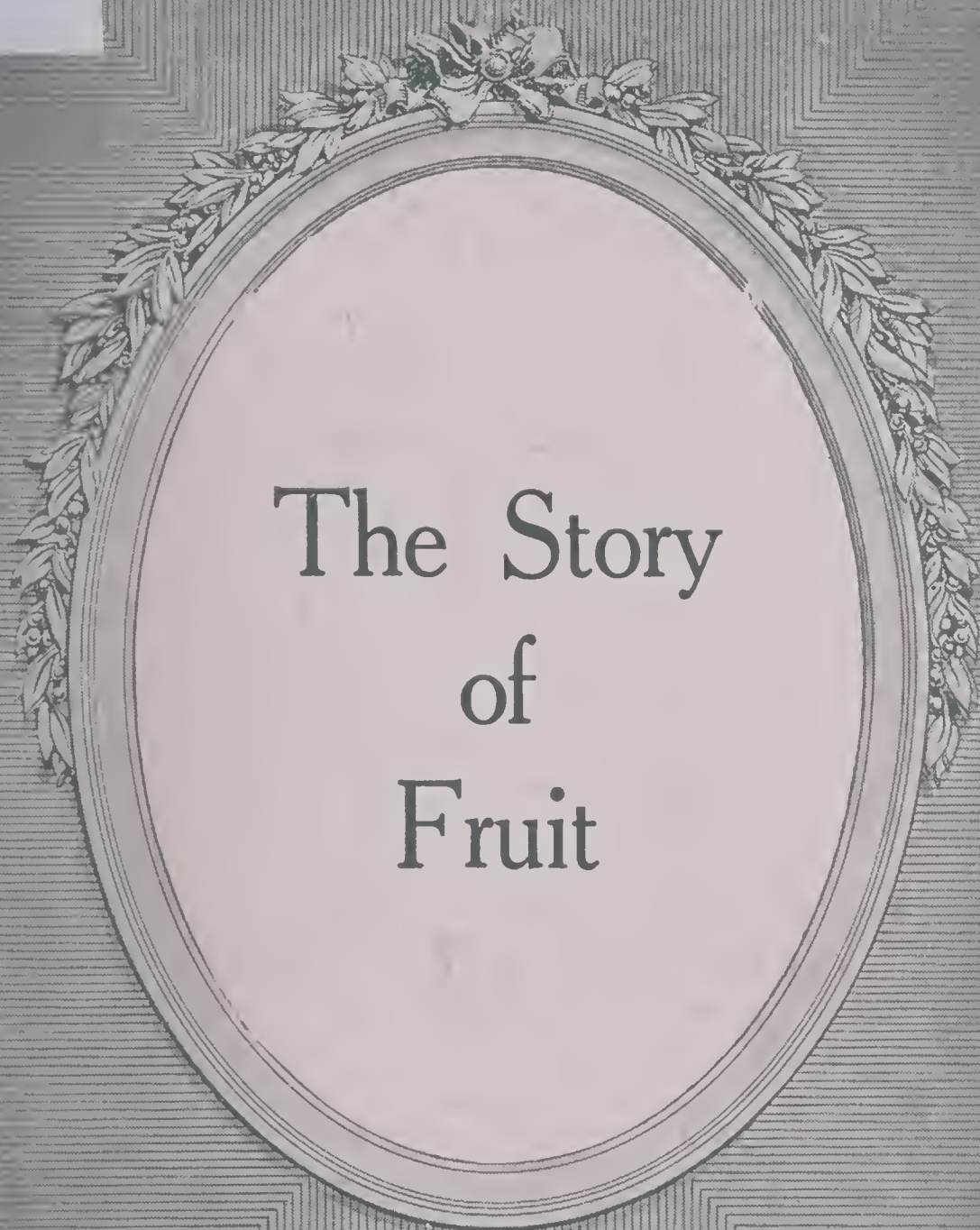


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CHICAGO

THE STORY OF FRUIT

William H. Francis

BY

W. L. ROCHELEAU

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THE STORY OF FRUIT

By W. F. Rocheleau

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Fruit is one of the most prized and healthful of all articles of diet. This has been recognized by all people since the remotest time, and savage and partially civilized tribes make fruit a large part of their diet, provided they live in localities where it grows. Before the occupation of America by white men, the Indians gathered the wild fruit which grew in abundance, eating it fresh during the summer and drying quantities of it for winter use. The early colonists recognized the necessity of providing themselves with the different fruits which could be grown in the various parts of the United States, and soon after establishing settlements they began their cultivation.

