period. A good supply of canned rhubarb reduces food costs in winter. From an economic angle, the permanent garden plays an important role in subsistence farming.

There are a number of essential points about handling the area for maximum production. Common sense shows that the logical size is an area which is as small as possible and yet which is sufficient for the family's needs.

But don't make the mistake so many farm families do. The permanent garden, like the annual, should be laid out for efficient working. That means, first of all, that the rows must be carefully spaced. Raspberries fill in as a hedge and should be kept at a 2-foot width at the bottom, but allow space between hedges for cultivation with the garden tractor. Asparagus needs a 2-foot width of row, as the roots spread out. If you're fond of grapes for fresh fruit, juice and jelly, plan the trellis along one side, but remember that during the growing season the long branches fill a considerable space. Leave room enough between the grapes and the next row for the cultivator. Oftentimes a good plan is to have the grape arbor along one side, then the asparagus next, since both of them are long-lasting plants. Leave a 7-foot space between the grapes and asparagus row. The grapes are brushy and sprawling; big, vigorous asparagus plants throw wide-spreading branches.

First of all, lay out the garden plan. "How much should one set out of each crop for a family of four?" is a fair question. On the basis of experience and observation, the writer recommends the following for the families who want enough to eat in season and ample to can for winter use.

With rows 100 feet long, the plot should be about 50 to 60 feet wide. There should be a row of grapes, a row of raspberries, a row of blackberries, and a row of asparagus. One row should have 6 or 8 hills of rhubarb, a few bushes of currants, a few of gooseberries, and the herbs if one wants them. Then at the other side of the garden from the grapes, save a space about 8 feet wide for the strawberries. Each spring set a row which will bear fruit the following June. As soon as the row has finished bearing, plow under the old

plants and sow a green crop. This narrow strip will be the only part of the garden which you will plow. The permanent crops and plants need only cultivation. (If you have a small-plow attachment for the garden tractor, you may want to plow a few shallow furrows between the grapes and asparagus, between asparagus and raspberries, etc. The writer has tried this in a number of experiments, but no improvement in production was seen. Cultivating with the shovel-type blades will loosen the soil to a depth of 3 inches or so. Then, with the spike-tooth cultivator the soil can be kept in good tilth through the season. If weeds get a start, put the shovel teeth on and cultivate each row 2 or 3 times. This upsets the weeds by the roots and they can be collected with a rake and thrown on the compost heap.

If one has good soil, water available, and fertilizes generously (all except the raspberries which need very little, if any), he can get 200 or more quarts of strawberries from a 100-foot matted row, 100 to 200 pints of raspberries, and all the asparagus needed. Eight grape vines, spaced 10 feet apart, will produce several bushels.

After the plan is made, choose the area carefully. Ahead of anything else, provided reasonably good soil is available, is the matter of water. You can't raise big crops of fruits without water when needed. Available water keeps the plants bearing over a longer season. Asparagus doesn't need it because it comes early in the spring; grapes send their roots a long distance to get moisture, but the other crops in the permanent garden must have water if it's needed.

With water under pressure, one can put in a single overhead pipe the length of the garden. If it's the type of pipe one can turn and there's fair pressure, one length will do

the job of watering the area because the grapes and asparagus need not be included.

There's another recent development that's going to mean much to home gardens. The bigger seed houses and hardware stores are selling a portable type of pipe on a movable stand, to which a garden hose can be attached. A common size of this new irrigator sprays an area 20 to 25 feet in width and from 25 to 50 feet in length. Every home gardener should investigate the possibilities of this irrigator because it offers a practical solution to one of the chief problems in getting big production. One can do a good job with a whirling lawn sprinkler which is pulled along from time to time to a new spot. But a larger type of sprinkler that will cover a wide area and is readily movable is more efficient.

Next, in preparing for the permanent garden, put extra time and energy into getting the soil ready. This is an area which, presumably, you will use for many years. Everything you can do to get the soil ready means less work and better production over a long period of time. We have emphasized the essentiality of many harrowings. Before anything is planted, go over the area and get rid of all rocks and stones, all the clumps of turf and bunches of perennial weed roots. After the plot is cleaned and raked, harrow it some more. More rocks and clumps will show up. Make sure that you leave room enough at each end of the garden for the tractor to turn easily. You can't do it in a 3-foot space. Leave 6 or 8 feet for comfortable working conditions.

One of the secrets of a high-producing permanent garden is using enough fertilizer. Before anything is planted, harrow in 300 pounds of organic-base 6-6-6 fertilizer.

Keep the cultivator and hoe going the first year or two until the weeds are under control. Witch grass is a major enemy and there's only one logical way to handle it in the home garden. Spade it out by the roots.

Beginners often ask whether fall planting or spring planting is better. In general, set plants just as early in the spring as the land can be worked. This is Nature's natural time for growth.

If you're setting 50 asparagus plants, don't buy 50. Don't buy 50 raspberries or blackberries, if that's the number you're planning to set. Buy a third or half more than the number you expect to use, and plant only those that are the biggest and have the best root systems. The plants you throw onto the compost heap will make you money.

The writer has run many experiments on asparagus, strawberries and raspberries in regard to this point. It's too early to state definite conclusions, but results have been startling in terms of difference of yield. Do this, even if you buy from the best nursery in your state.

VARIETIES RECOMMENDED FOR THE NORTHEAST

Raspberry	Latham
Blackberry	Eldorado
Grape	Concord
Strawberries	Catskill, Howard 17, Premier, Fairfax
Rhubarb	McDonald
Currant	Wilder
Gooseberry	Poorman

HELPFUL POINTERS

If the soil lacks humus, it pays to buy 5 cords of well-rotted cow manure and have it plowed under. If you can't get manure, harrow in 600 pounds of organic-base fertilizer

before setting plants, and spread 50 pounds between each 2 rows early in the spring for 3 or 4 years, and harrow it in. (Don't do this for the raspberries as it will stimulate excessive growth, and you'll have winter-killing. See details in Chapter Twenty-two on this fruit.)

Before you set out Wilder currants or Poorman gooseberries, check with the County Agent or the Selectman of the town to see that the state law permits these fruits to be grown. Both of them are "hosts" to the white pine blister rust, and many localities in the Northeast are not permitted to grow them.

Beginners often ask about cultivated blueberries. Yes, they are an excellent fruit, and a row of 12 or 15 big, vigorous bushes will yield many quarts. They require an acid soil. (Details in Chapter Twenty-eight.)

The writer has often been asked about high-bush cranberries. They are a hardy shrub, growing up to 6 feet or even more in height. For most families, however, it's usually better to buy what cranberries are needed rather than attempt to raise them.

Sometimes the only logical spots for the annual garden and the permanent garden have poor drainage. It's often possible to use these spots if a drainage system is put in. One can dig a deep trench at the lower end; one can lay tiles in ditches. Sometimes a deep open trench along one side will correct the trouble. Every situation is a separate problem. If drainage is a question mark in your mind, ask the County Agent to help you, or a local farmer who has had experience. There are a number of ways of draining a spot, and an area 100 by 50 feet, or a family annual garden

75 by 300 feet, can frequently be remedied in this respect at not too great an expense.

The song birds—robins, sparrows, and cedar waxwings—are one of the worst pests with fruits. The best way of overcoming their destruction in the home garden is to cover the rows of strawberries, raspberries and grapes with long strips of heavy-mesh cheesecloth. For some reason, according to the writer's experience, the birds don't bother the blackberries. If the cheesecloth is thoroughly dried when it's rolled up and put away at the end of the season, it will last for many years.

The great secret in growing tall, thick, succulent stalks of rhubarb is generous fertilization. Dig in a pound of the organic-base fertilizer around each hill every 2 weeks from early spring until the first of August. If you want some rhubarb very early in the spring, put a half barrel over a hill, and a large pane of glass over the barrel top.

The Red Star variety of strawberries is a promising newcomer that bears late. It's worth experimenting with to see if you can have this favorite fruit over a longer season.

The chief secret in getting a garden's weeds under control is to see that none go to seed. One weed may produce hundreds, even thousands of seeds. If there's purslane, be sure to get the whole root out. A piece of root left in the ground means a new plant.

CHAPTER THIRTEEN

The Home Orchard

MOST FAMILIES who move to the countryside want to grow some tree fruits. This is true whether the plan is to do only subsistence farming with a big garden and perhaps some livestock, or whether a family plans to arrange a program that will bring in from $500 to $1000 cash profit, in addition to home-raised food.

There's much satisfaction in raising one's own apples, pears, cherries, plums, and peaches. With modern methods and materials for dusting, the diseases and insect pests can be controlled. It's easy to keep a few trees pruned. Anyone who will get bulletins on the subject or who is willing to ask advice from a full-time farming neighbor can do all the work.

There's also an interesting new development just coming into commercial production that offers great promise to part-time farmers. Over the years you have probably read a good deal about dwarf fruits. You've seen attractive drawings of little 6- or 8-foot-high trees just laden with fruits. You've seen photographs and drawings of trees that have been trained against walls and sides of buildings, with usually a comment to the effect that gardeners in European countries utilize every inch of space and grow fruits by this method.

This business of dwarf trees is a snare and delusion for most situations. There may be, admittedly, home plots of very small area where a few of these little trees will fit in. But if the writer's observations are correct, these dwarf trees don't amount to much when it comes to providing fruits for a family. If a man is interested in growing tree fruits for a family of four, for example, 2 or 3 dozen apples on a tree don't mean a thing. The assumption is for many families that they want plenty of tree fruits in season, plus plenty to can, and plenty to store for winter use.

The interesting new development is this. Experiment stations have been working with semi-dwarf trees. That is, they now have trees that grow from 15 to 20 feet tall. This is an excellent size for the part-time farm orchard. An apple tree this tall and with a diameter of 15 to 20 feet can produce 6 to 10 bushels of fruit. Pear trees are not very widespreading; peaches are small trees, so one doesn't need to think of smaller adaptations of these two species.

But if you have land available for a home orchard, it's still the writer's opinion that regular-sized trees are best.

First of all, select a spot for the orchard that has good drainage. Pears will grow where apples, cherries and plums do not thrive, but even pears will produce better if they are located on well-drained soil. It doesn't need to be much of a slope to provide adequate drainage; there are level areas, where the subsoil is gravel and coarse sand, that will do perfectly well. But a low-lying, heavy piece of soil should be avoided. In the fruit-growing region of southern New Hampshire, there's a saying that "the lighter the soil, the bigger the fruit."

Second, don't make the mistake, common to so many beginners, of planting too many trees. There are families who

want to raise just enough for home use who put out a dozen apple trees, and several each of cherries, plums, pears and peaches. Then after a few years they realize they have many times the amount of fruit the family can use.

This question always comes up, "Why can't a part-time farmer make his $500 or more profit with tree fruits instead of the specialties so often mentioned: asparagus, strawberries, raspberries, etc.? Why can't an acre or two of apples, pears or peaches do the same?"

The answer, of course, is that if a man wishes to he can specialize in tree fruits. But during 20 years of watching the part-time farming movement develop in the Northeast, there's one fact that stands out. The men who go into tree fruits on a part-time basis don't succeed in the proportion that men do who go in for the so-called specialties. There seem to be three reasons. First, a man has to be on the job at just the right time for spraying or dusting. It's no longer a matter of spraying once or twice a season. Many of the commercial apple growers spray 6 or 8 times. Second, apples in the Northeast are an off-again, on-again crop. When it's a good apple year, everyone has apples and the price is low; if it's a year of high prices, it's because the crop is short. Third, if the part-time farmer is to concentrate on fancy fruits and sell in small amounts for good prices on the roadside stand, he must have irrigation. The man who sees the point about availability of water for berries, melons and squashes is inclined to take a chance on tree fruits.

So unless one is very sure that tree fruits are his special interest and is willing to provide conditions that produce fancy fruit, observation indicates that part-time farmers can make more money with other crops.

How many trees for a family of four? Using standard-sized trees, here's a chart that will serve as a basis of study (for the Northeast):

Fruit	*No. of Trees*	*Variety*	*Maturity*
Apple	1	Transparent	Summer
	1	Duchess	Summer and early fall
	1	Baldwin	Late fall
	2	McIntosh	September
	1	Northern Spy	Late fall
Cherry	2	Large Montmorency (sour)	Mid-July
		Emperor Francis (sweet)	Early July
Plum	2	Bradshaw	Early September
		Lombard	Mid-September
Peach	3	Elberta (best all-around freestone peach)	September
Pear	2	Beurre Bosc (will keep well into fall)	Late September
	1	Bartlett	September
	1	Seckel	September

If space is limited, cut the apples to 1 Transparent, 1 McIntosh and 1 Baldwin. If I had to choose 1 cherry it would be Montmorency for pies and canning; 1 plum would be Bradshaw; 1 pear would be the Beurre Bosc.

You can secure technical advice on planting from the bulletins, but here are two practical points that mean better results. When you dig the hole for setting the trees, put the good topsoil in a pile to one side. The hole should be deep enough so the tree will be just an inch or two lower in the soil than it was in the nursery. After the hole is dug considerably below the level on which you'll spread out the roots, put in 3 or 4 shovelfuls of good loam as a foundation. Spread the roots carefully and put in a shovel or two of loam. Tamp this down rather firmly, but don't stamp on it

with the heel. When you stamp on it with force, you break off some of the feeding rootlets, the very roots which are needed to start good growth.

(The author has run scores of experiments on transplanting, with the purpose of finding which method starts plants, shrubs and trees off to the quickest growth. Everything points to one conclusion. Put the soil around the roots carefully. Press down and around the roots with the fingers so no air pockets will remain. Firm the soil only moderately.)

But this next point is perhaps the major secret of good transplanting. Leave a circular depression around the tree and, night and morning for 2 weeks, unless a rain intervenes, pour on 2 or 3 quarts of water. This water not only keeps the soil moist, so that the food will be in soluble form for the feeding rootlets, but it also settles the earth around the roots.

Until recent years, it was common to emphasize that 1-year-old trees, or whips, were the best to plant. But now one can buy 3-year-olds or even older trees. It's the only sensible thing to do. If you buy from a reputable nursery, the trees will come with their roots wrapped in moist material. Both roots and tops will be pruned. All you have to do is set them out. Some fruit growers believe it pays to set the roots in a tub of water for a few hours; others contend it's just as well to transplant immediately.

(If, for any reason, trees, berries, strawberries, or asparagus come before you are ready to use them, they can be "heeled in" and held for many days. Dig a trench; set the plants in close together. Put the soil back and keep the plants watered.)

Another interesting development for the home orchardist

in the past decade has been the tree on which anywhere from 2 to 5 different varieties of fruit have been grafted. Some of the nurseries are featuring these. If you want a tree half McIntosh Red and half Red Delicious, you can get it. Or you can get trees with 3 summer or early fall varieties, trees with 2, 3 or 4 winter varieties. If a family has plenty of space, this multiple-fruiting tree may not be desirable, but if space is cramped and one has room for only 2 or 3 trees, it may well be that half a dozen varieties on the trees will be worth while.

As far as controlling fungus disease, blights, insects, and borers is concerned, the only logical procedure is for each part-time farmer to write to his own State Experiment Station for the bulletins on the subject. Sprayings and dustings vary among states as to the time of application, and the time element is of vital importance. Sprays at different times are put on to control different pests.

Beginners are often puzzled about the relative merits of liquid sprays versus dusting for control of pests. There are proponents of both sides, but it is noticeable in recent years that dusting is steadily increasing in popularity for tree fruits, the same as for control of pests in the garden. For the home orchard, the smaller type dusters will do the job; one doesn't need a power duster. This is especially true if one buys the semi-dwarf trees. But even if one has the standard trees, it will be years before they get beyond the 15-foot height. (As you read bulletins on pruning, you will see how trees can be pruned to the low-headed, spreading type instead of the leader-type of central stem that tends to go high in the air. One of the practical points of handling tree fruits comfortably is to keep the height of the tree down to a

reasonable figure. It's much easier to handle a 10- to 12-foot ladder than one of the taller ones.)

If you can locate the home orchard within reach of water, by all means do so. It's true that apple tree roots may extend a considerable distance beyond the diameter of the limbs. They go fairly deep. But it makes a big difference in yield if you can let the hose run water around the trees in a long, dry spell. Some farmers with only a few trees to water, run a pipe on the surface of the ground to the edge of the orchard, and then use a hose to move from tree to tree.

When you set out fruit trees, *don't* put fertilizer in the holes in which the trees are set. This will result in a tangled mass of roots concentrated in one spot. Put good, rich loam under the roots, and fill in the hole with first-class soil. You don't need to use any fertilizer at all the first year.

There's nothing very scientific, admittedly, about the author's method of fertilization. He uses 1 pound of 6-6-6 the year after fruit trees are planted, and increases a pound per year until the trees get 10 pounds. After the trees are 5 years old, 2 pounds of nitrate of soda are also scattered around each tree early in April. Your bulletins will give you some interesting material on this matter of fertilizing fruit trees. Different experimenters get different results. My father, who ran an 800-tree Baldwin orchard, and several hundred McIntosh, Red and Yellow Delicious trees, as well as a few Kings, Russets and Mountain Spies, was a great believer in 10 pounds of nitrate of soda per mature tree in a sod mulch—and he secured excellent yields.

This brings up one important point that must be watched for a few years after the trees are put out. Keep the soil

cultivated around each tree in a circle of 3-feet diameter. It isn't that the cultivation is so important, but it's a help in controlling the borer. This worm or grub, in one stage of its cycle, bores into the young trunks just below or at the soil line. Several times a season a man should pull the soil away from the trunk so he can inspect it to a depth of 2 or 3 inches. You can tell when borers are working by the little piles of champings or borings. Use a slender wire or a small blade to kill them. Sometimes you'll have to slit open the bark to find the tunnel, but usually you can tell by the gooey mass on the end of the wire whether you've killed the grub. When the trees are 6 or 8 years old and the bark gets heavy and thick, the borer danger is past.

Be sure to set the trees far enough apart so that at full maturity there will be room to work comfortably among them. Standard-sized apple trees should be 35 feet apart each way; pears, plums and cherries, 25 feet; and 18 to 20 feet for peaches.

There's one other point that should be mentioned here since we are interested in receiving the maximum yield of first-quality fruit. You cannot raise top-quality apples, peaches and pears without thinning them. After a heavy blossom a tree will very often start several times the number of fruits that should be allowed to mature. Don't do the thinning until about July 1. In many areas, there is what is called the "June drop," when for some reason many of the starting fruits lose their hold and fall to the ground. But early in July, it pays to spend a few hours going over the trees and removing surplus fruits. If there are 2, 3 or 4 inches between fruits, it means a larger total yield than if they are allowed to grow thickly in clusters.

HELPFUL POINTERS

If the family is fond of quince jelly and quince preserve, by all means set out a quince or two. They're a shrub-like tree, reasonably hardy. If the family is fond of spiced crab apples, set out one crab apple tree. If there's room enough and you want the earliest apple, set out a Red Astrachan. (The writer believes that the old-fashioned Porter is one of the best of apples, but many disagree with him. The Porter is not only a delicious eating apple, tangy but not sour, but it also makes the most luscious pies, sauce and puddings in mid-fall.)

One definite advantage of setting out several varieties of apples, or trees with 2 or more varieties grafted, is that cross-pollination is assured. Many people who have set out McIntoshes alone, for example, do not understand why they have poor crops year after year. Cross-pollination is essential with some varieties of trees, as with some varieties of strawberries.

For working around the trees, pruning and harvesting, get a ladder with a 4-inch-wide step. It's much more comfortable than the traditional-type ladders with round rungs that cut into the feet.

Young trees need very little pruning for 4 or 5 years. The bulletins will have photographs and charts showing you how to develop the open-head trees. Keep the trees low and spreading, even though you'll have to use props when the branches are heavily laden. It's much easier to use props than it is to work high in the air.

For trees 8 feet tall and higher, one of the most useful

and efficient tools you can own is a small curved saw attached to a long handle. With a 6- or 8-foot handle, you can do most of the pruning from the ground. Hardware and farm supply stores carry these saws.

Remember that the fruit buds for the following season's crop are started in June and July. That's why the writer believes in spring fertilization. It gives the roots food for the double job of growing fruit and starting fruit buds. It's been common to talk of "bearing" years and "off" years with tree fruits. Some trees do seem to have a tendency this way, but annual fertilization is one of the best guarantees of annual crops.

There are many types of dusters on the market. Write to the advertisers in the farm journals for catalogs. You don't need a power sprayer for the home orchard. Yet you must have a duster which is powerful enough to throw a cloud of dust over the trees. A large bucket or quarter-barrel type with a pump handle for giving good air pressure will do a satisfactory job in the home orchard.

Here's a little tip about harvesting apples so they'll keep well through the winter. Pick them before they are quite mature. This is especially important for the winter varieties. You'll find, if you have a cool cellar space boarded off from the furnace, that you can keep the McIntoshes until Februthe furnace, that you can keep the McIntoshes until February if you pick them while still very hard. Baldwins and Northern Spies will keep into April. The Beurre Bosc pear is also an excellent keeper.

One of the irritating problems in connection with cherry growing is the birds. Robins and cedar waxwings raise havoc with the cherries just as they're half ripe. There's only one solution the writer has discovered or heard of. If you want

cherries, take strips of heavy cheesecloth, sew them or fasten them together with safety pins, and put the cloth over the tree. It's easy to put this cheesecloth tent over even a tall tree if you'll get someone to help you. Take 2 long, slender poles. Fasten a corner of the cloth to each pole. Raise the poles; carry the cloth over the top of the tree. It will cost a few dollars for the cheesecloth tent but it will last for years —and you'll have cherries.

CHAPTER FOURTEEN

The Family Cow

THERE ARE people who will disagree with the emphasis on this phase of part-time farming. It is true, for instance, that a family can keep two good milking goats for about one-fourth the cost of keeping a cow—if all the hay and grain are purchased. Goats have an increasingly important place in part-time farming operations, and we'll talk about them in the next chapter. But the writer has seen enough of part-time farming in the northeastern area so that he has no hesitancy in saying, "If there are children in the family, a good-yielding cow is better than a couple of goats for most situations."

There is one provision, however, that is the backbone of the plan. The part-time farm must be large enough so that all the hay and part of the grain can be raised. It must also be large enough so a full acre of reasonably good soil can be devoted to a pasture.

Let's examine a few of the angles. We'll assume it's a typical family of four for whom we are planning a subsistence food program. A cow will mean approximately $300 worth of dairy and meat products to them. The figure of $300 is by no means high; it is, in fact, on the conservative side when one considers all the food that directly, or indirectly,

is connected with the keeping of a good cow. First of all, there's the milk for the family for 10 months out of 12. (A cow needs to be "dry" for approximately 8 weeks before freshening.) Let's assume the family will use 3 quarts of milk a day for 300 days. At 18¢ per quart, that's a return of $162. We'll say you use 2 pounds of home-churned butter a week for 40 weeks. At 50¢ a pound, that's another $40. To keep on the conservative side, we'll say that in the 40-week period, you'll use $50 worth of cream. That brings the total to $252.

But it's by no means the whole story in terms of home food production for the family that wants to increase its real income. If there's a frozen-food locker in the community or you have a locker in your home, you can raise the annual calf from the cow and within a 12-month period grow 300 to 400 pounds of prime-quality beef. If you have skim milk available, it gives the beef a good start. With hay and corn-cob meal, you can feed the beef inexpensively until the latter part of winter or early spring. (Corn-cob meal is the result of grinding the corn and cob together. Experiments have shown that it has well over 50 per cent of the feeding value of straight corn meal. An electric motor and a small grinder will do the work.)

This amount of beef is certainly worth $200 to the family, even though in purchasing from stores one sticks to the less expensive cuts and grades. There's the additional angle that many part-time farmers with a good cow will want to raise a pig to have butchered in the fall. Skim milk, plus home-raised corn-cob meal, is excellent feed for the pig. The home-raised pork from a 200-pound pig that dresses out 125 pounds or more is worth $40 to $50. If the family

keeps a few laying hens and raises from 25 to 50 chickens each year for canning or to use as roasters, sour skim milk materially reduces the feed bill for the poultry.

Therefore, there are solid arguments for many families living on part-time farms to keep a cow. The total value of the products depends upon several factors, all of which are within the control of the farmer.

First of all, the only kind of cow that's profitable is a good producer. It may be difficult for the beginner to believe, but the average production of dairy cows in the United States is only about 4700 pounds of milk a year. There's no point in keeping a cow that gives less than about twice this amount. (A quart of milk weighs 2.15 pounds.)

A good cow gives from 16 to 24 quarts a day when fresh, and should maintain a production of 10 to 12 quarts over many months. There's only one logical procedure for the man who doesn't know how to judge the milking qualities of a cow. Secure the help of a neighbor or the County Agent. There are cows and cows. Some of the sleek, good-looking ones are the poorest producers. You'll want to study the bulletins on the subject. The first-class dairy cow has the right size for her breed; she has big capacity in stomach and heart-girth. She should have a slender neck and feminine head. Look for a good big udder with 4 well-spaced teats. But if you're a novice, don't buy a cow on your own judgment.

The right age is important. You can buy an older cow, 7, 8 or 9 years, for less money. Except in unusual situations, it's probably better to buy a cow that has just had her second calf. Then one has 8 or 10 years of production. It's a safety angle to buy a cow after she has freshened, rather

than before. Cows usually have no trouble in giving birth, but occasionally complications arise as in all animal births.

There's one more point in favor of buying a cow after she's freshened instead of when she is dry. You may never have heard of the terms "hard" milker and "easy" milker. Cows vary greatly in the ease with which the milk can be squeezed from the teats. A really hard milker is a great nuisance and will be a never-ceasing source of irritation to you. An easy milker can be milked in 8 or 10 minutes and doesn't require much muscular power. And *never* buy a cow that doesn't have good-sized teats. You want a teat large enough so that your hand fits around it comfortably.

There's another little point here that many beginners never think about. There's no sense in keeping a family cow that has horns. In fact, it's a danger point! Each year there are dozens of nasty and occasionally tragic accidents on America's farms, when cows swing their heads unexpectedly and a horn goes into a man's eye. Very often when you buy a cow, you can make a deal with the seller to have the horns cut off before you get her. And if, by chance, you decide to raise a heifer calf for replacement or perhaps to sell, buy a tube of dehorning paste from the feed store and use it on the calf. Two or three applications just as the "buttons" begin to form will prevent the growth of horns.

"Which breed is best? Should one buy a purebred?" These two questions are frequently asked. The writer realizes that his point of view on the best breed is different from that held by many who have written in this field. The usual advice to subsistence farm families is to recommend either the Jersey or the Guernsey. Both are excellent. Good milking strains of either produce 12 to 15 quarts a day or more,

when fresh. The milk has a high butterfat content. But the writer has seen many Jerseys and Guernseys that give only 6 to 8 quarts a day during the first two or three months after freshening. The calves from these breeds are small.

The Holstein is a big cow and produces lots of milk, but the butterfat content is low. However, a good Holstein will give a family all the cream it wants for table use, and plenty for butter making, and there'll be plenty of skim milk for feeding the calf, pig, and poultry. In many areas, the Holstein is the favored milk producer.

If you are located where you can find a Milking Shorthorn, however, this is the best breed, the author believes, for the family cow. Milking Shorthorns are known as the dual-purpose breed. They give lots of milk, perhaps not up to Holstein quantity; but a Milking Shorthorn's butterfat is considerably better than the Holstein's. Where a Holstein may average 3 to 3.5 in butterfat, the Shorthorn gives 4 to 4.5. Shorthorns are quiet, docile and friendly. Don't let the coloring bother you, for this breed has white, red, and roan animals.

There's another argument in favor of the Shorthorns if the family wants to raise 300 to 400 pounds of beef a year. The calves from this breed are stocky and good meat animals. The cows will give good production on home-raised feeds, plus a little protein concentrate like cottonseed meal.

You don't need a purebred. A good grade is just as satisfactory.

Last of all, buy from a local farmer or cattle dealer whose reputation means that you can have confidence in his word. Sometimes it's a temptation to go a distance; sometimes you may be at an auction where you'll be tempted to bid on

cows put up for sale. Don't do it. Get someone to help you and buy from a local source.

Now let's consider some other angles. The secret of making money in terms of food with a family cow is to produce all the feed possible. Use an acre of good soil and seed it down to hay. If you're raising a calf for beef each year, seed down 1¼ acres. You can raise 3 tons per acre and that will be enough. Ask the County Agent about the most successful hay combination in your area. Alfalfa is good in some sections; in others it winter-kills easily. Red clover and timothy is a good combination, much used in the Northeast. It pays to give special attention when seeding down this area. Harrow the soil well after plowing. Check to see if lime is needed. After the first harrowing, broadcast a ton of 6-6-6 organic-base fertilizer per acre and harrow this in. It costs to get a good hayfield going, but it will last for years if correctly handled.

Write your State Experiment Station for recommended seedings and amount of seed per acre in your locality. You can sow the seed by hand without difficulty. If you have turned over a piece of sod land that hasn't been used for a number of years, it's good business to grow a green cover crop of oats or buckwheat and turn this under. It not only adds humus, but also the extra working of the soil makes a mellow, deep seedbed. After you have sown the seed and stirred it in with the spike-tooth harrow, be sure to roll the area. Roll it both ways. It firms the soil, makes a level bed, and insures much better germination. If you lap over a half each time with the roller, it will give excellent results.

