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BOYS' AND GIRLS' INDUSTRIAL CLUBS
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Oregon Agricultural College

EXTENSION SERVICE.
RALPH D. HETZEL, Director.

NOTE. This is the only circular on canning and preserving that will be issued in connection with the project this year.

The paper or story called for in paragraphs 3, 4 and 5 of the Rules Governing the Canning and Preserving Contest (page 9, Bulletin 98, the Pony Circular) will not be required this year.

FRUIT AND VEGETABLE CANNING

By HENRIETTA W. CALVIN

There is no food quite so good as fruit. It is absolutely necessary to good health, and because of its flavor, it stimulates all other food digestion. An apple is not only "golden" in the morning but is equally good at all times of the day, and eaten at night will insure sound sleep.

FRUITS IN SEASON.

All agree, of course, that fruit is best in the season of its maturity. No manner of preparation can enhance the value of luscious ripe strawberries. The flavor of a peach can not be improved by cooking, nor does a ripe Bartlett pear need a cook's attention to increase its flavor. But because the ripening season of a fruit is brief, the housekeeper strives to lengthen that season by various methods of preservation. She would have peaches at Christmas, and strawberries in March, string beans in mid-winter, and sweet corn all the year; so she cans, preserves, pickles, and dries the fruits and vegetables, and thus has abundance all the year.

OLD METHODS OF FRUIT PRESERVATION.

Drying is the oldest method of food preservation. Formerly the food was sun dried and often portions of the food decayed before entirely dry. Flies and other insects hovered around it while it was exposed to the sun and air. Now, however, food is dried by artificial heat and kept clean and free from insects.

Vegetables were often kept for winter use by packing them with alternate layers of salt. This method necessitated long soaking in water with a consequent loss of flavor and nutriment. Much fruit was kept for winter use in the form of "butters," jams, jellies, heavy

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preserves, and pickles. When these were made, they were boiled long and often until greatly concentrated, then put away for winter use. Even after long cooking they had to be brought out occasionally and re-boiled; for they were covered only with cloth or paper and unless given constant care they often spoiled. Some food preservation was done with lye, and in the mountains of Kentucky "lye apples" are still made.

AIR TIGHT CANS.

About one hundred years ago glass jars that could be sealed air tight were invented. Very soon the same method was used for tin cans and the modern methods of fruit and vegetable preservation were begun.

CAUSE OF DECAY.

It is now known that the spoiling or decay of fruits is due to micro-organisms. These micro-organisms are tiny plants, so small that a microscope must be used in order to detect them. These micro-organisms live on the fruit or vegetable and destroy its flavor. They not only produce undesirable substances in the food, causing it to taste and smell unpleasant; but quite often they even produce poisons in the food. Heat kills these micro-organisms, and that is the reason the fruit or vegetable is cooked when it is to be kept for future use.

FOOD PRESERVATION BY CANNING.

If all micro-organisms in a food are killed and the food is then sealed so no air can enter to it, the food will keep for years. Since air always contains these tiny plants that cause food to spoil, it is necessary to exclude the air, if perfect food is to be insured.*

All that is necessary, then, in the preservation of food by canning, is to kill all micro-organisms by heat and exclude all air from the product. Since all cans, lids, and rubbers have been in air, they too must be subjected to heat in order to kill the micro-organisms attached to them.

SELECTION OF MATERIAL FOR CANNING.

Only sound, clean, ripe fruit should be used for canning. The fruit should be freshly gathered. If fruit is over-ripe, it will be covered with millions of the micro-organisms causing decay and it will be difficult to kill every one of these. If but a very few survive the cooking, they will multiply until they are enough to spoil all of the material. One spoiled or mouldy berry or one half-rotten tomato or over-ripe peach may cause the decay of one or more cans of food. Hence, great care must be taken that sound fruit only is used. If the fruit is dusty, it will also have a greatly increased number of micro-organisms upon it. Fruit must not have road or street dust

*There is one exception to what has been said above. If air is strained through cotton wool these micro-organisms will be strained out. Cooked food can be kept, if a thick layer of cotton wool be tied over the jar containing the food while the food is still boiling hot.

on it, nor should flies and insects be allowed to reach it before it is used. Well ripened fruits should be chosen because of their finer flavor and texture. When fruits are green they are hard and sour but when fully ripe they have a fine odor and flavor and are less woody.

Vegetables must also be selected with care and used in the condition when they would be best if cooked for immediate use. Peas and beans which are too old, or sweet corn too mature, can never be satisfactory when canned.

PREPARATION OF FOOD FOR CANNING.

