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HOME CANNING OF FRUITS AND VEGETABLES

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By DIXIE HARRIS, Field Agent in Foods and Nutrition

WHY CAN?

Spring used to be welcomed by a strenuous and anything but pleasant siege of bitters, sulfur tonics or "blood thinners" in a vain attempt to overcome "that tired feeling". Regardless of these endeavors the tired feeling usually lingered until after the garden was supplying its early and welcome products. It was not realized that a long winter's diet composed largely of potatoes, meat, dried beans and pie was responsible for the constant fatigue, lack of resistance, frequent colds and numerous other minor ailments of the family. Our newer knowledge of nutrition has taught us that health, resistance, vitality and energy are largely dependent on food and that to be well fed each person should have two fruits and two vegetables every day, not counting potatoes and dried beans.

Vegetables are good sources of minerals, especially iron for a supply of good red blood. The roughage of vegetables, and the acids of fruits aid in regulating the elimination of waste from the body. Both vegetables and fruits contain vitamins which are essential to good health. The minerals and vitamins of properly canned fruits and vegetables compare favorably with those of the fresh cooked foods. During the winter the best substitutes for fresh fruits and vegetables are stored or canned ones. A liberal supply of canned fruits and vegetables will do much to assure good health during the winter and prevent the necessity of spring tonics.

Canned fruits and vegetables give variety to the winter diet, and make menus more interesting and attractive. Since

"variety is the spice of life" it is wise to have well-filled shelves of canned foods from which to choose.

The wisdom and economy of producing sufficient vegetables and fruits for a good supply during the growing season has never been doubted. It is equally good wisdom and economy to produce a surplus for canning which will care for family needs during the winter season. Definitely plan to produce a surplus and to "can to save the surplus." (See also canning budget.)

SPOILING OF FOOD

Certain changes take place in developing fruits and vegetables which are known as ripening. These processes continue after foods have reached their prime causing deterioration and making them more susceptible to the action of the minute plants known as bacteria, yeasts and molds which finally cause their spoilage. These tiny organisms (bacteria, yeasts and molds) are found practically everywhere in water, air and the soil. The spoilage of food may be prevented by (1) destroying the organisms already in the product, and (2) making conditions unsuited for their further action or sealing against their re-entry.

Prevention of Spoilage. Three common types of food preservation are: (1) drying; (2) use of home preservatives; (3) canning.

Drying is the process by which sufficient water is removed from the food so that the bacteria, yeasts and molds are unable to cause changes which result in spoilage.

By the use of such harmless home preservatives as sugar, salt, vinegar and spices the destructive processes of bacteria, yeasts and molds are checked.

Canning is the process by which these organisms are destroyed by heat and their further entrance is prevented by sealing.

Certain bacteria are difficult to destroy, since they can change into a more heat resisting form known as spores. The spores, if not destroyed, develop into active forms after the proper temperature is reached. The intermitent or three-day

method of canning was developed in the southern states to destroy the spore form of bacteria. Steam pressure canners and longer periods of processing make this method seem unnecessarily laborious.

Detection of Spoilage. Spoilage may be detected on the outside of a container by:

1. Bulged or swelled ends of tin cans.
2. Broken seal on glass jar.
3. Liquid escaping between rubber and jar.
4. Unusual cloudiness of liquid.

Spoilage may be detected after the container is opened by:

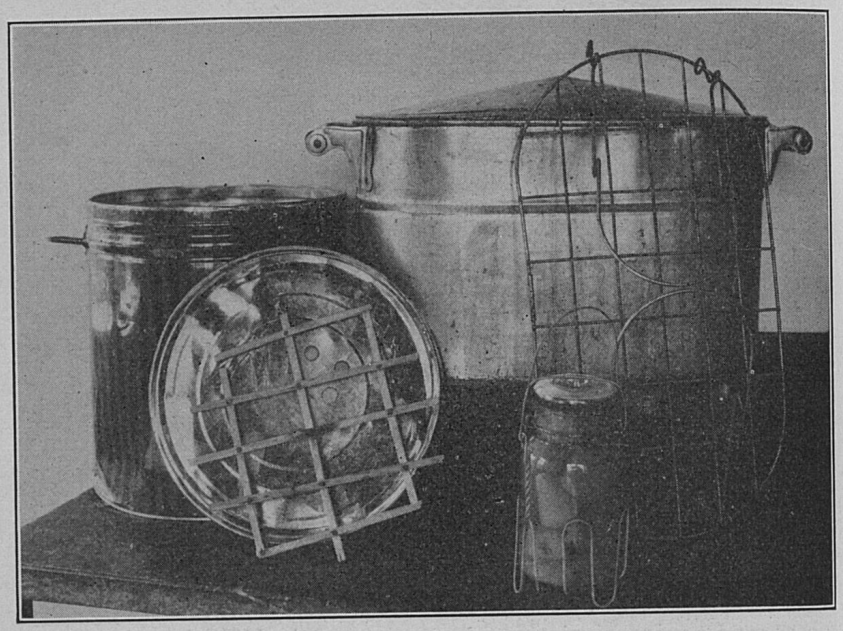
1. Liquid spurting out or air rushing out. (Do not confuse this with air being sucked in, which indicates a good seal.)
2. Disagreeable odor or one not characteristic of the food.
3. Extremely soft food. (This may indicate either spoilage or overcooking.)
4. Extreme change in color.
5. Extensively darkened or badly corroded can.

Danger in Eating Spoiled Food. A careful observer can usually tell when bacteria have caused deterioration of canned food. Carelessness may result in serious illness or even death to those eating food contaminated by botulinus bacteria. This is a spore-forming variety of bacteria and is difficult to destroy except by temperatures obtained in steam pressure canners. Botulinus poisoning has occurred in certain districts of the United States and in these districts it is advocated that all meat and non-acid vegetables be canned in pressure cookers. Non-acid vegetables such as corn, peas, beans and spinach are more likely to contain botulinus bacteria than tomatoes or fruits. Up to this time not a single case of botulinus poisoning has been reported to the Department of Public Health of Kentucky.