A first-class yield of good hay is vital. It pays to top dress the acre each spring, in late April (Boston latitude), with

500 pounds of 6-6-6 fertilizer. Cut the hay at the time recommended by your Experiment Station; early-cut hay has the most protein. Try to get it under cover before it gets rained on.

Good hay is one-third the program. The second third is the pasture. The least expensive milk is made from a good pasture plot. From mid-May until into September, you can produce milk at a very low cost per quart. A good pasture plus corn-cob meal, plus a pound of protein concentrate a day, will usually give good results. Most farmers will find it best to have the cow freshen in April or May. That means during the months of biggest production a cow gets a major proportion of her food from the pasture. It means the most skim milk at a time when it's needed for starting the calf, pig, and the growing chickens.

The third part of this program is an acre or more of field corn for feed as corn-cob meal. There's an angle here that puzzles many beginners. You will read in the literature on the subject that good dairymen feed a pound of grain for each 3 or 4 pounds of milk produced. Thus a cow giving 16 to 18 pounds, or some 7 or 8 quarts, ought to have 4 to 6 pounds of grain a day.

This is a good standard if one is running a commercial dairy, but it has little relation to the economics of the part-time farm. You are after all the milk, cream and butter the family needs; you want skim milk for the hens, even in winter. It may work out that 1 pound of cottonseed meal, plus 1 pound of corn-cob meal, plus an excellent pasture, will produce all the milk you can use. In the wintertime, good hay, a couple of pounds of corn meal and a pound of cottonseed may be ample. Don't be afraid to do a little experi-

menting on the grain question. You can tell if the cow's condition is good and if production holds up.

You will find that this corn-cob meal is excellent. It keeps the cow in good health and good flesh. It's a splendid grain for putting flesh on the beef and the pig. You can use it, mixed half and half with the egg mash, for the hens.

The new hybrid field corns are giving remarkable yields, up to 100 bushels and more an acre. However, there's an important point here. You have to buy the seed each year since it's a hybrid (a crossing of 2 or more strains). If you try to raise your own seed, you'll meet with disappointment. Furthermore, there are a dozen and one hybrids, developed to meet climatic conditions in various parts of the country. Ask the State Experiment Station for the names and numbers of the hybrids that have proved satisfactory in your region. The seed catalogs of reputable farm seed companies are an excellent source of information. They are as anxious for you to have good results as you are.

It's not difficult to raise big yields of hybrid corn. Make a good seedbed; harrow in half a ton of fertilizer. Don't skimp on this. Good farmers raise field corn in hills 3 feet apart or in rows with the stalks 8 or 10 inches apart. If the soil is well prepared, you can do all the work with the tractor. As you cultivate, the shovel-type cultivator teeth will throw soil over the weeds in the row and around the stalks.

Make a rat-proof bin in the barn of heavy, small-mesh wire to hold the ears, and keep other grains in barrels or bins, so you'll lose none to rats or mice.

HELPFUL POINTERS

It's good business to spread 300 to 400 pounds of fertilizer on the acre of pasture in April. Test the soil and if it needs lime, use enough hydrated lime or ground limestone to correct the acidity.

If there are rocks in the hayfield that cause trouble when mowing, spread a few extra handfuls of fertilizer closely about them early each spring. The deep green circle of grass will warn you, when mowing, where the rocks are located.

Raise some mangel-wurzels or turnips for green food for the cow in winter. They are good regulators of the cow's digestive tract.

A corner of the barn can be easily and inexpensively fitted up for the cow, and a pen made for the growing calf. If you have running water, put in a drinking cup with a float valve. It will save uncounted steps over the years.

If you can locate the pasture so it leads to the barnyard, it is an efficient plan. That means you can extend a hose or pipe to a tank in the yard where the cow can drink during the summer. Also, be sure there's a spot where she can get in the shade. It's cruel to keep any farm animals exposed to the sun and without access to water during the hot months. A cow in the first few months of lactation consumes about 10 gallons of water a day.

A gentle cow quickly becomes a family pet. Keep her well groomed. Use plenty of shavings, sawdust or straw for bedding and keep the stall clean. Before milking, wipe the cow's udder with a damp cloth. At periodic intervals, cut the long hairs from around the udder.

Keeping a comfortable temperature in winter is always a problem when there're only one or two animals in the barn. If the temperature drops below 32 degrees, the cow can stand it, but production decreases. That's why it's a good idea to make the stanchion in a corner. If the sides of the barn are tight, it's not much of a job to hang a heavy canvas curtain, or a double-thick curtain of sewed-together burlap bags, around the other two sides. Whatever you can do to make her comfortable will result in better production.

A cow comes "in heat" every 21 days. It's a wise idea to wait 3 months after freshening before breeding her. The gestation period is 9 months, so it's possible to regulate the matter to have a calf every spring. Make the arrangements ahead of time with a neighboring farmer to take the cow to the bull. Even a novice can tell when the cow is in heat. She's irritable, uneasy and restless, and frequently there's a vaginal discharge.

You can protect your hay crop by having a dozen large-sized canvas covers. If a rain blows up before the hay is completely cured, cock it up, and cover. You'll see advertisements for secondhand canvas covers in the farm journals.

Don't make the mistake of thinking it's better and more humane to keep the cow in a box stall. It's much easier to care for her, and she'll be perfectly comfortable, in a stanchion with a manure gutter behind her. Have the gutter 6 or 8 inches deep, and the plank floor on which she stands should be long enough so her hind feet will come just to the edge of the gutter.

If there's a choice of bedding, use sawdust. It absorbs the liquid and is easy to handle.

You don't need to be bothered with flies in the barn. Use DDT according to directions.

Cow manure is valuable. Store it under cover.

If you have irrigation of the portable-pipe type with the whirling gun sprinklers, it is good business in a dry spell to soak both the hayfield and the pasture. In many seasons, extra watering will give a ton or more of excellent hay as a second crop, cut late in mid-August or the first of September. (See the chapter on irrigation for details on the powered whirling sprinklers that water up to half an acre at a setting.)

If you haven't crop irrigation, here's a practical suggestion which you can handle close to the barn. Seed down a patch 50 feet square with white clover, which the garden hose will reach. You can grow an amazing amount of green food for the cow on this area if it is watered frequently and fertilized heavily in the spring with 300 pounds of 6-6-6 fertilizer. During the summer, spread 10 pounds of fertilizer once in a while just before you water the patch.

Here's a good point for getting the finest grazing in the pasture. Early in April, just before a rain begins, broadcast 3 pounds of white clover seed.

After the cow freshens, let the calf suck for two or three days. The colostrum, or first milk, is valuable in getting it off to a good start. Then wean the calf. Back it into a corner, straddle it, put a finger into its mouth and with the other hand force its head down into the bucket of warm milk. Two or three sessions of this will teach the calf to drink. Use whole milk for 2 or 3 weeks and then use skim milk and one of the reliable calf starters (especially prepared calf meal).

A cow is a creature of habit; she likes to be milked and fed at regular hours.

It's work to care for a cow, but if one wants to have livestock on the part-time farm, a good cow means $300 or more in return for your labor. Each family will want to decide for itself about these points. But if you do decide to have a cow, remember that the big addition to your income is the result of home-raised hay and grain.

Before you buy a cow, be sure that she has been tested for both tuberculosis and Bang's disease (contagious abortion).

If you decide to raise a heifer calf, have the veterinarian vaccinate her against Bang's disease when she is between 4 and 8 months old.

Two or 3 days before the cow freshens, give her ground oats and bran instead of the regular grain—about 2 pounds morning and night, mixed half and half. Give her warmed water for a couple of days after she freshens. Continue the oats and bran for 4 or 5 days and then gradually shift back to the regular grain ration.

A statement from Extension Leaflet No. 215 of Massachusetts State College reads: "There will be some salt in mixed grain, but it is well to offer a small handful daily or give the cow access to a saltbrick. Pasture grass from fertilized land is about the best feed a cow can have. . . . If she gives 6000 pounds of milk she will eat about a ton of grain during the year. If all the feed is purchased, the cost will be from $115 to $125. The retail value of this milk will be about $400."

Before you buy an old-fashioned wooden churn, investigate the 3-, 4- and 5-pound glass churns with egg-beater

type paddles. Look in your favorite mail-order-house catalog for them. You can get the hand-cranked models or those that are driven by a small electric motor. A $10 or $15 investment in a little power churn will save much work.

Sometimes part-time farmers with an excellent-producing cow—20 quarts or more at freshening—have a chance to sell a few quarts to neighbors. If pasteurized milk is wanted, one can get an 8-quart electric pasteurizer from the mail-order companies. Both the temperature and the timing are automatic. It costs about 1¢ a gallon to operate these small pasteurizers.

CHAPTER FIFTEEN

Milk Goats

THERE ARE a number of important reasons why a chapter on milk goats is included in this book.

The part-time farmer who is interested in securing the greatest economic return from his place will keep either a family cow, according to the plan in the previous chapter, or else he will keep 1 or 2 goats, depending on the size of his family.

It should be said, first of all, that a couple of milk goats will provide the milk and butter needed for a family of four or five. If the does are bred so they will kid (freshen) at different intervals, it means a year-round supply of milk. There are good strains of milkers available now. The interest in goats in this country is increasing rapidly. Almost everywhere one drives in the countryside, he will see milk goats tethered or in pasture lots.

A good milking doe produces from 2 to 4 quarts a day when she is fresh, and in good strains the production at the 2-quart-a-day level is maintained for a period of 7 to 10 months. A family can keep 2 milk goats for about one-fourth the cost of keeping a large cow like a Holstein or Milking Shorthorn. It has taken a long time for the prejudice against goats in this country to be overcome. In the

Old World, native goats have been the "poor man's cow" for a long time. But here it's been a standard joke to speak of goats living on tin cans, glass bottles, and brush. People have the erroneous idea that goat's milk is very strong and tainted; they believe that the smell of a goat rivals that of a glue factory.

These are delusions. A buck goat does have a strong smell, but the part-time farmer is not going to keep a buck. The only sensible thing to do is buy the does from a dealer or breeder in the neighborhood who keeps a buck. For a small service fee, the does can be taken to the buck at breeding time. (A small 2-wheel trailer, in which a wooden crate can be placed, is a very convenient method of transporting the doe to the buck.)

Any animal acquires unpleasant smells unless it is kept clean. Too often goats are placed in a dark corner of a barn or shed from which the manure is removed at infrequent intervals. In such unsanitary conditions, the goats' hair gets stained with manure and urine. If goats are kept clean, one doesn't need to worry about smell.

There's one essential point about keeping goats instead of a cow. If the land area is limited, you can raise the winter hay for 2 goats on about a third of an acre of good soil. That's an area about 100 by 130 feet. Good soil, generously fertilized, will produce 3 tons to the acre. If you have water available, a man can raise hay enough for his goats on a quarter-acre plot, by cutting it 2 or 3 times. (With water, plus fertilizer, 2 or 3 cuttings means a yield of 4 tons or better per acre.) So, in terms of winter hay, a small area will provide the fodder needed from October to May. In fig-

uring your hay crop, plan on about 500 pounds per doe a year.

Beginners often ask this question, "If one has a good pasture plot for summer and good hay for winter, can he get by without feeding any grain?"

The answer is, "No, you can't get good production from milk goats any more than you can from cows, unless some grain is fed. You can maintain body weight, perhaps, but you won't get the milk." If all the grain is purchased, figure that it will cost about 5¢ a day for the mash, the same type of dairy feed that one would buy for a cow. You will use from 1 to 2 pounds of mash per day, depending on the amount of milk the doe is producing and how far along she is in the lactation period.

If you feel that goats are a better solution to your particular problem than a cow, study the bulletins and talk with people in the area who have had experience with them. There are 3 main breeds of goats in the United States.

The Nubian, often called the "Jersey" of the goat world, gives 5 to 8 per cent butterfat. (It's called the "Jersey" for this reason.) It is large in size. Because the hair is short and fine, it needs comfortable quarters during the cold winter months.

The Toggenburg, which originated in Switzerland, is the most numerous and popular breed. It's an excellent milker, and many breeders get 4 to 6 quarts a day for 2 or 3 months after the does freshen. It's usually brown or chocolate-colored. Since this is the most plentiful breed in the United States, a great number of cross-bred goats carry Toggenburg blood.

The Saanen is another Swiss breed; it has white hair and

averages slightly larger than Toggenburgs. It is a good producer, and the butterfat content of its milk averages around the 3.5 mark, about the same as the Toggenburg's.

Which breed is best for the average part-time farm? The answer here is the same as with cows or hens. It isn't the breed; it's the strain within the breed. There are high-yielding strains of goats and poor strains. Furthermore, don't make the mistake of going a long distance to buy your goats. If someone within a few miles has a good strain of any of these breeds, buy from that breeder so you can take your does to his buck when they come in heat.

If the writer were buying, he would choose the Nubians for two reasons. First, the butterfat content is high and that means more cream for making butter. (And in a family with children, the butter bill can easily be $1 a week or more.) Second, the Nubian is the only breed that will come in heat regularly through the year. Therefore, if a family keeps 2 goats, one can be bred to kid in the spring, the other to freshen in the fall. This means a steady year-round supply of milk and butter. (The other breeds normally mate in early fall or along in October or November.) The Nubian, on the whole, doesn't give so much as the Saanens or Toggenburgs, but then butterfat, plus the fact you can have does that will kid both fall and spring, is a decided advantage. (The gestation period is 5 months.)

There's nothing complicated about feeding or caring for goats. They'll eat lots of brush and weeds; they delight in cleaning up patches of poison ivy. But you won't get the milk production on weeds and brush that you do from good pasture grass. Many goats are kept tethered and are moved about, keeping the grass down around the buildings. If you

have land available, you'll find it more convenient to have a half-acre pasture. In spite of all you hear about their climbing ability, a 5-foot woven-wire fence, tautly stretched, will keep them confined without trouble. Give them a good pasture, the same as you would a cow. Fertilize it early in the spring, and water it during droughts. Good succulent grass means good production. If you can, plan the pasture so it opens from the barn or shed, or the barnyard. That means the goats can get in out of the sun in hot weather. Keep water available in summer, and water twice a day from fall until spring.

There's one secret in caring for milk goats. If you want a clean pen, build the quarters so the feed rack, water bucket and grain box are outside the pen. This arrangement also makes it much easier to do the chores. Keep the manure cleaned up twice a day, and store it under cover for the garden. A pen about 10 by 10 feet is a good size for 2 goats. It's wise to have the pen on the south side of the barn or shed so the winter sun can reach them. There'll be many sunny days in winter when they should be let out for exercise. If you have running water in the barn, one drinking cup with a float valve is a great help. Use sawdust, shavings or straw for litter. If you clean out the soiled spots each day, or better twice a day, there'll never be any unpleasant odor in the barn, and it will be easy, with a daily grooming, to keep the goats clean.

Milking a goat is not difficult. The actual process is similar to milking a cow, though a few milkers prefer to take the teat between the thumb and first finger and draw downward the entire length of the teat. A beginner will do well to ex-

periment with both techniques of milking, and experience will tell him which method he likes better.

You will want a wooden platform for the goat to stand on while being milked, and a stanchion attached so that she will be held by boards or 2 by 4's either side of her neck. A milk goat knows when it's milking time, and usually will hop onto the platform without any urging. They know that milking relieves the pressure in their udders. Wipe the udder with a damp cloth before milking. Occasionally cut away any long hairs from around the udder and on the flanks.

You'll discover when the kids arrive (twins and triplets are more common than single births) that the baby goats are peculiarly friendly little animals. If you want to raise a female or two for replacements, make sure they get off to a good start. You can raise goats by hand or allow them to nurse the mother, but in any event the mother doe's first milk, or colostrum, must be fed for the first couple of days. There are qualities to this milk which help the kid's digestive system at the outset. When the kids are a month old, it is easy to wean them to a solution of commercial powdered skim milk.

If you decide to keep the buck kids for meat, they should be castrated at 2 weeks of age. It's not a difficult operation. The details are given in the bulletin on Milk Goats mentioned at the end of this book.

HELPFUL POINTERS

If you make a pasture for the goats, choose the type of wire fence where the mesh is finer near the ground than it is

2 or 3 feet aboveground. Then if the kids are given the run of the plot, they will not squeeze between strands.

Young female kids will mate at an early age but best results for a number of years of milking come when the female is bred for the first time at 15 to 18 months.

There's nothing difficult about making butter from goat cream. A small glass electric-powered churn of 4-quart size is efficient, though many goat keepers prefer the 2-quart size. A pound of cream makes about a pound of butter. Goat's butter is pure white naturally, and most homemakers add regular butter coloring to it. (Cow's butter is usually pale in color, and coloring is added to make it more attractive.)

Goat's milk is very easily digested and is often recommended by doctors. Goats almost never have tuberculosis or Bang's disease.

The reason why the cream on goat's milk rises so slowly is the smallness of the fat globules. Over 50 per cent of the globules are below 2 micra, 2/25,000 inch, in diameter.

A goat that averages 2 quarts per day for a 10-month period means 600 quarts for family use.

You will probably pay $50 to $75 for a good-quality doe. Buy a young one, not a 4- or 5-year-older. Most does produce profitably until about 8 years of age.

Since many part-time farmers keep goats tethered, here's an important point. Be sure there is a swivel, or even better 2 swivels, in the chain. Many goats are strangled to death every year by their tether chains or ropes getting twisted around their necks.

If the pasture plot dries up in the summer and you haven't water available to soak it, start a little patch of clover near

the barn or beside the garden where you can keep it watered with the garden hose. A small area, constantly watered, will produce much green feed for the goats. You can cut a little each day with a scythe.

If you have a very heavy-producing doe, you may find it necessary to milk her three times a day for a few weeks.

Don't let horns grow. Goats are playful, friendly creatures, and especially if there are children in the family, it's dangerous to have horned ones about. Both females and males have them, even in breeds that come hornless a majority of the time. Get some dehorning paste or caustic soda that comes about the size of a lead pencil. You can feel if the "buttons" are starting to grow. Rub the soda or put the paste on them, having first cut away the hair from around them.

Many people have unfounded prejudices against goats. Each family should analyze its own situation. It may be that goats, instead of a cow, will fit your plan. Subscribe to one of the goat journals for up-to-date information.

CHAPTER SIXTEEN

The Family Flock of Hens

THE FIRST question that always comes up is, "How many hens is the best unit for a typical family of 2 adults and 2 children?"

If I were establishing an arbitrary figure for a family of 4 persons, I would say, "Start the hen year (October 1) with 8 first-class, good-sized, husky, mature pullets. Eight pullets of a good laying strain will provide you with about 1600 eggs. You'll get 2, 3 and 4 eggs a day through the fall and winter; you'll get 5, 6 and some days 7 eggs from February through May. Then the production tapers off somewhat through the summer.

If you buy all the hard grains and mash, you'll find that it will probably cost from 10¢ to 15¢ a dozen to produce eggs. If you have a good cow and plenty of sour skim milk available, it will reduce the cost per dozen. If you raise some field corn that you can grind as corn-cob meal, and use as part of the mash, it will reduce costs still further.

There are a number of points about handling and maintaining the home flock that a beginner should know. Observation of many part-time farm setups shows there are three common methods of renewing the flock. Some families prefer to buy the pullets all ready to lay along in September

or October. Some buy 8-week-old pullets that can be placed under a range shelter without any supplementary heat. Others prefer to buy day-old chicks and raise 30, 40, 50 or more of them so there will be 5- and 6-pounders to eat and can in the summer or early fall.

A word should be said here about two of the important steps recently made in the poultry industry. It's possible today to buy "sexed" chicks. This means that the breeder or hatchery guarantees that the chicks will be 90 per cent or more pullets. A technique has been perfected whereby an examination of the vent indicates which chicks will be pullets and which cockerels. This applies to chicks of any given breed.

The other development is even more interesting to many poultrymen and part-time farmers. One can buy today what are known as "sex-linked" chicks. This means that the chicks are hybrids. The males of one breed are crossed with the females of another breed. When the chicks hatch, it's possible to determine by feather coloring which will be males and which females.

Hence, a man can order, for example, 100 baby female chicks. The cross of Rhode Island Red males with Barred Plymouth Rock females is a very popular hybrid. The results are most interesting. The hens tend to grow slightly larger than the birds of a purebred strain; they are excellent producers, and many poultrymen believe the hybrids are more vigorous and less susceptible to disease. (The results in cross-breeding of poultry are so promising that the U.S. Department of Agriculture is carrying on long-range experiments with dairy cows at its station in Beltsville,

Maryland. Cross-breeding seems destined to be an important new field in animal husbandry.)

Each family will have to decide which method of renewing the flock is the most efficient for its individual situation. But if you do decide to raise 50 or 100 baby chicks, here are a few pointers. (The bulletins will give you the needed technical information.) Use an electric brooder. It's much easier than handling a coal-burner or an oil-burning brooder. It gives steady and economical heat. For 50 or 100 chicks, it's easy to build a homemade brooder and supply heat by large electric bulbs. Your State Experiment Station Poultry Department probably has a bulletin which will tell you how to build this type of brooder.

If you happen to have a shed or small building which can be used, that is good. But for the sake of convenience, always keep this point in mind. If the hens, chicks, cow, and pig can all be kept under one roof, it makes the chores much easier. Here in the Northeast, there is plenty of nasty weather in the course of a year, and a man soon learns why New Englanders had an ell between the house and barn.

You can use a corner of the barn or woodshed, or a back room of the house, as a place to start the chicks. There's one point to check carefully. Be sure there are no drafts. If a young chick gets chilled, it's a ruined chick. It causes all kinds of digestive trouble and is often the reason for the "pasted-up" condition that occurs. For the first 3 or 4 weeks, if the heat unit is located in a barn or corner of a shed, it's a good idea to build a pen around the brooder. If you use wire, hang burlap bags to stop any draft. Keep a 10-watt bulb going at night under the brooder so chicks will not wander away.

A beginner can quickly learn to tell if the chicks are comfortable. Plenty of heat is vital—100 degrees at the edge of the brooder, 2 inches above the floor, for 2 weeks is a safe rule. After that reduce the heat 5 to 7 degrees a week. The writer realizes there's a school of poultrymen which feels this temperature is unnecessarily high. But years of work with growing chicks has taught one lesson: you don't have troubles if you provide lots of heat. Chicks can get away from too much, out around the edges of the brooder. But if there's too little, all kinds of complications develop. The chicks may crowd into a corner, pile up, and many smother. If they are chilled, it stunts growth.

If you're buying baby chicks, order them ahead and don't economize on a few cents per chick. Pay more and get them from a good breeder. For the part-time farm, the writer recommends sex-linked instead of sexed chicks. Make sure that you start the brooder 2 or 3 days before the chicks are due. Then if anything is out of kilter, you have time to remedy it before the chicks arrive.

For litter, many kinds of material are used: shavings, peat moss, sand, shredded sugar cane, etc. An excellent combination is an inch of sand or gravel covered with an inch or more of shavings. For the first 2 or 3 days, keep the chicks closely confined around the brooder until they know the source of heat. For the first 2 days, keep the floor covered with heavy brown wrapping paper or some old roofing paper while the chicks learn to eat.

The writer has tried all sorts of ways of feeding chicks for the first day or two until they learn to eat. As good a way as any perhaps is to put mash and fine chick feed on paper plates. After a day or so you can start using small

hoppers. For a flock of 50 chicks to start, set out 3 plates and have 2 waterers. After they have learned to eat, 1 good-sized hopper and 1 waterer are sufficient, provided water and food are kept before them all the time.

There's no problem any longer about food. Choose the feed and system recommended by a good commercial concern and stick to it. Some poultrymen start their chicks on an all-mash diet for several weeks; some prefer the fine chick feed (hard grain) plus mash. You can talk with experienced poultrymen; you'll undoubtedly read bulletins. Many of the large feed companies put out excellent booklets. A beginner will benefit from reading them.

It costs about a dollar to raise a pullet to laying age with feed at 3¢ a pound. The American breeds, such as the Rocks and Reds, require about 6 months to get into steady production. The Leghorns require about 5 months. In general, the part-time farm family will want an American breed because they furnish more meat. Many families raise the young stock to 4, 5 or 6 pounds and then can 20 to 50 pints of meat. The question has been asked, "Wouldn't it be better to raise cockerels for meat and sell off the surplus pullets?"

It can be done. But cockerels after 8 weeks of age are a nuisance. As their sex glands develop, they begin to annoy the pullets. How about capons? Yes, these are all right. There are men in most communities who will caponize (remove the testicles) of the males for 10¢ to 15¢ a bird. Capons are quiet, grow to good size, and are delicious eating. But, by and large, most families will find it wisest to start hybrid chicks, grow all pullets and keep the best 8 or 10 for the

next year's layers; to can, freeze, or eat what they need; and to sell any surplus.

If you buy 8-week-old pullets, you don't have to bother with the brooding, but the original investment is greater. Good 2-month-old pullets cost from 60¢ to $1. Ready-to-lay pullets will probably cost from $1.25 to $1.75.

If it's at all possible, have running water, with a float valve to control the amount, in both the pen for the hens and the pen for the pullets or out on the range if that's where the young stock is raised. You can have large-sized feed and mash hoppers to lessen the task of feeding, but if water has to be carried once, twice, or more times a day, it's the worst chore of all.

Here's a point that a great number of part-time farmers miss—and yet it's one which means a great deal over the years in terms of comfort and ease in doing the chores. Whether you fix up a corner of the barn for the hens, or whether you have an individual henhouse, make the nests, feed hoppers and the waterers so they can be attended to without going into the pen. It will save hours of time over the year and it's a feature your wife will appreciate, too, if she cares for the family flock.

As far as feeding the hens is concerned, the only logical thing is to buy commercial feeds. Don't think you'll save anything by buying separate grains, whole or ground, and mixing your own formula. One of the most interesting developments of the present day is the feeding program by which both mash and whole grains are kept before the layers all the time. One hopper holds the mash; another the corn, wheat and oats. This is worth trying. With good-sized hoppers, it means a reduction in chore time. With mash and

grain, grit and oyster shells in hoppers, and running water, the work can be systematized to the family's convenience.

Don't think you need to have dropping boards under the roosts. Wire in, or board in, this spot and let the droppings accumulate over a 6-month period. During hot, sultry weather, spread a pound or two of hydrated lime over the manure every other day, and it will keep down odors. You don't need to change the litter in the pen more than once a year. Use what is called the "built-up" litter system. Every 3 or 4 weeks add more shavings, peat moss or straw. If you keep a cow or goats, mix the litter and droppings with the livestock manure, keep it under cover, and use all the manure on the garden plot.

HELPFUL POINTERS

Raise a few extra cabbages for green feed in winter. The commercial mashes may contain ground alfalfa meal, but the hens like some succulent green.

Don't go haywire and think it would be interesting to hatch your chicks in a small incubator. The only logical way is to buy your stock—whether day-old chicks, 6- or 8-week-old pullets, or ready-to-lay pullets.

Don't raise the young pullets and older hens together. Keep the pullets in a separate flock.

It's traditional folklore that hens lay better if a rooster is with them. Countless experiments have proved this false. There's no place for a rooster in the family flock.

There's always a problem with 8 or 10 hens when the temperature drops down around the zero mark. If hens' combs are frosted, the layers cease production from 2 to 4

weeks. One inexpensive device is to make a frame, covered with burlap bags, that can be lowered over the hens on the nights when the thermometer drops to 15 or 20 degrees. There should be a large window in the pen. This can be closed in very cold weather. Hens will stand a good deal of dry cold, but extra protection means more eggs in extreme weather.

Have the drinking fountain on a wire-covered platform or stand. This prevents an area of litter from getting damp.

Provide 3 nests for 8 or 10 hens.

You can use a 50-watt bulb under the waterer to prevent the water freezing in cold weather. Have the bulb in a tightly enclosed, fireproof container so all the heat comes against the bottom of the watering can.

One of the minor problems is "breaking up" broody hens so they will not want to set, and will quickly get back into production. The writer has tried many different ways and thinks the following is best. Build a coop 3 or 4 feet long, 1 foot wide and 2 feet in height that can be fastened to a side wall of the pen. Make the bottom and the front of 1-inch heavy mesh wire. Arrange a mash box and a can for watering that can be tended from the outside. Usually a day or two on this wire will cure a hen of wanting to set.

Hens require constant and careful attention, the same as other livestock. But if a family wants to produce as much of its own food as possible, the family flock has a place on the part-time farm.

CHAPTER SEVENTEEN

The Pig—Economical Meat Producer

THERE'S A place for home-raised pork in the program if the part-time farmer has a cow and is trying in every practical way to increase his income through subsistence farming.

If there's a good producing cow that freshens in April or May, it means from 16 to 20 or more quarts of milk a day. When one buys an 8-week-old pig at the same time, it means a major part of its food is available in the skim milk. Furthermore, there'll be sizable amounts of this milk for pig feed until December, the usual butchering time. If a man has raised some hybrid field corn and has corn-cob meal ready for the last 2 months, the production costs are kept to a minimum. Even if one has to buy commercial grain, in the form of a prepared mixture, pork can be produced at a cost of somewhere around 8¢ or 10¢ a pound—if the pig has good pasturage of grass and clover, all the garbage from the kitchen, and weeds and discarded plants from the garden. A pig fed on garbage and waste makes just as good meat as one fed on grain.

