

After the water is boiling in your canner the second day, place your cans in for a second boiling 1 hour in length, remove, set aside for 24 hours, and boil again 1 hour on the third day.

This is the only sure method of keeping corn. Never use any acids or preserving powders.

Butterbeans, peas, okra, and soup vegetables are canned in the same manner. Add 1 level teaspoon of salt to butterbeans, peas, okra, and soup; and 2 level teaspoons of sugar to peas.

After a can of fruit or vegetables is removed from the canner, it should be cooled as quickly as possible.

EXERCISES AND PROBLEMS

1. Examine mold through a good magnifying glass, and see if it looks at all like the picture.
2. Why is a rubber ring used under the cover of the can?
3. Explain why candied fruit does not spoil.
4. Why do figs and dates keep?
5. Why does the boiling temperature help to preserve food?
6. Look up the meaning of the word "sterilize."

LESSON 13

VALUE OF FRUIT IN A DIET

We often think of fruit as a pleasant thing to eat; but we do not realize that it is a food needed to keep the body in health, and that we should use it every day. In what other ways may fruit be prepared for serving?

At one of Miss Travers' lectures before a Farmers' Institute, one man who owned a large apple orchard and sold many barrels of apples, said to her that he had thought people ate apples because they liked them, and that it was news to him that fruit is food.

Indeed, we do like fruit, and we may be glad that so many kinds grow in our own country. When the early settlers began to clear and burn over the land, how happy they must have been to find blueberries and huckleberries and blackberries growing wild for them to gather! What do you suppose the children said when they saw their first wild strawberries and checkerberries in the new land? They found, too, the cranberries in the bogs and the wild red plum on the sandy beaches of the coast. Perhaps in your own home country, wild fruit grows now for you to gather.

Have you ever heard of Johnny Appleseed? He traveled through the forests and over the plains, so the story goes, planting apple seeds wherever he went, and warning the settlements of the coming of unfriendly Indians. Many people who never heard his name have wondered, perhaps, at finding apple trees in unexpected places. Do you know what the word "benefactor" means?—A blessing maker. Do you not think that Johnny Appleseed was a benefactor?

Planting fruit trees. You are all benefactors if you celebrate Arbor Day, as they do at the Pleasant Valley School, by setting out a shade tree somewhere near the schoolhouse every year. But let us have more than one tree day, and set out fruit bushes and trees for home use. They do not cost very much; and there are pamphlets and books that tell you what kinds to buy, and how to set them out and care for them. The ground can be enriched with wood ashes and with fertilizer from the

barn and henhouse. Fruit trees and bushes will more than repay what they cost, on account of the value of the fruit in the diet.

More about the value of fruit. We have talked about this in the first lesson on fruit drinks, but it is worth while to study the fruit question again. Have you heard the rhyme:

"An apple a day,
Keeps the doctor away"?

This is too much to claim for one apple, but the rhyme is worth remembering because it keeps the importance of fruit before our minds.

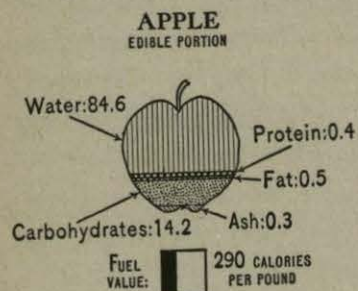


FIG. 54. — The composition of the apple makes it a valuable fruit in the diet.¹

What fruit contains. Although fruits are largely made up of water, they contain sugar, a very little protein, and so little fat that it is not important. The mineral matter is the treasure in fruit, including iron, phosphorus, lime, magnesia, potassium, in forms that the body can use. The fruit acids, especially in a meat diet, do away with the need of medicine. Fruit is so valuable in the diet that

¹United States Department of Agriculture. Office of Experiment Stations, A. C. True, Director. Chart prepared by C. F. Langworthy, Expert in charge of Nutrition Investigations.

you should make *Fruit every day* one of your home mottoes.

Why does fruit sometimes disagree with us? If we eat too much unripe fruit or if the fruit is not fresh, it may not agree with us. Cooked fruit can be taken by some people who cannot eat it raw, because the cooking softens the fruit and kills bacteria that might cause some trouble. Cooked fruit is better for little children than raw fruit.