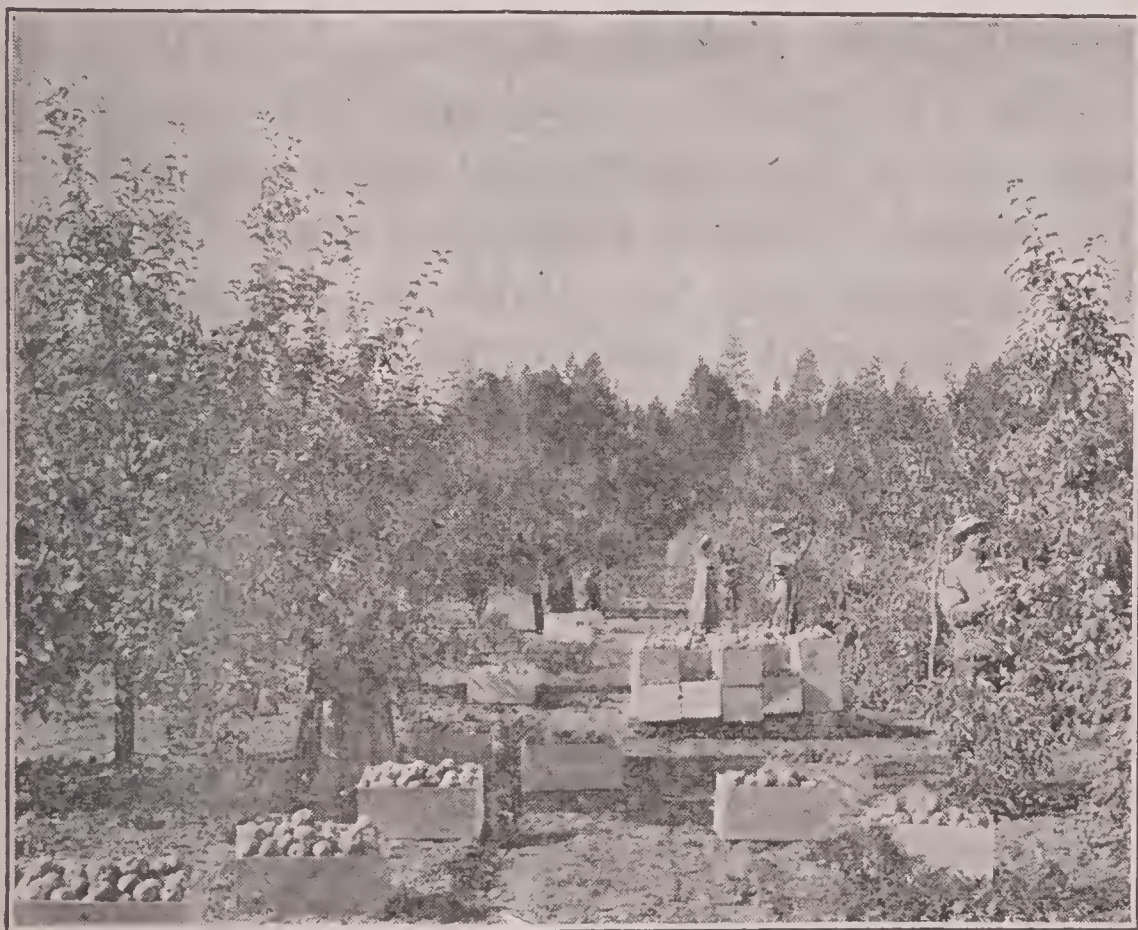
The earliest planting of fruit in America by Europeans is supposed to have been the planting of oranges in Florida in 1560 by the Spaniard Menendez. The Jesuit missionaries planted pears in the vicinity of the Great Lakes at about the same time, and the Spanish missionaries introduced oranges into California soon after their