Prccautions. All canned foods showing any signs of spoilage should be destroyed. Boil all commercially or home canned vegetables except tomatoes for five minutes before tasting or eating. Heating sometimes brings out odors difficult to detect in cold food. This boiling will prevent botulinus poisoning. Food

which is to be used for salad may be boiled early enough to be cooled before using.

Canned food unfit for human consumption should be burned or buried deep enough to prevent farm animals from eating it.



2. Home equipment which can be successfully used for water bath processing. Lard can with home-made wooden rack, wash boiler with commercially made wire rack, and individual jar holder which may be used with either canner.

CANNING EQUIPMENT

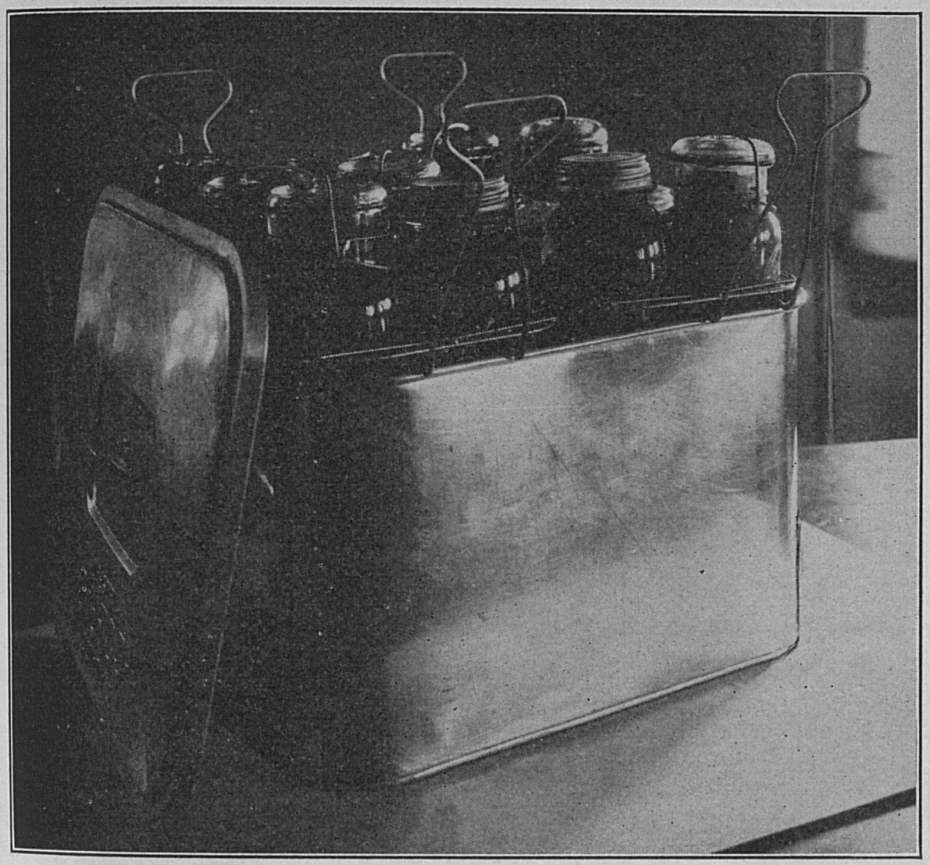
Canning equipment includes utensils for the preparation of foods for canning, vessels for precooking or blanching, canner for processing containers, containers such as tin cans or jars, lids and rubbers. The following list of small equipment makes home canning easier.

1. Colander.
2. Sharp, stainless steel paring knives.
3. Accurate measuring cups.
4. Accurate measuring spoons.
5. Large wooden spoon.

6. Wide-mouthed funnel for filing jars.
7. Jar lifters.
8. Paddles or wooden spatulas to aid in packing containers.
9. Hand sealer if tin cans are used.
10. Lifter for hot pan.

TYPES OF CANNERS

Open Kettle. For the open kettle method of canning a large vessel is necessary for boiling the food. Tin pans or chipped enamel vessels should not be used for fruits and tomatoes.



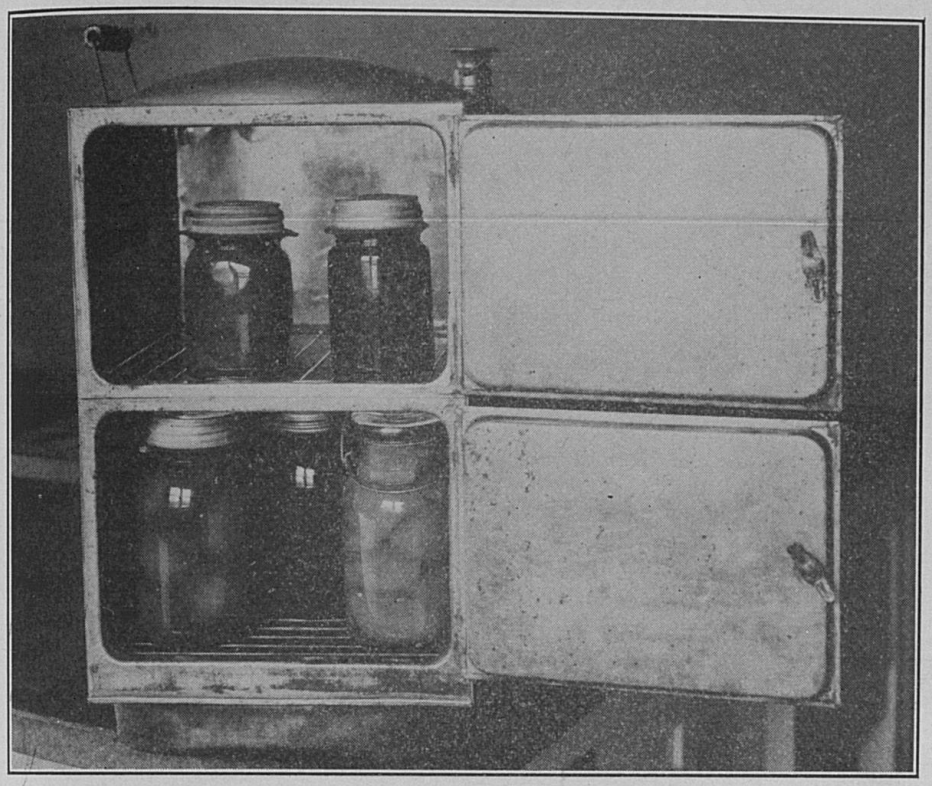
3. Commercially made water-bath canner, equipped with two racks holding six jars each.