Fruit juice again. Clear fruit juice squeezed from the pulp — orange juice, for instance — is given to very young children, who ought not to eat the pulp, and to invalids sometimes.

How shall we prepare fresh fruit for the table? *Large fruit* should be washed, pared, or peeled with clean hands. Slice it, sprinkle with sugar just before eating, and serve it as cool as you can make it. You have used bananas, oranges, and peaches in this way. Try mellow apples and pears, and serve with milk or cream and sugar. *Berries* should be picked over and washed, and served in the same way as sliced fruit.

How shall we cook fruit? We have said very little as yet about the effect of cooking on our foods. Compare a baked apple with a raw apple, and describe the changes. With your eye you see a change in color. You can easily cut the baked apple with a spoon; but you need a knife for the raw apple. The cooking, then, has softened the skin and the fiber of the apple. Taste the apple. Even if it has been cooked without sugar, you will find that it has a new flavor.

The cooking of fruit on the fire goes on with the work of the sun in ripening fruit on the tree. The difference between cooked and raw ripe fruit is somewhat like the difference between ripe and green fruit. Can you see how? Heat does work miracles. Have you ever heard the true "fairy" story, that all our heat comes from the sun? So, when we "bake" fruit, we are really putting it where it becomes a little riper with the heat of the sun, are we not?

One other thing that the heat accomplishes, we have learned in the lesson on canning. Now you can tell quite a story in your notebook about heat and an apple, illustrated with the picture of a fine, smooth fruit.

Stewing and baking fruit. You have seen apple sauce and baked apples at home, and perhaps have prepared both yourself. Miss James asked her cooking class to describe nice ways of cooking apples and other fruit used at home, and to see what they could find in cook books. These are some of the suggestions.

Mollie Stark's grandmother told her about cooking fruit slowly for a long time in an old-fashioned brick oven (see Frontispiece), making a clear, dark red apple sauce. "The longer and the slower, the better," she said; and Mollie's grandmother was quite right. You have not a brick oven, but you can slice apples into an earthen pot, add a very little water and sugar, cover and cook when the fire is low. You will find the apple sauce delicious.

One of the girls described tart (slightly sour) apples

baked with the cores taken out, and with sugar and a tiny bit of butter and cinnamon in each hole. That suggested something else to put in the hole,—a little jelly or a few seeded raisins. When the apples are imperfect, cut them in two, crosswise, for baking. Cut out the core, and in its place put the tiny bit of butter and sugar and the spice, a raisin that has been soaked, or a canned cherry. This is a very pretty way to serve baked apples.

Marjorie Allen reported that her father was fond of baked pears, cooked very slowly in the oven. Miss James said that it is best always to use as little water as possible, and to learn to like the cooked fruit with only a small amount of extra sugar.

Cranberry sauce or jelly. Cranberries are delicious stewed with a little sugar; but, if you want a mold of jelly for the Thanksgiving dinner, stew them with a little water, put through a strainer, and heat the pulp. Add as much sugar as you have pulp, cook until the sugar is dissolved, and put in a mold to cool. A few cranberries combine well with other fruit. Try cranberries and raisins in a pudding, and use a little extra sugar.

Barberries. This is an old-fashioned fruit that few people use; and yet its tart flavor is quite unlike any other. If the bushes grow wild on your farm, do not let the animals destroy them, but transplant them to the garden. The berries can be used in several ways. They make a delicious jelly, and cooked with molasses

and put away in jars they afford a refreshing drink stirred into cold water in the summer. Miss White of Pleasant Valley suggests that barberries and sweet apples make an excellent jam.

How can dried fruit be made palatable? The girls in the cooking class were quite sure that they could not like dried fruit, prunes being the poorest of all. We all "change our minds," which means our opinions, sometimes; and so did they. Stewed figs are good; and so are dates, cooked and spread on bread. Try dried prunes, peaches, apples, apricots, plums, and berries in this way:

Directions for dried fruit.