occupation of that portion of the country. Lord Delaware planted a vineyard upon his estate in Maryland in 1610, and a few years later grapes were growing at Jamestown. Apples were also among the earliest fruits raised, for a report dated 1639 states that one man made five hundred barrels of cider from his crop.

APPLES.

The apple is the most useful of all orchard fruits. It can be grown successfully over a wider range of country and climate than any other large fruit. The trees are hardy and when well started need comparatively little attention. The trees are grown in nurseries and are usually sold to fruit growers when they are two years old. The best varieties of apples are produced through grafting, that is, by cutting a little branch called a cion, taken from the tree producing the desired variety of fruit, and inserting it in the stock of another tree which is hardier but does not produce as good a variety of fruit. This insertion must be made so nicely that when the joint is wound and covered with wax, the sap from the tree will flow into the cion and thus keep it alive. During the first season the cion grows to the tree and attains a length of several inches. At the end of the next year the

trees are ready for transplanting. They are usually set in rows from sixteen to twenty feet apart each way, and when fully grown are so close together that their tops nearly touch. In favorable localities the trees begin to bear when four or five years old but do not produce a full crop until some years later.



PICKING APPLES.

There are a great many varieties of apples, suited to different uses and to different localities and climates. In general those growing in the warmer States, such as Missouri, the southern part of

Illinois, and Tennessee, are early varieties, maturing either in August or the early part of September, while those raised in largest quantities in the states having a cooler climate, such as the northern part of New York and Michigan, mature later in the season and when ready for picking are very hard. These are known as winter apples, because they need to lie in storage for several weeks or months after picking in order to soften and develop the best flavor. Winter varieties are the most choice and command the highest prices in the market. Among those best known and most widely used are the Baldwins and Greenings. The early varieties which mature in the warmer climates begin to decay soon after harvesting, and need to be used within a few weeks, although by using care in picking, so that the fruit is not bruised and placing the apples in cold storage, some varieties may be kept until the middle of the winter.

Apples are used in many ways and for many purposes. By crushing and pressing out the juice, cider is made, and from this the best quality of vinegar is obtained. By boiling the cider or evaporating it until it becomes nearly as thick as molasses, a most delicious preparation for flavoring sauces and for other cooking purposes is obtained. Cider prepared in this way does not ferment, and can be kept for years. The most choice fruit is

placed upon the market in its natural state and is eaten without cooking, while poorer grades are made into sauce, pies, puddings, apple butter and other preparations, all of which are pleasing to the palate and highly nutritious. Much of the fruit is also dried to preserve it for winter use. This is usually placed on the market as evaporated apple. In the eastern and central parts of the country the leading apple-producing states are New York, Ohio, Michigan, Pennsylvania, Illinois, Missouri and Kansas. West of the Rocky Mountains the states noted for their production of apples are Idaho, Washington, Oregon, Montana and California. In these states the production has been greatly increased by the opening of large areas to irrigation, and the fruit raised in these irrigated tracts is of excellent quality. There are over 2,200,000 apple trees in the United States and the number is increasing from year to year. The apple crop constitutes more than one-half of all the orchard fruits grown in the country. Great care needs to be exercised in harvesting the fruit. If allowed to fall from the tree, the apples are bruised and soon decay; hence, the most choice fruit is picked by hand and carefully laid in the baskets, from whence it is transferred to boxes and barrels for shipment.



FRUIT-PACKING WAREHOUSE, INTERIOR.

PEACHES AND PLUMS.