Water Bath. Water bath canners may be purchased as such, or may be arranged from other equipment. Galvanized garbage pails, large buckets, lard cans and wash boilers have

been used successfully. The canner should be deep enough to allow one inch of water to cover the jars and have several inches of additional space. There must be a well-fitting lid to inclose the steam and prevent water from rapidly boiling away. A rack or false bottom one inch from the bottom of the canner allows for free circulation of water under the jars, prevents breakage and lessens likelihood of jars losing liquid. The rack may be made of a strong wire netting, one-half inch mesh, or wooden strips nailed together securely. Handles attached to the rack are convenient for lowering and removing jars from boiling water. Straw, newspapers or cloths are unsatisfactory for the false bottom since they prevent the circulation of water.

The temperature of a water bath canner never goes above boiling (212° F.) so this type of canner is best suited to foods which are easily kept such as fruits and tomatoes. However, these canners have been used successfully in Kentucky for canning non-acid vegetables such as beans, peas, corn and spinach.

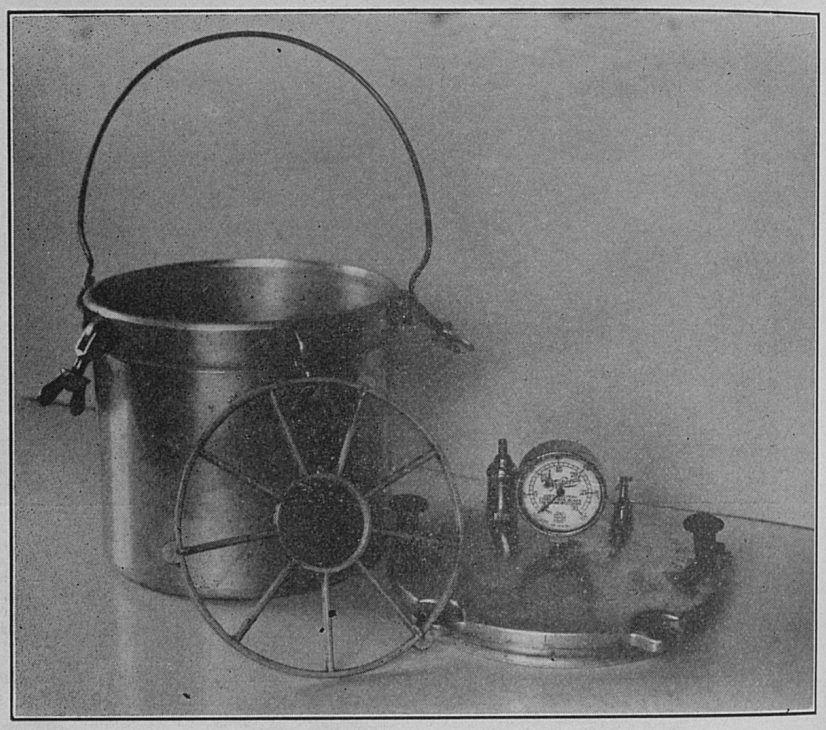
Steamers, or Steam Canners. Processing may be done in steamers, or steam canners. The lower part of the steamer is filled with boiling water and the jars are placed on racks in the tightly closed or covered compartment above. The live steam from the boiling water surrounds the jars and processes them. Since the steam in this type of canner is not under pressure the temperature does not go above boiling. The time of processing is the same as for a water bath canner. There is less danger of burning oneself in placing or removing jars. Water must boil vigorously during the whole processing period and must be added as it boils away. On the best steamers a whistle indicates when more water is needed. This water may be added thru a small pipe from the top without opening the doors of the canner.



4. Steam canner.

Steam Pressure Canner. The steam pressure canner is recommended by the Bureau of Home Economics, Department of Agriculture, as the surest method for canning meats and non-acid vegetables. The canner consists of a heavy aluminum, steel or enameled ware vessel with a heavy lid which is fastened down by bolts. On the top of the lid are a pressure gage with a hand to indicate the pressure and corresponding temperature, a pet-cock for the escape of air, and a safety valve to prevent pressure becoming too great. In this type of canner steam is confined under pressure. The temperature of the canner varies with the pressure from 212° F. when the water in the canner begins to boil and pressure gage registers 0 to 250° F. when the pressure registers 15 pounds. A pressure of fifteen pounds is as high as most canning directions suggest. A rack holds the jars up from the bottom of the cooker.

Steam pressure cookers are economical because they save fuel, energy and time, and because foods so processed are more likely to keep. They are excellent for the preparation of certain types of food. Pressure cookers may be purchased in several sizes.



5. Steam pressure canner, showing container, rack and lid.

Care of Pressure Cooker. It is extremely important that the lid of the pressure cooker fit perfectly in order to confine the steam. A very small dent or a deep scratch on the lid or rim of a cooker may break the seal. Cookers which are used only for canning and cooking and which are carefully handled should last indefinitely. The small metal ball in the safety valve should be wiped dry after each using to prevent rusting. It is well to leave the spring over the ball released when not in use.