1. Wash the fruit.
2. Soak it for several hours — perhaps overnight — to replace the water which was dried out.
3. Cook it very slowly in a stew pan or in a slow oven, for several hours.
4. Use as little water as possible and only a little sugar.
5. If the fruit has a "flat" taste, add a little lemon juice, or a little cream of tartar, which is an acid, too.
6. Sprinkle chopped nuts on the stewed fruit for variety and to increase the food value.

Using canned fruit. If you buy fruit or vegetables in cans, look to see if the top is flat, for if it bulges, the fruit is spoiled. When you use either fruit canned at home or bought from the grocery, let it air in a dish in a clean, cool place. This will give it a better taste; and it improves it even more to reheat it and let it cool again.

Fruit for dessert. Fresh fruit and cooked fruit make the best of desserts at the end of a hearty meal, and are quite enough for supper. If you want something more, there are many dishes easy to make with fruit.

Apple scallop, or Brown Betty.

What and how much.

Bread crumbs and a little butter
Tart cooking apples, enough to fill a dish
Sugar
Cinnamon
A little water

How to make. Make a layer of crumbs in a baking dish, and on the crumbs put little "dabs" of butter. Pare and slice the apples and place a layer on the crumbs. Sprinkle with sugar, cinnamon, and a little water. Add a layer of bread crumbs and another of apples. Flavor and cover the top with crumbs. Bake in a moderate oven until the apples are cooked and the crumbs are brown. Any fruit, such as peaches or blueberries, may be used instead of apples. Serve hot with hard or foamy sauce, or cold with cream and sugar. Instead of crumbs the bread may be used in slices, buttered.

Remarks. Remember the other food materials that were used in meat scallop, and try cooked rice or hominy or oatmeal in place of the bread. One family calls the fruit scallop Brown Elizabeth when it is made with peaches or apricots; and Black Betty, with blackberries. Perhaps you can name some other members of this group. Stewed dates, or figs, or prunes are delicious with rice in a fruit scallop served cold. They are especially good with milk for little children who are beginning to be given sweets. They need no sugar added.

Foamy sauce.*What and how much.*

Butter	2 tablespoonfuls
Powdered sugar	1 cup
Egg	1
Vanilla	1 teaspoonful

How to make. Cream the butter. Add gradually the sugar, the egg well beaten, and vanilla. Beat while heating over hot water. If too thick, add a little hot water.

Fruit tapioca.*What and how much.*

Minute tapioca	$\frac{3}{4}$ cup
Lemon peel	
Boiling water	$2\frac{1}{2}$ cups
Salt	$\frac{1}{2}$ teaspoonful
Tart apples	6
Sugar	$\frac{1}{2}$ cup

How to make. Cook the tapioca in the salt and water until it becomes transparent. Core and pare the apples and place in the bottom of the baking dish. Fill the cavities with sugar and add a little lemon peel. Pour the tapioca over the apples and bake in a moderate oven until the apples are soft. Serve cold with sugar and cream.

Remarks. This is sometimes called bird's nest pudding. Other fruit can be used. Prunes, with the stones out, are very delicious in the tapioca. There are still other ways for using fruit in puddings and desserts. Some of these you will find mentioned in Lesson 25 and in all cook books.

EXERCISES AND PROBLEMS

1. Make a definition of "cooking," from what has been said about the baked apple.

2. Make a list of all the different ways of cooking that you know.
3. Explain why fruit should be eaten daily.
4. Can you find a very important reason for cooking figs and dates?
5. Compare the cost of a can of peaches from the grocery with home-canned peaches. What must you take into account?

LESSON 14

VALUE OF POTATOES AS FOOD

WARMED-OVER potatoes are one of the best supper dishes. Potatoes, either freshly cooked or served a second time, are good for any meal. How shall we have potatoes for supper?

Americans are said to have the potato habit. We are told sometimes that it might be better to use oftener in their place some other starchy food, perhaps rice or hominy. These do make a pleasant change, but if you prefer potatoes, you can use them as freely as you like; and there are many ways to prepare them to give variety. In spite of the fact that potatoes are attacked by insects and by diseases which the farmer must fight steadily, they are one of our staple foods.

Why are potatoes such an important food? Recall to your minds the substances in the foodstuffs that we talked about finding in milk and in bread made from wheat. Make the list on the blackboard or on paper or in your notebook, and check them as we talk about potatoes.