Peaches constitute a little over one-fourth of the orchard fruits of the country. They are limited to a narrow area because the trees will not thrive where the winters are severe and the fruits will not mature in localities subject to early and late frosts; for this reason the peach-growing states are found only in those localities where the winters are mild and the summers long. The leading states in the production of peaches are Michigan, Georgia, California, Texas and Kansas. Of these, California is far in the lead, producing over six times as many peaches as any other state. Texas is second and Michigan third. The annual crop amounts to about 15,500,000 bushels.

As with apples there are numerous varieties of peaches, and they are propagated in very much the same way though the process of budding is more frequently used than grafting. This consists in setting a bud taken from the tree producing the desired variety of fruit under the bark of the tree upon which it is to grow, and so making the connection that the sap from the stock flows into the bud.

All varieties of peaches can be grouped into two classes known as freestones and clings. The freestones are those in which the pulp is free from the stone, or pit, while in the clings it is fastened to

the stone so tightly that it is difficult to remove. Peaches of the best quality, when ripe, are slightly yellow with a tint of red on one side. They vary in size from those as small as large plums to those as large as a good sized orange. The California peaches are the largest and when allowed to ripen on the tree are of the best flavor.

Peaches cannot be kept like apples or other hard fruit, and must be used soon after picking. They are usually harvested before they are quite ripe; otherwise they would become so soft that they would be damaged in shipping. They are packed in small cases or baskets, and before being placed on fruit stands are usually cleaned with a soft brush. This removes the dirt and brings out the colors so that they present a very attractive appearance. Besides being eaten raw, they are canned and also dried for winter use.

Plums have a wider range than peaches, though the largest and best varieties grow in about the same localities. The most important phase of plum raising is the preparation of prunes, which are nothing more than a certain variety of plums dried in the sun. After picking, the plums are placed in shallow trays, one layer deep, and exposed to the sun, when they slowly dry. In the dry atmosphere of a California summer this requires but a few days. When dried upon one side,

an empty tray is turned over the one on which the plums have been laid, and the trays are then turned over so that the plums are transferred to the other tray and turned at the same time. When dried, the prunes are emptied into boxes which



DRYING PRUNES.

hold about fifty pounds each and hauled to the packing house. Here they are sorted by sizes by passing them through a screen with different sized openings, the smallest falling through first, the medium-sized ones next, and the largest last. They are then packed into boxes holding from ten to fifteen pounds each, and are ready for market.

GRAPES.

While grapes are raised in a large number of states, the industry has not reached large proportions except in California, Delaware and some portions of New York. The methods of culture, varieties and kinds of vines vary widely with the locality. In Delaware and New York grapes are



A CALIFORNIA VINEYARD.

grown almost wholly for table use, while in California, which raises many more than all other states combined, they are grown principally for wine and for raisins.

A California vineyard, to one who is not acquainted with it, would not be taken for a vineyard

at all. The vines are set in rows, six or eight feet apart and when the stocks have reached the height of about four feet, they are cut off and are kept pruned from year to year so that the vine is really a bush with a thick, strong stock and numerous short branches which bear a large number of leaves and clusters of grapes in the axils of the branches next to the main stock.

A good vineyard, when properly cared for, will produce from eight to ten tons of grapes to the acre. The fruit is harvested by cutting the clusters from the vines and, if they are designed for wine, dropping them into boxes that hold from fifty to sixty pounds each. These are either hauled directly to the winery or to the nearest railway station, where cars containing large tanks made especially for the purpose are ready for their shipment. The grapes are dumped into these tanks, and when they reach the winery are run through a press which crushes them and liberates the juice.

The juice, together with the pomace, is pumped from the vat beneath the press into large vats or tanks where it is allowed to slowly ferment. When the process has reached a certain stage, the pomace is strained off and the clear juice is transferred to other vats, where it remains until it has turned to wine, when it is either bottled or put into casks for the market.