It's a maxim among farmers that pigs convert feed into

flesh more economically than any other farm animal. If one has a home storage locker, or there's a community frozen-food locker within reasonable distance, there's no problem of holding fresh meat for months at a time.

Furthermore, modern science has removed one of the farmer's tedious tasks by giving him a new method of curing hams and shoulders. Years ago it was necessary to pickle these in brine for a time and then to smoke them over a slow fire of corncobs, ash chips, or other wood. Today one can purchase chemically prepared mixtures to rub into the skin. A considerable amount of commercial ham and bacon is prepared this way today. The old-fashioned smokehouse, with its danger of burning and the irksome work of keeping a fire going correctly, is being eliminated. If you raise a pig and want to cure hams, shoulders and bacon, watch the advertisements in the farm journals for these commercial curing preparations.

An Excellent Breed

You don't want to grow a pig to the 300- or 400-pound weight. You're after lean meat, not fat. Of the breeds with which the writer is familiar, none is equal to the Yorkshire. This is a white-haired pig that grows to 200 or 225 pounds in 6 months. It will dress out from 65 to 75 per cent. If all the grain is bought, it turns 4 pounds of feed into a pound of weight. They're quiet, docile and easy to manage. The Yorkshire is an English pig and for generations the breed has been accustomed to grazing on pasture grasses.

Selecting the Pig

In many sections, one can buy a weaned, 8-week-old pig for $10 to $12. Be sure it is completely weaned. Buy only

a barrow, a castrated male. If you inspect a litter of 6 or 8 little pigs, you'll probably notice that 2 or 3 are larger and huskier than the rest. This indicates vigor and health. Choose one of these. If you've never bought a young pig, perhaps you can get a neighboring farmer to go with you and help select one from a litter. Failing that, you'll have to use your own good judgment plus the honesty of the seller. A beginner can usually pick out a good pig much more easily than he can a cow or a horse.

Quarters for the Pig

Many people have the idea that a pig is a filthy animal that takes delight in wallowing in muck and mire. Nothing could be further from the truth. A pig is one of the cleanest of all animals—if it has the chance. Give it a yard of some size and it selects a corner for its droppings and always goes there. (Pig manure is very valuable fertilizer. The corner should be cleaned frequently and the manure added to the pile with the cow manure and hen droppings.)

If building space in barn or large shed permits, the ideal way to house a pig from the viewpoint of time-saving is to make a small pen in the building and have the run outside. Build a trough that extends through the partition, so the skim milk or water can be poured in from the outside. During hot summer weather pigs need water and shade. The grain mixtures should be fed in a self-feeder. You can make one easily from directions in bulletins. If skim milk is not available, or if it is scarce in quantity, water should be given twice a day. The point to keep in mind about the pig's quarters is to arrange the equipment so the work can be

done under cover if possible, and without opening a gate to get into the pen.

Give the pig a space to run in. A plot 100 by 100 feet will furnish lots of pasture if it's seeded down to clover and timothy. In dry spells, water this plot and keep the grass growing. Many experiments prove that a pig on good pasture can be grown at 15 per cent less cost than if all the feed has to be bought.

Feeding

There's nothing complicated about the feeding schedule. If skim milk is available, give the pig what it will clean up night and morning. Mix a few handfuls of commercial pig mash into the milk. Give it waste vegetables and the clean garbage. If pasture is short, throw in some green stuff like oats, rape, or clover. About 2 months before butchering time, begin to feed corn, either corn meal or corn-cob meal. Don't overdo the corn for that has a tendency to put on pure fat. During the fall you can feed good cured hay from a rack built into the side of the pen.

Fencing

You won't hear the cry, "The pig's out!" if you build the right kind of fence. Probably the best type is the electrified fence with one or two strands, but few part-time farmers want to go to this expense. You can build a hog-tight fence easily if you'll follow directions. Use heavy-gauge, fine-mesh wire. Stretch it very tightly between posts 15 feet apart. The new-type steel posts with pointed ends to drive into the ground are excellent. Drive the posts almost as deep as you want them. Stretch the wire as close to the

ground as you can. Then with a heavy sledge hammer, drive the posts down another couple of inches. This will keep the lowest strand tight against the soil.

Late Fall Care for Pig in Small House

On many places, the pig is kept in a small house of its own. Sometimes the house is close to the barn; sometimes, in order to let the pig get at a good pasture, the house is a considerable distance from the farmstead.

In late October, through November and into December, there's a question of keeping the pig comfortable. Unless it's comfortable, the proper weight will not be gained. If a pig is expected to grow to 200 pounds in 6 months, then it has to put on about a pound a day. When nights begin to get chilly and the thermometer drops to 32 degrees and below, put some forkfuls of straw or hay into the house. Renew this from time to time, so there will always be a good pile. The pig will burrow into this completely out of sight. Even in the northern states this method will work until into December. The secret is to provide plenty of hay. If the front of the house has a sizable opening, hang two or three heavy burlap bags or pieces of canvas over the door. The chances are the door faces to the south, but November and December winds from the southeast or southwest can be very chilly.

HELPFUL POINTERS

Most pigs are weaned at 8 weeks. Healthy, normal-sized pigs at that age will weigh between 30 and 40 pounds.

If commercial grain is fed, many hog raisers keep it be-

fore the pig at all times, even if a handful or two is mixed with the skim milk. The right kind of self-feeder doesn't waste grain.

In olden days, many farmers believed that the corn meal should be cooked during the last weeks of fattening before butchering. There's no basis in fact for this belief. The hog will grow just as fat on uncooked foods. But if one, for example, has many very small potatoes, it's a good idea to cook these for the pig. If you keep a pig, you don't need to let any produce go to waste.

Between May and December, a pig will produce about 1500 pounds of manure. It's excellent for general garden use, and if you want to grow some extra special vine crop, melons, cucumbers or squashes, store the pig manure under cover in a pile by itself. The following spring this will be well rotted. A shovelful or two under each hill means tremendous yields. (The writer has tried cow, hen, sheep and pig manure, and the latter has always produced more crops [not just vine and leaves] than any of the others.)

CHAPTER EIGHTEEN

Rabbits for Inexpensive Meat

THE PROBLEM of an adequate supply of home-raised meats is an important one on the part-time farm if the family is interested in raising a major share of its food. Each year from now on, the problem will be greatly simplified in one respect. The storage question is being solved.

At the present time, many manufacturers are getting individual frozen-food lockers into production, and as time goes on and assembly-line techniques are perfected, various models and sizes will be available for country families. We already have more than 6000 community locker plants in the nation, and in the next decade the number will probably double, perhaps triple. In these plants, a family can rent a locker for $10 to $20 a year and store meats, fruits and vegetables.

It's a vastly different situation in every respect from conditions a generation ago. Then it was possible to have fresh meats only from early winter until spring when livestock was ordinarily butchered. Extra meat was pickled, salted and smoked at that time for hot-weather use.

A city man who is planning to move to the countryside on a part-time farm asked a logical question that doubtless has already come into the mind of the reader, "Why talk

about frozen rabbit meat? Why not dress off a rabbit or two during the season whenever this meat is wanted, just the same as one would dress off 2-pound broilers or 4- or 5-pound roasters in late summer and fall?"

The answer is this: one of the worst features of raising rabbits for meat is the work involved every week or so in dressing them. From spring to late fall a part-time farmer is very busy. He's busy whether he just has a big family garden or has cash crops to sell at the roadside stand.

But if a man can dress off a dozen or more rabbits at a time and if the meat can be frozen for future use, it adds greatly to the efficiency of operations. The beginner may feel this is a minor point but if he could talk with farm families who are raising rabbits for meat, he would soon realize the importance of it. (The same practice will apply more and more to poultry meat. A man will dress a dozen broilers, or roasters or fowl. The meat is cut up so it can be packed compactly in paper bags and then frozen for future use.)

There are good reasons why rabbit raising fits into the scheme of part-time farming. First of all, it's excellent meat and most people like it. Second, it's meat that can be produced very inexpensively. All the hay and vegetables can be raised on the farm. The grain will be bought, but even so, one can produce first-quality rabbit meat for 10¢ or less per pound. More and more people over the nation are growing rabbits for meat.

Rabbits are very prolific breeders, and this brings up the first point where a family is likely to make a mistake. Three or 4 does and 1 buck is all the breeding unit necessary.

There is no "best" breed. Among the most widely used

ones are the New Zealand White, New Zealand Red, the Flemish Giant, and the Chinchilla. The Flemish Giant is what its name implies. If it's well fed, at the age of 3 months it will reach a weight of 7 or 8 pounds and dress off from 5 to 6 pounds. The meat, while perhaps not so fine-grained as some of the other breeds, is very good in quality.

The New Zealand White is the most popular breed. Sometimes beginners are inclined toward one of the less used breeds: the Angora, Havana, Polish, Dutch or Imalayan. They are attractive to look at and make a nice display in the poultry and rabbit shows, but the part-time family wants a utility breed, one that will be ready for meat at 4 months or so.

There's often a question as to what is the best age to buy the foundation breeding stock. One can get fully matured does, already bred, or start with young stock. The chief point is that one should deal with a reliable breeder in the neighborhood. You want certain qualifications in the stock, whether mature or whether you begin with young ones. Look for vigor and health; watch out for running eyes and sores that have made discolored, matted spots in the fur. Look for good size for the breed selected. A beginner without any experience must depend either on a friend or acquaintance who knows rabbits or on the honesty of the seller. Furthermore, there's the same angle here that there is in buying a cow or hens locally instead of going a distance. If you buy from someone in town, the chances are he will be glad to help out with advice in the future. Questions are always coming up and while bulletins and books are often very helpful, it's also good to have a neighbor of experience who has been through the problems involved.

The government bulletin mentioned at the end of this book is an excellent treatise and will answer most of the technical questions that may come up. Here, we'll consider some of the highlights that experienced rabbit raisers have stressed.

The equipment need be neither elaborate nor expensive. A man who is handy with tools can build the hutches. In northern states, where the climate can be severe from September to May, the hutches should be substantial and the back and sides made of wood. It's true that rabbits are very hardy and can stand a good deal of dry cold. But if heavy, driving rains come and the rabbits get wet and chilled in winter, it's an open invitation to trouble. On the part-time farm it's excellent business to save a corner of the barn or a spot in the shed for the hutches in winter. Any form of livestock will give better production and meat growth if it's comfortable and protected. One should keep in mind that the does live in a small, confined area. If a slanting, cold, blustery wind and rain come, the doe is at the mercy of the elements.

The hutch itself is a simple box to make. A good size is about 2 feet in height, 2½ in width and 4 in length. If you keep 3 or 4 does, make the boxes in a tier unit with an overhanging roof for protection. Put a sturdy handle on each side; then it's easy to move the hutches as a unit. During the spring and summer, the hutches may need to be moved from time to time to keep the rabbits protected from the hot sun.

Each hutch needs two troughs or mangers: one for feeding hay and one for feeding oats, wheat, barley or buck-

wheat. There's an essential point here for the man who wants to produce meat at a low cost per pound. If the writer's observations are correct, in most hutches the rabbits waste more food than they eat. That's why it pays to have wire-covered boxes, or mangers, fastened to the side of the hutch. (One on either side of the door is a common arrangement.)

A vital piece of equipment in each doe's hutch is the nest box. For the utility rabbits, such as the New Zealands, a good size is 10 inches high, 1 foot wide, and 16 inches in length. A common-sized opening is 8 inches for length and 6 inches for the vertical measurement. This nest is where the young are born and nursed. Some beginners figure they will leave the top of the nest uncovered and thus permit the doe to jump in and out. This is not recommended, for the heavy does frequently land on the baby rabbits and kill them.

In building the hutches, make sure that the troughs for food and the stand for the water are securely fastened and arranged so the doe can reach them. Put the feeders and waterer on the outside so you won't have to open the hutch doors night and morning when you do the chores. Time is precious on the farm; 5 minutes a day saved by efficiency in chores mean half an hour a week.

It has been mentioned that one can produce rabbit meat very inexpensively, using home-grown feeds as a basis of the ration. That's one reason why, among families who watch the food bills, rabbits are increasing so rapidly in popularity. This isn't to say that rabbits will thrive on wilted, discarded weeds and grass. But it is possible to raise a major proportion of the rabbits' feed. The basis is good legume

hay, clover and alfalfa plus carrots, lettuce, cabbages and carrots—all of which can be grown at little expense. A good many growers chop the clover or alfalfa into 3-, 4- or 5-inch lengths. This saves a good deal of waste. In addition to cabbages and carrots for winter use, the rabbits relish and thrive well on mangel-wurzels and turnips. Plenty of hay, some green food and a little grain is the ration. When the does are nursing the young, increase the grain supply a little. Experience will tell you how much hay and green feed to give.

One essential for good growth of the young and good health for the mother is a supply of water available at all times. It may be difficult for the beginner to believe but a large doe and a litter of 6 to 9 need about a gallon a day during the fortnight before the growing rabbits are weaned.

There's always the problem of water freezing in winter in the northern latitude. The best way to handle this when the temperature drops below 32 degrees is to give the doe a drink just before feeding time, morning and afternoon, and then empty the drinking pan or fountain.

If you are raising rabbits for meat and subscribe to a rabbit journal or join an association, you'll find there is disagreement among growers over the feeding of grain. Many growers feed whole grains: wheat, barley, oats, buckwheat. Some use rolled oats, linseed, and soybean meal. There are commercial mixtures on the market that give excellent results, and most part-time farmers will find these the most convenient form of grain. If a man is raising field corn for the cow, a little corn-cob meal can be fed, and reduce the amount of commercial feed.

Breeding

Domestic rabbits come into heat every 3 weeks and the gestation period is 31 days. This means that it's possible to have a doe raise 5 or even 6 litters a year, but this is not a wise procedure. Good breeders in the northern half of the United States generally agree that 3 or 4 litters per year are enough.

A little observation will tell when the doe is in heat. The genitals are enlarged and become a bright red color. The doe moves around very restlessly in the hutch, and she often rubs her head against the sides as if she were attempting to get out.

Always take the doe to the buck's hutch. If the buck is brought to the doe's cage, she may put up a savage battle; but if the doe is taken to the buck and she is in true heat, the mating act will occur almost immediately. Then return the doe to her own hutch. Sometimes there's a little trouble about the mating. If a doe refuses to accept service, she has to be restrained. The technical details are clearly discussed in the bulletin recommended at the close of the book. If you are breeding young does for the first time, wait until they are sexually mature. Many beginners make the mistake of breeding at too early an age. As a general rule, the utility breeds (New Zealands) are ready to be bred for the first time at about 7 months; the larger breeds (Flemish Giants) at 9 or 10 months.

Care at Kindling

"Kindling" is the term used by rabbit growers to indicate giving birth to young. On the 26th or 27th day after mating, the nest box should be placed in the hutch. Put a few

handfuls of clean hay or straw in the box for the doe to use in making her nest. Just before the young arrive, the mother pulls fur from her body and lines the nest.

After the young are born, they stay in the nest about a fortnight before hopping out into the hutch. At 8 weeks of age the young should be moved to a pen by themselves and kept growing until it is time to dress them for meat. If one has 3 or 4 does mated about the same time, it means he can dress off a larger number at once. After the young ones are weaned, keep the females in one pen and the males in another. The sexes can easily be distinguished. Press the sexual opening wide with thumb and forefinger. In the young bucks, the opening is round; in young females, it is a longitudinal slit.

Dressing the Rabbits

There's nothing difficult or complicated about the process. Stun the rabbit with a solid blow on the head; cut the head off with a sharp, heavy knife and hang up the carcass until it's well bled.

Practice makes one adept at skinning and dressing. Cut the skin around the hock on each leg; next cut from the hind hocks to the tail. Lift up the skin from around the hocks, and then it's easy to pull the skin from over the hind legs, down the body and to the neck. Split the body down the middle, take out the entrails and wash the carcass in cold water.

HELPFUL POINTERS

A rabbit is a clean animal if it has a chance. The easiest way to maintain sanitation is to remove the dirty bedding

and manure each day. Sawdust is excellent material for hutch litter, though most growers use straw or hay. Here's a pointer that will help greatly in reducing the chores. Put a cake tin in one corner of the hutch and a little sawdust in the bottom of it. Have the sawdust on the hutch floor just level with the top of the pan. The rabbits will use this pan as a toilet and the pan may be emptied regularly, once a day in summer and once or twice a week in winter.

It's a good idea to disinfect the hutches, and an occasional spray with DDT or some of the other similar preparations, perhaps once or twice during the summer, will keep the flies to a minimum.

Each week put a teaspoonful of salt in the grain box. This mineral helps maintain good health.

Many beginners overfeed both does and buck, with the result they get too fat and will not breed regularly. Figure from ½ to ¾ of an ounce of food per pound of rabbit. Thus a 10-pound doe will get about half a pound a day. A common ration would be 5 or 6 ounces of hay and 2 ounces of grain. You can feed a little more grain while the doe is nursing.

Check the nest box as soon as the doe has kindled and remove any dead or deformed young. Six or 7 young are enough for the mother to nurse. You'll grow more meat per litter if you destroy the smallest when the number is more than this.

Young rabbits are blind and naked at birth. Their eyes open on about the 12th day. At 3 weeks of age they will be eating solid food. They like stale bread and milk and rolled oats for 2 or 3 weeks before they get started on hay and grain.

At weaning time, anywhere from 6 to 8 weeks, take one young rabbit away each day so the doe's milk supply will dry up gradually.

A wire-covered run, 6 by 18 feet, will accommodate 15 to 18 young rabbits until they are ready to be dressed off.

If you breed the does three times a year, you can figure on 15 to 18 rabbits per doe as the year's production.

CHAPTER NINETEEN

Homecrafts as a Profitable Side Line

One of the most interesting developments in recent years has been the renaissance of homecrafts. From all areas of the nation come similar reports. Many states now have central organizations through which members get instruction on how to build articles to accepted standards and which, in turn, set up salesrooms over the state to sell the finished products.

In getting material together for this book on part-time farming, the writer has talked with many families who intend to move to the countryside from city and suburban environments. In terms of statistics, some interesting facts show up, and one of the main ones supplies the reason for including this chapter in the book. About 50 per cent of the families are making definite plans to raise one or more cash crops to bolster the income, though the vast majority of the other 50 per cent have this in mind in case of another business recession. It's a part of the feeling of security that comes from owning a place in the country where one cannot only produce a good deal of the food for the family, but also make a profit by raising specialty crops.

About 25 per cent of the families are planning to keep a cow or goats, a few hens, and to raise a first-class garden each year. This group feels that $500 worth of food products is one of the major results they want from a part-time farm.

Then comes this fact which may surprise many. About one-fourth of the men and women are interested in some form of homecrafts as a means of adding to the family income.

There's no reason why the manufacture of handicraft specialties as a side line will not fit into the program in many cases. More and more businesses and industries are operating on a 5-day week. Some men are naturally handy with tools and equipment. A man who likes this work may be happier building or making something than he would be going in for farming enterprises.

An investigation of homecrafts industries shows several main points that a beginner should take into account if he is interested in making a few hundred dollars a year this way instead of from farming. Some of the points that follow are based on the writer's observations and conclusions after talking with craftsmen; others are highlights of what he has been told and what has been emphasized by men and women who are making a success in this field.

The first essential is a shop or room where the work can be carried on. A sizable number of the farmhouses for sale in the countryside along main or secondary roads have more rooms than the average one-family house in city or suburb. It may be possible to knock out a partition and arrange a place in the house. The Cape Cod type of house as well as the two-story houses may have an ell that can be inexpensively remodeled. Some sets of farm buildings have tool sheds,

icehouses or large henhouses that will serve. Probably 50 per cent of the places for sale have a bigger barn than is necessary for the livestock. With the big sheets of prepared building materials, plus a few 2 by 4's, it's often possible to make a shop that's efficient as well as roomy. With one of the oil-burning cabinets for heat from fall to spring, one can easily maintain a comfortable working temperature even in midwinter.

The second matter craftworkers emphasized fits in with points stressed about raising crops on both the small farm and the part-time place. The selling end is much more important than the production end.

"Tell your readers this fact," said a New Hampshire man who has been making beautiful pieces of native pine furniture. "If a man is interested in a craft, the chances are he is a good worker. He takes pride in making things that have a distinction one cannot find in articles produced by mass methods. He is likely to specialize in a few things. But unless he knows how to sell, either at retail from his own home or shop, or has special outlets through some first-class gift shops or stores, he is going to meet with disappointment."

Producing and selling homemade articles simmers down to the same problem as growing farm crops. A man can secure wood and metals; he can make quality products. But if he has to sell to a wholesale market, the profit margin is low.

About half the homecraftsmen sell direct from their homes. Some of them run a roadside stand especially for selling; others have articles on display in their shops or homes. The second half make special arrangements for sell-

ing through gift shops, crafts stores and the better department stores in cities. This point cannot be stressed too strongly—if a part-time farmer wants to get a return of a dollar an hour for his labor. After you have learned to produce a quality article or articles, spend time and energy on the problem of selling.

Third, it's very evident that the families who are making a success financially specialize in 1, 2 or 3 lines. The list of possible enterprises is a long one: making lawn chairs and other lawn furniture; wooden fences, tables, stands, chairs; hand-wrought metal jewelry, wooden jewelry, carved woods, wooden platters and bowls, hand-painted trays and canisters; wooden stools and buckets, boxes for fireplace wood, etc.

Some men have specialized in wooden toys and playthings for children and children's furniture. There are some who make all kinds of baskets and gift boxes. There are women who make quilts, hooked rugs and rag rugs. All kinds of weaving offer possibilities. There are both men and women who have specialized in foods, jellies, jams and pickles.

But the point is this, according to the writer's observation. If a man wants to make several hundred dollars a year profit, then he should specialize in one or more lines in which he can build up a reputation for high quality. The production of homecraft articles on a profitable basis means that they must go to a market willing to pay for the extra labor involved. Specialization means a reputation for certain things. It's better in the great majority of cases for a man to keep to his specialty and hunt for wider markets than it is to try to expand the number of articles made for just one market.

Admittedly, there are exceptions. It's a problem each

family must work out for itself. Perhaps you can make a number of articles to sell for one location. But workers in the field say this, "When you specialize in just a few things, you learn how to produce them most economically, consistent with top quality. It's efficiency in homecraft production that gives a man a good return per hour for his labor."

The writer knows well one man who has specialized in working with native pine. He makes peg-top tables with the sawhorse-type legs. He makes them of various sizes, 3 by 5, 4 by 5, and 4 by 6 feet. They sell as fast as he can make them as living-room or dining-room tables or for breakfast-nook and kitchen tables. He buys his lumber from a local mill. It's full of knots, but pine is soft to work. The tables are put together with pegs; there's not a nail in them. The tops are hand-planed, which gives a beautiful finish when the smooth wood is sanded and rubbed down with oil. The legs and crossbars, on which the top rests, are planed by machine and then rubbed down by hand. He has several outlets and has no trouble selling all he can make and getting a return of more than a dollar an hour for his time. The point is, even while making this handmade product, he has learned to standardize things so as to produce efficiently. On the table saw he can cut boards to the right lengths to fit the 3 sizes of tables; he buys dowels in quantity for the pegs. In an hour or two, with power saw and plane, he prepares material enough for many hours of handwork.

Fourth, if one is planning to work on a craft, with wood, metal, cloth, or clay for pottery, make certain of the source of supply. If you set up a plan whereby you intend to work an hour or more each day and perhaps several hours over

the week end, or all day Saturday, it can cut your anticipated income sharply if you do not have materials on hand when you need them.

The situation, of course, is somewhat different from that of the man who is planning cash crops. Once the latter gets his equipment, he is ready to go ahead each spring. He may have to buy $100 to $200 worth of fertilizer, but if he has his tractor and irrigation system, the cost of seeds for planting is a small item. Once a crop man gets going with raspberries or strawberries, he can use his own plants for replacements. And many fertilizer companies and stores are willing to take a man's note with fair interest for the season.

It's a different story in most cases with materials for handicrafts. This matter of credit was checked with a number of workers and the answer was uniformly the same. "The wholesale houses that deal in the materials won't give over 30 days' credit, and most of them insist on cash with the order." Therefore, for efficiency's sake, plan to reserve enough capital to finance the start, and plan always to keep materials ahead.

Next, before you go into homecrafts as a serious side line, take time to drive around the countryside and talk with the people who are making a success. Contrary to what you may think, most of them are glad to tell you about the business. Write to the Information Bureau of the Extension Service of your State College. Ask them two questions. Is there a state association or league that fosters crafts? What are the names of the County Agent and Home Demonstration Agent? Then make a point of getting acquainted with them. They will give you the names and addresses of people in the county who are making craft products.

HELPFUL POINTERS

Both men and women stressed this point: get good equipment to begin with. If you are going to be handling tools several hundred hours a year, it pays in dollars and cents returned to have the best of tools. In starting life on a part-time farm, you'll discover that it takes more capital than you planned. Things come up you have not foreseen. But if tools are the agents for making a profit for you, don't economize here. Go without something else.

In the states that have Leagues of Arts and Crafts or Associations that foster homework, there is often a man employed by the group who is available for instruction to beginners. Frequently classes are held in the evenings in various communities within easy driving distance. If your state has a league, by all means join it and benefit from cooperative action. You may be able to save dollars by purchasing through a central organization; you may be able to make dollars by selling through an organized channel.

What are the drawbacks of homecraft production in comparison with raising cash crops? First of all, if a man is making it a serious proposition, it means definite hours each week, all through the year. If a man doesn't work for a few days, his income falls off from that source. With a farming program of the type described in this book, the work ends in the fall, usually in October, with the exception of mulching strawberries if that crop is raised. From then until spring a man has the chores, but that's all. If one is making an article to sell, he has to keep going.

A number of men have spoken of this: working with crafts keeps a man indoors in contrast to crop-raising. If a

man's regular work is in an office or factory for five days a week, many enjoy working outdoors an hour or two in the late afternoon or evening and over the week ends.

And here is a third point one must keep in mind for an objective, over-all view. If general financial conditions are tight, people will spend money for their stomachs in terms of fancy fruits and vegetables when they won't buy something of lasting value for the house, or as a toy or decoration.

Observation shows three types of craftworkers who seem to do well. One group makes beautiful pieces of furniture, jewelry or other products which sell for a good price. A certain number of people who appreciate hand-wrought articles are willing to pay for the beauty that is inherent in them, whether they be tables, chairs, quilts or jewelry.

A second group makes what we may call utilitarian crafts: lawn chairs, children's furniture, toys, etc.

The third group—and one which interests many men who have imaginative and inventive turns of mind—is composed of men who make novelties and unusual knickknacks. "There's always a market for a new idea," a Vermonter who has had experience told me. "It makes no difference whether it applies to a doorstop, book ends, or salad bowls with stenciled designs. If you'll think up a new idea that can also be useful, you'll find you have more orders than you can fill."

Homecrafts have proved a good side line for many part-time families who have moved to the country. It's not a way to make $500 unless one is willing to work—any more than one can carry on a farming operation and make a profit without work. But for those who like to handle tools and who are business-minded enough to make sure of a good market, homecrafts are a perfectly practicable way to add to the family income.

CHAPTER TWENTY

Small Greenhouse Business on a Part-time Farm

One of the most interesting part-time farming developments in recent years is the increasing number of small greenhouses that have sprung up along the roadsides. In this chapter, we shall not be talking about the large commercial plants with investments of many thousands of dollars, where hired labor is used the year round.

We are talking about the smaller greenhouses where a man and his family grow flowers, vegetables such as cucumbers and tomatoes to market from fall to spring, or have built up a profitable seasonal business selling young plants (tomatoes, lettuce, melons, annual flowers and perennial flowers) in April and May.

This is a highly specialized type of farming. First of all, it requires an additional investment for the greenhouse and heating plant. It's detailed and fussy work. It's not like growing seasonal crops and having the work over with for six months when October and November roll around. With greenhouses the work comes in winter. In talking with those who run such plants, two points have always been stressed. The wife must be willing to cooperate; a man who is working

5 or 5½ days at a job in a nearby community cannot do all the time-consuming tasks, especially if there are thousands of plants to transplant. There are many days, of course, when the main task is to watch temperature and ventilation.

Running a greenhouse is a business of rush periods and slack ones. For example, if a family is growing vegetables, cucumbers or tomatoes, it is a rush to get the soil ready for the seeds and to do the planting. Then there comes the period of growth of plants, blossoming and formation of the crop. As the cucumbers or tomatoes mature, there comes the work of harvesting each day until the crop is finished.

If the family is going to specialize in selling plants raised in the greenhouse, we have a different situation, but it's one that is being successfully operated by a surprising number of part-time families. The previous fall, the benches of soil are made ready. Then, in February or early March, the seeds are planted: the vegetables or flowers. When the plants are 2 or 3 inches tall, there is a period of intense work as they have to be set individually in boxes or flats. (The most common box sizes are from 10 to 12 inches square, in which a dozen plants are grown to the time they are sold.)