When great care is exerted in the cleansing and preparation of the food for the cans, the worker is well repaid by the fine grade of the product. *Berries* are most easily washed when placed in a colander and dipped up and down in a large pan of clean water. *Cherries* should be washed and sorted before being pitted. *Pears, peaches, apples*, and similar fruits should be washed before paring and placed in clean cold water after paring unless immediately filled into cans. *Tomatoes* must be sorted and all faulty ones discarded before being scalded for peeling. This is necessary because the scalding softens the tomatoes and spoiled spots might be overlooked. *Beans, asparagus, and rhubarb* must be well washed before being cut, then washed again after cutting.

METHODS OF CANNING.

Open Kettle Process. When there is but a small quantity of material at hand at any one time, a satisfactory method is the old-fashioned way of cooking the food in an open kettle. The jars, rubbers and lids must be boiled in another utensil. We boil the jars

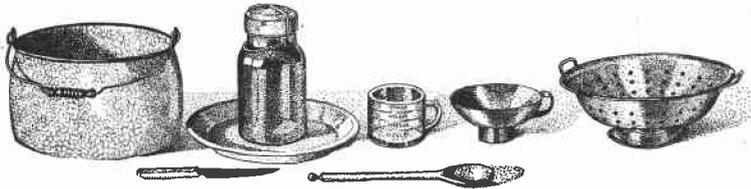


Figure 1.

because they may have been in a place where there was mould; if they were, this might cause the contents of the jar to spoil. Filling the boiling hot cooked fruit into the hot jars and immediately sealing them air tight, insures the keeping of the fruit.

This method is satisfactory when there is only enough material for two or three pints or quarts. When the quantities are greater, the fruit is often broken and crushed while cooking, and a much less attractive product results. For heavy preserves this open kettle method is desirable because it admits of long cooking and great concentration of the syrup.

Cold Filled Jar Process. By this method, the cleaned, prepared fruit or vegetable is packed tightly into the clean cans or jars. These

cans or jars are then filled to overflowing with water or syrup. The material is cooked by surrounding these cans with water, and bringing all to a boiling temperature. The boiling continues from 20 minutes to 4 hours according to the kind of food being canned. A wash boiler with a wooden or tin rack at the bottom to keep the jars from being broken provides a good cooker.

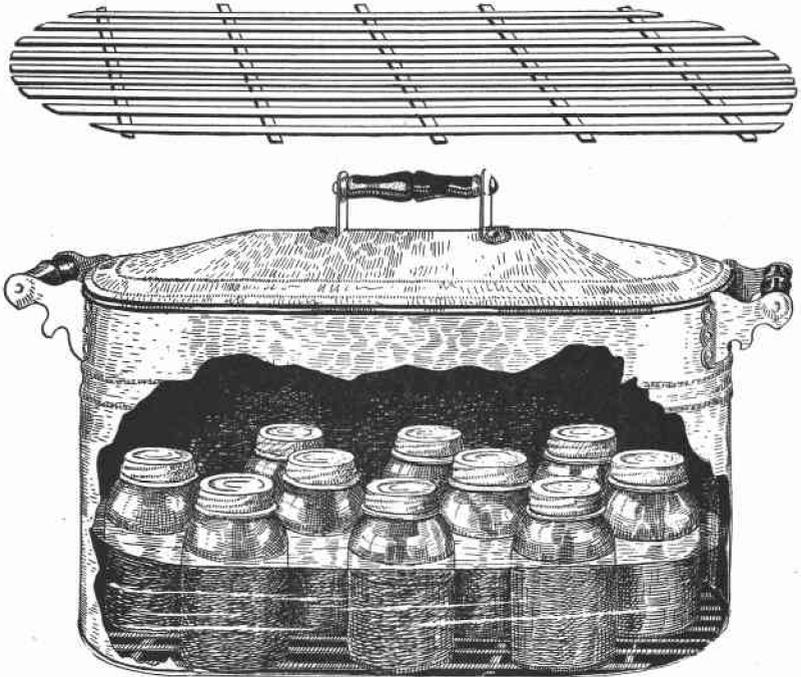


Figure 2.

TIME REQUIRED FOR COOKING.

Small fruits and berries about 10 to 20 minutes after boiling begins.

Tomatoes, peaches, and similar fruits, 20 to 30 minutes after boiling begins.

Tough fruits, until tender.

Peas, beans, asparagus, and corn, 4 hours.

When long cooking is required, it may be done for one hour each day for four successive days or in four hours one day. When a higher temperature than boiling can be obtained, as is the case with some of the patent kettles, much less time is required.

CANNING OUTFIT.

When a farm has much fruit or many vegetables grown upon it, a commercial canning outfit will soon pay for itself. These canning outfits are intended for out-door use and can be set up in the orchard

or out in the yard. This takes the litter and heat out of the house, and is thus a relief to the housekeeper. When neighbors live near together, they can have "canning bees" and accomplish a great deal in a short time.