Study this chart (Fig. 55) of a potato, and see if you

understand it. The perpendicular lines show what a large amount of water the potato has. State 78.3 per cent in a common fraction. There is so little of the fat and protein (see the dark lines toward the left) that we do not find the worth of the potato in these. Notice the word "carbohydrate." In per cent it ranks next to the water in quantity. This is a word that you will understand when you study chemistry, but we can learn

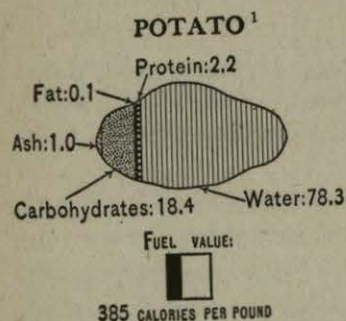


FIG. 55. — The composition of a potato.

about it now that, instead of saying starch and sugar, or speaking of the starches and the sugars, the word carbohydrate stands for both. You remember in the lesson on bread we spoke of the fact that starch and sugar are alike, and that one can be changed into the other. The chemist has found them so

much alike that he uses this name carbohydrate for both. If you wish to do so, look in the dictionary and see from what other words this one comes. Even before you study chemistry you can learn something more about starch and sugar. Burn some sugar until it becomes entirely black. Taste this black substance. You think it does not look eatable? But it is

¹United States Department of Agriculture. Office of the Experiment Stations, A. C. True, Director. Chart prepared by C. F. Langworthy, Expert in charge of Nutrition Investigations.

what you eat whenever you take sugar or starch; its name is "carbon," and it is the same substance that you burn in the coal in the stove. The heat has driven off the water in the sugar, and left this black carbon¹ behind. We need the carbon for fuel in our bodies. We can use it when we take it in sugar and starch, although, as pure charcoal or carbon, it is useless to us as a food.

Here are two questions that Miss James asked her class, and, in finding out the answers, her pupils learned one of the most wonderful of nature's true stories:

"Where does the plant find the carbon to make into starch and sugar?"

and

"From what source came the carbon of our coal?"

Here is another way to put the question. You may have heard your father and his friends talking over the question of fertilizers. If so, they have spoken of nitrogen, phosphorus, and potash. Probably they have complained of their cost. How much does your father pay per ton for the carbon for his crops?

Energy for us in the potato. The carbon is fuel for us. It occurs in the carbohydrates, starch and sugar. Starch and a little sugar are in the potato (18 per cent); therefore, the potato gives us energy. This is one value. Ten cents' worth of potatoes at sixty cents per bushel gives us more energy than ten cents' worth of bread, even.

¹ See page 299.

Mineral value of potato. Look at Fig. 55 again. In that small space at the left is pictured the other prize in the potato, the mineral matter, — the ash that cannot be burned. There is a high percentage of potassium and calcium, and of phosphorus and iron, also. These the potato takes from the soil and stores away for the young plants that would grow from the buds. Our bodies need mineral matter, too.

So let us keep on growing potatoes, in spite of Colorado beetles and the blight and scab.

The cooking class was very much amused when Marjorie Allen told them what her little sister said at supper the evening after they had all studied the composition of the potato. Little Alice looked at the baked potato on her plate, and said, "Which end has the mineral matter?" She thought that the chart of the potato was an exact picture. The little chart shows you how much mineral matter there would be, if it were all by itself and not mixed with the other substances in the potato.

What is a starch grain? The illustration (Fig. 56) shows you a slice of potato, magnified, before and after cooking. At the left the small bodies are the starch grains. See how the heat of the boiling temperature of water changes their shape, unfolding or bursting them. The heat also softens the fiber of the potato. Thus, with these two changes made by heat, the potato is made more digestible.

How shall we cook our potatoes? The answer to this

would make a long list, and you might begin to make this list by writing down the ways that you know.