In terms of work, the transplanting of the small plants to the boxes is the hardest job, according to the accounts of those in the business. But in the spring there's another hustling period when the selling season begins. In any given region, most gardeners and farmers plan to set out their plants about the same time each year. This means the selling season is short and rushed. It also means that if a man specializes in the growing of plants, his year's chief work is over by the first of June. That is a pleasant feature of the business.

(As one studies the problems connected with part-time farming and the ins-and-outs of different ways of making $500 to $1000 profit, it's interesting to observe that a great many families are choosing something that means half a year or a few months of more or less intensive effort and then a period without pressure. In thinking of a long period of time, it makes a great difference if a family can secure its wanted profit in 4 or 6 months, or whether it is tied down 7 days a week, the year round, to a farming enterprise.)

During the 2- or 3-week selling period, if one is raising plants, it means some member of the family must be available all day long and well into the evening to serve the customers. A man can take over the selling during the evening, but his wife or some other member of the family will have to be on call from morning until late in the afternoon.

That is the first point in planning a small greenhouse business. It's work that countless women enjoy. Many have emphasized to the writer that they would much prefer working in a greenhouse, handling plants, watering, transplanting, etc., than they would working with poultry or common garden crops.

The second point is the familiar one of selling to get the consumer's entire dollar. I have yet to find a small greenhouse operator, either full-time or part, who was satisfied with the business unless he sold directly to the retail trade.

Part-time farmer John R. lives 6 miles from his place of work in a small city. A dozen years ago he moved to an old farmhouse and remodeled it, doing much of the work himself. After investigation and talking with the County Agent, John decided to build a greenhouse approximately 20 by 50 feet and raise certain flowers. Both he and his wife

liked the work. They didn't mind being indoors; they had good success as far as production was concerned. But a couple of years of selling to wholesale outlets and discovering that they were working hundreds of hours per month for a return of 15¢ to 20¢ per hour for their labor, changed their plans. He and his wife reorganized their program and they now sell 3- or 4-thousand dozens of plants in the spring for transplanting. The great majority are sold at a stand in front of the greenhouse; occasionally they have to sell some to stores. But they have found that 3000 boxes, retailing at about 50¢ a dozen, give them a net profit of $600 to $800. They work intensively from February 15 to June 1. But the rest of the year is more leisurely, with a family garden, a goat, and a few hens.

Part-time farmer Robert S. lives on a main road between two smaller cities. He commutes 20 miles each way to work, and in his particular field of work he usually has longer hours from May through September. Garden crops, poultry or turkeys didn't fit his situation. But he went into raising tomatoes to sell during the wintertime. From a greenhouse of about the same size as John R's he makes $500 or more during the winter. A small room and office at the end of the greenhouse nearest the street is used as a salesroom.

It is interesting that these three lines, plants for sale in boxes, tomatoes, and cucumbers, seem to be the most dependable ones for profit in small greenhouses. Occasionally one comes upon someone who is making a success of other crops: carnations, Easter lilies, and perennial plants. Once in a while a family has made a success of growing house plants. One man has done very well with young plants to sell just

before Memorial Day. He also sells a great many potted geraniums at that time.

This statement is from Farmers' Bulletin No. 1318, *Greenhouse Construction and Heating*, "High quality greenhouse products are finding an increasing demand, and the industry offers special inducements to those having a knowledge of and a liking for the work. . . . Products of exceptionally high quality can be grown under glass, as conditions are more nearly under control than in the open."

The following is from Farmers' Bulletin No. 1431, *Greenhouse Tomatoes*, "Successful production in greenhouses requires the use of suitable structures with adequate heating and other equipment, good seed of suitable varieties, fertile, well-adapted soil, and painstaking care in growing plants and in handling the crop. The greenhouse operator who can provide the high-grade equipment necessary and give the crop the care it demands is likely to find an increasing market for his product."

Getting Started

There are two common ways of getting started. Part-time farmers who are mechanically inclined and handy with tools can often discover a greenhouse for sale and buy it secondhand. Often the County Agent will know of one. It is not particularly difficult to dismantle a greenhouse and have it moved to a foundation previously prepared.

In recent years, several commercial concerns have specialized in building and installing greenhouses. By mass production methods they have kept prices surprisingly reasonable. There are times when the regional representatives of these companies know where a house and heating plant are

for sale. Since some of the companies operate on credit, they occasionally have houses that they have to repossess. A beginner will find it most helpful to make the acquaintance of someone in the greenhouse business. A friendly greenhouse operator will give you many tips. You don't need to be afraid of professional jealousy. If he's located some miles distant and on a road where his trade will not compete with yours, the chances are you can strike up an acquaintance or a friendship that will be mutually pleasant and advantageous.

There's one good feature about buying a greenhouse put out by a standard concern. Their engineers have worked out the most efficient relationship between the size of the house and the heating equipment. A man in Massachusetts, for example, where temperatures go to 30 degrees below zero once in a while, needs a different capacity heating system from that required in southern New Jersey where the winter temperature is higher. As you study greenhouse operation and talk with others in the business, you will pick up the technical details. Greenhouse operation is a matter of watching many things: heat, ventilation, moisture, etc. It's highly specialized, but there are those who thoroughly enjoy it and who make a satisfactory profit.

The investment necessary varies. If one can get a second-hand house and its heating plant, it may be possible to carry the business with an overhead that ranges between $1000 and $2000, depending on the size of the house. With a new plant it may go twice this figure or more. It costs money for heat, interest on the investment, and an amortization charge. But if one is interested in this phase of part-time farming, he should keep in mind that he is out to make $500 to $1000 profit; his equipment will last for many years. And this is

one business where one must have adequate equipment. It's not out of line to think of investing $4000 in a business that can return $500 or more profit year after year.

Keep Records

There's only one way to know how much a family is earning from a part-time enterprise. That is by keeping records. It's doubly important in this line where the investment may be fairly heavy. Greenhouse operators also stress the fact that fertilizer experiments are even more important under glass than out in the field. Here every square foot of surface is directly related to the profit margin. It may be that more fertilizer or a different formula will materially increase profits. The soil that is used in the benches or troughs comes from a surrounding field. Soils vary greatly in their composition. Each operator should run fertilizer experiments constantly.

Efficient Arrangement in the Greenhouse

Some beginners make the mistake of overcrowding crops in an endeavor to use every possible inch of space. Cucumbers and tomatoes are commonly grown from troughs of soil. These troughs have board sides and rest on the earth floor. Then the cucumbers and tomatoes are trained to grow directly up on strings. Use distances between rows recommended by the State College until you have done a bit of experimenting on your own.

In a business of starting plants, transplanting, and then growing the plants for weeks or months in flats, the most important item for efficiency in working is the width of the benches. On the benches are the plots of soil where seeds are

planted; here the plants will grow in boxes. If the bench is too wide, it is difficult and back-breaking work to weed and tend the plants. A person with long arms can comfortably handle a wider bench than a short-armed person. As you investigate greenhouses, keep this point in mind: If you're going to specialize in raising plants for sale, you want the width of bench that fits the people who are going to work over it.

The Lean-to Type of Greenhouse

Some part-time farmers have built a lean-to greenhouse on the south side of a barn, long shed or house. These lean-tos are inexpensive to put up. A structure 6 feet 8 inches wide allows room for a walk 2½ feet wide and a bed about 4 feet wide. Some men build a bench for the bed; some excavate the walk, and use the natural surface of the ground as a bed. This latter method means the house can be lower in height. Farmers' Bulletin No. 1318 has the following to say about this type: "A lean-to house should have a southerly exposure, as otherwise it will be shaded for a considerable portion of the time. If built as a supplemental source of employment, when it is to receive but a portion of the operator's time, the location must be an accessible one. If the house is to be heated from some existing plant, the location must be such that this is possible. The laying out of greenhouses is similar to the laying out of other structures, and any good mechanic can readily perform the work."

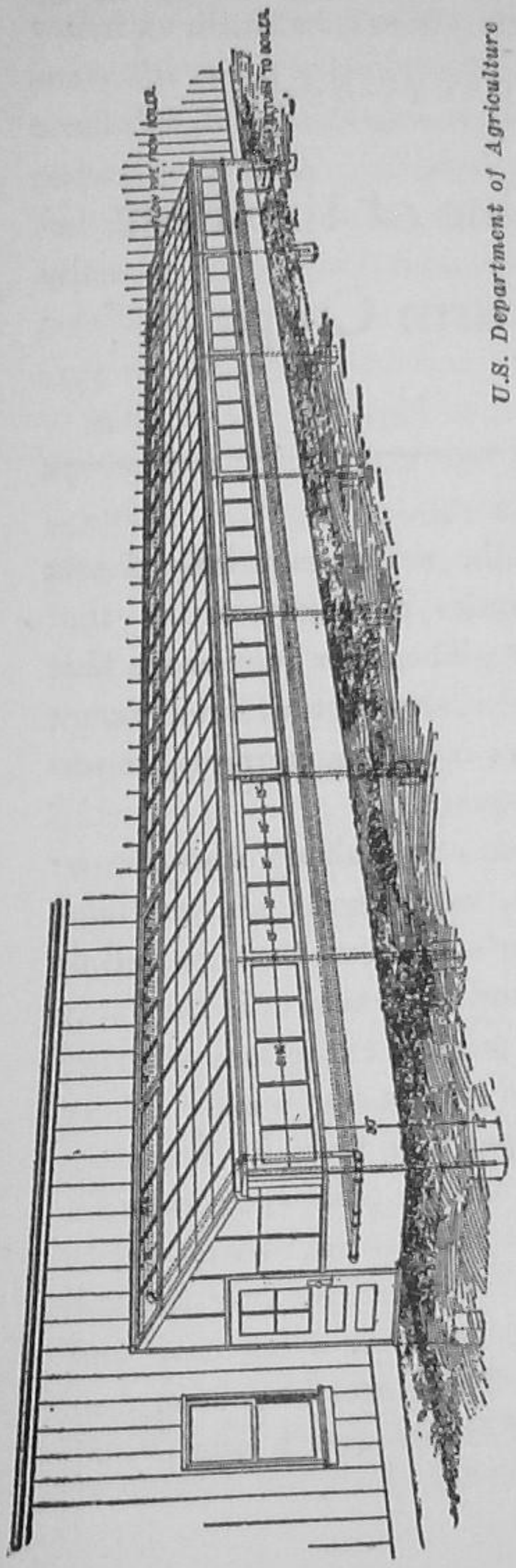
The 10-foot Detached House

The 10-foot-wide house is a type that's much favored by small operators. It's well adapted to a man who wants to run

a part-time greenhouse business. It can be built with low side walls about 8 inches thick. In this size house it's common to have a center walk 2 feet wide and a bench on either side. Those who are planning greenhouses should remember that for houses fitted with benches, there is no width between 10 feet and 20 feet that can be divided economically into space for walks and benches.

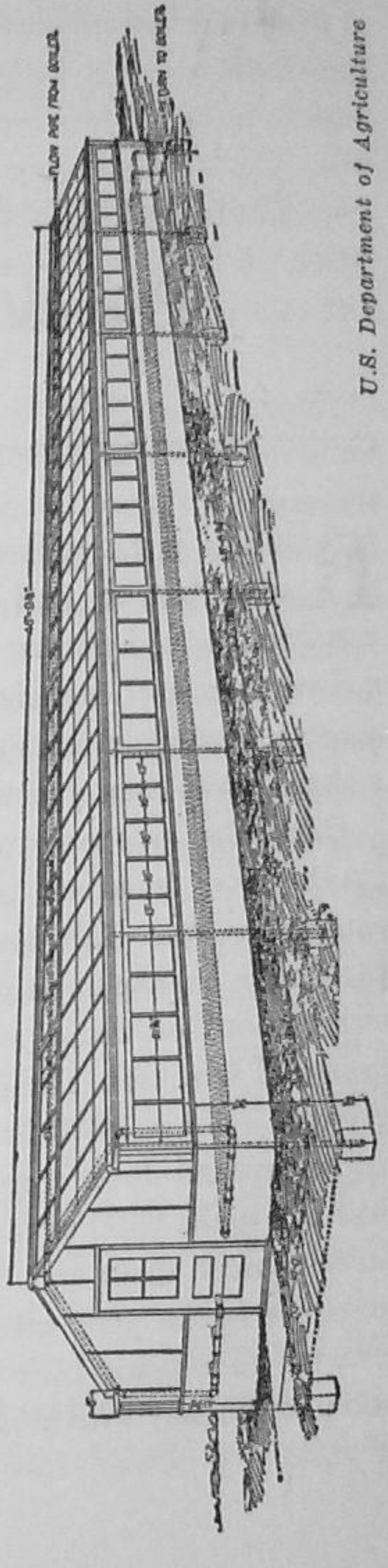
Finally, this point is important. If you are planning to build your own greenhouse, the first thing to do is to check the standard sizes of sashes, fittings, etc. You can always buy standard sizes, factory made, for less cost than if you buy odd sizes that have to be made to your order.

There are good points about greenhouse crops as a side line for the part-time farm family. The work is under cover; you can control conditions. You can plan a program so you make your profit in half a year or less. If you sell at retail prices, there is a good profit. It's specialized work, to be sure, but there are those who find it both pleasant and profitable. The bulletins and leaflet mentioned at the end of the book are excellent sources of information.



U.S. Department of Agriculture

A lean-to greenhouse built against a building. This house is 6 feet, 8 inches wide and may be made any reasonable length.



U.S. Department of Agriculture

A 10-foot detached house well suited to the needs of the beginner.

CHAPTER TWENTY-ONE

Strawberries—One of the Best Part-time Farm Crops

READERS WILL gather that the writer especially favors strawberries and raspberries as fancy fruits that can bring a high return per acre. The other four crops that a dozen years of experience and observation of small farms show are possible money-makers include asparagus, musk-melons, sweet corn and winter squash.

Questions have frequently been asked about other crops: green peas, tomatoes, potatoes, root vegetables, cabbage, cauliflower, etc. It's the writer's opinion that part-time farmers will make more profit, and do so easier, if they stay away from these crops, with the possible exceptions of green peas and tomatoes. The first is a good money-maker. Many growers average $300 to $600 per acre from it. Tomatoes are an up-and-down crop; one year the price is good and a man can make $500 or more an acre. The next season many farmers raise them and the price is low. The year to raise tomatoes is the year after there has been a big crop and growers have made little profit. There are, of course, men who make money with all kinds of crops—over a long period of years.

But we are interested in a specific problem. In the case of a part-time farmer, the limiting factor is time. If a man's wife is interested in tending a roadside stand, and local boys and girls are available at harvesting, the two biggest profit-makers can be strawberries and raspberries. In this, and the seven following chapters, we'll consider crops that offer possibilities to the part-time grower. One or more of them may fit into the individual family's schedule.

First of all, it should be stated that $500 profit per acre on strawberries is *not* the goal. The man who wants to specialize in this popular fruit should set as a minimum goal $1000 net profit per acre. Probably the average production for the country is somewhere near 3500 quarts per acre. But if you grow strawberries correctly, you can produce up to 8000 or 10,000 quarts per acre.

If you know what the average retail price per quart is in your area, you can figure gross and net returns. If you grow 4000 quarts on a half acre and sell them all at 30¢ each, the gross is $1200. Total costs won't average more than $500 per half acre, including fertilizers, harvesting, baskets, and amortization charge against equipment. If you can get 40¢ a quart, that's $1600 gross; if you're in a section where people will pay 50¢ for fancy berries, that's $2000.

It seems like a tremendous profit to a beginner. And it is. But it's made by first-class growers who make a specialty of the fruit.

There are no secrets connected with it, but there are definite requirements. The reason why the average production is around the 3500 quarts per acre figure is that most

growers neglect one or more of the essentials. After a dozen years of strawberry growing, the writer lists the main requirements as follows:

1. Good soil
2. Heavy fertilization
3. Availability of water
4. Care during growing season
5. Correct mulching over winter
6. Roadside stand to get retail prices

(As we start this series of chapters on cash crops, this is a good place to mention one of the most common mistakes of part-time farmers. Let's assume a man wants to earn from $500 to $1000 cash profit. Instead of specializing and concentrating on half an acre of strawberries, he feels there's more safety in a program that also includes raspberries, muskmelons and sweet corn. The consequence is that he neglects the fruit. The other crops don't get the attention they need. The result is a small profit from three sources, where there might have been a satisfactory profit from one. This is a different situation from that of the full-time farmer as discussed in *Success on the Small Farm*. All evidence points to one primary fact: the part-time farmer will make his cash profit more surely if he specializes in one, or at most, two lines. A combination such as strawberries and winter squashes; asparagus and strawberries; or asparagus and raspberries is feasible. Sweet corn and winter squashes are a workable combination, as are muskmelons and sweet corn. The essential factor is to choose a crop or two and specialize intensively.)

Soil and Fertilization

Strawberries need a good loam soil, well filled with humus, and reasonable drainage. They're not unduly fussy about soil; they can be raised on a wide range from light to heavy loam. But you can't approach the 8000 or 10,000 quart per acre goal unless the soil is filled with humus.

It pays to grow crops of green manure and plow under before plants are set. A good combination is oats early in spring; then buckwheat; then domestic rye grass to be planted in fall and plowed under the next spring. This means a large amount of humus in the soil; the repeated plowings and harrowings mean a deep bed, friable and soft. Between each green crop, broadcast 6-6-6 organic-base fertilizer at the rate of 300 to 500 pounds per acre and harrow this in before seeding down.

In the spring, after the domestic rye grass has been plowed under, broadcast the same type of fertilizer at the rate of 2 tons per acre. Experiments over a dozen years have proved to the author's satisfaction that this heavy fertilizing program is one of the cornerstones of a 10,000-quart yield. Experiments in good loam soil have shown that whereas no fertilizer gave a crop at the rate of about 4000 quarts per acre, 1 ton per acre boosted production to the 6500-quart mark. But the 10,000-quart mark wasn't reached until 2 tons were used. All three areas were treated the same way with green manure crops and 300 pounds per acre of fertilizer between the green crops. In addition, the 10,000-quart area had 1¼ tons per acre applied after the runners were started. Thus we have a total in the growing year (when the plants are set and runners formed) of 3¼ tons.

When one is dealing with a crop that can bring in a profit of well over $1000 per acre, it's poor business to economize on $200 worth of fertilizer.

Getting the Plants Started

Make your plot rectangular so it will be easier to use the tractor. An area 300 by 75 feet is 22,500 square feet, just a bit more than ½ acre. If the rows are 3 feet apart, that means 25 of them. The writer recommends rows 3½ to 4 feet apart with a variety like the Catskill which throws many vigorous runners. (The Catskill is the most profitable variety in the writer's experiments in Boston latitude.)

Order the plants from a good plant grower in your own locality. Don't send hundreds of miles away for the sake of a few dollars. And here's a vital point in growing the big crops. Order at least ⅓ more plants than you'll need. Throw away the third with the poorest root systems. It's one of the best investments you can make. The "mother" plant has to send out a dozen to 15 runners. A weak plant is slow in starting them, sends fewer and weaker ones. The result is an area of the row with fewer and smaller berries next year. The following chart shows plants needed per acre under different setting methods:

Space between plants, inches	*Space between rows, inches*	*Plants needed*
21	36	8297
21	42	7112
24	36	7250
24	42	6223
24	48	5445

Get the soil ready and the plants set as early in the spring as possible. This is an important point. The size of crown

and number of leaves in the fall determine the size of the crop next season. Early-set plants get the runners going quickly; that means big plants by winter.

After the plot is plowed, harrowed thoroughly, fertilized and rolled well, mark off the rows. There's only one secret in setting plants. Make sure the crown is just level with the soil; if it's too high the roots dry out; if it's too low the crowns rot.

If you can, set the plants just before a rain. Otherwise, turn on the irrigation system or the sprinklers operated by the garden hose and give the area a thorough soaking.

Keep the cultivation going. You'll need to hand-hoe a few times and be sure to work the earth toward the plants, not away. The matted row system is the most common and it's the most practicable for the average part-time farmer. But this term "matted row" can be misleading. It does not mean letting the runners develop and grow where they will.

A term "controlled matted row" would be much more to the point. As the mother plants take hold, they'll begin to send out runners. And here come two big secrets in getting the large yield. First, as you do the hand-hoeings, space the runners so each new plant will not be nearer than 8 inches to the next one. Strawberry plants have surprisingly large, bushy root systems. You won't get big yields unless each plant has room for feeding space. Second, the row of plants should be all "first" runners. After a runner has "set," that is, sent down it's own roots and been established, it starts another runner. Cut this second runner off so the first one will grow into a big-crowned, many-leaved plant.

Supplementary Fertilization

We spoke of the 1¼ tons per acre of fertilizer after the mother plants are set. The author developed this system after various trial-and-error experiments. About 3 weeks after the plants are set and just before the runners get started, apply the 6-6-6 fertilizer at the rate of 1 pound per 4 feet of row. Scatter it in a 3-foot band, 1½ feet either side of the row marked by the mother plants, and cultivate it in.

Irrigation

Three or 4 years out of 5, you cannot grow big crops without water. It means from ⅓ to ½ more fruit. It's necessary when the berries are forming; it keeps the size up until the end of the fruiting season. Water is essential to make the newly set plants throw out runners and to grow the runners into big plants.

Harvesting

Arrange ahead for pickers. Buy the baskets in advance. If you have several pickers, remember to set up toilet arrangements and water and towels.

Berries should be picked every day. But, if the weather reports indicate a 2- or 3-day rain is coming, pick all the berries that are half ripe. Strawberries will ripen off the vines and this precaution may save you a hundred dollars or more.

Frost Protection

See Chapter Twenty-nine, Overcoming the Hazard of Frost.

Mulching

Mulching is an essential in the northern half of the country. Its purpose is to prevent the alternate freezing and thawing of the top 2 inches or so of soil. This freezing and thawing breaks the crowns and greatly reduces the yield.

Straw, hay, swale grass and pine needles are commonly used. Leaves are not suitable because they pack down too tightly. In April, one should lift the mulch with a pitchfork and stir it around among the plants so the leaf clusters can get through. You may have to remove some, but if so put it along the edge of the row. Plenty of mulching material means clean berries. The author has tried many mulches and prefers pine needles.

HELPFUL POINTERS

The U.S. Department of Agriculture Bulletin No. 1028. *Strawberry Culture, Eastern United States*, contains this statement, "The more leaves per plant in the fall, the greater the number of berries next year."

To grow big plants, one of the chief requirements, other than fertility and water, is to keep the plants 8 inches apart.

Some growers use the hill system and others the so-called "spaced row." But in the great majority of cases the matted row, with plants 8 inches apart, will give the greatest yield from a given amount of area.

Set the mother plants as early in the spring as possible. This means runners more quickly. The quicker the runners set, the bigger the plants at freeze-up time.

Don't try to grow two crops from the plantation. Set the

bed one spring; harvest the crop the following year; plow the soil and seed to buckwheat.

After the new plants are set, keep the blossoms pinched off so all the strength will go into the runners.

You can make $500-plus from half an acre of strawberries, but to get the big yields a man has to attend to the details. If this fruit interests you as a crop for part-time farming, keep this quotation in mind. It's from the Leaflet No. 29, *Strawberry Growing*, published by the Extension Service of Massachusetts State College. "The grower who can get eight thousand or ten thousand quarts to the acre can grow strawberries at a profit at prices ruinous to the man who can get but three thousand quarts."

After the first year, you can use your own plants for starting the new bed. Choose big, husky-looking ones with vigorous, bushy root systems. Many growers set one row each year just for this purpose.

Since *Success on the Small Farm* was written, at least two State Experiment Stations have published findings which confirm experiments the writer has carried on for years but has hesitated to publicize because the results are so extraordinary in terms of what one ordinarily reads. Briefly, both the Missouri Agricultural Experiment Station and the New York Station at Geneva have announced that fall setting of strawberry plants substantially increases yields.

The fall setting of plants works this way. They are set in September or early October and get their root systems well established. Then in the spring they send out runners much earlier than spring-set plants. This, in turn, means a matted row of considerably bigger plants in the fall—which, in turn, means a bigger crop the following spring. Keep in mind this

fact that's been established by the U.S. Department of Agriculture: the bigger the crowns and the greater the number of leaves, the more the berries. Setting the plants in the fall means that one has to mulch these "mother" plants the first winter as well as the second, after the matted row is formed. But in terms of profit, fall setting of plants may increase the yield from 8000 quarts per acre to 10,000. And if you're a first-class grower, you can jump the 10,000-quart yield to 11,000 or even more. A 1000-extra-quart yield at 40¢ per basket is another $400 for a little additional work. But in terms of half an acre, $200 is pretty good pay for putting on mulch in the fall and removing it in the spring. The only secret the writer discovered in setting strawberries in the fall instead of the traditional time in late April or early May was this: it takes more care to mulch the individual plants. Put on 4 or 5 inches of pine needles or straw instead of 3 or 4. Be sure the mulch covers the ground 8 or 9 inches all around the plants to prevent heaving and breaking of the roots.

Probably the most popular variety in the Northeast is the Howard 17. But the most profitable variety the writer has raised is the Catskill. It's a main-season fruit, good sized, deep red, and makes a handsome appearance on the stand. It's also vigorous and throws many runners.

CHAPTER TWENTY-TWO

Red Raspberries—A Good Profit Maker

THERE ARE several reasons why red raspberries are a practical cash crop for the part-time farmer. In some ways this bramble fruit is the best of all. It is a high-priced specialty crop and a universally liked fruit. It blossoms late enough in the spring so that frost is not a problem. Over a 12-year period, when there were several May frosts that would have killed the strawberry blossoms unless they had been protected, there was not a single one that came late enough to hurt the raspberries.

Furthermore, it's a crop that bears for several years after the plantation is established. It's the third year after setting out the plants before one gets much fruit. The 4th, 5th, and 6th years bring the biggest crops according to the writer's records. There's a fair crop the 7th season. By then the roots of the canes have become very thick; weeds are likely to get into the heart of the hedgerows, and the diminishing size of the canes decreases the crop.

Thus, every 3 or 4 years one should plan on setting out a new bed. A half acre is an excellent size for the part-time farmer, though many men, especially after a little experi-

ence, decide to handle a full acre. With water available for irrigation, it's entirely reasonable to plan on $1000 net profit from an acre. It cannot be emphasized too strongly for part-time farmers that a smaller plot, intensively cultivated, will yield more satisfactorily than a larger area that is neglected at times.

We have become so accustomed to half yields in our farming program that we forget what is possible if culture is correct. This statement from the U.S. Department of Agriculture Bulletin No. 887, *Raspberry Culture*, gives the clue to big profits, "The average yield for the United States is less than 1000 quarts per acre. No grower, however, should be satisfied with such yields. Records of red raspberry growers in New York indicate that the average yield of good fields is between 1300 and 1400 quarts per acre, while the best fields go as high as 4000 quarts."

For the part-time farmer who is interested in making a cash crop a definite part of his country living, these figures tell the story. Raspberries are sold in pints. A yield of 8000 pints at 30¢ each means a gross of $2400. In many areas, fancy red raspberries bring a price of 40¢ or 50¢ a pint. If one can get 40¢ at the roadside stand, that means a gross of $3200. Admittedly, only 10 to 20 per cent of growers get the 8000-pint yield, but they are the men who are making the big profit. The total expenses of an acre will not run much, if any, above the $1000 figure. This includes cost of plants, interest on money, fertilizers (if any), amortization charge against tractor, baskets, picking, etc.

Soil and Drainage

One of the major secrets of growing 8000 pints per acre is the selection of the right soil and the drainage condition. This bramble (we are concerned here with red, not blackcap or purple raspberries) gives biggest yields in good loam soil, well filled with humus, and so situated that there is a gentle slope for drainage. Raspberries should never be set in low-lying spots where water stands on the surface during the spring and fall. Avoid the heavy, clayey loams. A light loam is much preferable to clay-type soil. If raspberries are set out in low areas, one also has to contend with the matter of winter-killing. Cold air settles in the lowest places. Furthermore, in too moist areas, the canes keep growing late in the fall and this means danger of winter-killing because of the immature wood.

One should never set a field to this berry unless the soil is filled with humus. That is why the best growers raise 2 or 3 crops of green manure and plow it under. One or 2 heavy crops of buckwheat help kill out weeds.

Raspberries are biennials. Each year the canes that grew the previous year bear their fruit, and then die. Therefore, each season the roots have to get feed for the fruiting canes and to grow shoots for next year's crop. As soon as the harvest is over, the old canes should be cut out and burned.

Fertilizers

Our federal and state bulletins have little to offer about fertilization. Many good growers get big yields with no fertilization except the plowed-under crops for added humus material. The writer has been experimenting with fertilizers on raspberries for many years. To date, here is the evidence

for whatever it is worth. An application of 50 pounds of a general fertilizer, 6-6-6, or 5-8-7, along each 200-foot row produced about a 10 per cent larger crop over 50 per cent of the time. But there's one very essential point here. Experiment after experiment has proved that, at least in this northeastern area, one cannot use fertilizer safely after early spring. If you use fertilizer, spread it very early in April. Use the organic-base type for added humus. Each grower should run fertilizer experiments on various crops and check his results. Soils differ greatly within small areas.