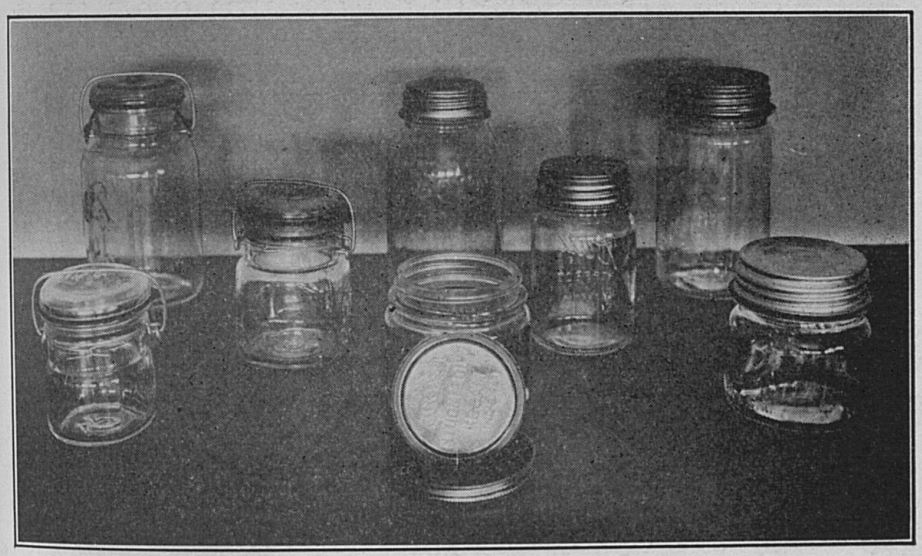
CONTAINERS FOR CANNING

Containers which may be used for canning are, (1) glass jars, (2) tin cans.

Glass Jars. Since there are several types of glass jars the home canner should study them to learn the type which will best suit her purposes.

Jars come in green or clear glass. Green glass is cheaper but the true color of the food cannot be seen thru it. For this reason, the use of green glass is not encouraged for exhibits. Large-mouthed jars are convenient for packing whole tomatoes and whole fruits. Mason jars with straight shoulders are easier to pack than those with wide shoulders. Wide shoulders also increase the difficulty of removing the air bubbles after packing the jar. Square jars can be neatly packed and conserve storage and shipping room. Most jars can be purchased in half-pint, pint, quart and half-gallon sizes and should be selected according to the nature of the product and the size of the family.

The mason jar has a screw top or lid. Inside the lid is a porcelain lining to prevent food coming in contact with the



6. Types of glass jars. Back row, left to right—quart size: wire-clamp glass-top jar, Mason wide shoulder, Mason wide mouth. Second row, left to right—pint size: square, wire-clamp glass-top; Mason straight shoulder. Front row, left to right—half-pint size: wire-clamp glass-top jar, automatic seal wide mouth, and wide mouth Mason.

metal. If the porcelain cracks discard the lid. If the lid rattles press down on center of top to tighten.

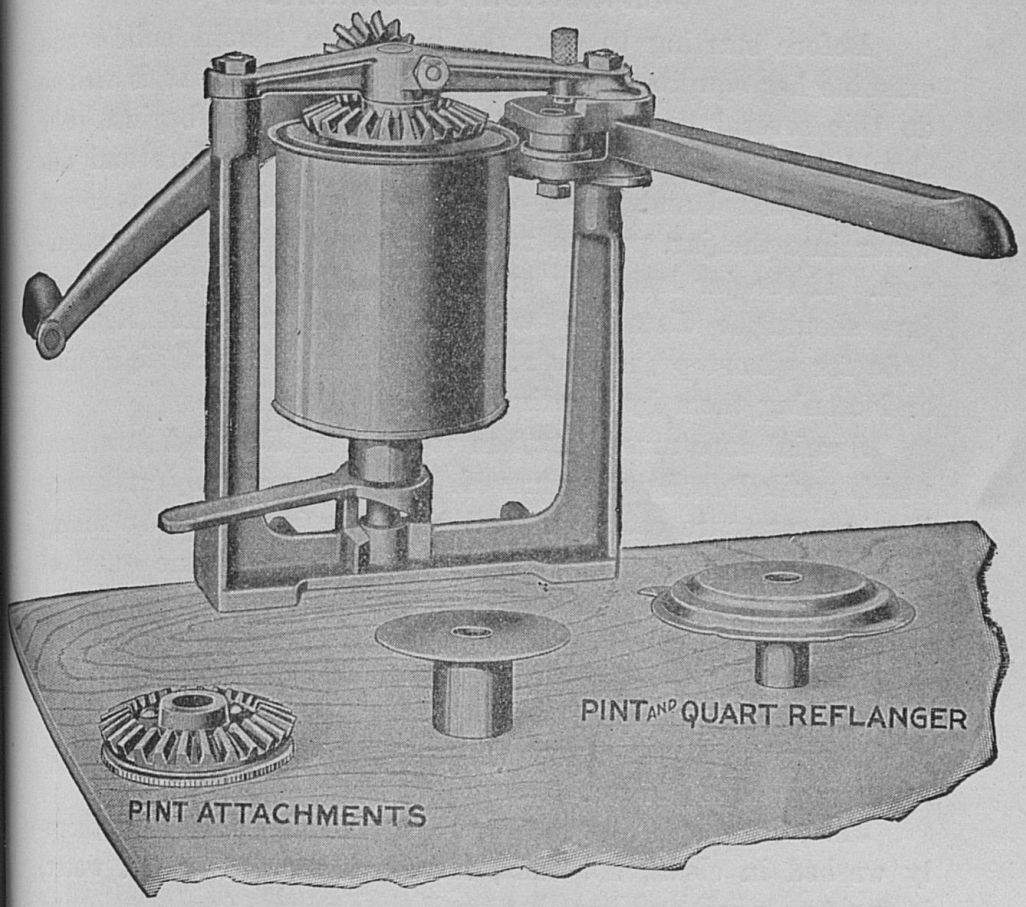
The top of a mason jar must fit perfectly if food is to be preserved. Carelessness in opening jars brings trouble the next canning season. A simple method of opening a jar is to pull the rubber ring out with a pair of pliers. Turning a mason jar upside down in hot water to cover the rubber will soften the rubber and make it easier to press a dull bladed knife between the jar and the rubber, thus breaking the seal. A sharp pointed instrument used in opening a jar may bend or break the zinc lid so it will not make a perfect seal.