Raisins are simply sun-dried grapes. The variety used for making raisins is the green grape commonly known as the muscat. The grapes are picked and laid upon trays similar to those used in drying prunes, and exposed to the sun. When one side is dry, they are turned and allowed to remain in the sun until they are so dry that they will not decay when packed. Before packing some are run through a machine which removes the



AN ORANGE GROVE IN FLORIDA.

stems. They are then marketed as stemless raisins, while the most choice varieties are packed in clusters and placed upon the market in this way. We sometimes find seedless raisins on the market, and

the seeds from these are also removed by machinery.

ORANGES.

Perhaps the most interesting as well as the most attractive fruit is the orange. As stated at the beginning of the chapter, oranges were planted in America at an early date, though it was several



AN ORANGE GROVE IN CALIFORNIA.

centuries after that before any special attention was given to their cultivation. The orange is a semi-tropical or tropical fruit and cannot be grown in regions subject to frost, since this not only kills the fruit but the tree as well. The trees are set in

rows from eight to ten feet apart. They have dark green leaves and white blossoms and when in bloom an orange orchard presents a beautiful appearance. This is particularly true since the trees usually blossom before the ripe fruit is picked, and the combination of the dark green, orange and white is particularly pleasing.

Only two states produce oranges in sufficient quantities to supply the market. These are Florida and California. Because of its fine climate, California is especially suited to the raising of oranges, and they are grown from the southern boundry as far north as 100 miles north of San Francisco. There are several varieties raised, but the variety most highly prized is the navel orange, which has no seeds. The product of California is between 26,000 and 30,000 carloads each year. The fruit begins to ripen in October and the earliest is picked before it is quite ripe and rushed to the eastern markets for the holiday trade.

Oranges are tender and need to be handled with the greatest care. They are cut from the trees because, if broken, the point at which the stem is attached would soon decay and spoil the fruit. When picked, they are placed in bags, which the pickers hang about their necks, and when filled empty into boxes, in which the oranges are taken to the packing house. Here the oranges are

dumped into a tank of water and run between two revolving brushes with soft bristles. This removes any dirt or discoloring. After washing, they are dried in the sun, then brushed again to give them the polish which they present, after which they are sorted as to size, then wrapped in tissue paper and



SHIPPING ORANGES BY BOAT.

placed in boxes. The number in the box depends upon the size of the fruit. The largest size requires 96 to fill the box, while of the smallest, 200 are necessary. We can see from this why oranges of the same variety vary so greatly in price.

The oranges are shipped to market in refrigerator cars, by which they are protected from the cold of winter or the heat of summer, as the case may require. Like peaches and plums, they can not be kept for a long time after harvesting, and the reason that we are enabled to have oranges on the market every month of the year is because there are early and late varieties, and the growers produce enough of each variety to keep the market supplied. Next to apples, oranges constitute the most valuable fruit crop of the country.



ORCHARDS

BY W. L. NIDA

Helping One Another. Fruit trees of some kind will thrive in any section of our country, so every farm should have its own fruit. Some farmers make fruit-raising their chief business, while others have only a small orchard for family use. If the raising of fruit is the principal object of the farmer, he should locate where many other farmers are doing the same thing, so that they may form companies to help one another in many ways, especially in obtaining good prices for their crops.

Keep Near Market or Railroad. It is well not to go too far from the railroad to raise fruit. When peaches are to be handled, they should not be hauled more than three miles. Strawberries must also be marketed soon after they are picked and with as little cartage as possible. Apples are more firm and will endure more handling, but the expense of a long haul reduces the profits.

Hill Lands for Orchards. It is usually better for orchards to be upon land higher than the rest of the farm. The cold air is heavier and settles into the valleys and lowlands, so the hill orchards are not so likely to be caught by late spring frosts.

The Best Slope. The north and east slopes of hills are preferred for apple orchards, because they

are slower in warming up in the spring. This keeps the blossoms from coming out too soon and being injured by late frosts. Trees set on southern slopes receive more sunshine, and their fruit is more highly colored. But southern slopes are usually drier than northern slopes, and thus the fruit does not grow so large.