The *best* way to cook the potato is one that keeps in the mineral matter. If we pare the potato, we lose the mineral matter near the skin, and allow a further loss as the potato cooks in boiling water. The best ways, then,

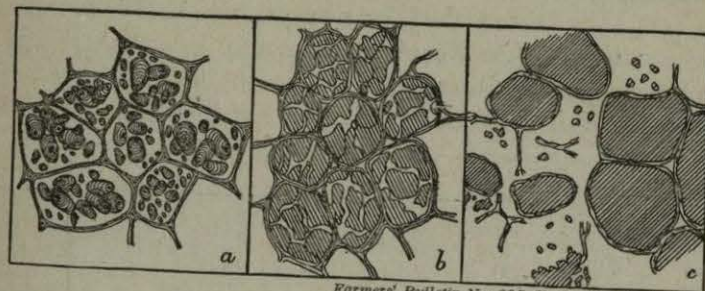


FIG. 56. — Changes of starch cells in cooking: *a*, cells of a raw potato with starch grains in natural condition; *b*, cells of a partially cooked potato; *c*, cells of a thoroughly boiled potato.

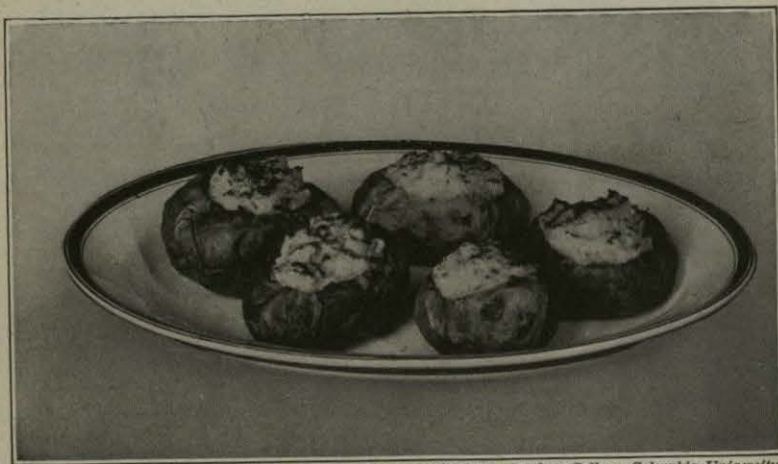
are baking, steaming, or boiling with the jackets on. Potatoes cooked in either of these three ways can be made into other "tasty" dishes. Learn how to boil a potato well; and serve it plain sometimes.

New and old potatoes. Potatoes are "new," fully ripe, and old. The new potato is in market in July and August, and may be known by its very thin skin. The later potatoes have a thicker skin, but the color still is fresh. In the spring after its winter storage, the potato is "old." It seems a little less firm; the color of the skin is somewhat changed; perhaps, the buds in the eyes of the potato are beginning to grow. When cooked it

has a stronger flavor and a rather darker color. If the potato has been frozen, it has a sweet taste and the quality is waxy. Potatoes are sometimes poor in quality when the season is unfavorable, or when some potato disease is prevalent.

1. Baked potatoes.

1. (The best method for new potatoes.) Select those of even size. When scrubbed, place them in a shallow pan or upon the rack of the oven. The oven should be hot. The length of time depends upon the size of the potato; forty-five minutes is the time for medium size.



Courtesy of Department of Foods and Cookery, Teachers College, Columbia University.

FIG. 57. — Baked potatoes, mashed, seasoned, and returned to the skins.

Test by pressing firmly, or by sticking in a fork. When the potato is done, it feels soft to the fingers. If the potatoes cannot be eaten at once, break the skin to let out the steam, cover with a cloth, and keep them hot.

Here is a nice way to serve potatoes. Cut them in two,

lengthwise; sprinkle with salt, and add as much butter as one would use at the table; break up the potato with a fork, leaving it in the skin.

Potato on the half shell is one step more. Cut the potatoes in two, lengthwise; take out the potato and mash it with butter, milk, and salt; add about a teaspoonful of butter, a tablespoonful of milk, and a shake or two of salt, to each potato. Beat this well, put back piled lightly in each half shell, and brown the tops slightly. Sometimes you can put in a little chopped meat. The beaten white of an egg may be added to make a potato puff.

2. The same as baked potatoes, except that the potatoes are pared before baking. This is a good method when the skins are poor. A brown crust is formed on the potato, which is crisp and pleasant to eat. Before baking, large potatoes may be cut in two or even sliced.