The wire-clamp glass-top jars are very satisfactory. Broken tops can be replaced. There is little danger of the lid and jar not fitting. They are easily cleaned and easily opened. In case the bail becomes loose, does not click when slipped over the top, it may be removed and bent back into proper shape.

The automatic seal top requires no rubber but new tops must be purchased each year. Under the lacquered metal top around the under outer edge is a hard, waxlike compound which softens when heated and on cooling forms a seal.

Tin Cans. The sanitary or rim seal type of tin can is rapidly replacing the cap and hole type which requires exhausting and soldering. When food is packed into the rim seal can hot it may be sealed immediately as no exhaust is necessary. The top is entirely open. A compound or rubber composition film inside the lid makes a double seal when the cover is crimped on. Several types of sealers are on the market, one of which can be adjusted to fit either number 2 (pint) or number 3 (quart) cans. These sealers may also be used for opening and reflanging cans so that they may be used again. Cans for pumpkin, squash, beets, fruits and tomatoes should be lacquered or enameled to prevent the action of fruit or vegetables on tin.

The advantages of canning in tin are: (1) there is no fear of breakage; (2) when using a steam pressure canner the pet cock may be opened as soon as processing time is over; (3) they may be plunged into cold water immediately after processing which will prevent any overcooking of the product.



7. Hand sealer for sealing sanitary tin cans. (Courtesy of the Burpee Sealer Company.)

RUBBERS

Use the best quality of rubber rings, use only once and buy new each year. Rubbers with lips are easier to remove when opening jars and cost no more. Put the lip on the opposite side from the bail on glass top jars. Two rubbers should never be used on one jar.

Tests for rubbers.

1. When rubber is bent sharply back on itself there should be no signs of cracking or breaking.
2. Rubber rings should stretch twice their length and return almost immediately to their original size.

PREPARATION FOR CANNING

Before starting to can, the housewife should collect and examine her equpiment and put it in good order. It is well to do this several days before the canning season begins. She should have a liberal supply of new rubbers. Jars and lids should be tested and fitted. A sure method of testing is to put water into the jar, put on rubber, fasten the lid tight and invert. If the jar leaks try another lid. All defective lids and jars should be discarded to avoid future trouble. Regulate bails for glass-top jars by removing from jars and tightening or loosening them by bending to fit.

Special care must be taken to sterilize lids and jars from which spoiled food was removed. Wash thoroughly and sterilize in a pressure cooker or boil in a solution made by adding two or three tablespoonfuls of washing soda to one quart of hot water. Then boil in clear water and rewash. This special care is necessary to prevent the contamination of new food from bacteria left in jars and lids.

STEPS IN CANNING

1. Preparation of jars and cans

Jars, cans, and lids to be used in canning should be thoroly washed in clean, hot suds, rinsed, immersed in hot water, brought to a boil and kept hot until time of packing. Adjusting the rubber before packing will prevent specks of food from becoming lodged between the jar and rubber.

2. Selection of the product

Foods are most satisfactory for canning at the height of the season or when each crop is in its prime. Immature fruits and vegetables are lacking in flavor. Wilted, rotting or defective foods contain bacteria which make them difficult to keep. They should be discarded.

It is economical for the woman who has a small canner or a limited supply of vegetables to can either every day or several times a week. This plan should insure vegetables in excellent condition and should neither interfere with regular duties nor overtire the already busy housewife. Canning three or six

quarts several times a week will soon fill the average size family's canning budget.

"One hour from garden to can" is an excellent slogan. Vegetables and small fruits deteriorate quickly after picking, hence are more difficult to keep. Fresh foods for canning

8. Jars of green beans. Left to right: 1. Overmature beans, fancy pack. 2. Tender, young beans cut for table use. 3. An utility pack of tender young beans.

which must be kept from one day to the next, should be stored (1) in a cool place to prevent wilting, (2) in clean containers to prevent contamination, and (3) in shallow containers to allow for circulation of air and to prevent bruising.

3. Cleaning and grading

Fruits and vegetables to be canned should be very carefully cleaned. Low-growing vegetables like spinach need particular care because they are apt to carry heat resisting bacteria found in the soil. Do not wash too many vegetables at one time, use plenty of water, lift the vegetables out rather than pour the water off. A large colander or wire basket lessens the task of washing fruits and vegetables.

Grade for firmness, ripeness and quality. If a product is to be canned whole or in halves, grading for size improves the appearance and increases the value of the product. Foods not

to be canned whole should be cut in uniform sizes convenient for packing or serving. It is a convenience for the housewife to label her canned products to correspond with her grades, reserving the lowest grade for family use.

4. Blanching or precooking

Blanching is the process by which foods are prepared for cold packing. In the past few years the hot pack has taken the place of cold pack in the canning of non-acid vegetables. The cold pack method is still used in the canning of fruits or acid vegetables which require shrinking and peeling.

Small fruits such as berries, cherries, grapes, currants, gooseberries, are often canned with no preliminary heating or precooking since they do not require peeling, shinking or wilting.