The Influence of Water. Land sloping toward a river or a large body of water is good fruit land, because the water keeps the air from too sudden changes. The fruit should be on the slope that receives the wind after it has crossed the water. Air near water is kept from getting suddenly colder and there is less likelihood of frosts. (Fig. 93.)

Kinds of Soil for Fruits. For apple, pear, and plum trees a farmer should choose a deep, moist, clay loam. A sandy loam is better for peaches and cherries.

Preparation of Fruit Land. The soil should be prepared as carefully for a fruit orchard as for corn. It is plowed deep for planting the trees, so the roots may reach out far and wide for food. The surface should be harrowed to a dust mulch. If the field is wet and swampy, it must be drained.

Planting Trees. The trees may be planted either in the spring or fall. If the soil is in good shape, fall planting is better, because the trees get a start before winter. To make tillage easy the rows should be straight. Apple trees are commonly planted forty feet apart each way, but sometimes they are planted

closer. Pears are set about twenty-five feet apart and peaches and plums each twenty feet. There should always be room enough between the trees so



FIG. 93. *Irrigating an orchard.*

spraying may be easily done and the crop harvested conveniently.

Setting Trees.

When a tree is taken from the ground the more roots that are saved the better. But with the best of care many

of them are broken or bruised, and others must be cut. All the broken roots should be cut back from the injured end with a sharp knife, so the smooth wound will heal quickly. Since the tree has lost many of the rootlets that supply it with food, the branches must be cut back, too, else they will need more food and moisture than the roots can supply. People usually leave too much of the top on a tree that is transplanted. The trees should not be exposed to the sun and wind before planting, and the planter should not allow the roots to dry out. If the roots are covered with a coat of clay, it is well to dip them in water before setting them.

Packing About the Roots. The holes dug for the trees should be a little larger than the roots seem to need, so that they can be placed straight. Since the roots feed the tree, it is very important to pack the soil well about them, so they can get plenty of liquid food from it. The upper roots should be raised until the soil is packed firmly under them. Roots should never be crowded together, but spread out naturally to grow as they will. In the bottom of the hole the soil must be packed very tight, but the top four inches should be loose for a dust mulch. A common mistake is to pack the soil tightly on top and leave it loose underneath. This brings the moisture to the surface and causes the young trees to die of thirst.

Tilling the Orchard.

The old idea that orchards would take care of themselves after planting is a thing of the past. Now the successful fruit growers till their orchards as regularly as they do their crops. Trees make nearly all their growth early in



FIG. 94. *A crop between rows.*

the year, before the hot months of midsummer, so it is during the spring months that they need plenty of food and moisture. Then is the time to cultivate the orchards. More than nine-tenths of the fruit is water, and we know that tillage is very helpful in saving moisture. The drier the season, the more the harrow and cultivator are needed. After July, when the growing period is over, a crop may be sown on the orchard to be plowed under later as green manure (Fig. 94).

Injury to Trees. In tilling orchards, care must be taken not to injure the trees. The grass and weeds that grow close to the trunk of the tree do very little harm, and they had better be let alone, rather than run the risk of injuring the tender bark of the young tree.

Pruning. If young trees are well pruned when they are set out, they will need very little more trimming until they begin to bear. Shoots that cross each other and interfere with other branches should be removed. When branches are likely to become too crowded, the knife should be used. Many fruit growers change the shape of their trees to their fancy by pruning. They cut the tops back so the trees will spread out instead of growing tall, for it is difficult to spray a tall tree, and the fruit is harder to gather.