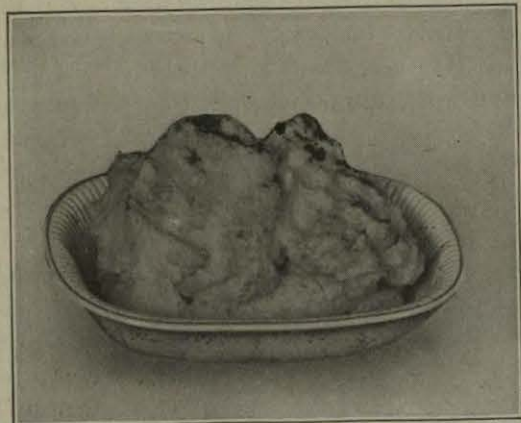
2. Boiled potatoes.

Have enough boiling water to cover the potatoes. Put the potatoes of uniform size into the kettle, one at a time, that the boiling may not stop. Allow a gentle boiling to continue until the potatoes are done. Why avoid rapid boiling? Test with a fork at the end of half an hour. When the potatoes are mellow, drain off the water, and set the kettle where the remaining moisture will steam off. Shake gently to hasten this process, and sprinkle the potatoes with salt. If they must stand before serving, shall you place a tin cover or cloth over the kettle? Old potatoes with a strong flavor should be pared before boiling, or even soaked in cold water.

3. Mashed potato.

Mashed potato can be very poor when wet and lumpy. Do not use new, poor, or very old potatoes. See that the boiled potatoes are as dry as can be with every particle of water steamed away. Mash thoroughly with the wire masher; add

butter or butterine, salt, and milk in about the proportions given for potato in the half shell. Use a tablespoonful or so of cream if you have it. *Beat vigorously.* The mealiness of



Courtesy of Department of Foods and Cookery, Teachers College, Columbia University.

FIG. 58. — A dish of mashed potato daintily served and browned in the oven.

the potato and the beating make mashed potato perfect. The mashed potato should be light and moist, but *not wet*. Reheat in the kettle. Pile lightly in a hot dish and serve; or smooth and brown the top before serving.

4. Scalloped potato.

Scalloped potato is a good supper dish.

Wash, pare, and slice the potatoes in $\frac{1}{4}$ inch pieces. Grease an earthen or enameled baking dish. Cover the bottom of the dish with a layer of the slices, sprinkle the slices lightly with flour, and put on two teaspoonfuls of butter, or butterine, in small bits. Continue until the dish is nearly full. Pour in milk to barely cover the potatoes, put a cover on the dish, and set the dish in a moderate oven. Remove the cover in time to allow the top to brown. Allow rather more than half an hour for the baking.

5. Creamed potato.

Here is an easy way. Chop cold *baked* or *boiled* potatoes with the chopper. Allow 1 tablespoonful of butter to 1 pint of chopped potato. Melt the butter in a saucepan. Stir in the potatoes. Shake from the dredger the same amount as a tablespoonful of flour, stirring the potato with one hand as you shake with the other. Pour in enough milk to barely cover the chopped potato. Set the saucepan in the coolest spot on the range, or on an oil stove with low flame, upon an asbestos mat; or turn all into an earthenware jar or baking dish, and bake slowly until it becomes creamy.

6. Potatoes warmed over in fat.

This is an old-fashioned way and a good one. Have only a little fat in the frying pan; and that very hot. The slices of potato will become brown as you turn them from side to side.

7. Hashed brown potato.

This is a delicious way to warm up cold potatoes. Chop the potatoes. To a quart of chopped potato add a tablespoonful of flour. Heat a frying pan and melt in it two tablespoonfuls of beef fat. Stir the potato thoroughly into the fat. Press the mixture firmly down and set the pan where the potatoes will brown on the bottom. It is better to do this slowly, and you should allow half an hour. Turn the potatoes out on a large plate. There should be a nice brown crust, just as you have it in corned-beef hash.

EXERCISES AND PROBLEMS

1. Make a list of the foodstuffs in potato, with the percentages.
2. Make a list of the different ways of cooking potatoes.
3. Explain why potatoes, meat, and meat gravy containing fat make a good meal.