Blanching is the process of dipping in boiling water for a short length of time and plunging immediately into cold water. This process loosens the skins of such foods as peaches, apricots, tomatoes, etc. It also softens and shrinks the product sufficiently to make it easier to pack to good advantage in the jar.

Non-acid vegetables are precooked in preparation for packing. This process consists of bringing the product to a full boil and keeping there for a short time varying with the product. Precooking drives out the air, shrinks and softens the product thus permitting a fuller pack, makes immediate sealing possible, and facilitates the penetration of heat to the center of the jar in processing.

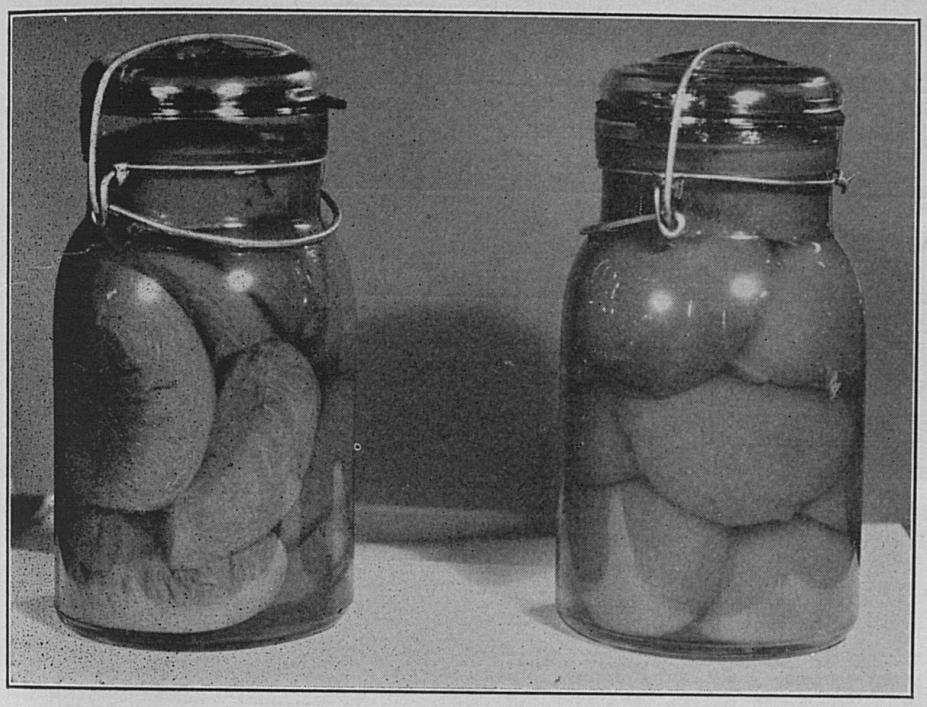
5. Packing in jars and cans

Jars or cans should be clean, sterile and hot before packing. Adjust rubbers before packing. In packing precooked food, work quickly to prevent cooling. Fill jars or cans well but not so full of solid material that it is difficult for the liquid to carry the heat to the center of jars. So-called fancy packs are not desirable for exhibit or home use as more time is spent than the packs warrant. The arranging of pears or peaches in

layers avoids breaking them and makes a fuller, neater pack and is advocated.

6. Adding water or syrup

Cover vegetables with the boiling liquid in which they were precooked, adding boiling water if necessary. Remove air bubbles by slipping a spatula or case knife down the side of



9. The peaches in the left-hand jar are neither of uniform size nor attractively arranged. The right-hand jar shows attractive, economical pack.

the jar in several places. This is especially necessary in a jar with shoulders. Add salt near the top of the jar in the proportion of one teaspoon to each quart of vegetables. Oversalting or the use of sugar should be avoided as they change the original flavor of the vegetable. Do not add canning compounds, chemicals or preserving powders for they are harmful drugs and are unnecessary if the directions given in this circular are followed.

Syrup should be added to fruits. General directions for making syrup are: slowly heat water and sugar together stir-

ring until all sugar is dissolved. Let come to boil and fill jars. Fruit juice may be substituted for water in syrup.

TABLE OF SYRUPS FOR CANNING FRUITS

Syrup	Sugar	Water	Fruits to be used with
Thin	1 c.	3 c.	Sweet fruits such as apples, apricots, pears, pineapple, sweet cherries.
Medium	1 c.	2 c.	All berries, grapes, peaches, plums, rhubarb.
Thick	1 c.	1 c.	Sour fruits such as gooseberries and sour cherries.

Select a syrup which will secure good color, preserve the texture and retain as far as possible the natural flavor of each fruit. Canning fruits in water is not satisfactory for fruits so canned lack richness and flavor.

7. Adjusting the lids and sealing

In order to understand when a jar may or may not be sealed before processing, the housewife should understand the effect of heat on the volume of air and liquid. Heat causes both air and water to expand, thus increasing in volume. When cool air or liquid is confined and heated the result is expansion which causes the breaking or "blowing up" of the container unless it is strong enough to resist the pressure of the expanding air and liquid. When boiling hot liquid is confined and heated, nothing happens since the liquid has already been expanded and the steam drives off the air. Jars or cans packed boiling hot with a precooked product may be completely sealed at once because precooking has already expanded the liquid and product and the steam drives out the air.

If the product is allowed to cool or if the product is packed below boiling temperature as in the case with food that has been blanched in preparation for canning, complete sealing be-

fore processing would cause the jar to break because of the expansion of the liquid and air in the jar. In order to provide for this expansion of air and liquid, jars so prepared are only partially sealed before processing. In mason jars this is done by screwing the lid down firmly and then turning back just enough to break the seal, in wire clamp glass top jars by adjusting the top bail and leaving the second bail up, in sanitary tin cans by putting in the first crimp only. The jars are now ready for processing.