Getting the Plantation Started

The plants should be ordered well in advance from a good nursery, and here, as with strawberries, order a considerable number more than you need. (The writer recommends a third more.) It's one of the best investments you can make. Use only the plants with big root systems.

When the plants arrive in bundles of 25 or 50, put them into water immediately. Raspberries are among the most sensitive of all plants and if exposed to air and sun for even a few minutes will die, or be stunted. If, by chance, the plants arrive before the area is ready, "heel" them into a trench and keep the roots covered with moist earth. The plants can be kept many days without damage if carefully heeled in.

When you are transplanting, carry 25 plants or so in a bucket half-filled with water. This is an excellent insurance measure. In doing the actual planting, don't drop more than 25 plants ahead if it's a cloudy day, or 15 if it's sunny. The plants should be set about an inch deeper than they were in the nursery. Usually the plants come with canes

cut back to 6 or 8 inches, but if they are not so pruned, one should do this either before or after planting. This very short stub induces the root crown to send up several shoots instead of pushing food up into the old cane.

Growers vary in the width they prefer for the rows. A 7-foot distance between rows is efficient. If you grow the berries in the narrow hedge system, that is, a hedgerow about 2 feet wide at the bottom, this leaves about 5 feet for cultivating, a good width for the tractor.

Use the tractor to make furrows. Set the plants 2 feet apart in the row, and leave a circular depression around each stub for watering if the irrigation system isn't set up. If it doesn't rain, put a cupful of water around each plant daily for a week or 10 days. This is essential in getting the plants started.

Keep the tractor going and the cultivation clean. You will need to hand-hoe around the plants 3 or 4 times during the first season and to pull a few weeds by hand that are very close to the plants. Beginners always ask, "Can't one grow a crop between rows if the plants are 7 feet apart?" Yes, it's good business to grow something like potatoes, beans or cabbages that need cultivation. Some growers plant strawberries between the raspberry rows the year the raspberries are set out. This is perfectly feasible, and the irrigation system can do double duty. If one wants to grow a cash crop, some farmers have found that green peas, broccoli and shell beans are profitable.

Diseases

There are two diseases the raspberry grower must combat. The first, crown gall, is very easy to conquer. This crown

gall is a large, rough wart that grows on the root crown near the surface. About the only practicable way of combating it is not to set out any plants that have it.

The other disease is the mosaics, and in some areas it is a very serious affair. There are two mosaics, the red and yellow, and often raspberry growers speak of them as "The Yellows." It is a virus disease. There is no cure. The virus is spread from plant to plant by tiny aphids, but since these aphids move very slowly, the spread of the disease is usually slow. This is a helpful point because it means the grower can watch his plantation and "rogue out" the affected plants. At least once a week a man should go up and down the rows watching for the blistered, wrinkled leaves with the red and yellow splotches. If you buy your plants from a certified nursery, you'll probably have little trouble.

Irrigation

In the writer's experience, water is more essential year after year on this crop than on any other. Raspberries blossom late. The fruit is forming at the end of June or first of July when a hot, dry spell often comes. It is so important in getting a big yield that one should hesitate before trying to grow raspberries without water. Many years it's an impossibility to get 4000 pints from a half acre without irrigation.

Harvesting the Crop

Raspberries are ideal for a high-priced crop to sell at the stand. They should get to the consumer very quickly after picking. They lose their "bloom" and attraction if held many hours. If one has an acre, he should arrange for 10

pickers. Pick every day, and if it looks like a 2- or 3-day rain coming, pick all the berries that are not quite ripe. Otherwise, have the pickers take only those that are at the peak of ripeness.

HELPFUL POINTERS

Which variety? The only sensible thing is to write the horticultural department of the State Experiment Station and ask which variety does best in your area. Latham, Marcy, Cuthbert, Newburgh and Taylor are good varieties. The writer has had most success with the old favorite, Latham. It's a good idea for fruit growers to keep experimenting with a few plants of new varieties.

Beginning growers always ask about mulching. The writer has tried mulch but prefers clean cultivation.

Most bulletins recommend setting plants 3 or 4 feet apart in the row, but if you set 2 feet apart the hedges will fill in faster.

You don't need to use any trellis with the Latham variety.

Some growers recommend pruning back the tips of the canes in April, but many experiments show it does not increase the yield.

In cutting out the old canes after the bearing season is over, use a curved knife blade on a 3- or 4-foot handle. It saves much back bending.

When the plantation is set, save a couple of dozen good plants in a heeled-in spot as re-plants for any that die the first few weeks.

When it comes time to set a new area, you can use big, vigorous canes from the bearing plantation. Dig only a few at a time and transplant immediately.

If you raise fancy fruit and give good measure, it is easy to build up an annual list of customers.

CHAPTER TWENTY-THREE

Asparagus—A Dependable and Profitable Crop

If a part-time farmer has a goal of $500 profit from half an acre and wants to concentrate on one crop to be sold at the roadside stand, there's much to be said for asparagus.

The writer has often been asked this question, "If you were a part-time farmer and were going to concentrate on just one crop to make $500 net profit from a half acre, which would you choose?"

The answer to this depends on one fact. If a man has a particular interest in one crop or one fruit, then he should concentrate on that. Human psychology determines a part of success. The writer enjoys working and experimenting with strawberries. That would be his personal choice.

But—and this is a point for beginners to think over—if the writer had no particular choice, from his own experience and what he has observed, he would choose asparagus.

Here are the reasons:

1. Asparagus does not require irrigation. The crop comes in May and June when Nature usually provides enough water.

2. It's a crop that sells for a good price if one produces a fancy product.

3. One planting lasts indefinitely.
4. Insect pests are easily controlled.
5. A good share of work can be done with the tractor.
6. After the 6 or 8 weeks of harvesting, the work is unhurried.
7. No mulching is required.

Admittedly, only a few growers make the $500 profit per half acre, but let's look at the figures. According to the Extension Leaflet No. 49, *Growing Asparagus in Massachusetts*, from the Massachusetts State College, a survey showed that the average yield was 2426 pounds to the acre. But no part-time farmer growing half an acre for the best possible yield should ever think in terms of that figure. A goal of 5000 pounds is not unreasonable and many of the best growers exceed it.

With a yield of 2500 pounds from a half acre, assuming it's sold at 25¢ a pound, the gross is $625. If a man grows 3000 pounds, the gross is $750. Total expenses for fertilizer, amortization charges, etc., will probably be in the vicinity of $125 a half acre. If a man has the time to handle one acre of asparagus and concentrates on it, it is not unreasonable to set a goal of $1000 net profit. In fairness to the total picture, one should also take into consideration the fact that, in many localities, a pound of fancy asparagus may sell for 30¢ or 35¢. A few cents more per pound-bunch make an appreciable increase in total returns.

Preparing the Soil for Planting

The U.S. Department of Agriculture, Farmers' Bulletin No. 1646, *Asparagus Culture*, contains this very significant paragraph. "Asparagus can be grown on many kinds of soil, but good drainage is essential. The best types of soil

for permanent plantations are deep, loose and light, such as mucks and light sandy loam. The asparagus plant has an extensive root system and for maximum development must have an open porous soil. Since early spring growth depends on the reserve food stored in the fleshy roots, a soil should be provided that permits unhampered development of the storage roots which may reach a length of over 10 feet. Where earliness is important, a soil that warms up readily in the spring is essential, for temperature is an important factor in early growth."

In many years of experimentation, the writer's biggest yield came from well-drained, good loam that was fertilized heavily.

Since the asparagus bed is good for 15 or 20 years of top production if correctly handled, it's good business to spend a year getting the soil ready. A succession of green crops plowed under adds humus, softens the soil, and kills out weeds.

Have the soil tested for acidity. Asparagus gives greatest yield if the soil is either neutral or just slightly acid. Here in the Northeast our soils grow acid as the rains wash out the alkaline properties. If the soil shows acidity when it's tested by the State Experiment Station, the tester will tell you how much dehydrated lime or limestone is necessary to bring it to the neutral or pH 7 point. And after 3, 4, or 5 years, test the soil again.

Setting the Plants

The common distance between rows is 4 or 5 feet. If the cultivating is being done with a small walking-type garden tractor, many men use the 4-foot distance; if one has the

riding type of tractor, either the 4- or 5-horsepower model, or the 10-horsepower one, put the rows 4½ or 5 feet apart.

Make the furrows 8 inches deep. Set the plants 1½ feet apart in the rows. This is a bit closer than some of the commercial growers use, but the writer's experiments tend to show that this distance gives the greatest yield per square foot of planting. (It means heavy fertilization about which we'll speak in a minute.) Spread the roots out and cover with about an inch of soil. The first shoots are very small and slender; as they grow, gradually fill in the soil. By September the area will be level. In planting, press the soil fairly firmly with the hand, but don't stamp on it. If you can set the plants in April, or early May just before a rain, that is ideal. If not, make a rim of earth around each plant and water it once a day for a week or two or until a rain comes.

Choosing the Plants to Set

Don't miss this point. All evidence leads to one conclusion. Don't set any plants that are not top quality and do not have vigorous root systems. If, for example, you order 3000 plants for a half-acre planting, the chances are that you should probably throw away 1000 of them. Order a third more plants than you need, and discard the poorest. If you don't set first-quality plants, year after year there'll be spots in the row that don't produce the poundage they should. If you're out to make $500 profit from a half acre, every detail counts.

Care Until Cutting Begins

Keep the cultivator going and prevent weeds from getting a start. Hand-hoe as it's needed. If you kill out all weeds the first two seasons, it makes things much easier in the years ahead. Some growers cut lightly the second year, but it's better to wait until the third. Save a few extra plants for replacements in case some do not grow.

Fertilizing Program

One of the chief secrets of big production is generous fertilization. Before the soil is furrowed for planting, harrow in a ton of 6-6-6 or 5-8-7 fertilizer. *Don't* spread fertilizer in the furrows, and *don't* put any under the newly set plants.

Most bulletins do not agree with what is said next, but the writer's experiments all lead to one conclusion: it pays to spread 2 tons of fertilizer per acre each spring. This is broadcast and cultivated into the soil. Each season the writer has also used 1 ton of hydrated lime per acre.

Admittedly, soils differ. In some areas, it may be that 1 ton of fertilizer will produce maximum yields; perhaps lime will be needed only occasionally. Every grower should run experiments on different rows. If $50 invested in fertilizer boosts returns $100, it is a good investment. The writer believes that fertilizer and lime, spread in late June, are better than when spread in April or early May. Food which is spread early may be washed down by heavy spring rains. The year's crop is determined by what is stored in the roots between July 1 and freeze-up time. But here again, each man should run tests of his own. Experiments in various parts of the country indicate that more phosphorus and pot-

ash may increase yield. It is a good idea to try out an 8-10-20, or an 8-12-18 formula.

Cutting and Selling

Use an asparagus cutter with a very sharp, V-shaped blade. If the cutting edges are kept sharp, it means one does not have to exert pressure against the stalk. With dull knives one is likely to make a tear on the crown and injure next year's crop. There's no special trick to cutting the stalks. Cut just below the surface with a slanting stroke.

When it comes to selling, there are a number of important points that need emphasis. First and foremost, put up an attractive pound package that will appeal to customers. The stalks should be plump, 8 to 10 inches high, and solid to the tip. Don't try to sell stalks that have begun to "feather out." Cut these down, but don't sell them.

Buy one of the little commercial contraptions that hold the stalks while bunching and tying, or else build one yourself. They are a great labor saver. After the bundle is set, the base ends of white stuff can be cut off neatly and evenly with one stroke of a big knife. Tie the bundles securely but not so tightly that the string cuts into the stalks.

Next, comes a very important matter. If you want to build up a repeat business with customers, show them you are interested in the quality of the asparagus by setting the bundles in shallow water in pans, and keep the pans in the shade.

Overcoming Pests

The common asparagus beetle is the pest that's likely to give the most trouble. Introduced from Europe some 60-odd

years ago, it's common east of the Mississippi river and north of the cotton belt. During the winter the beetles live on trash and debris on the surface. Early in May (Boston area), the females lay their slender, dark brown eggs in the spears of asparagus as they grow. In the latter part of the month and in June, the grubs eat the foliage for about 2 weeks. These grubs are about ⅓ of an inch in length. After this period the grubs burrow into the soil and change into yellow-colored pupae. In a week the adult beetle emerges, and the whole cycle is repeated. Usually there are 3 generations a season.

There are two methods of control. First, late every fall clean the asparagus bed thoroughly. Rake up and burn any weeds, debris and the frost-killed stalks. Second, as soon as the cutting season is finished, about July 1, use a dust on the plants, made of 1 pound of calcium arsenate and 10 pounds of hydrated lime. Put this on very early in the morning or late in the evening so the dew will act as a binder in sticking the dust to the foliage. A knapsack-type duster is an efficient size.

HELPFUL POINTERS

Buy 2-year-old roots from a good nursery. That is the best age to set plants.

You may find that on lighter type soil nitrate of soda broadcast at the rate of 200 pounds per acre in April will increase the crop.

Always keep this in mind: the food for the spring crop is stored in the roots between July 1 and freeze-up time. The roots extend for many feet. Broadcast the fertilizer. Don't

spread it along the rows. It takes heavy fertilization to grow big crops.

It's been folklore for years that common salt should be spread on asparagus beds. There's no basis in fact for this belief. Use organic-base commercial fertilizer. Dried animal manures are good for a small plot in a home garden but are too expensive in a large area. Theoretically, regular animal manures, cow or poultry, are good, but they have too many weed seeds.

The only two varieties of asparagus one should use are: Mary Washington or Martha Washington. These are rust-resistant and are good, vigorous growers.

If the rows are 5 feet apart and the plants are set 18 inches apart in the row, it requires about 5700 plants per acre.

CHAPTER TWENTY-FOUR

Muskmelons—A Good-selling Annual Crop

MUSKMELONS ARE one of the higher priced annual crops that may fit efficiently into the program of the part-time farmer who wants to make $300 or more from his farming operations. Like squashes, it's a crop that doesn't demand much handwork. Most of the cultivating can be done with the tractor; usually 3 or 4 hand-hoeings will suffice. When a crop is planted in hills from 5 to 7 feet apart, it isn't too much of a job to hand-hoe around hills in an area of an acre or two.

There's another point about muskmelons. A section of the field can be planted under hotcaps early in the spring—a month ahead of the regular planting time. This means the early melons will be ready for market the first part of August (Massachusetts area). This signifies also that if one sells fancy melons, the same customers will give you repeat business through August and well into September. Selling at the roadside stand, it means more profit per acre if the ripening stages are staggered. If the whole crop comes on at once and a part of the crop is sold to commission firms at wholesale prices, the profit is materially lessened.

A part-time farmer who decides on muskmelons as a cash crop should set his minimum goal at $500 profit per acre, and it's possible to make more with a heavy fertilizing program plus irrigation.

The U.S. Department of Agriculture Bulletin No. 1468, *Muskmelons*, says, "Yields of about 200 standard crates of muskmelons per acre are not exceptional, but yields of 135 to 145 standard crates are more common. . . . Small acreages, near a good local market or where the melons are retailed at a roadside market, give the highest returns per acre. The large markets are now well supplied with muskmelons of medium to fair quality, but there is an excellent opportunity for the development of local markets within easy truck haul and for the sale of muskmelons of good quality at roadside stands."

Let's figure yield and return. The standard crate has 45 melons. At a 200-crate yield per acre, that means 9000 melons. If you average 10¢ per melon, that is a gross of $900. But most roadside stands get 15¢, and a sizable number 20¢ for top-quality fruits. At 15¢, the gross is $1350; if one can get 20¢, it is $1800. Furthermore, in figuring this crop, the man who specializes and gives his attention to 1 acre is not going to stop at the 200-crate yield. Another 1000 melons per acre is not an unreasonable goal at all. Expenses may be around the $400 mark per acre if one has irrigation.

Soil and Soil Preparation

The Extension Service of the University of Connecticut, Bulletin No. 294, reads, "The best soil for cantaloupes [muskmelons] is a medium to heavy sandy loam, although

they are grown on almost any soil found in Connecticut." The Department of Agriculture Bulletin No. 1468 says, "Muskmelons do best on well-drained, warm sandy loam or silt-loam soils, but some of the finest melons are grown on sandy river-bottom lands and on rich clay loams."

The writer's experience shows that melons will produce well on a wide variety of soil types, but the heaviest yields come from good loam, a bit on the light side, with plenty of humus material, plus heavy fertilizing, and plus water if a dry spell occurs in June, July or August. Don't select the low-lying, rich spots of soil where the clay composition causes water to stand after a rain.

If one is using the same area year after year, sow a winter cover crop of domestic rye grass and plow it under just as soon as the soil can be worked. Harrow the area 6 or 8 times for a deep, mellow bed.

Fertilizing

Don't think you can grow 10,000 first-quality melons per acre without generous fertilizing. Bulletins and articles speak of from 500 to 1500 pounds. The U.S. Department of Agriculture Bulletin mentions from 400 to 1400 pounds. It says, "As a rule, a fertilizer containing 4 to 5 per cent nitrogen, 8 to 10 per cent phosphorous acid, and 4 to 6 per cent potash may be profitably used in quantities varying from 400 to 1400 pounds per acre, the composition and quantity depending largely upon the previous cropping of the land."

Every grower should experiment with different fertilizer formulas because soil varies so much. The writer recommends 1 ton per acre of organic 6-6-6 broadcast and har-

rowed in before planting, and his experiments indicate that it may pay to use 1½ or even 2 tons. If one is using the same soil year after year, enough of the 3 main chemicals must be used to replenish what the plants take. It may be one's soil will respond better with a 4-8-6 or a 4-10-8 formula. Experimentation is the only way to judge accurately.

After the field is furrowed out, it pays with this crop to drop 2 cupfuls of fertilizer each 5, 6 or 7 feet, whichever distance you are planting. After this fertilizer has been dropped in the furrow, take the hoe and spread it around so it covers an area one foot square, and pull 2 to 3 inches of soft soil over it on which to plant the seeds.

Planting

If you have the field planted checkerboard fashion, you can cultivate both ways, but a square area means more frequent turnings with the tractor. Most growers prefer a rectangular plot. Planted in furrows 7 feet apart, with the hills 5 feet apart in the row, you will have 1240 hills per acre; 5 feet apart each way gives 1740 hills. With heavy fertilizing and water available, you will probably grow larger crops in the 5 by 5 planting.

Plant 7 or 8 seeds in a hill. Cover about ½ inch. One pound of seed will plant an acre.

Thinning

After the plants have developed 4 leaves, the number of plants in the hill must be decided upon. Some prefer 2 or 3; others leave 4, 5 or 6. Probably the average is 4, and the writer's experiments, not necessarily conclusive, indicate that over the years 4 plants per hill give a big yield. When

you are thinning, many of the extra plants can be cut off with a narrow hoe which has one end very sharp. But if 2 husky plants are growing very closely, it pays to pinch off one. This saves disturbing the feeding rootlets of the one selected to grow.

Cultivation

During the first few weeks keep the cultivator going enough to kill the weeds. Especially after a rain it's a good idea to break up the crust, not so much because the so-called "dust mulch" holds water as to kill the weeds that start during the rainy spell. Evidence is accumulating that the old idea of freshly stirred earth holding the water is not so valid as we once thought. But it's essential to keep the weeds down until the vines spread so much that further cultivation is impossible. It will take 3 or 4 hand-hoeings to keep weeds out of the hills, although some growers get by and raise good melons with 2 hoeings.

Diseases and Pests

The striped cucumber beetle is probably the worst pest. They come in hordes overnight and sometimes eat the tiny seedlings as they are pushing through the ground. This beetle carries plant diseases such as bacterial wilt and mosaic. The grubs or larvae of this beetle (the same that attacks squashes and cucumbers) live on the roots and half stunt some plants. The writer has found that dusting with hydrated lime early in the morning or late in the evening is an effective repellant. New dusts are being brought out by commercial firms that hold promise. Each grower should

write his State Experiment Station for directions. The rotenone dusts are becoming more important each year.

Marketing

The man who wants to make from $500 to $800 or more profit per acre must sell his produce at retail prices at the stand. There's only one rule: sell quality melons so that you will build up a repeat business.

The very early melons started under hotcaps may bring 20¢ or 25¢; then as the main crop comes on, you may have to drop to 15¢, perhaps to 10¢. However, that is usually 100 per cent more than you can get if you sell at wholesale.

HELPFUL POINTERS

Some part-time farmers are starting early muskmelons in hot beds and cold frames. They are easily transplanted if one is careful to water them daily for a few days. This transplanting sets back growth for a day or two. Under hotcaps one plants 8 or 10 seeds and then thins out to the 3 or 4 plants left to grow.

Consult the County Agent, the State Experiment Station and local growers as to the best variety or varieties for your section.

You will read about nipping the ends of vines and pruning them in order to grow bigger fruits. There is no evidence that this extra work increases the crop.

In some seasons, bacterial wilt and the virus mosaic disease are problems. One should have on hand the directions of his State College, but remember that the cucumber beetles transmit these diseases. Control of the beetle is an impor-

tant point in growing big crops. Hydrated lime is a deterrent, not a poison. Many growers add calcium arsenate, rotenone or pyrethrum to the dusts.

Highest quality in melons—the point that pleases customers most—comes when the fruit is fully ripe. This can be determined if the stem pulls out very easily, leaving a circular depression. Selling at the stand, one can display only those melons that are at the peak of perfection. You will find that customers will be glad to pay 5¢ more than the average price if they are sure that they always get a melon that is at the height of its deliciousness.

CHAPTER TWENTY-FIVE

Winter Squash—An Excellent Crop for the Part-time Farm

MANY PART-TIME farmers have found that winter squash is the best of all crops to fit their program. In the years immediately ahead, with small 5- and 6-horsepower-tractors available, it means that this crop, along with sweet corn and muskmelons, is going to fit well into the scheme of part-time farming.

This size tractor will plow land that is soft and mellow; it will do the harrowing; it's an excellent type of machine for cultivating. If one is breaking up tough sod that has not been plowed for years, it will be necessary to hire a larger tractor for the first plowing and disking. But after that, if one grows a green manure crop each year and keeps turning the soil, one of the small machines will do the job.

Here are some of the points to consider in planning this crop if you want to add a substantial sum to your income. You can start all the plants after the danger of frost has passed, if you wish. However, if you want a long selling season, from August 10 through the fall, you can start 50 hills or more under hotcaps. Squashes require only 2 or 3 hoeings. If the field is laid out with the hills 6 or 7

feet apart each way, one can cultivate both ways, which reduces hand-hoeing tremendously. The roots of the squash plant extend a considerable distance downward, and if a family cannot afford irrigation at first, it's a crop that will still make a good profit. But if you want to make the really big profit per acre, you must have water. In many years, according to the writer's experiments, available water will mean 30 to 50 per cent more weight to sell.

Since squash is sold by the pound at roadside stands, we figure yield on that basis. Perhaps an average yield in the Northeast is 5 tons (10,000 pounds). But any good farmer will not be satisfied with this. He should plan on raising at least 8 tons. Thus, for example, if one sells 16,000 pounds at 3¢, it brings a gross of $480; if the price is 4¢, the figure is $640. Expenses for an acre may be in the neighborhood of $200. Many part-time farmers who specialize in this one crop will discover they can handle 2 acres of squash easier than they can handle berries. It means hiring some help for harvesting, but a man with a tractor can do the rest of the work. This assumes that a member of the family will tend the stand.

Getting the Soil Ready and Fertilization

Squashes can be grown on a wide variety of soils, but the biggest yield comes from a deep, mellow loam that has abundant humus. If you have a choice of soil, select an area that is medium to heavy, rather than light and sandy. If you use the writer's plan of heavy fertilization and green manures, the same area can be used year after year. This is a great help to the part-time farmer, for the soil gets increasingly mellow and easy to work. In the fall (Septem-

ber, Boston latitude), as soon as the harvest is over, plow the area and seed to domestic rye grass.

Just as early in the spring as the soil can be worked, plow this under and harrow once or twice. Next, broadcast 2 tons of organic-base fertilizer of 6-6-6 or 5-8-7 formula. Then harrow several times more to work this in. If you are planting in late May to escape frosts, there'll be time to harrow two or three times more, a few days apart, unless it's an unusually rainy spring. This is an excellent idea, for it means you can kill thousands of small weeds that have started up.

Beginners will think this fertilizer program of 2 tons per acre is excessive. It is more than is generally recommended. Some bulletins advise anywhere from 1000 to 1500 pounds. But the evidence is all on one side. Big yields come from generous feeding. Men who have specialized in squash growing use more fertilizer than is commonly recommended. Some good growers use a formula (6-12-4 or 4-10-6) with higher phosphorus content (the element that produces fruit and seed).

(The writer has tried many fertilizer experiments. In good loam and with irrigation, he got bigger yields with 6-6-6 than any other formula. But soils differ. Every man should experiment with his own. We spoke of an 8-ton yield, but there are growers who get 10, 12, or even more tons per acre.)

Planting and Cultivating

If one is going to raise the big type of squash, such as Blue Hubbard, the hills should be 8 feet apart. Six or seven seeds should be planted per hill and thinned out later to the

strongest two. The following is from Circular 213, University of New Hampshire Extension Service: "In experiments at the University of New Hampshire, the highest yield was obtained with two plants per hill, 8 feet apart each way; the biggest squashes and the second highest yield at one plant per hill; the third highest yield but better-sized squash at three plants per hill."

This brings up one of the most vital points in squash growing for the part-time farmer who plans to sell at the roadside stand.

Don't raise the big type of squashes. The demand is increasingly for a smaller squash of 3 to 6 pounds that fits the average family. There will still be a demand by hotels, restaurants and canners for the big squashes, but the retail trade wants the smaller ones.

The seed catalogs will describe the smaller varieties. The Horticultural Department of your State College will recommend the most satisfactory ones for your section. The best variety the writer has grown is the comparatively new one, the Butternut. Don't confuse this with the Buttercup. The former is a yellow-tan color, something like a gourd in shape. The hills can be planted 6 feet each way; it's a prolific yielder. It also, for some reason as far as the author's experience is concerned, does not attract the squash borer. The flesh of this new variety is dry and sweet and very fine in texture.

Mark the field off for the sites of the hills. Some growers put a handful or two of fertilizer under the hills; others do not. Experiment with this point and compare yields. Cover the seeds with ½ inch of soil. The writer likes to plant his squash (and melons) in hills that are a couple of inches

lower than the surrounding level of soil. During the hand-hoeings the soil is pulled in and by the time the plants are 6 or 8 inches high, the hill is leveled.

Even before the plants appear above the ground, run the cultivator over the area to kill off sprouting weeds. Cultivate about once a week until the growth of the vines makes further cultivating impossible.

Controlling the Pests

Squash growers must control three pests. The first, the striped cucumber beetle, comes in hordes and settles on the leaves and stems. The larvae may live on the roots and bore into the main stem. The beetle can be controlled by dusting. A good mixture is 8 pounds of chemical hydrated lime and 1 pound of calcium arsenate. Dust in the early morning or late evening. Put on several dustings from the time you first notice the beetle until the vines start running.

Squash bugs are a nuisance some years and not others. They come along in late June and usually need three dustings at weekly intervals. If heavy rains intervene, you may need to make additional applications. The best mixture the writer knows is that recommended by the University of Connecticut Extension Service, "Use one pound of pyrethrum concentrate containing 2 per cent pyrethrine and 9 parts talc as a dust." (Bulletin No. 272, *Winter Squash.*)

In most localities, the worst damage is done by the squash borer. About the end of July, the moths lay their eggs on the leaf stems and main trailing stems. When the eggs hatch, the larvae go into the stems. Later, the grubs that develop go into the soil, make cocoons, spend the winter in the soil and emerge as moths in June. That's the life cycle. The point

is the squash grower must either prevent the moths from laying eggs on the vines or kill the eggs or larvae.

The University of Connecticut Extension Service's formula for a liquid spray is 2 quarts of 40 per cent nicotine sulphite and 2 pounds of laundry soap in 50 gallons of water. Most growers will prefer dusting to liquid sprays, and several of the reliable insecticide concerns offer dusts with rotenone for controlling the borer.

Evidence is by no means conclusive, but the writer's experience tends to the conclusion that rotenone dust on the leaves and stems and for a couple of feet on the ground around the hill deters the moth from lighting and depositing its eggs. There doubtless will be many new chemical preparations for dusting. If a dust can be discovered that is repellent to the moth, the one greatest handicap to squash raising will be conquered.

HELPFUL POINTERS

By all means plan for irrigation. Available water through the dry spells can mean $100 or more extra profit on an acre per year.

You don't need to worry if, by chance, you wish to raise muskmelons adjoining the squash. Muskmelons and squash do not cross-fertilize.

If you want to start squashes early under hotcaps (April 20 to May 1 in Massachusetts), you can later transplant the extras about May 25. Put 6 or 8 seeds in a hill. Let the 2 strongest plants remain to grow, and transplant the others if they are vigorous.

Handle the fruits carefully in harvesting. They bruise

easily, and if a period of warm weather comes in September or October, the bruised spots begin to decay.

You can save your own seed. Here is what the New Hampshire Extension Circular 213 says on this point, "Many squash growers select their own seed and build up a type of squash which is greatly superior to the original one. They select for certain qualities such as earliness, resistance to disease, type characteristics, thickness of flesh, and color. In saving seed at home, care must be taken not to have another field of squash within half a mile unless the two are separated by a strip of woods or a high hill."