Spraying Fruit Trees. All fruit trees have enemies which the farmer must fight. More than twenty-five years ago a man who was employed by

the state of Illinois to study plants, discovered that Paris green would kill the potato beetle. He said that he believed the same poison would stop the cankerworm from injuring the apple crops. For a good many years farmers doubted and shook their heads; but here and there a man began to spray with Paris Green to protect the crops, and they found it worked well. Fewer apples were found wormy in orchards that had been sprayed. (Figs. 38 and 39.) This was only the beginning of an intelligent fight to protect crops and trees from insects. Many discoveries have been made since, and now the best farmers everywhere are spraying with different mixtures to save their trees and fruits, their gardens and other crops. In the West, where the finest of fruit is raised, state laws have been passed, commanding every orchardist to spray his trees whether he finds them troubled with insects or not. This is to make sure he will not grow millions of insects to attack the orchards and crop of some neighboring fruit grower who is careful in spraying.

Bordeaux Mixture. Besides the insects which injure our trees, there are tiny robber plants, or fungi, like mildew and the brownrot, that attack peaches and other stone fruits, sometimes even apples and pears. In France, where many grapes are raised to make wine, the grape farmers near Bordeaux found that their vines were being injured by mildew. So they set very earnestly to work to find a check for

this enemy. After much experimenting, they discovered a poison spray now called the Bordeaux mixture. It is used all over the world to-day to kill the fungi that are injuring gardens and orchards.

Spraying Machines. A farmer who has not more than five acres in his orchard can use a spraying machine worked by hand. There are many kinds of good spraying outfits. (Fig. 95.) It is chiefly important to be sure that the liquid is well stirred by some means, so that the poisons will not settle to the bottom of the barrel instead of reaching the tree. The best fruit growers spray their trees regularly. (Fig. 96.) Peaches and prunes are usually not sprayed unless they are attacked by the scale. In many places apples are sprayed three times—once just before the blossoms open, again just before the blossoms fall, and a third time about ten or twelve days later. The mixture used is three or four pounds of copper sulphate, five pounds of lime, and a half pound of Paris green in fifty gallons of water.

Thinning Fruit. Some fruit growers are now urging the thinning of the fruit crop. A part of the fruit on heavily-loaded trees is taken off before it is half grown, so that which is left may grow to a larger size. Though it costs a good deal to thin, the growers argue that it costs no more to pick the fruit when small than when it is full grown; and the fruit that is left to ripen is so much larger and brings so much better prices that it is well worth

while. In Western regions the trees bear such heavy loads that the branches break unless some of the fruit is removed. When the crop is light there is no need of thinning. Apples usually grow in clusters from three to a half dozen in a bunch. If one



FIG. 95. *A good spraying outfit for the orchard.*

is growing fancy fruit he should remove all but the best apple of each cluster. Pears grow like apples and may be thinned in the same way. In thinning stone fruits, the work may be done by pulling the fruit off; but with apples and pears it

is safest to clip them with sharp-pointed shears, because pulling is apt to break the branch. A fruit tree that has been properly pruned and the crop thinned, will not need props to keep it from breaking down; and it is more likely to bear a good crop every year.

Harvesting Fruit. A farmer who grows fruit for market must pick it carefully to prevent bruising. In order to make the fruit attractive to the buyer, the grower grades his apples, that is, he sorts out those of the same size and packs them together. Boxes are being used for packing, though many still prefer barrels for apples. Neat and careful packing helps to secure good prices for the fruit crop.

Peaches. Though many peaches are raised in California, the greater part of them come from the Eastern states. A mildly temperate climate favors this fruit. They must be packed quickly and closely and sent by fast freight when shipped. Packers get two cents a basket, and an expert packer can fill a hundred baskets in a day.

Apples. Of all the many fruits grown in our country, the apple is the most important. More than forty million barrels are used every year, or about a half barrel for every man, woman, and child in the United States. There are fewer difficulties to meet in raising apples than any other fruit. The tree is hardy and is not easily injured. There are many varieties of apples that keep well through

the winter. All kinds are firm and can be handled and marketed with less care and trouble than other fruits. Apples may be put to many uses. They are eaten raw or they may be cooked in a variety of ways. Some are dried or made into jelly, and in this form they may be kept for a long time.