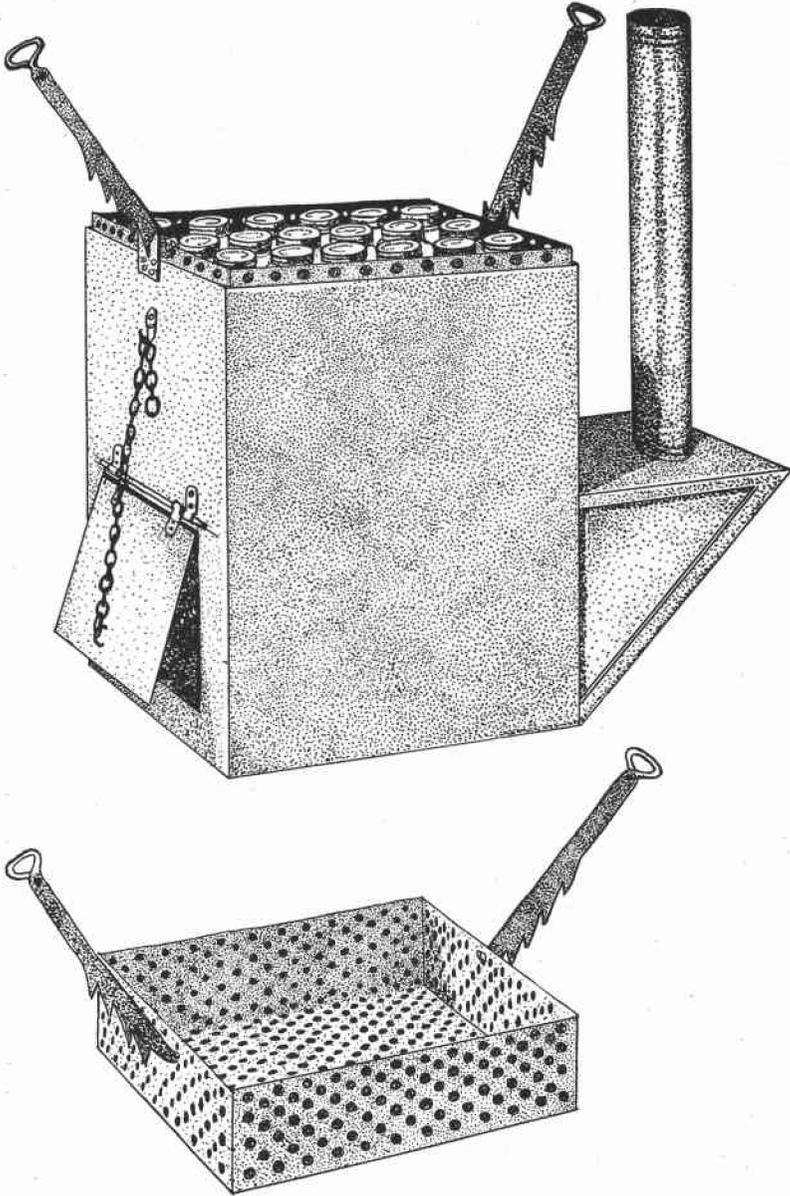


Figure 3.

TYPICAL RECIPES.

Sufficient sugar should always be used to make the food palatable. Fruit canned unsweetened cannot be made so well-flavored after being opened. If the fruit is too sweet, it can not be eaten in large quantities; so care should be taken to sweeten correctly.

Canned Berries. Gather when well ripened.

Sort out any over-ripe or injured fruit.

Place the berries in a sieve or collander and dip in water until clean. By handling them thus, the berries are easily cleaned without bruising.

Hull the berries and drop into clean jars.

Fill the jars to overflowing with boiling hot syrup.

Put the rubber on the jar and lay lid on.

Set jars in boiler on rack.

Fill the boiler with hot water up to necks of jars.

Bring water to boil and boil 10 minutes.

Screw tops down tight and leave in boiler until cool.

Wipe off jar. Label plainly with kind of fruit, method of preparation and date—thus: Canned Strawberries, June 10, 1914.

Turn jars upside down and leave until the following day. This is done to make sure that none will leak.

Place canned food in a cool and rather dark place. Some fruits are injured when kept in sunlight.

Caution. Berries lose shape if cooked in an open kettle, and lose flavor if over-cooked. The amount of sugar needed will vary with the variety of the fruit and the preferences of the users.

Canned Peaches. Select well ripened, sound free-stone peaches.

Wash the peaches thoroughly.

Place peaches in a small wire basket and dip into boiling water.