For dusting, the knapsack-size duster is convenient and efficient. It holds several pounds of dust material, and a hand-operated bellows throws a dense cloud of the insecticide.

CHAPTER TWENTY-SIX

Sweet Corn—A Good Crop If Borers Are Controlled

THIS IS one of the three annual cash crops that the writer particularly recommends. It is an easy crop to grow; it sells at a high price. It's true that the corn borer is becoming more and more serious as a pest, but if one is willing to watch details, as will be explained, the borer can be overcome.

Borer control means a part-time farmer can build up a reputation for selling quality ears—and this in turn means a steady business through a considerable length of time each season. Theoretically, the part-time farmer would fare best if all his corn (or any other crop) matured in one or two weeks and the harvest period could be ended in a fortnight.

Practically, of course, things do not work out that way. Asparagus is a 2-month selling proposition; strawberries and raspberries take 1 month. Squash, melons and sweet corn are about 2 months if one makes several plantings.

This point, with melons, sweet corn and squash, is important because many beginners do not understand one of the fundamental tenets of making $1000 cash profit from a

part-time farm. That tenet is: repeat business from customers who are willing to pay a good price for top-quality produce. If you specialize in 1, 2, or 3 crops and always sell quality products and give good measure, you'll find that people will plan to come to you for that specialty.

If you decide that sweet corn is a crop which fits your situation and you want to make it your major cash item, then the sensible thing to do is to sell sweet corn over as long a period as possible.

From the viewpoint of the part-time farmer whose farming activities are limited by the time available from his main work, sweet corn is a good crop because most of the work can be done with the same type tractor as described in the chapter on squash. The rush period is the harvest time, plus some extra help to control the borers.

Planted in rows 3 feet apart, with hills 3 feet apart in the row, an area 209 by 209 feet will have 4761 hills. That's an area of 43,681 square feet. Most farmers grow 4 stalks per hill; some grow 5. If you had 4761 hills of 4 stalks each, that is a total of 19,044 stalks. To keep our figures on the conservative side, we'll assume 1 marketable ear per stalk, although many of the stalks will produce 2 good ears. If one grows 19,000 stalks producing 19,000 ears, and the ears sell at an average of 3¢ each, it brings a gross return of $570.

But this is not the whole story for the man who wants to make all that's possible. At least ¼ of the acre should be planted very early. If the frost gets it, there's still time to plant again. Furthermore, suppose a man plants (in Massachusetts latitude) ¼ acre on May 1 and the second ¼ on May 10. If the May 1 planting is killed on May 17 or

18, just before the May 10 planting comes up, the latter will still be ahead of 90 per cent of the sweet corn growers of the region who don't plant until the 18th or 20th.

Some of the best sweet corn men plant almost half their acreage very early, for the simple reason that instead of selling the corn at 3¢ per ear, they get 5¢. The 60¢-a-dozen price lasts for a week or two before the bulk of the crop comes in. Three years out of 5 a man can materially increase the $570 gross mentioned by planting ¼, ⅓ or even ½ of his crop very early. Then the main crop goes in later in May, and the late crop from the 18th to 20th of June. A program such as this gives a sales period from early in August until mid-September.

The writer is often asked this, "If sweet corn, melons, and squashes all come along about the same time, from August into September, why can't a man more logically plant ½ acre or so of each and have 3 crops to sell at his stand?"

That's a good question. And the answer won't satisfy many who have had no farming experience. But from observation of numerous part-time farming places, this one fact stands out. The men who make from $500 to $1000 net profit and who work full time at other jobs, are those who specialize in one crop. Part-time farming is a different proposition from full-time. In the latter case, there's definite security in having several lines—at least until a man gets broad experience and has a good reserve of capital behind him.

On the part-time place, the farming is secondary. If a man concentrates on one crop, available evidence indicates he'll make more profit per acre of ground handled. It's the

psychological angle. A man knows that whether or not he makes $500 profit depends on the way he handles things. Admittedly, it's the "all the eggs in one basket" philosophy. But it works.

In fairness to the whole picture, there are men who raise 2, 3, 4 or more crops on the part-time farm. But these are exceptions, and certainly the beginner who is having a family garden, a few hens and a cow, had better not take on more than one crop at first.

Soil and Soil Preparation

Cornell Extension Bulletin No. 644 makes this statement: "Sweet corn can be grown on a wide variety of soils. Where early maturity is important, well-drained, sandy loam soils are best. Such soils warm early in the spring and usually mature the early varieties before drought occurs. If a large yield is more important than early maturity, a rich soil retentive of moisture is best, for sweet corn draws heavily on soil moisture. . . . Regardless of soil type, when corn is planted on sloping land, rows should always be on the contour to increase the moisture-holding capacity of the soil and to reduce erosion. Although sweet corn is tolerant of a wide range of soil reaction (pH 5.5 to 6.8), the plant growth and the yield are decreased materially on extremely acid soil."

Corn roots extend through the soil for many feet, and a deep, mellow soil, well filled with humus, means better production. If a man is specializing with an acre or two of sweet corn and using the same area repeatedly, he should plow under a green manure crop each year.

The Fertilizing Program

With a crop like sweet corn, where the roots travel several feet from the hills, the only logical fertilization program is broadcasting and harrowing in before planting. There's been much written about fertilizer for corn under the hills or beside them, but this will not bring the big production that broadcasting does. It may seem like a big expense to follow the writer's recommendation of 2 tons per acre, instead of the ½ ton often recommended in bulletins or articles, but $125 or so invested in fertilizer is one of the best guarantees of a profit of $300 or more per acre.

Care of the Growing Crop

Many good growers start cultivating even before the corn is up. If the area is planted in hills, one can cross-cultivate. The question often arises, "Which is better? The hill method of growing corn, or the drill system where 1 seed is planted each 10 inches in the row?"

The hill system means easier cultivation. The drill method means one can lay out an acre in long rows and have less turning around with the tractor. Each man will have to decide for himself, but for the part-time farmer the writer recommends the long rows. If the soil is well prepared, all the cultivating can be done with the tractor. The corn will grow very fast, and soil can be thrown around the stalks with the cultivator blades to smother most of the weeds. This phase of the growing of sweet corn is important. It saves many hours if a man can do all the cultivating by power. A cultivation each 7 to 10 days will usually keep the weeds under control.

Borer Control

First of all, it should be said that the Experiment Stations and insecticide companies are working hard to discover a dust that will be effective against this pest. It's only a matter of time when the right chemical or combination of chemicals will be evolved that will give good control. Then, with a moderate-sized duster a man can easily handle the control methods himself.

Until this dust is perfected, here's a method that works. Arrange ahead of time for a few boys to help. The whole success of this hand method depends on correct timing. Just when the tassels are forming and the soft silk on the ends of the ears begins to show from 1 to 2 inches in length, there is a period when the borer can be gotten easily and killed. One will notice the borers chewing on the tassels (the corn blossoms). The chewed material, which looks like very finely pulverized sawdust, means that a borer has gone into the stem of the tassel. It's one phase of the corn borer's life cycle.

Just at this period (within a few hours from the time the borer has gone into the stem), it's very easy to break the stem and get the grub. The grubs vary greatly in size: some are ⅓ of an inch in length; others are almost an inch. With a few boys to help, it is not an impossible task at all to go over an acre. Many hills will have no signs; in some hills one stalk will show a borer. It's a matter of a few seconds to break the stem, follow the tunnel and get the grub.

To the beginning part-time farmer this may seem like a big job, but it sounds much worse than it really is. A man

who wants to build up a reputation for quality sweet corn is well advised to spend money for borer control. If a customer gets an ear or two in a dozen with big repulsive borers in them, it's not a good pull for future business. At present, the corn borer is spreading rapidly. It's the one great handicap to growing sweet corn. But if a man is willing to put in the time and attention necessary to control this pest, he can make a good profit from the crop.

Varieties

It's almost traditional to think of sweet corn as Golden Bantam. But while this is, to the writer's knowledge, the sweetest and most delicious variety for the home garden, it's not the one to plant for sale at the roadside stand.

Plant one of the new hybrids. They make big, handsome, yellow ears. The quality is very good. Don't make the mistake of planting a white variety, however good it is. The general public is sold on the idea of yellow sweet corn.

Check with the County Agent or the Experiment Station for the best variety for your area. Buy seed from a reputable concern. You cannot save your own seed from hybrid corn, because it represents a special breeding proposition in combining parent strains.

HELPFUL POINTERS

Many times in the Northeast the radio will warn of a frost when early-planted corn is 1 to 4 inches high. If a man has a plot of corn this height, it can be saved by hoeing or cultivating a ridge of soil over it for the night. It means the hills have to be uncovered in the morning, but a few hours'

work may mean $50 extra profit from early ears in August.

Your customers will be steady buyers if you sell a high-quality product. Experiments show that better than 50 per cent of the sweetness is lost within 36 hours. That's why 48-hour-old corn in the markets is often unpalatable. The less the time between picking and selling, the better.

Don't worry about the side shoots or suckers that come up around the stalks of corn. They do no harm. The family cow and the pig will enjoy them if you cut an armful or two a day for them.

Cover the seed when planting to a depth of 1 inch. It takes about 12 pounds of seed to plant an acre. Treat the seed with Semesan Jr. before planting to prevent its rotting in the ground.

CHAPTER TWENTY-SEVEN

Peaches—A Good Part-time Farmer's Crop in Certain Locations

IN THE chapter on The Home Orchard, a statement was made to the effect that few part-time farmers make a success with tree fruits. As a general statement this holds water. The writer has watched a number of families try tree fruits while the man carried on his regular work some miles distant. Almost invariably the project does not succeed. It takes several sprayings a year to raise fancy fruit; there must be time for thinning. A man who has a steady job finds that the demands of an apple or peach orchard conflict with his other work.

There's one exception. And since this book is meant to be helpful over a large area, the subject is important enough for a separate chapter. If you buy your part-time farm in a region where peach growing is successful, it may be good business to investigate its possibilities if you want to add a few hundred dollars to your income. But don't go into peaches unless two conditions are met.

First, the area must be located in a climate where peaches thrive; second, you must sell the fruit in baskets from a roadside stand to get a good profit per acre.

Some beginners read that peaches are grown in more than half the states in the Union; they remember the prices paid at the local fruit stores and jump to the conclusion that peaches will be more profitable than berries or annual crops.

The one greatest enemy of profitable peaches is a contingency that man cannot control, that is, winter-killing of the fruit buds and the trees. The colleges have kept records on this matter of winter temperatures, and some interesting variations occur. Some years the fruit buds are killed at zero or a little below; other years they seem to stand several degrees lower than this. The variation is probably due to the degree of "hardening off" or maturity of the buds when winter arrives. If there's a warm, late fall, the buds keep developing instead of ceasing to grow.

Each part-time farmer should check with the horticultural department of his State College, but from reading and observation of peach growing in sections of New England, it seems there's little chance of success over a period if the winter temperatures go lower than 10 degrees below zero.

It's possible to make from $300 to $500 profit per acre. If the trees are set 18 by 18 feet, it gives 134 trees per acre, and many growers make $3 to $5 net profit per tree if the fruit is sold in small-basket lots.

Soil and Site

The U.S. Department of Agriculture Bulletin No. 917, *Growing Peaches*, contains this excellent paragraph, "It is the current opinion that the peach should be planted on sandy or some of the lighter types of soil. Excellent results may follow the planting of orchards on such soils, but

peaches do well also on a wide range of soil types, including even some of the moderately heavy clay loams and clays. But whatever the type, a soil must be thoroughly well drained. Peaches will not succeed on poorly drained soils. The heavy clay types which are so hard and impervious that water does not percolate through them readily are to be avoided. Moreover, the soil should be moderately fertile. One very rich in nitrogen is not desirable as a general rule, since it may induce an excessive growth of foliage, but the impression that a poor, infertile soil is 'good enough' for peaches is erroneous."

Successful peach orchards are frequently on sloping land above the adjoining area. This is good frost protection in winter because cold air drains to the lowest levels. This atmospheric drainage is almost as essential as water drainage. The most successful peach orchards the writer knows are situated on side hills.

The term "contour planting" is one which the beginner should learn. It means setting the trees around the hillside according to the contour of the land. All hillside plantings are subject to harmful erosion when the rows are run up and down. By the contour plan, the rows will not be parallel all the way, but the production per acre will be greater. It is easy to learn how to lay out lines according to the contour. Bulletins from your State College will give directions.

Get the soil in good shape before planting by growing green manure crops. After the last crop is plowed under, lay out the contour lines and determine the rows for the trees. If the slope is at all steep, you may want to plow ridges or terraces that will hold the water after heavy rains. The advice of the County Agent will be helpful on this point.

Setting the Trees and Getting the Orchard Started

The same principles apply in setting peach trees as with others. Dig the hole deep enough so the one-year-old whips can be set an inch or more deeper than they were in the nursery. As you dig the hole, put the good topsoil in a pile by itself. Set the tree with the roots well spread and press the good soil down on the roots with your hands. You'll need an extra shovelful or more of topsoil, in addition to what you dug from the hole. Leave a depression around the stem and pour several quarts of water on as soon as the tree is set. Give a couple of quarts of water to each tree in the evening for a fortnight unless a rain comes. Don't neglect this watering; it's one of the major points in getting the trees off to a good start.

A big majority of peach growers keep the soil cultivated. With a tractor it's not a difficult task to go over an acre or two each week or 10 days until the middle of July. (This refers to New England latitude.) Then sow a crop of buckwheat. This is ready to turn under in September, and the winter cover crop of domestic rye grass can then be seeded. Don't let the soil stay bare over winter.

One advantage of growing buckwheat and domestic rye grass is that the competition of the cover crops for food causes the trees to stop their annual growth earlier in the fall and to "harden off" before cold weather. The other angle, of course, is that the buckwheat takes some food that might cause the fruits to grow larger. But, on the whole, it's a common practice to grow buckwheat because the harder the wood and more mature the buds, the better chance there is of getting through the winter without injury.

Fertilizers

There's some difference of opinion among good growers regarding the best fertilizing program. Many men who get big annual crops use nitrate of soda—about ¾ of a pound scattered in a 3-foot diameter circle the first 2 years; 2 pounds per tree from 3 to 5 years; 4 pounds from 6 to 8 years; and after that from 5 to 7 pounds per year for the mature trees.

This is a reasonably safe general rule, but each grower should run some experiments. It may be that a higher percentage of phosphorus will produce more fruit, a 4-10-6 or a 5-12-8 formula. Try various combinations on blocks of half a dozen trees and compare results.

Thinning

It may seem like a big task to thin the fruit on an acre of 134 trees. Yet this is an important part of the year's operations if a man wants to make around the $500-profit mark. Your object is to grow the big, luscious, handsome fruits that readily command top prices. The Massachusetts State College Bulletin No. 399, *Peach Growing in Massachusetts*, reads, "Thinning the fruit is as essential to good orchard management as spraying or cultivating. Too often this operation is neglected or poorly performed, to the disadvantage of both the grower and his orchard. In a good crop year, most peach varieties need thinning, since the trees set more fruit than they can carry to maturity and still develop good size. The principal reason for thinning is to obtain large peaches."

And it's the big peaches that catch the customer's eye on the stand. It's a fact that a 3-inch peach has almost three

times the volume of a 2-inch fruit. The size of the stone, or pit, does not increase correspondingly. The Bulletin just quoted makes this significant statement, "Therefore, one three-inch peach is worth more than three two-inch peaches because there is more flesh to eat and fewer pits for the tree to develop."

Don't do the thinning until after the annual "June drop." Most years, in June, many fruit trees drop some of their fruits. Thin the fruits to a distance of 5 to 8 inches apart along the first of July. It doesn't take so long as you might expect. The trick is to twist off, not pull off, the young green peaches.

The Spraying Program

The spraying program differs in each state—and differs within regions of a state. Get the bulletins from your State College which will explain it. A small-sized power duster or liquid sprayer will be needed. This will handle 1 or 2 acres. Talk with neighboring farmers before investing in any machine.

The Peach Borer

This is perhaps the worst pest of all. In its larvae stage, it bores into the tree at soil level or a few inches below. Fortunately, it's easy to tell when the borer is at work because of the gummy, sticky stuff that is exuded. Early in the spring and again in late fall, one should examine the base of every tree. Dig the soil away to a depth of 6 inches. A sharp, slender-bladed knife is the best tool to use. If you have to cut the bark to get into the burrow of the larvae, make a clean cut and try not to remove any bark, just lift it up.

Many growers have had success with paradichlorobenzene in controlling the borers after the trees are 3 years old. The process is this: clean a circle 2 feet in diameter around the tree. Put the paradichlorobenzene in a solid circle around the base, 1 inch from the bark. Use from 1 ounce to 1½ ounces per tree.

Next, cover this ring of white crystals with mellow soil, making a mound against the trunk. If this treatment is given in August or September, the compound can stay until April, when it should be scraped away. If the treatment is given in April or early May, remove the mound one month after the crystals are put down. But whatever you do, be sure to control the borers. Thousands of trees are killed every year by this persistent pest.

Pruning Peaches

This is one tree fruit which must have correct pruning for big annual crops. The first spring when the year-old whips are set, all the side branches should be cut off.

If you want the modified leader type of tree, cut the stem off 3 feet aboveground at planting. Then scaffold branches will grow out from the stem.

If you want the lower-headed trees, cut the stem at 20 to 24 inches aboveground. Most growers now prefer this open-head type. The trees are lower, more spreading in growth, easier to prune, thin and harvest.

After the trees are 3 or 4 years old, the annual pruning is a vital affair. March is the time to do it in New England. Get the pruning bulletins from your State College and the one from the U.S. Department of Agriculture in the list at the end of this book. It's not a difficult operation,

but it has to be done correctly to keep the right balance of wood. Each year's crop comes on new wood. If there are a great number of fruit buds, it requires more drastic pruning to strike a balance between fruit growth and wood development.

HELPFUL POINTERS

In most areas, part-time farmers will find the Elberta the best variety. It is a freestone peach, yellow-fleshed and handsome in appearance. It is a good producer, and the wood is somewhat resistant to cold spells in winter.

The major secret of profit is selling top-quality fruit at retail prices in small 2- and 4-quart baskets. This is a size that appeals to a majority of the customers.

It's poor economy to try to save money when buying trees. Get the best from an approved nursery.

You will get a good crop when the trees are 4 years old, although some fruit will be borne the third year. A peach orchard bears profitably for about 15 years after coming into full production.

One of the most interesting new developments in tree fruit culture is the use of hormones to keep fruits on the trees until they are dead ripe. The Experiment Stations are working with alphanaphthyleneacetic acid which gives much promise of becoming an efficient help to the orchardist. This acid spray delays the formation of the absciss layer between the fruit and the woody stem. When a spray is developed that holds peaches longer on the trees, it means the fruit sold on the stand can be at the very peak of tree-ripened perfection and therefore can command fancy prices.

CHAPTER TWENTY-EIGHT

Cultivated Blueberries—An Excellent Side-line Crop

THE IMPROVED high-bush blueberry is the latest addition to the list of cultivated fruits. It must be emphasized, first of all, that this is a crop for special locations. Blueberries require an acid soil and a fairly moist one. There are many areas east of the Mississippi where this acid condition is found. Oftentimes old, worn-out fields, where sorrel, moss and perhaps cranberry plants have started, indicate acid conditions.

There are a number of good points about blueberry growing for the part-time farmer. It's a crop that sells well from the roadside stand at high prices. A man will have to hire help at harvesting time but he can do the mulching, fertilizing and pruning himself. Many growers make several hundred dollars' profit per acre.

Beginners should understand that blueberries are not huckleberries. The names are often used interchangeably, but the blueberries have many minute seeds; the true huckleberry has 10 larger nutlets. High-bush cultivated blueberries began to attract attention in the 1920's, after the late F. V. Covelle of New Jersey had been breeding and selecting

varieties for some years. There are probably about 4000 acres of blueberries in cultivation now, principally in the states of New Jersey, North Carolina, Michigan, Massachusetts, New York, Washington and Oregon.

Sites and Soils

In choosing a site to set cultivated blueberries, one should keep in mind the requirements of the native bushes. The following from the U.S. Department of Agriculture Farmers' Bulletin No. 1951, *Blueberry Growing*, is a good summary: "The high-bush blueberry is found in the wild only where the soil is very acid and moist. Usually the best growth occurs where the acidity ranges from pH 4.3 to 4.8, and cultivated plantings have succeeded on such acid soils. Good growth may occur in soils with a pH value as low as 4; however, where the acidity is as low as pH 4, application of hydrated lime at the rate of about 1000 pounds per acre should be tried and will usually result in much better growth; where the acidity is as high as pH 5, finely ground sulphur or ammonium sulphate may be used. If the soil is sandy or sandy containing some peat, ammonium sulphate should be used as it both acidifies the soil and furnishes nitrogen. If the soil is a loam, it may contain enough nitrogen, and sulphur may be used to acidify it. Open porous soils, such as a sand-peat mixture with an admixture of loam, with the water table 14 to 30 inches below the surface, have been found best for blueberries." A footnote from the same bulletin makes this statement, "As a result of studies in New York, it is recommended that to acidify sandy soils ¾ of a pound of sulphur per 100 square feet be applied for each full point that the soil registers above pH 4.5 and that to

acidify medium loams 1.5 to 2.25 pounds be applied for each full point above pH 4.5."

This brings out the first essential for success. The soil must be acid. However, while a moist location is best, the writer has seen many good cultivated blueberry fields where one would not call the location especially damp. All over the Northeast, native high-bush blueberries grow not only in swamps, but they also grow and fruit well on higher places —pastures, sidehills and plateaus. Of course, the water supply is of primary importance with blueberries as with any fruit. But under the mulching system, as will be explained, a reasonably moist soil can be maintained if the water level is lower than the 30 inches mentioned in the Federal bulletin.

From the writer's observations and from talking with successful blueberry growers, the two most essential points are the acidity of the soil and the sandy or light type of soil. (pH 7 is neutral; pH 8 is alkaline and pH 4 is very acid.)

The site itself should be one where water does not stand for any length of time in the spring. Many good plantings are on a slight slope. Oftentimes the part-time farmer will have a rough field where there are pines, pasture oaks, white cedars, red maples and all kinds of brush growing. In among the alders, birches and sumacs, there may be either high- or low-bush blueberries. This indicates a good location, though the first thing one should do is to test the soil for acidity.

There are two ways the writer knows of to get a plot into condition for planting. Any sizable trees, of course, must be cut. Then in most regions one can hire a bulldozer to rip the rest of the growth out. This should be piled and burned, and then a big tractor can be hired to plow the area and

disk-harrow it. The other way is to hire a bunch of goats, fence in the area, and let the goats clean off the brush before the plowing is done.

Setting the Plants

It costs a considerable sum to get an acre started. If the rows are 8 feet apart, a good distance for efficient tractor cultivation, and the bushes are set 4 feet apart in the row, it requires 1360 bushes per acre. First-class 2- or 3-year-old bushes may cost half a dollar or more each, even if bought in as large a quantity as 1000.

(On the other hand, one must keep in mind the possible returns. After the third year one may get from 2000 to 3000 quarts per acre. This is an average yield. The Bulletin No. 1951 says, "Larger yields are possible and as many as 9600 pints per acre have been obtained from good fields." Cultivated blueberries commonly sell for 50¢ or more a quart. A 3000-quart yield at 50¢ a quart means a $1500 gross. Expenses per acre for fertilizer, mulching, baskets, picking and an amortization charge against equipment will probably average around $500 to $700. If a man becomes an expert in growing blueberries and gets a yield, for example, of 4000 quarts, blueberries become one of the highest profit specialties.)

Buy the plants from a nursery on the certified list of your State Experiment Station. Set the bushes a little deeper than they were in the nursery. Use only good topsoil in filling the hole. Spread the roots and press good soil on them with the palms of the hands. Leave a depression around each plant so a quart or so of water can be put on every day for 10 days unless a rain intervenes. Always buy

2 or 3 dozen extra bushes and heel them in, in case some of the transplanted bushes die.

Mulching and Cultivation

Two forms of soil management are common. Perhaps 75 per cent of the growers mulch around the plants and along the rows to a width of 1½ feet. This does away with hand-hoeing and weeding around the bushes. Then clean cultivation is used in the middle of the rows—a 5-foot distance if the rows are 8 feet apart. But more and more blueberry growers seem to be going in for total mulch, and there's much in favor of this method. It keeps the soil moist, and new mulch can be added from time to time, especially to kill any weeds that poke up through the old mulch.

The most common mulch is hay or straw, but if one happens to be near a sawmill, sawdust is ideal. It requires some work, of course, to cover an acre to a depth of 4 or 5 inches. After the first covering, however, it's not at all an impossible task to put on an inch or so a year, preferably in the spring when the weeds begin to show.

If one cultivates, watch out that the cultivator teeth do not tear up the soil too close to the bushes. Blueberries are a shallow-rooted shrub and send out roots a couple of feet or more around the main stems.

Fertilizing

Good growers vary greatly in their fertilizing program and the only logical procedure for the part-time farmer who is out to make $500 to $1000 profit from an acre of cultivated blueberries is to experiment with different formulas on blocks of bushes, and compare results.

Some growers use a general formula, 6-6-6 or 5-8-7 organic-base, 500 to 1000 pounds per acre. On fertile soils, little fertilizer may be required to get a good annual growth of wood and good crops. If the soil is very acid, below pH 4.8, growers have found that 150 to 200 pounds of nitrate of soda broadcast in the spring have increased yields. Fertilizers should be spread in a 4- or 5-foot band along the rows. If leaves begin to turn yellow, it usually indicates too much nitrogen.

Pruning

This is one of the vital practices in getting big yields year after year. The fruit is borne on wood grown during the previous season. Thus each year the root system has a double job; it has to grow the fruit; it has to grow wood that will bear berries the next year.

Correct pruning, along in February and March, is one way to stimulate a good growth of new wood. Very little pruning will be necessary the first 3 years after the bushes are set out. After that, an annual pruning is essential. Blueberries have a tendency to overbear; the pruning holds down the crop to a reasonable basis and gives wood for next year's crop. In general, the first thing to do is cut out the dead and broken branches. Each year, with vigorous bushes, most growers cut out one or two of the oldest looking canes. Some of the weaker new shoots that started the previous year are cut out also, leaving the stronger ones to bear. Occasionally, due to a particularly good growing season, there's a dense growth of laterals and some of these should be removed. Send to your Experiment Station for bulletins and

get the Federal one for detailed directions. A beginner who buys from a good nursery not too far away will find the nurseryman an excellent source of advice.

HELPFUL POINTERS

There are a score or more of cultivated varieties of high-bush blueberries. The State College or local growers will tell you which varieties are best in a given location. There are early, medium and late ones. Not all authorities agree on the necessity of cross-pollination, but there's evidence that if several varieties are set the berries grow larger.

Most growers recommend that blueberries be set in the spring, rather than the fall.

The lighter the soil and the greater the distance above the water level of the soil, the heavier the mulching should be.

In good conditions, a yield of 1000 quarts from an acre is possible the fourth year after planting. The bushes will bear for many years. No one knows the exact limit of life for profitable production.

No fertilizer should be used the first year.

Since many home gardeners would like to have a dozen bushes, here is a way to get them going that means success. After the fourth year, you can figure on a yield of 3 or 4 quarts per shrub. Dig holes 16 inches deep and 20 inches across. Set in the plants and fill the hole by mixing the garden soil half and half with acid peat, or use black humus which you can dig in a swamp area where blueberries grow wild. In the latter case, fill the hole entirely with this

marshy, acid soil. Keep the soil mulched with sawdust, peat, or oak leaf mold.

The writer has had a group of 75 wild high-bush blueberries on his farm. Over the years, the yield was improved and the size of the berries increased by a severe annual pruning.

In the years ahead, we shall see many farmers and part-time farmers go into cultivated blueberries. It's a highly profitable crop in the right soil and location. With the exception of picking and selling, the part-time farmer can easily care for an acre.

CHAPTER TWENTY-NINE

Overcoming the Hazard of Frost

THERE ARE ways for the part-time farmer to conquer this enemy of profitable production. There are two points of special interest to the man who wants to make one or more crops bring in a cash profit. There are points involved for the family who want to run a big home garden and get the most possible from it.

First, most growers will agree that frost is the single most important hazard to be overcome in terms of making an annual profit. Each year spring frosts kill strawberry blossoms, melons, squashes and sweet corn in certain areas. Some seasons there is a very widespread frost that ruins these crops over an extensive section.

This means, from a business angle, that a season's profit is lost to the man whose crop is destroyed.

But it also means that the man who has taken steps to protect his crop will get a very much higher price—and a bigger profit. For 20-odd years the writer has watched the cycles work. The year when everyone has a big crop, the prices are low, unless a man is raising a fancy product and sells at retail from a roadside stand.

The year when a killing frost gets in its damage in May or early June (Boston latitude) is the year when prices

are very high. In this connection, one could recite some success stories that show earnings per acre way above figures quoted in the preceding chapters on various crops.