Seedless Apples. Since we have varieties of seedless oranges, men have been trying to develop an



FIG. 96. *The successful orchardist always sprays.*

apple without a core. When this kind takes the place of those we now use it will be a splendid thing for us all, because there are certain insects that live in the core of the apple and there is so much waste in removing it. Some day seedless apples will be a very common thing.

PRESERVING FOODS

Germs which **Help** and **Hinder**. The farmer's wife has her problems of canning fruits and preserving foods. It is a help to her to know the enemies she must fight and the harm they do. There are three living organisms that will cause animal or vegetable matter to decay. These are yeast, molds, and germs, or bacteria.

The Yeast Plant. In order to grow, the yeast plant must have warmth, air, moisture, and sugar. This plant grows and divides into two plants, and these divide again and so on. Thus this tiny plant multiplies amazingly in a short time. It will grow in fruit juice and in fruit slightly sweetened, but it will not grow in thick sirups or preserves. It is easily killed by a high or low temperature.

Making Bread. A small amount of yeast is put in the dough to make it "rise" for bread. When sugar is added, the plants increase in great numbers in a few hours. They start the decay of the mixture and create a gas which forms bubbles throughout the mass, and these make the bread rise. When the bread is baked the yeast plant is killed by the heat, and the gas escapes.

Mold. Mold is spread about by tiny spores or seeds floating in the air. When they lodge on a

warm, moist surface, such as foods, they readily germinate and spread over the surface. Molds may be destroyed by heating to a high temperature for about twenty minutes. Canned and preserved fruits are more liable to be injured by yeast and mold than by bacteria.

Canning Fruit. The important things to remember in canning and preserving are to keep all cooking utensils clean and to kill all germs. This we call sterilizing. The kettles, jars, strainers, covers, rubbers, and other utensils used in canning, must be scalded to kill the germs, or bacteria. When all germs in the jars and fruit are killed, the cans are sealed while hot so as not to permit other germs from the air to enter. If live germs are left in canned fruit, a gas will escape which means that decay or decomposition has set in, and the food has begun to spoil. Foods and other organic matter will not decay if germs are kept out.

Bacteria. Bacteria multiply rapidly in meat, milk, and legumes. They cannot grow without the presence of water. Dried fruits and meats will keep because there is no water in which the germs may grow. Neither can bacteria live in a strong solution of common salt. That is why we salt meat to preserve it.

Smoking Meats. Meats are also preserved from germs by smoking. Smoking leaves a thin coat of creosote on the surface of the meat, which not only kills all germs but gives the meat a good flavor.

Certain kinds of wood smoke give the best flavor, though any wood may be used for the purpose.

Cold Storage. Putting foods in cold storage does not kill the bacteria, but it keeps them from growing and multiplying. As soon as the temperature rises, they begin to act and the food soon spoils.

Preserving Fruits. Sugar is used somewhat in curing meats and very extensively in preserving fruits. When fruits are cooked for a long time the "boiling down" kills all germs and drives off the water so that other germs can not grow.

Souring of Milk. It is also germs that cause milk to sour. The air contains many germs, the dust of the barn is full of them, and there are some on the milk pail and on the hands of the milker. So it is impossible to keep germs from milk. All milk cans should be scalded after using and, if possible, placed in the sunlight, which is a powerful enemy of germs.

Bacteria in Butter and Cider. Germs or bacteria make butter rancid. This can be prevented by working out of the butter all the milk and water which bacteria need to thrive and by thoroughly mixing salt into it. It is bacteria that makes cider turn sour and ferment. The solid, slimy mass known as the "mother of vinegar" is merely a vast colony of bacteria. Sweet cider makes the best vinegar because it contains more sugar for the bacteria to work upon. The process of making vinegar from new cider may be hastened by introducing some "mother of vinegar."

ENTERTAINMENTS

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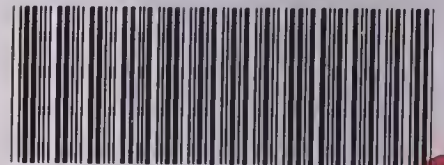
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