As soon as skins loosen a little, put the peaches into cold water. The skins will readily slip off and the work is rapid.

Remove the pits of the peaches and drop the halves in water until ready to cook. Peaches may be cooked in ordinary kettles. Two or at most three quarts are all that should be cooked in one kettle, for if a large kettlefull is cooked the peaches become much broken. If the open kettle is used proceed as follows:

Make a syrup of sugar and water. One pint of sugar to one quart of water is enough for tart peaches.

Lay the peaches carefully into this boiling syrup and cook until clear, that is, from 20 to 30 minutes.

Lift clean jars out of boiling water and place on a pie tin covered with several thicknesses of paper.

Put can rubber in place and then fill the jar with fruit, cover the fruit with boiling juice. Fill the jar to overflowing. Do not wipe top of jar off. Screw top down tight.

Wipe jar with clean cloth wrung out of hot water. Turn jar upside down and leave until day following.

Label as directed for berries.

When washing jars to be used in canning, have clean hot soap

suds and a perfectly fresh, clean dish cloth. Roll the jars after washing in clean boiling water. Do not wipe jars, because cloth often carries mould spores, which might cause the fruit to spoil.

Don't forget to boil all jars used for open kettle canning. When the cold filled process is used, the jars are boiled at the same time that their contents are cooked.

Peaches canned by the cold filled process are most excellent. Follow same directions as for strawberries but cook longer.

Notice. Sugar toughens fruit. Naturally tough fruit should be cooked tender before sugar is added, while fruits easily broken may be placed in sugar or syrup for a time before being cooked.

Canned Tomatoes. Select the fruit with care.

Discard all faulty fruits.

Wash, scald, and slip off skins.

When wanted whole, prepare juice from less perfect and small tomatoes and use this to fill in space in cans.

Cook either by open kettle or cold filled process. The tomatoes should be held to boiling temperature at least 20 minutes.

Glass jars are better than tin except when fruit is to be shipped.

Canned vegetables, beans, asparagus, peas, etc. Gather even-sized and developed vegetables.

To "blanch" beans, wash and dip into boiling water.

Break or cut in small pieces. Shell out peas. Wash again.

Fill into jars, pack tight and fill with clean cold water.

Place rubber and lid.

Arrange in boiler and boil for 15 minutes.

Screw down top and boil for 4 hours.

If it is inconvenient to boil four hours one day, then leave the jars in the boiler and boil for one hour each day for four succeeding days. Do not loosen lid at any time. If but three hours' cooking is given most of the food will keep, but four hours makes keeping more certain.

Fruit Juices. Prepare fruit as for canning.

Cook until juice flows freely.

Put into bags made of strong double cheese cloth.

Hang up over night and allow to drip into a stone jar.

In the morning boil the juice rapidly ten minutes, put in jars as directed for fruit canning.

Fruit juices are best left unsweetened because in sickness they may be needed without sugar.

Preserved Fruits. Prepare as for canning.

Use $\frac{3}{4}$ lb. sugar to pound of prepared fruit.

Boil long and slowly in a tightly covered kettle. The fruit colors up better when lid is kept on.

Fill in jars as directed for canned fruits. Preserves will keep unsealed but they are more conveniently cared for when placed in air-tight jars.

Sweet Pickles. Make a syrup of one pint of vinegar to seven lbs. of sugar.

Add a small bag of whole cloves, stick cinnamon, and allspice.

Into this syrup place the fruit and finish as preserves.

Jellies. Use fruit a little under-ripe.

If grapes are used, pick from stem, wash, crush, and cook without adding water.

When the seeds come to the top, pour into bags and drain as directed for fruit juices.

If apples, pears, or quinces are used, wash and cut up skin and core as well as flesh of fruit.

Add just enough water to cook, and cook until tender. Drain as directed above.

Fruits such as peaches do not "jell" readily and the juice should be mixed with apple juice before using.

Do not squeeze the juice from the bag.

Measure the juice after it is drained out and for each 4 cups of juice add 3 cups of sugar.

Do not cook more than 4 cups at any one time.

Boil *rapidly*, until a drop when it falls from a spoon seems to tear off slowly; or test by placing a small quantity on a saucer in a cool place. Be careful that the jelly is not over-cooked.

For Exhibit. Have your fruit and vegetables in uniform jars neatly labeled.

Can only such foods as need to have their season lengthened.

Have your jellies covered with paraffin and in neat, uniform glasses. Label your jellies with name of kind and date.

Under the new rules a written paper is not required.

A Last Word. It is economical and profitable to can foods at home. Any surplus of really excellent canned material will always find a ready market. As to health, remember, "A barrel of fruit in winter is more pleasant than a barrel of medicine in the spring."