The home gardener with a plot for annual crops and an area for the permanent garden can control things easily. But the man who is planning on strawberries, melons, squashes and sweet corn for cash crops must make plans ahead. One reason why asparagus and raspberries are excellent crops for the part-time family is that these give no trouble so far as frost is concerned. If a killing freeze hits the asparagus, new shoots come up immediately. Raspberries blossom after danger of frost is past.

Strawberry Protection

If a man is trying for a 4000-quart yield from a half acre of strawberries, and depends on this for his profit crop, then he must be ready for a frosty night. There's only one practicable way the writer knows about. Buy enough heavy brown paper in 4-foot width to spread along and over the rows. If this is on a 2- to 3-inch roller, with the roller sticking through about 12 to 15 inches on either side, two people can spread a length of covering in a few minutes. The writer has experimented with different lengths of paper for covering berries and has come to the conclusion that a 50-foot length makes for efficiency when rolling it up the next morning after it has dried off. Two men, or a man and a boy, can cover half an acre in an hour or so. It takes several hours the next day to roll the paper up. If it seems as if the next night might also bring a frost, just pull the long strips in a straight line away from the strawberry rows. Then the next evening, one person can pull the strips back

over the rows. This method of using heavy paper will save 90 per cent of the crop. If the berry crop through the region is killed—and you have saved yours—you may get 50¢ or 60¢ a quart for your fruit instead of 40¢.

Melons and Squashes

Men who specialize in these crops commercially do two things to overcome spring frosts. First, more and more growers are using hotcaps to start a part of the crop. Hotcaps are made of specially treated paper; they have peaked tops and steeply slanting sides to shed rain. They are commonly used in diameters of 10 to 14 inches. The seeds of melons and squashes, and sometimes sweet corn, are planted under these. A wide flange at the bottom of the hotcaps is covered with soil to keep them in place in the event of winds. Six or 8 seeds are planted under each, and the plants grow under the paper for 3, 4, or 5 weeks, until danger of frost is past. Then the superfluous plants are pulled out or pinched off. This method is efficient. It means muskmelons can be ready for sale early in August if planted April 25 to May 5. Butternut, Acorn, or Delicious squash (all small varieties) will be ready in mid-August to late August, depending on growth conditions.

Using hotcaps, the hills are made in the places where the plants will grow. This frost protection is inexpensive, and the caps can be used for a number of years. One can get them at seed supply houses, farm supply stores and from most of the seed catalogs. It's wisest to get a large size, the 12 to 15 inch, instead of the 8 or 10 inch. The larger size means a large hill, and when the plants are thinned out,

it means each of the 3 or 4 plants left to grow has more room.

A second method of defeating spring frosts is to grow the plants in hotbeds or cold frames. Many people have the erroneous idea that melons and squashes do not transplant well. When they are 5, 6, or 7 inches high, they can be transplanted successfully if they are handled carefully and kept watered for a week or 10 days. Many good growers make it a point to do the transplanting on cloudy days, and if one can, just before a rain.

Some growers plant a part of these crops without any protection about 3 or 4 weeks before frost danger is over, and then if a frost is imminent, they go to the field with a big-bladed hoe in the evening and pull mellow soil over the plants for the night.

Here's still another device that may appeal to the part-time farmer who wants to start 100 to 200 hills a month or so early. Get hold of some fairly heavy secondhand canvas. Build a framework 18 or 20 inches square and 1½ inches high. Cut the canvas 2 to 4 inches bigger than the framework to allow some looseness. Tack this canvas to the framework, using good-sized tacks (No. 12 or 14). Put the tacks ½ inch apart so the canvas will be tight against the wood.

There's just one secret, but an important one, in using these frame covers. *Don't* put them down vertically over the the plants. Put them down with a sideways motion so the plants are bent over. Young plants are very soft-stemmed and bend easily. Frames like these are convenient to handle and can be used year after year on frosty nights.

Sweet Corn

Some growers are beginning to use hotcaps for their earliest planting of this crop, but most men use the tractor and a shovel-type cultivator to throw soil over the plants for the night. In the morning, the soil can be easily pulled from the plants, using the back of a hoe.

Fall Protection in the Family Garden

If the family wants to grow cucumbers late into the fall, plant 1 or 2 hills about July 1. Put the hills close together (24 to 30 inches). Then in September and October, it's easy to cover a small area with an old blanket.

The best way to have garden-ripened tomatoes through October, and some years even into November, is to set 6 plants in a rectangle, 18 inches apart. Use sturdy stakes 5 feet tall. Then on frosty nights cover the plants with a canvas. (When the final picking is made, wrap each green tomato in 2 or 3 thicknesses of newspaper and store in a cool, dry place. They will ripen gradually through the month of November.)

Protection for Fruit Trees

If a man wants to protect his home orchard, or if he's depending on an acre or two of peaches for his cash crop, the only logical method of protection is fire pots that use a low-grade fuel oil. Some growers try to get by with piles of brush ready for burning among the trees. There are years when there's just one frosty night at blossom time, and ready brush piles may save the crop. But that is taking a risk. The practical method is burning oil. Frosty nights are usually calm, with no breeze, or at most very little.

Therefore the heat rises rather directly. Write to your State College for directions for using these pots. They require an investment of perhaps a couple of hundred dollars an acre, but over the years the initial outlay comes back many times.

Hotbeds and Cold Frames

There's a definite place for these on both the part-time farm that plans on a big family garden, and for the man who is thinking in terms of cash crops and wants plants ready to transplant to the field.

In the old days, when horse manure was available from livery stables, market gardeners used hotbeds as a regular part of their operations. Nowadays, more of them use electrically heated hotbeds and small greenhouses for starting early plants. Perhaps between 50 and 75 per cent of growers use cold frames. The hotbed, as its name implies, has supplemental heat from some source. The cold frame depends on the protection given by wood and glass, plus heat from the sun.

For the home garden, these devices mean that one can start lettuce, tomatoes, eggplant, cucumbers, melons and squashes early and lengthen the bearing season. For the man who wants to get the big prices that the earliest crops command, it is a way to grow transplants. It's a matter of personal choice; some prefer hotcaps; others prefer to grow in a hotbed or cold frame, and transplant after danger of frost is over.

A handy man can make his own hotbeds and cold frames. They should be in a protected location on the south side of a barn or shed. If one is attempting very early planting,

have straw matting or canvas ready in the event the temperature falls very low. The Department of Agriculture Bulletin listed at the end of this book has specific data on how to build them.

HELPFUL POINTERS

If one wants the pleasure of early crops in the home garden or the high prices for certain crops as a profit income, it's necessary to overcome frost hazards. A half acre of melons, squashes or sweet corn, started early, can make a difference of $100 to $200 in the profit. There's no point in growing strawberries at all unless one has frost protection.

CHAPTER THIRTY

Hens—A Money-making Side Line

Next to the common cold, one is sometimes inclined to think that "chicken fever" is the most widespread affliction. In the book, *Success on the Small Farm*, the writer had a chapter entitled, "A Living From Hens." Far more people have written or asked about this phase of farming than any other.

The same line of reasoning is likely to attack the part-time farmer. He reads somewhere of a man (or woman) who keeps 300 hens and makes a labor profit of $3.50 per layer. Therefore the beginner rationalizes, "I will remodel an old barn, raise 500 sexed or sex-linked pullets a year, sell off 200 each fall and run 300 layers, and make $1000 cash profit. I'll forget about the cash crops: asparagus, strawberries, raspberries, melons, sweet corn and squashes. I won't have to worry about soils, fertilizing, harvesting, and frosts. I'll concentrate on raising 500 pullets; I'll keep 300 layers. That will be the most businesslike method for me to add $1000 to my income."

Let it be said, first of all, that a few (a very few) part-time farmers do well with poultry. If a man's wife is genuinely interested and willing to do much work, if the laying pens and the growing range have running water, if the eggs

can be sold at retail prices to steady customers at the roadside stand, it's possible for a part-time family to make the $1000 profit from 300 layers.

But a beginner who contemplates this program must remember a number of unfavorable factors. He will have to do routine chores night and morning, 365 days a year. It's vastly different taking care of 8 or 10 hens than it is 300. Raising 300 first-class pullets a season is a major affair.

One very pleasant feature about the cash crop program is that while a family has much work to do during the growing and harvesting seasons, when November comes a man can have a little leisure until spring. It's not too laborious to care for a cow, a calf, a pig and a few hens. If there are children in the family, they can be trained to do many of the chores. But when you come to 300 laying hens, it's entirely different. In fairness, it should be said that if a man likes poultry, it may be that this is the right avenue of approach for him to make $500 to $1000 profit. It may be that $500 is the goal. You can make $3 or more profit per hen—if you have an excellent laying strain—and if the eggs are sold at retail prices. However, in place of planning about soils, fertilizers, frosts and harvesting, you'll have to contend with sickness and diseases among the hens and growing stock.

If you've never kept poultry on a commercial basis, you'll be amazed at how closely it ties the family to the routine that's essential for success. Even if $500 is the goal and a family keeps 150 layers and sells the eggs at retail, it's a confining business.

So much for the discouraging side of things. You'll ask,

"Aren't there any good features about poultry keeping?"

Yes, there are a number. Especially interesting is one of the side lines of what we commonly think of as regular poultry keeping, that is, the production of high-quality table eggs.

Most of the points mentioned in Chapter Sixteen on The Family Flock of Hens apply here:

1. Buy a good commercial feed and stick to it.
2. Have running water in pens and on the growing range.
3. Buy sexed, or hybrid, day-old chicks. For the Northeast, the writer recommends the Barred Rock, Rhode Island Red, cross.
4. Use electric brooders.
5. Experiment with feeding methods. Try the all-mash system of feeding. Try the system of keeping laying mash in some hoppers and hard grains in the others.
6. Use dropping pits and built-up litters.
7. Laying hens are kept confined in their pens all the year. No outside yards are necessary.

But if a family decides to make $500 to $1000 in poultry, there are a number of other points that need to be mentioned.

You should plan to start at least a third more baby chicks (sexed) than you want to go into the laying pens as pullets in September or October. This is where a great many poultry keepers make a serious mistake.

You are after pullets that will produce 200 eggs or more in their first laying year. The only kind that will do this are the top-quality birds: good sized, deep bodied, vigorous, and with clean-cut, feminine-looking heads. Most poultrymen have a tendency to house all the pullets they raise. It's a serious mistake—and it costs money.

The American Breeds: Reds, Rocks and Wyandottes, need 4 square feet of floor space per bird. The Leghorns will do well with 3 or 3½ square feet. As an example, let's say a man is running 3 flocks of 100 layers each. He started 500 sexed baby chicks under 2 brooders, 250 to a lot. Along in September he has 400 left; some have been eaten as broilers and small roasters; there was a mortality of 5 per cent. But in September, when the yearling hens are sold off as fowl, the part-time farmer has 400 good-looking pullets left.

He says to himself, "I have 3 pens, each 20 by 20 feet. They were meant for 100 layers each, but I can divide up the other 100 among the 3 pens and get by all right." This reasoning has grave errors in terms of possible profit. First, if the hens are crowded, it brings trouble. Cannibalism is much more likely to occur; if respiratory diseases get started, they seem to spread more quickly. Second, many of those 100 extra pullets should have been eliminated as possible high-profit makers. If one looks at a flock of 400 pullets on the range, they may seem much alike.

But a major secret of making that $3 or more per hen lies in strict culling. From any average flock of maturing pullets, a man can cull one third and make himself money. There's no secret hocus-pocus about learning to cull. Study the bulletins and the booklets put out by the large commercial feed concerns. Look for these points:

1. Good size
2. Deep body
3. Good width between the legs
4. Bright eggs

5. Early sexual maturity as shown by well-developed combs and wattles
6. Broad back
7. Good feathering
8. Large vent
9. Vigorous appearance and activity

Cull out:

1. Undersized birds
2. Pullets with long legs set close together
3. Birds with heavy-looking heads and dull eyes
4. All pullets with crossed bills
5. Pullets with unusually long necks and narrow heads
6. Birds slow to feather
7. Birds that act lazy and dumpish

The writer puts it down as a first principle of success that at least a third of the pullets should be culled.

The Best Breed

This point troubles beginners. If one lives in an area where the market demands white eggs (New York and Philadelphia, for example), the answer is easy. The logical breed is White Leghorns. The part-time farmer can order the number he wishes of sexed chicks and get 90 per cent or more females.

When the market calls for brown eggs, it means one of the American breeds, or sex-linked (hybrid) chicks.

Chore Efficiency

The part-time farmer who is handling from 150 to 300 hens should devote real study to this matter. We'll assume he has running water controlled by a float valve, large feed hoppers, and one nest for each 4 or 5 hens. But that's

by no means the whole story. If you have three 20 by 20 pens in a row, make a carrier platform to run the length of the house. On this you can carry feed, nesting litter, and eggs. You can get details of building from a bulletin. A carrier on a track will save tens of thousands of steps and hours of time in the course of a year.

Plan the grain room as efficiently as you can. Build a table on which the eggs can be cleaned, weighed and packed. If this table is the right height so one can work at it comfortably seated on a stool, it means much strength will be saved.

If, by chance, you remodel an old barn so you have laying pens on the second floor, rig up a tackle and pulley so the 100-pound bags of grain and bales of litter can be lifted easily. Build a chute to the second floor so the litter and droppings can be shoveled into it and carried to a truck or wagon body below.

The Family's Part

The part-time farmer should not attempt to make a cash profit from hens (as distinguished from 8 or 10 hens for family use) unless his wife is interested in this phase of farming. A man can do the feeding night and morning. He can do the heavy chores of cleaning out, etc. But if he's away at work, it means the wife has to pick up the eggs three or four times a day (more often, in zero weather). She will do most of the packing of the eggs in the cartons. She will sell the eggs at the stand in front of the house.

Right here is where many a part-time farmer makes a mistake in his thinking. He reasons, "We'll keep hens, but instead of selling, in cartons, by the dozen at the roadside,

we'll sell in 30-dozen cases to a good wholesaler who, in turn, sells to a fancy trade such as hotels and better restaurants." This is a possibility, of course. But you won't make $3 a hen from this method; it will be nearer $1.50 or $2. It makes a vast difference in profits whether you sell at retail at an average year-round price of 50¢ a pound, or an average of 30¢ or 35¢ wholesale.

So, before embarking in poultry as the main cash crop, be sure the whole family understands that it is day-in and day-out work, 7 days a week.

Another Poultry Angle for Part-time Farmers

We are just beginning to see the development of another angle that offers possibilities to the man who is primarily interested in poultry rather than cash crops as a side-line income.

The growing and selling of capons at retail or wholesale is certain to be an increasingly important phase of poultry work. Capons are male chicks that have the testicles removed when they are a few weeks old. They don't necessarily grow any faster than cockerels but they grow considerably larger and the meat is very tender and delicious. The public is beginning to realize that capons are more economical to buy because there's more meat in proportion to the weight of bones. The public is learning that the weight (8, 9, or 10 pounds) is a convenient one, between regular fowls and roasters on one hand and turkeys on the other. Consumers are gradually spreading the word that capon meat is better than other types of poultry.

The caponizing operation is a simple one, and the equipment is inexpensive. A man should try it first on a few

birds that have been killed for meat. The technical angles are explained in directions that come with the tools.

It's possible today in practically every section to buy male chicks at a reasonable price. Most poultrymen want the females. (In the Rhode Island Red male and Barred Rock female cross, the female baby chicks are a bronze black with no bars; the males are all barred and can be distinguished when 24 hours old.) This demand for the females often poses a problem for the breeder or hatchery-man who has thousands of surplus males on hand, and tends to keep the price for them in the low range.

There are interesting possibilities in capon production as a cash side line. True, for 6 to 8 weeks, if the chicks are bought the first of April, the wife will have to work with them while the brooders are going. There's no work with the brooders per se, if electric ones are used. But the mash hoppers and waterers have to be tended to the first 8 weeks or so. When the chicks are 2 months old, the hoppers can be big enough so a man can take care of them night and morning, and an automatic waterer can be used.

However, after the males are caponized and out on the range, the man can do all the work through the growing season. Big, homemade range shelters offer all the protection needed from the weather. In late September and October, it may be a good idea to hang burlap curtains around the edges to stop drafts. In many situations, the capons will be sold alive at prices considerably above male roasters.

The writer hasn't figures enough on this phase of the poultry business to offer more than a general opinion. But the situation seems to shape up about like this: it costs around $1.25 to $1.50 to raise a capon of American breed to

9 or 10 pounds. If the selling price, liveweight, is 30¢, the gross on a 9-pounder is $2.70. Therefore, it seems one is being on the safe and conservative side if he says that, in most situations, a man can make about $1 a bird profit on capons—selling them liveweight in the fall when they are 7 to 8 months old.

If a man could build up a trade and sell them over the roadside stand from September through November, he could increase his profit at least 50¢ per bird, paying someone to do the killing and feathering.

At any rate, the writer believes there's a better possibility for side-line cash for the part-time farmer in capons than in producing eggs. It's work from April to late fall, but it isn't year-round labor as egg production is.

HELPFUL POINTERS

For the part-time farmer, the only logical way of renewing the flock is by purchasing day-old chicks from a good breeder. Six or 8-week-old pullets and ready-to-lay pullets cost so much that it cuts off part of the profit. The part-time farmer shouldn't invest money in incubators and attempt to be a breeder as well as an egg producer.

From the writer's experience, 200 is the best number of chicks to start under a brooder—both for good growth of chicks and efficiency of chores.

If you're thinking of poultry as a means of making $500 or more profit, don't buy a place unless it has a long poultry house or a barn that can be remodeled.

The average egg production per hen in the United States is probably under 125. One secret of success is to buy chicks

from a strain that will lay 200 eggs per year. It costs almost as much to feed a hen that lays 125 or 150 as a hen that lays 4 dozen more.

STANDARD WEIGHT

	Hen, pounds	*Cock, pounds*
White Leghorns	4	5½
White Rock	6½	8½
Rhode Island Red	6½	8½
New Hampshire Red	6½	8½
Plymouth Rock	6½	9½
Red-Rock Cross	7	9

As for the best litter for laying pens, the writer likes a mixture of shavings and peat moss. Add a little fresh material from time to time. Clean the pens once or twice a year. If an area before the window gets wet from rain, clean this out immediately. Otherwise, the "built-up" litter system is perfectly satisfactory.

Give the laying pens a first-class housecleaning before the pullets take over in the fall. Mop the floor and roost area with a hot lye solution—one can of lye to 5 gallons of hot water.

Many poultrymen use a half inch of sand on the floor as a base for litter and to keep it from sticking.

DDT will control flies.

Questions are often asked about batteries for laying hens and the battery method of growing chicks. There are poultrymen who are using batteries successfully, but the beginner is advised to stick to traditional methods and to try out batteries on a small scale. As more is learned about them, it may well be that this method will increase in efficiency and popularity.

Poultry manure (the droppings and litter) is valuable.

Often a man can realize a substantial sum by selling this by-product to a greenhouse operator or nurseryman.

You can't make the top profit from laying hens unless you have electricity available in the pens to increase the length of days from November to March. In a 20 by 20 pen, two spaced 40-watt bulbs will give enough light. It's essential that the lights be arranged so the hoppers and the waterer will receive good illumination. An alarm clock with a toggle switch will turn them on. An extra egg or two in November and December will pay for the cost of electricity, and it's probably on the conservative side to say that artificial lighting means from 1 to 2 dozen extra eggs per hen between November and March.

In the chapter on The Family Flock of Hens, it was stated that it costs about a dollar to raise a pullet to laying age, with feed costing about 3¢ a pound. It used to be a somewhat standard rule among poultrymen that the cost of raising a pullet was returned when the hen was sold as meat at the end of the laying year.

It may help to know that it takes about 35 pounds of feed to grow New Hampshires, Reds, and Rocks to laying age. In figuring total expenses of raising pullets, probably the feed represents about ⅗ of the complete cost. The American breeds eat about 100 pounds of feed per hen a year. If a hen produces 17 dozen eggs per year and you receive an average price of 40¢ a dozen, that gives a gross of $6.80. If feed is $3, that leaves $3.80, out of which must come interest, taxes, amortization, etc. If you have a retail trade that averages 50¢ a dozen, or $8.50 gross per hen, you will come somewhere near the $3 net profit figure per hen.

Be sure to keep records on the poultry enterprise. You're

going to work hard; you want a fair return for your labor. The only way to tell is by keeping records from day to day. It takes a few minutes per week; but they will be the most valuable ones you'll spend on the poultry end of things on the part-time farm.

In case you feel it wouldn't be too much work to carry water to the pens, consider these facts. Experiments show it requires about 8¾ tons of water a year for each 100 layers. Time studies on poultry chores show that having running water in the pen reduces steps and time consumed approximately 50 per cent.

The following suggestion applies to this chapter and also to the next one on turkey raising. If a man makes a specialty of raising capons or turkeys and wants to spread the selling season at the stand over a period of weeks to get retail prices, he should investigate the large-size, walk-in type of farm freezers. Depending on the size of the room or unit, one will need a compressor of ½ horsepower or more. Write the Farm Engineering Department of your State College if you are interested. A walk-in freezer means that many capons or turkeys can be dressed at one time and kept at a temperature of 34 to 38 degrees.

CHAPTER THIRTY-ONE

Turkeys—A Profitable Cash Crop

IF THE writer were going into any phase of poultry farming today as a part-time proposition, and if the members of the family were interested, he would choose one of two lines. He would either raise capons to sell in the late fall or he would raise turkeys.

Both of these lines offer interesting possibilities. The reasons in favor of each are similar. Both represent a type of work that means close attention for a 6-month period, especially the first 8 weeks. A man does not need to keep breeding stock. Along in the fall everything is sold out and during the next 6 months there are only the chores in the barn to attend to if a man keeps a cow, or goats, and 6 or 8 hens.

Furthermore, the cost of getting started is not too great. One needs electric brooders, feed hoppers and waterers. In the case of turkeys, there must be wire-bottomed runs for the poults on the south side of the brooder house.

There are many turkey farms today where growers believe they get the best results by keeping the turkeys on wire right through the season until they are dressed off. On other places, after the young birds are 4 months old, they are put out on the range where they roost on poles until November or December.

The part-time farmer is naturally interested, first of all, in the amount of profit per bird he can make. The net profit depends on several factors: cost of the day-old poults, cost of grain, interest on money invested, a fair charge for amortization of equipment, and the price received for the birds. In many cases, it will work out somewhere near the following figures in terms of a 15-pound turkey. The total costs where all grain is bought may be in the vicinity of $3. If the turkey brings 35¢ at wholesale, liveweight, the gross is $5.25, leaving a margin of $2.25. If one can take orders ahead and sell the turkeys dressed at 50¢ a pound, the gross per bird is $7.50. Even if one hires someone to do the killing and feathering at 50¢, that brings the profit to $4 a bird.

This is a good illustration of why the writer insists that, if possible, a food producer, either part-time or full-time, should put even more attention into the marketing than into the production end of farming. The real profit margin comes when a producer gets 100 cents of the consumer's dollar.

Thus, if a man wants to raise 200 turkeys, and sell them dressed for retail at Thanksgiving and during the next few weeks, it's entirely possible to make $500 and more cash profit from that number of birds.

There's another angle that should be mentioned here. You have probably read items in the papers about the new type of turkey (perhaps it will be a new breed) that is being developed by private breeders and by the U.S. Research Center at Beltsville, Maryland. In recent years, there has been a great demand for 12-pound turkeys, instead of the 15-, 16-, and 18-pounders that were most common. Real progress

has already been made in breeding turkeys with shorter legs, blockier bodies and more breast meat. We are going to see more and more of these compactly built, smaller turkeys. Furthermore, families are beginning to buy turkeys over a longer period—not just for Thanksgiving and Christmas dinners. The family that is interested in a 6-month program in poultry raising will do well to investigate the possibilities with turkeys.

Equipment to Start

If a man is thinking seriously of turkey raising, he should buy a place with a barn or long poultry shed. It makes the chores much easier if the work during the first weeks can be done under cover. Observation shows that flocks of 100 baby poults do better than when they are started in larger units. This means a good-sized electric brooder for each unit. Various-sized waterers and mash hoppers will be needed for the first 16 weeks.

The question always comes up of the advantages of the three main types of brooders: coal-burning, oil-burning or electric. Sometimes a system of hot water pipes is used in the larger commercial plants; heat is furnished by a main boiler, and the pipes run along through the pens with canopies over them. Both coal and oil brooders are satisfactory if one buys good quality. But coal has to be tended night and morning; with oil there's the danger of fire. The best type, in the author's opinion, is a good electric brooder in a well-built brooder pen.

In the past, certain writers have insisted on individual brooder houses. A house, 12 by 12 feet, will handle 100 to 150 poults until they are 4 months old and can be moved

to the range, but a long house with pens 12 by 20 feet is a timesaver. In this, with a wire porch, there's ample room for 100 turkeys to be raised to maturity. If the same number of poults are to be raised on the range after 4 months, a porch 12 by 12 feet is large enough. If you plan to keep the turkeys on the wire until maturity, figure on a porch 20 by 20 feet. A few dollars extra spent for spacious outside pens represent a good investment.

Brooding

You can get the technical details from the bulletins, but here are a few general points to serve as guideposts. Don't economize on heat. There's always argument among poultrymen about the right heat to start the poults. If you keep the temperature at 100 degrees, 4 inches from the floor, just under the hover edge, the poults will be comfortable. You'll avoid the tragedies that come with too little heat: crowding, piling, smothering and digestive troubles. A chilled poult is likely to be a loss. After the second week, reduce the temperature 5 degrees or so each week.

Put a fence of cardboard or boards, or wires covered with burlap, around the brooder for a few days until the poults learn the source of heat. Sand, covered with shavings, is an excellent and economical litter. After the first 10 or 12 days, let the young poults start going out onto the porch. Keep them in the brooder house if the weather is cold, cloudy and rainy. (One of the points to remember about turkeys is that they are very tender creatures the first 3 months. After they have feathered, they are very hardy. They can stay out in the cold during rains of October and November without any harm.)

Feeds and Feeding

Baby poults are peculiarly stupid about learning to eat. A good percentage of the mortality that often comes in the first 64 hours is due to the fact that they don't know how to get food. Put the mash on paper plates, and spend some hours watching the flock to see that all the poults come out from under the brooder to eat and take a drink of tepid water. After a day or two, replace the plates with the regular small feeders.

As far as the feed itself is concerned, there's no problem. Use the commercial preparations of a reliable feed concern —all the way from the first day to the fattening ration of the last few weeks. Many growers use all mash the first 8 or 10 weeks and after that feed mash in one hopper and hard grains in another. This greatly simplifies the feeding and chores.

Sun Porches

Whether raised all the way on wire, or just for the first 16 weeks, there must be wire porches to keep the young poults off the ground. This greatly reduces the hazard of "blackhead," the greatest enemy of turkey raising.

A man can make his own sun porches without trouble and at reasonable expense. A sun porch is wire stretched over a framework. Use 2 by 4's, with cross pieces every 4 feet. A good weight of wire is 16-inch gauge in 1-inch mesh. Make the sides of the porch 3 feet high. Sides and top may be covered with regular hen wire.

Build the feed hoppers and waterers into the sides of the porch so they can be attended to from the outside. Have a large overhang on the hoppers so rain cannot get in and

cause the grain to mold. Running water is the single greatest help in reducing chore time. After turkeys are 3 or 4 months old, they drink a tremendous amount of it.

Range Versus Sun-porch Rearing

Beginners often ask this question, "Is it better for a part-time farmer raising 200, 300 or 400 turkeys to use the range method of rearing after 4 months, or to keep the birds on wire all the way?"

From observation, the writer sees little difference as far as raising healthy birds is concerned. His investigations as to the difference in profits are inconclusive.

In confinement rearing all the way, plan on 5 or 6 square feet per bird, figuring both the space in the brooder house and on the sun porch. A flock of 100 birds thus needs 500 square feet as a minimum. (The writer's recommendation of a sun porch 20 by 20 feet, plus a brooder-house space of 12 by 20 feet, means 640 square feet for 100 turkeys.)

There's one great advantage to the confinement method of rearing for the part-time farmer whose time night and morning is limited. It permits excellent efficiency in work. The equipment is permanent. Feeders and waterers can be carefully arranged. Droppings fall through the wire floors of the porches and can be cleaned up each week end.

If the range method is used, plan an acre for each 100 turkeys. Try to keep good pasture ahead. Oats and rape are a good feed. If seeded in early spring, they are ready for pasturage in about 7 weeks. Sow oats at the rate of 2 bushels per acre; dwarf Essex rape at the rate of 5 pounds per acre.

If there's land enough to have a "permanent" pasture and the flock can be shifted from one section to another each 3 or 4 weeks, it pays to get this area sowed down to a good pasture mixture of grasses that turkeys will really eat. Leaflet No. 40 from the Extension Service of Massachusetts State College recommends the following seed to use per acre:

5 pounds timothy
5 pounds red clover
3 pounds alsike
5 pounds Kentucky blue grass
2 pounds Ladino clover

"Finishing Off" the Turkeys

Turkeys grow fast but during the last 5 or 6 weeks they should be fed plenty of whole corn. Corn gives a pleasing yellow color to the skin as well as putting on weight rapidly. Once the framework is fully developed, the profit margin can be increased by extra feeding to put on flesh. Customers like the plump, full-breasted, yellow-skinned birds.