8. Processing

In Water Bath. The water in canner should be boiling hot before putting in jars or cans. The containers will already be hot from the precooked food or addition of boiling liquid. Have rack in bottom of canner.

Water should cover containers one inch. In jars this helps prevent loss of liquid. If water is hot when jars are put into canners, water from canner will not enter partially sealed jars.

Cover canner with well-fitting lid and boil vigorously full length of time. Begin counting time as soon as water boils hard. If water ceases to boil do not count the lost time but add that much extra time to the processing period. Add more water if necessary to keep containers well covered.

Remove from canner when full time is up and seal jars completely by screwing mason jar lids tightly, putting bail down on wire clamp jars, and putting second crimp in sanitary cans. (See care of jars after processing.)

In Steamer or Steam Canner. In steamer or steam canner the water in the bottom part of steamer should be boiling. Place jars or cans on rack in upper part of container. Close upper part of container by placing lid on steamer or closing door of steam canner. Begin counting time when water in lower part of steamer is boiling briskly and steam begins escaping around edge of lid or door. Add boiling water to lower container as necessary. The time for steaming is the same as for the hot water bath.

In Steam Pressure Canner. Before finishing packing jars add boiling water to reach rack in bottom and heat canner. When water is boiling place containers on rack and put lid on canner. On some of the newest canners arrows indicate just how lid should fit top of canner. Partially tighten clamps opposite each other then go back and screw them all down very tightly. This makes lid fit evenly.

Place over hot fire to run pressure up quickly.

Leave pet-cock open until steam has driven all air from canner and steam has been coming out for about three minutes. Then close completely. In large canners where there is little fear of the water boiling away the pet-cock may be left partially open if pressure can be kept up.

After pet-cock has been closed watch pressure gage until desired pressure is reached. Then begin counting time. Time of processing will vary with nature of product and size of container but it will be less than for water bath canner because the compressed steam runs the temperature up much higher. Steam should not escape from around lid nor from pet-cock when closed.

Pressure should not be run higher than the time table indicates and it should not fluctuate. Too high a pressure softens the product, while changing temperature forces liquid out of the jar. When desired pressure has been reached, move canner away from hottest part of stove.

For glass jars, when time of processing is up, remove cooker from stove and let stand until a minute or so after gage hand indicates zero. Then open pet-cock, undo bolts, remove jars and finish sealing partially sealed jars.

When canning in tin, open pet-cock immediately when processing period is completed. There is no fear of losing liquid from tin cans. Plunge cans at once into cold running water or change water frequently as it warms. If air bubbles rise, remove contents from the faulty can, repack in another can and process at least ten percent of the entire time suggested.

While pressure of canner is going down prepare the next set of jars for the canner.

If canning directions are not followed carefully water in jars may be very low when processing period is finished. This does not interfere with the keeping qualities of the canned foods but makes the jar look less attractive.

Oven Canning. Oven canning is becoming quite popular with the advent of heat controlled electric and gas ovens.

Processing can be satisfactorily done in an electric, gas or coal oil oven by using an oven thermometer. Regulate the oven to register between 250° and 275° F. Place the hot jars, partly sealed, on the rack of the oven about two inches apart to allow heat circulation. The oven may be filled to capacity. All jars canned by this method should be *partially not completely* sealed regardless of temperature at which product was packed. This precaution is necessary because of the high temperature of the oven and consequent possibility of explosion of completely sealed jars. (See time table for canning.)

9. Care of containers after processing

After jars are removed from canner seal immediately if not completely sealed before.

Never set hot jars on marble, metal or in a draft. Arrange on cloths so that they do not touch. All jars except those with composition tops for sealing may be inverted to test seal. After mason jars have cooled do not screw lids tighter for this might break the seal.

Place jars canned at the same time together. Keep them in the kitchen for a week or ten days examining them daily for spoilage. Spoilage which would develop slowly at a cooler temperature shows quickly and food can be saved. Recan any jars which are "working." Store in cool, dry place.

10. Storing canned food

Label jars by placing small stickers uniformly near the bottom of glass jars. Label should contain name and grade of product, date of canning and approximate cost.

Light does not influence spoilage but it will fade the color of canned foods. Hot sunlight will increase the temperature

and the higher the temperature at which canned foods are stored the more likely they are to spoil.

DIRECTIONS FOR CANNING VEGETABLES

Asparagus

Asparagus for canning should be fresh and tender. Wash, grade for size, discarding imperfect pieces. Tie in uniform bundles, cover tough portions with boiling water, cover saucepan and boil for four to five minutes. If asparagus is cut in half-inch lengths boil two minutes in water to cover. Pack boiling hot into jars or cans, cover with water in which it was boiled, add 1 teaspoon of salt for each quart.

Process: Quarts, 40 minutes at 10 pounds pressure.
Pints, 35 minutes at 10 pounds pressure.
No. 2 and No. 3 tin cans, 30 minutes at 10 pounds pressure.
120 minutes in water bath canner, steamer or oven.

Beans (String)

Large, coarse beans the seeds of which shell out easily are unsuited for canning. Use only well sorted, tender string beans. Wash thoroly, string, leave whole or cut in convenient lengths. ((Cut 18). Cover with boiling water and boil 5 minutes in uncovered saucepan. Pack containers boiling hot, add 1 teaspoon of salt for each quart and cover with water in which they were boiled.

Process: Quarts, 40 minutes at 10 pounds pressure.
Pints, 35 minutes at 10 pounds pressure.
No. 2 and No. 3 cans, 30 minutes at 10 pounds pressure.
In water bath 180 minutes.
For tender young beans 150 minutes.
Seal immediately.

Beans (lima)

Carefully sort and grade for size and age. Old ones dry or can for soups. Boil young beans in water to cover 2 minutes,

older beans 5 minutes. Pack boiling hot into containers to within 1 inch of top, add 1 level teaspoon of salt for each quart, and cover with water in which they were cooked.