Killing and Dressing

It's a real task to kill, feather, and dress off a hundred or more turkeys for retail sale, but this is an essential point for the man who wants to make all the possible profit from his project. You'll need help for it, which should be arranged for ahead of time. There's always the problem of refrigeration to be solved. Some turkey growers are finding it worth while to install a walk-in freezer space where the temperature can be kept around 40 degrees. Smaller producers can chill the carcasses in ice water and then hold them in big covered boxes with ice cakes to keep temperatures down.

Everything possible should be done to make an attractive carcass for the consumer. Clean all the blood from the head and mouth and wrap the head in paper. See that the feathering is a complete and neat job. The body cavity should be washed out thoroughly and the bird wrapped for sale in heavy paper, neatly tied. If you go into turkeys, you want to build up a clientele that will return year after year and that will pay you top retail prices for a fancy product.

HELPFUL POINTERS

Keep a dim light under the brooder the first 4 weeks. A 10-watt bulb will guide the poults to the heat if they get outside the circle.

There are a number of popular breeds, including the Bronze, White Holland, Narragansett and Bourbon Red. Most popular is the Bronze, but the White Holland has been gaining in recent years. Watch the journals and bulletins for news of the new-type, bigger-breasted, smaller-weight strains.

Start the brooders at least 48 hours before the poults are expected in order to see that everything is operating perfectly.

Order the poults well in advance and don't be afraid to pay a little extra to get quality young stock from a reliable breeder or hatchery.

If you raise turkeys in confinement, that is, on the wire porches, it pays to raise some green feed and carry it to them. It holds feed costs down and maintains health. Green feed helps prevent feather picking. Rape and oats are two

good crops to raise for this purpose. An excellent plan is to have a patch of Ladino clover which one can fertilize heavily and keep watered. Many cuttings can be made from this in the course of the season. It is succulent feed, high in protein and relished by the turkeys.

CHAPTER THIRTY-TWO

Other Ways to Turn a Dollar

IF ONE has studied part-time farming projects over a period of years, one fact quickly becomes evident. Men and their families succeed in the projects in which they are interested.

It would be easy for the writer to say, "Don't go into the income-producing lines mentioned in this chapter because only a few succeed with them." But this is the wrong approach. As literally hundreds of thousands of city and suburban families move to the countryside in the years ahead, some of these lines may offer just the opportunity that fits a man's inclination. Some people make a success of them; others start with one or more and after a period give them up.

The traditional approach of writers is to say, "Start slowly and gain experience as you go." That's good advice in one respect. There's another angle, however, that a man ought to keep in mind. It's a psychological angle, but it is important. If one starts too small, there's so little capital invested that the venture becomes a minor concern in a man's thinking and plans. There's a happy medium. But it's the writer's opinion that the chances of success are greater if a man invests enough so that it's a reasonably important af-

fair to him. If one is a beginner, keep in mind that the families who make a financial success of these projects are far fewer than those who don't; but also keep in mind that here and there a family is doing well with them.

Beekeeping for Profit

This is a highly specialized field, but there are men who average $10 a hive profit year after year. A 100-pound yield from a strong colony is not at all unusual, and 20¢ a pound is not a high price. It costs from $10 to $15 a hive to get started.

One of the writer's earliest recollections is helping his father with bees. We had from 10 to 20 hives on our farm. Father became interested in them because we needed bees for pollinating our 800-tree apple orchard. Many people have a senseless fear of honeybees. With a veil and gloves, and working around the hives only on sunny days, there's no trouble at all.

There's one noticeable point about successful beekeepers. They are all enthusiastic students of the business. In many respects, bees are the most interesting of all forms of "livestock." The organization of the colonies is fascinating: the queen, workers and drones. The building of the queen cells that look like a peanut in the shell, the hatching of the first new queen and her destruction of the other queen cells so she will have no rival; the nuptial flight of the new queen, the swarming—all these are phases of the bee's life cycle that one must know.

The technical information is available in books and bulletins, but the beginner should be familiar with certain fundamentals. Successful beekeeping depends primarily upon

one fact. Strong colonies in the spring are the ones that make a profit. If a colony has to spend weeks building up its strength, it doesn't gather the honey that means profit for the keeper. There's an old-time jingle in the country that tells the story:

A swarm of bees in May
Is worth a load of hay,
A swarm of bees in June
Is worth a silver spoon.
But a swarm in July
Is not worth a fly.

The meaning behind this is that a strong colony that has wintered successfully has so many bees in May that the workers build queen cells with the idea of swarming. Swarming means that the old queen flies away with part of the bees, leaving the other part with a still unhatched queen. When the new queen is fertilized, she starts to lay eggs in the cells.

A good queen is essential to profitable production. The average life of a worker bee—the ones that gather the pollen, rear the young, and build the comb—is about 8 weeks. Experts estimate it takes the collective effort of about 160,000 bees to produce 1 pound of honey; 80,000 to bring in the 4 pounds of nectar and 80,000 others to evaporate and modify the nectar by buzzing their wings. It requires from 5 to 8 pounds of honey to make 1 pound of beeswax.

The following is from Leaflet 148, Massachusetts State College Extension Service, *Bees for the Beginner*, under the heading, "Organization of Colony." It gives a good picture of the seasonal setup.

"A normal colony in the summer is comprised of three

types of individuals: workers, queen, and drones, together with the developing brood.

"In a normal colony, there is only one queen. . . . The queen requires 16 days for development from egg to adult. She mates, probably only once, six to nine days after she emerges. She then begins egg laying and may lay as many as 1500 to 1600 eggs a day. . . . During the height of brood rearing there may be a few hundred drones in a strong colony. As fall draws to an end, the drones are starved and then are carried or driven from the hive. Normally drones do not live over winter. The number of workers likewise varies with the time of year. It is usually lowest, 10,000 to 25,000 or more, from April 1 to 15. Then the number increases so there may be 60,000 to 75,000 bees in a colony. As fall approaches, the amount of brood diminishes and finally egg laying stops. After the brood emerges and as soon as the temperature falls to 57 degrees Fahrenheit, the bees form a cluster. Inside the cluster the bees produce heat by muscular movements. The bees on the outer part of the cluster serve as insulation, thus preserving the generated heat. The bees exchange positions from the center to the outside of the cluster and vice versa."

The part-time farmer who is interested in beekeeping as a project to earn $500 or more additional income per year should do the following:

1. Get bulletins and books and study the business.
2. Get acquainted with the apiarist at the State Experiment Station.
3. Get acquainted with a successful beekeeper in the region.
4. Plan to sell the honey at retail from a roadside stand.

It's a specialized business, but it offers good opportunity for one who is interested. Honey sells at a high price. The average yield of surplus honey (that which is not needed by the bees for food over winter) is probably between 50 and 75 pounds, but good apiarists get 100 pounds or more.

Green Peas for a Cash Crop

For the man who wants to make $300 to $500 profit from an acre of soil and have his season's work over by July 1, the best annual crop is green peas. It has certain definite advantages for the part-time farmer. Unlike asparagus, the work is practically all done for the year when the last picking is made. With asparagus, one has to keep cultivating and make an occasional dusting to control the beetle. When peas are harvested, the soil is plowed and a green crop put in, perhaps twice before the fall seeding of domestic rye grass.

The men who are making $500 an acre from peas emphasize the following. First, one must have a sandy loam or light loam soil with good drainage. It is the early planting that brings the high profit, and lighter soil dries out earlier so it can be worked. The earliest peas on the stand bring 10¢ or even 15¢ a pound. A good average yield is 150 bushels, and since a bushel weighs 28 pounds in most states, a man can gross $420 on a 150-bushel yield at 10¢ a pound. But here again, the part-time farmer who is out to make all the profit possible from an acre will not be satisfied with just a "good average" yield. He will plan to grow 200 or more bushels per acre.

Second, top-notch growers emphasize soil preparation and generous fertilization. Harrow 6 or 8 times. After the

first harrowing, broadcast 1000 to 2000 pounds of a general organic-base fertilizer, a 6-6-6 or 5-8-7 formula. Experiment with different amounts of fertilizer. The writer has not done as much experimenting with this crop as with others, but his conclusion to date is that 1½ tons (3000 pounds) will increase the crop on good loam to well over the 200-bushel mark—even close to the 300-bushel yield.

Most growers make three plantings to have a selling season of 4 to 6 weeks. If one is selling at retail, it's better to spread the season and get retail prices than to have a greater yield at one time than the trade can take. For best varieties, write the State Experiment Station.

Seed should be planted 1 inch in depth. After the soil is finely pulverized, furrow out to a depth of 5 inches; then as the peas grow, the cultivator will gradually fill in this furrow until the soil is level. The distance between rows depends on the variety, but with the dwarf varieties like Blue Bantam and Hundredfold (which the writer finds most profitable), the rows can be 24 inches apart.

Arrange ahead of time for pickers. You will need 8 to 12 to keep the area picked each day. Fresh-picked peas are a specialty and are very popular with customers—if they can have a fresh product. Peas that are 2 days old, the kind one commonly gets in many stores, have lost much of their flavor and sweetness. Green peas are an excellent crop in many localities if one has the right soil. They grow easily in the spring; therefore one does not need irrigation. They stand a surprising amount of frost. If a part of the acre is planted very early and a heavy frost is imminent, it's an easy matter to throw soil over them with the tractor cultivator.

Tomatoes

For some reason, a surprising number of beginning part-time farmers have a desire to grow tomatoes. Many men have said to me, "I'm going to raise half an acre of tomatoes. I've read that you can grow from 10 to 20 tons an acre. Suppose a man raises 5 tons on half an acre. That's 10,000 pounds. At 10¢ a pound, it means an intake of $1000. It won't cost over $300 or $400 to raise and pick them. Looks to me as if tomatoes were one of the best crops of all."

There are families who do well with tomatoes. They raise fancy berries (a tomato is technically a perennial herb); they develop a clientele that pays a fair price. But the writer's observations over the years tend toward the discouraging side with this crop. Two years out of 4 the price is low. Big crops come on and the market is glutted.

The men who make $500 an acre follow certain principles. First of all, they have a small greenhouse or hotbeds where they start plants very early. The plants are in blossom when they are set in the field the end of May (Boston area). As a result, at least a part of their crop comes on before the bulk of other farmers' plantings are ready to harvest. For the family that's thinking of tomatoes as the main source of income, this point cannot be emphasized too strongly.

This means not only early-started plants; but it also means the best of loam soil, heavily fertilized. Spread a general formula at the rate of 2000 pounds per acre, and disk it in well. Good commercial tomato growers generally prefer this instead of fertilizing around the individual plants as one commonly does in the home garden. If one is using the same half-acre or acre each year, it's essential to fertilize

heavily to maintain adequate amounts of nitrogen, phosphorus and potash.

Furthermore, to get the $500 profit year after year, one must have irrigation. If you have water available, it's a good guarantee of big profits. When there is a period of drought and production is down, prices are not only high at the beginning of the season, but they also stay relatively high right through the cropping period.

It is interesting to note that tomatoes are tolerant of soil acidity. They will produce well in soils that range from pH 5 to pH 6.8. Some growers believe in staking; others let the vines run. If staked, the plants are usually set 2 feet apart in rows 3½ to 4 feet apart; if allowed to run, a common distance is 3 feet apart in rows 5 feet apart. The average yield of good growers is probably around the 12- to 15-ton mark. Get bulletins from your State College for varieties that do well in your section.

Blackberries

Readers of *Success on the Small Farm* have asked why blackberries were not included as a good specialty crop. The reason is this. After watching part-time farmers set a plantation and then after a few years discard blackberry growing, the conclusion is inevitable that, for the majority, blackberries do not turn out as well as other crops.

Yet, here and there along the roads, one comes upon a family that has specialized in this fruit and is doing well with it. Big, juicy, fancy blackberries are a delicacy. They sell as well as strawberries, raspberries, or fancy peaches. The writer tried blackberries and gave them up because

they were so difficult to handle in comparison with raspberries.

One needs armor to work in the plantation. The thorns are long and sharp. The canes grow long and droop over one another. Cleaning out the hedgerows after the fruiting season is a battle. Blackberries are a biennial, like raspberries. The canes grow one season, fruit the next, and then die. Another habit of the blackberry is to send its runners a long distance underground, and then to start a new plant yards away. This means that one has to battle new suckers all the time between the rows.

The canes must be thinned out to keep a hedgerow under control. Different sections of the country use different methods of growing. Some growers tie the canes to one wire; others use a 2-wire trellis; still others depend on severe pruning and use no trellis at all. A few growers run a wire either side of the hedge, about 18 inches to 20 inches apart. Most growers prune back the long tips in the spring.

So much for this side of the subject. There are some favorable factors. The life of a blackberry plantation is long, the same as raspberries. In good loam soil, with a broadcast application of 1000 to 1500 pounds of general fertilizer, plus irrigation for dry weather, one can raise more than 5000 quarts per acre. Fancy blackberries will bring 50¢ a quart. There's one good point about this fruit that may appeal to a beginner. It's a crop with which you will have almost no competition.

Different varieties have been developed for various regions of the nation. Eldorado is the leading variety in the Northeast.

CHAPTER THIRTY-THREE

Good Recipes Based on Farm-raised Foods

CITY AND town families who are accustomed to buying all their food from stores will be happily surprised at the great amount of food inexpensively produced on the part-time farm—if the family is in earnest about reducing living costs.

Many of these recipes are from the author's *Countryman's Cookbook*. The family that has a big garden of vegetables and fruits, that has chickens, rabbits, a cow or goats, and perhaps raises a pig or beef, can cut its food costs to an amazing degree. A big garden, plus livestock and hens, can mean $700 worth or more of food to a family of four.

BAKED LIMA BEANS WITH SAUSAGE

2 cups dried lima beans
¾ pound sausage
1 large or 2 medium green peppers
2 teaspoons salt
4½ tablespoons of maple syrup or brown sugar
2 cans (10½-ounce size) tomato soup

Soak beans overnight in cold water. Drain, cover with water and simmer until tender. Put pinch of soda in water while simmering.

Large limas need to simmer about 1½ hours. Put in layers in bean pot: beans, cut-up sausage, chopped green peppers and salt. Add the syrup or sugar; add the tomato soup warmed. Bake 6 hours at 300 degrees.

Beef Stew—Rabbit Stew—Pork Stew

2 pounds of cut-up meat
Cut-up white potatoes, turnips, onions, carrots, parsnips (*Vary amounts to suit family's taste.*)
Salt, pepper

Start the meat in 1½ quarts of water. Simmer slowly until meat is half-cooked, add vegetables. When stew is done, set aside to cool. Reheat very slowly before serving. If you like stews thick, add flour paste or rice to get consistency desired.

Beef or Rabbit Casserole

1½ pounds of pieces of meat, rolled in flour and browned in frying pan
2 sliced potatoes
2 sliced carrots
1 sliced onion
Salt, pepper, bayleaf, ½ green pepper

Arrange in casserole. Add water to frying pan in which meat was browned. Thicken slightly with flour paste and pour over casserole. Bake at 375 degrees for about 1¼ hours.

Harvest Soup

2 pounds rabbit or beef in ½-inch to inch cubes
3 to 4 quarts cold water
5 diced carrots
2 sliced onions
½ cup peas
½ cup lima beans
½ cup cut-up string beans
½ cup diced potatoes

1 can tomatoes, or 5 fresh tomatoes
Salt, pepper

Put meat in large kettle, add water, carrots, onions, salt, pepper. After simmering 2 hours, add other vegetables and cook 1 hour more.

Scalloped Corn with Bacon

1 can corn
1 small green pepper
1 small onion
6 strips crisp fried bacon
¾ cup bread crumbs
1 egg beaten slightly
¾ cup rich milk
Salt, pepper

Mix together corn, bread crumbs, egg, cut-up green pepper, sliced onion, broken-up bacon, salt, pepper. Pour into buttered casserole. Cover with bread crumbs, dot generously with butter. Bake in 375-degree oven until piping hot and top is well browned.

Vegetable Supper Casserole in Cream Sauce, with Ham, Beef, Rabbit or Chicken

3 medium potatoes, cubed
3 diced carrots
3 medium onions, sliced
1 cup of diced cooked meat

Make cream sauce of:

2 tablespoons butter
2 tablespoons flour
1½ cups rich milk
½ cup cream
Salt, pepper

Cook the cream sauce in double boiler until right consistency. Put in other ingredients. Pour mixture in casserole. Cover with bread crumbs; dot with plenty of butter. Bake until piping hot.

Red-flannel Hash

8 cooked beets, chopped
3 cooked potatoes, chopped
1 good-sized onion, minced

Mix the three in a bowl, and let stand for an hour. Fry in a spider with bacon fat. Salt and pepper to taste. Keep a cover over the frying pan as the mixture heats.

The Bishop's Bean-pot Roast—For Beef or Rabbit

Three or 4 pounds of chuck, bottom of the round, or rabbit. Cut in pieces suitable for serving. Place in bean pot with water enough to cover. Slice one small onion to cook with the meat. Add salt and pepper. Tie a heavy piece of brown paper over top of bean pot. Allow about 4 hours to cook in a slow oven. At dinnertime, take out meat and thicken the gravy. This cooking method is excellent with tougher cuts of meat.

New Hampshire Style Scalloped Potatoes

Into a buttered casserole put a layer of very thinly sliced potatoes. The layer should be about ½ inch deep. Over the layer sprinkle salt and pepper, some minced onion, a few pieces of pimento or green pepper and a covering of bread crumbs. On the layer put a half dozen generous dots of butter.

Put 3 layers like this into the casserole. Pour enough light cream into the dish to cover the top layer. Put plenty of bread crumbs over the top and a little extra butter. Bake at 375 degrees until potatoes are tender (about 1½ hours).

Pea Shortcake

An excellent supper dish is to pour a pint of peas and a plentiful supply of the juice in which they were cooked over a couple of homemade biscuits in a soup plate. Have the biscuits well browned and spread with an extra amount of butter.

Canadian Supper Dish

Cook separately about 1 pint green peas, 1 pint string beans and 1 pint new potatoes. Put the 3 ingredients into a kettle. Add 1½

quarts whole milk, 1 pint light cream. Heat mixture very slowly. Salt and pepper to taste. Serve piping hot.

Tomato Chowder

1½ quarts of whole milk
1 cup light cream
1 cup cooked potatoes, diced
1 fried onion
½ cup of cooked bacon pieces
1 quart canned tomatoes
Salt, pepper

Mix milk, cream and tomatoes. Add other ingredients. Heat slowly. Set aside to cool, and reheat for serving.

Old-fashioned Chicken Pie

Cut-up meat from a boiled fowl
¾ cup diced potatoes
¾ cup diced carrots
½ cup peas

Cook fowl in 1½ quarts of water with a large onion and 1 bay leaf. Add salt and pepper to water. Put ½ cup of water in which vegetables were cooked into stock in which fowl was boiled. Make a gravy of this stock by adding flour paste. Arrange meat and vegetables in casserole. Pour gravy over the ingredients. Put biscuits on the top. Brush biscuits with cream. Bake until done.

Corn Chowder—With Plenty of Salt Pork

2-inch cube of salt pork, cut into small cubes and tried out
4 diced potatoes cooked 10 minutes
3 medium-sized fried onions
3 cups whole milk
1 cup light cream
2 cans corn
Salt, pepper

If you want a rich chowder, use most of the salt pork fat. Heat ingredients together slowly. Then set aside to cool. Reheat for serving.

Fried Potatoes—Countryman's Style

Each slice of raw potato must lie flat in the spider. Make the slices about 3/16 of an inch thick. Use bacon fat. Turn the slices occasionally so that each side will have a crisp, brown crust.

Creamed Cabbage

One medium-sized cabbage. Quarter, remove core and quarter again. Cook in salted water, but don't overcook.

In a double boiler make a cream sauce of:

2 tablespoons butter
2 tablespoons flour
½ cup medium sharp cheese, shaved
2 cups rich milk
4 tablespoons green pepper (Green pepper will cook as sauce cooks.)
Salt, pepper

Put cabbage in buttered casserole. Pour on sauce. Cover with plenty of bread crumbs and dot generously with butter. Bake for about 30 minutes until crumbs are well browned.

Peterborough Corn and Tomato Casserole

2 cups corn, cut from cob, frozen, or canned
2 cups cooked ripe tomatoes, or canned
1 teaspoon salt
Pepper to taste
1 teaspoon sugar
2 tablespoons butter

Mix ingredients. Pour into buttered casserole. Cover thickly with crumbs and use some extra dots of butter. Bake at 375 degrees until thoroughly heated. This is a particularly delicious supper dish in August and September, with corn and tomatoes fresh from the garden.

Baked Beans

Many part-time farmers enjoy growing their own beans. It's an easy crop to raise. After they are stacked and dried in the fall, they can be stored in the barn until there's time to flail them out. Red kidneys and yellow eyes are 2 favorite varieties.

In addition to the standard recipes with salt pork, try baking them with bacon. Experiment with varying amounts of molasses and maple syrup. You may or may not like an onion baked with them.

Tomato and Rice Casserole

This is an inexpensive and delicious dish. It's one of the best one-dish meals.

Cook 1 cup rice in salted water. Drain, and pour hot water over it to separate the rice kernels.

3 tablespoons bacon fat
2 onions, sliced
½ green pepper, sliced
1 can tomato soup to moisten to liking
3 tablespoons ketchup

Cook the onions and green pepper in bacon fat. Add the cooked rice and mix the ingredients. Add the soup and ketchup. Put in casserole, cover with crumbs and dot with butter. Bake in moderate oven until heated and crumbs are browned.

Soups

You can make delicious soups of beans, tomatoes, corn and onions. If you raise the garden products and have your own milk and cream, they are inexpensive supper or luncheon dishes.

Egg Dishes

There are many, many egg dishes and combinations with other foods. Eggs at a few cents a dozen are not only inexpensive but they are also one of the best of foods.

Salads

You can have home-raised lettuce from June 1 to long after frost time if you start plants in the cold frame and protect a block of plants with coverings on frosty nights. In the winter, a combination of raw cabbage and carrots, or canned asparagus on chopped cabbage and carrots is excellent. As a dressing, try this combination:

1 cup salad oil
⅓ cup vinegar
½ cup tomato ketchup
1 teaspoon Worcestershire sauce
1 clove garlic
1 onion
½ cup sugar
½ teaspoon salt

Cut garlic and onion in fine pieces. Mix all ingredients together, beat with egg beater and put in jar or bottle, store in refrigerator or other cool place. Makes 1 pint.

Steamed Fruit Pudding—For Rhubarb, Strawberries, Raspberries, Blackberries, Apples, Cherries, Peaches

1 cup flour
1 tablespoon butter
2 teaspoons baking powder
½ teaspoon salt

Moisten with milk. Roll to fit saucepan. Put fruit in saucepan and let simmer a few minutes. Put on dough. Cover pan and cook the pudding over low direct heat.

Apple Crumb Pudding

Slice 6 medium-sized apples into a buttered casserole. Sprinkle with ½ cup sugar and ½ teaspoon cinnamon. Add about ⅓ cup of water, depending on the juiciness of the fruit.

For the top, make a crust of:

½ cup butter
⅔ cup flour
⅔ cup sugar (either brown or white)
Pinch of salt

Blend these well and put over apples. Sprinkle with cinnamon. Bake at 350 degrees for 45 minutes. Serve hot with heavy cream.

Puddings

With home-raised milk, cream, butter and eggs, many kinds of puddings can be made at slight cost.

Pies

In season and out if you can and preserve, you can make rhubarb, blueberry, cherry, strawberry, raspberry, peach and apple pies. With your own dairy products and eggs, you can have chocolate, custard and butterscotch pies. From mid-August to February, you can have squash pie.

Squash Pie—Maple Flavored

1¼ cups cooked and strained squash
½ cup sugar
2 tablespoons maple syrup
½ teaspoon salt
¼ teaspoon cinnamon
¼ teaspoon ginger
¼ teaspoon nutmeg
2 eggs slightly beaten
1¾ cups light cream

Add dry ingredients to squash and mix together. Scald cream and add to squash. Mix in the egg. Pour into uncooked crust. Bake for 15 minutes at 450 degrees, and then 45 minutes at 350 degrees.

APPENDIX A

List of Helpful, Low-cost Bulletins

To secure these bulletins, send amounts indicated by money order or check to the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C. Give title and number of bulletin.

Title	*Number*	*Cost*
Asparagus Culture	1646	5¢
Blackberry Growing	1399	5¢
Blueberry Growing	1951	10¢
Capons and Caponizing	849	5¢
Care and Management of Dairy Cows	1470	10¢
Corn Culture	1714	10¢
Currants and Gooseberries	1398	10¢
Farm Drainage	1606	5¢
The Farm Garden	1673	10¢
Farmhouse Plans	1738	15¢
Farm Plumbing	1426	10¢
Farm Poultry Raising	1524	5¢
The Feeding of Chickens	1841	5¢
Fireplaces and Chimneys	1889	10¢
Fire Protective Construction on the Farm	1590	5¢
Fire Safeguards for the Farm	1643	5¢
Greenhouse Construction and Heating	1318	10¢
Greenhouse Tomatoes	1431	5¢
Growing Buckwheat	1835	5¢
Growing Peaches	917	5¢
Growing Root Crops for Livestock	1699	5¢

Title	*Number*	*Cost*
Homemade Jellies, Jams and Preserves	1800	10¢
Home Storage of Vegetables and Fruits	1939	10¢
Hotbeds and Cold Frames	1743	5¢
How to Select a Sound House	779	5¢
The Liming of Soils	1845	10¢
Livestock for Small Farms	1753	5¢
Making Cellars Dry	1572	10¢
Milk for the Family	1705	5¢
Milk Goats	920	10¢
Modernizing Farmhouses	1749	15¢
Muskmelons	1468	5¢
Painting on the Farm	1452	5¢
Part-time Farming	1966	10¢
Pastures to Hold and Enrich the Soil	1900	10¢
Planting and Care of Lawns	1677	5¢
Pork on the Farm	1186	10¢
Poultry Houses and Fixtures	1554	10¢
Practical Irrigation	1922	10¢
Production of Cucumbers in Greenhouses	1320	5¢
Production of Pumpkins and Squashes	141	5¢
Rabbit Raising: Conservation Bulletin	25	10¢
Raspberry Culture	887	5¢
Roof Coverings for Farm Buildings and Repair	1751	10¢
Sash Greenhouses	124	5¢
Sewage and Garbage Disposal on the Farm	1950	10¢
Small Irrigation Pumping Plants	1857	5¢
Soil Defense in the Northeast	1810	15¢
Strawberry Culture, Eastern U.S.	1028	10¢
Strawberry Culture, South Atlantic—Gulf Coast	1026	10¢
Strawberry Culture, Western U.S.	1027	10¢
Summer Crops for Green Manure	1750	5¢
Turkey Raising	1109	10¢
Use of Concrete on the Farm	1772	10¢
What and How of Hybrid Corn	1744	5¢
Windbreak as a Farm Asset	1405	10¢

APPENDIX B

Addresses of Agricultural Experiment Stations in the United States

A quotation from Miscellaneous Publication No. 60 of the U.S. Department of Agriculture:

"The agricultural experiment stations study problems relating to the agriculture of the States, and publish the results of such investigations. These publications, which usually constitute the most authoritative information available on the subjects treated, can be obtained from the Director of the station, usually free of charge. This list gives the post-office addresses of the agricultural experiment stations in the United States."

State	*City or Town*
Alabama	Auburn
Alaska	College
Arizona	Tucson
Arkansas	Fayetteville
California	Berkeley
Colorado	Fort Collins
Connecticut:	
State station	New Haven
Storrs station	Storrs
Delaware	Newark
Florida	Gainesville
Georgia:	
State station	Experiment
Coastal plain station	Tifton
Hawaii	Honolulu
Idaho	Moscow

State	*City or Town*
Illinois	Urbana
Indiana	LaFayette
Iowa	Ames
Kansas	Manhattan
Kentucky	Lexington
Louisiana (University station)	Baton Rouge
Maine	Orono
Maryland	College Park
Massachusetts	Amherst
Michigan	East Lansing
Minnesota	University Farm, St. Paul
Mississippi	State College
Missouri:	
College station	Columbia
Fruit station	Mountain Grove
Poultry station	Mountain Grove
Montana	Bozeman
Nebraska	Lincoln
Nevada	Reno
New Hampshire	Durham
New Jersey	New Brunswick
New Mexico	State College
New York:	
State station	Geneva
Cornell station	Ithaca
North Carolina (State College station)	Raleigh
North Dakota (State College station)	Fargo
Ohio	Wooster
Oklahoma	Stillwater
Oregon	Corvallis
Pennsylvania	State College
Puerto Rico:	
Federal station	Mayaguez
College station	Rio Piedras
Rhode Island	Kingston
South Carolina	Clemson
South Dakota	Brookings
Tennessee	Knoxville
Texas	College Station

State	*City or Town*
Utah	Logan
Vermont	Burlington
Virginia:	
College station	Blacksburg
Truck station	Norfolk
Washington:	
College station	Pullman
Western Washington	Puyallup
West Virginia	Morgantown
Wisconsin	Madison
Wyoming	Laramie

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