Process: Quart jars, 60 minutes at 10 pounds pressure.
Pint jars, 55 minutes at 10 pounds pressure.
No. 2 and No. 3 cans, 50 minutes at 10 pounds pressure.
In water bath process 180 minutes.

Baby Beets

Can only young, tender beets. Those of the turnip-shape and not much larger than one's thumb are desirable. Leave on all of root and one inch of stem to prevent bleeding. Wash thoroughly and boil 15 minutes or until skins slip easily. Slip skins, pack whole into containers, add 1 teaspoon of salt for each quart, cover with boiling water.

Process: Quart jars, 40 minutes at 10 pounds pressure.
Pint jars, 35 minutes at 10 pounds pressure.
No. 2 and No. 3 cans, 30 minutes at 10 pounds pressure.
Water bath canner 90 minutes.

Pickled Beets

Select beets of uniform size, cut off the stems, allowing at least 1 inch to remain on the beets so that they will not bleed and lose color and sweetness. Wash them well and cook in a covered pan until tender, in enough water to cover. For young beets this will require about one-half hour. When tender plunge into cold water, remove the skins, and when cool cut in dice or thin slices. Fill the beets into jars and to each pint add one-half teaspoon of salt. Fill up the jars with a mixture of vinegar and brown sugar in equal proportions by measure, heated to boiling, so that the sugar is thoroughly dissolved. If this is too acid, the vinegar may be diluted one-fourth with water. Process immediately containers of all sizes for 30 minutes in boiling water. Pickled beets may be processed in the water bath because of the high percentage of acid.

Cabbage and brussels sprouts

Wash and precook 10 minutes or until product is shrunk. Pack boiling hot into jars, add 1 teaspoon of salt to each quart and cover with water in which it was precooked. Seal.

Process: Quart jars, 40 minutes at 10 pounds pressure.
Pint jars, 35 minutes at 10 pounds pressure.
No. 2 or No. 3 tin cans, 30 minutes at 10 pounds pressure.
Water bath canner 90 minutes.

Carrots

Fall carrots should be left in the ground as long as possible. Where carrots can be successfully stored, canning is unnecessary. Only young, sweet carrots should be canned. Grade for age, size and color and scrub with stiff vegetable brush. Slice, dice or quarter large carrots. Scrape old carrots. Precook 10 minutes, pack immediately in containers, add 1 teaspoon of salt for each quart, cover with boiling water.

Process: Quart jars, 40 minutes at 10 pounds pressure.
Pint jars, 35 minutes at 10 pounds pressure.
No. 2 and No. 3 cans 30 minutes at 10 pounds pressure.
Water bath canner 90 minutes.

Corn

Select sweet corn ears of uniform size and proper ripeness. When corn has passed the milky stage it is difficult to can it successfully. Shuck, silk and clean carefully. Cut from cob without precooking, add half as much boiling water as corn by weight, heat to boiling, add 1 teaspoon of salt to each quart and fill containers. Do not pack too tightly into jars for corn swells. Corn should not be canned in No. 3 tin cans or quarts because of difficulty in heating thru.

Process: Quart jars, 80 minutes at 15 pounds pressure.
Pint jars, 75 minutes at 15 pounds pressure.
No. 2 tin cans, 70 minutes at 15 pounds pressure.
Water bath canner 180 minutes.

Greens (including spinach)

Every family should have greens in their canning budget whether home grown or of wild variety. Use only fresh, crisp greens discarding roots, coarse stems and withered leaves. Clean carefully by washing in running water. Lift greens out rather than pour water off. Steam or heat in covered vessel, with just enough water to prevent scorching, until completely wilted. Pack boiling hot into containers, being careful there is not too solid a pack. Boiling water may be added if necessary. Salt, 1 teaspoon to each quart. Avoid No. 3 tin cans and quarts because heat penetrates greens slowly.

Process: Quart jars, 90 minutes at 10 pounds pressure.
Pint jars, 85 minutes at 10 pounds pressure.
No. 2 cans, 80 minutes at 10 pounds pressure.
Water bath canner 180 minutes.

Peas (green)

Use only young, tender peas. Be sure to can peas as soon after picking as possible. Shell, discard imperfect peas, and wash. Can smaller peas together. Bring peas to a boil in boiling water to cover. Pack boiling hot in jars, add a teaspoon of salt to each quart and cover with water in which they were cooked. Do not pack peas too tightly in jars. Cloudiness in liquid of canned peas which have kept well may be due to rough handling or too mature peas which have burst in processing.

Process: Quart jars, 50 minutes at 10 pounds pressure.
Pint jars, 40 minutes at 10 pounds pressure.
No. 2 and No. 3 cans, 30 minutes at 10 pounds pressure.
Water bath canner 180 minutes.

Peas (black-eyed)

See directions for lima beans.

Pimientos (peppers)

The best sweet peppers for canning are the Spanish varieties known as pimientos. They should be ripe, sound, and in

good condition. The pod is thick and fleshy covered with a thick, tough skin which must be removed. Wash and prepare for peeling by placing in a dry pan in a warm oven for six to ten minutes or until the skin blisters and cracks. Cool quickly by dipping in cold water and remove skins and seed cores. Flatten pimientos and pack dry into jars. Processing brings out a thick liquid which almost covers them. Add ½ teaspoon of salt to each pint.

Process: Pint jars, 30 minutes at 10 pounds pressure.
Water bath canner.
Pint jars, 40 minutes.
No. 1 or No. 2 tin cans, 30 minutes.

Sauerkraut

Pack cold into clean, hot jars, and add no water nor salt. Partially seal and process.

Process: Quart or pint jars, 40 minutes at 10 pounds pressure.
No. 2 and No. 3 cans, 30 minutes at 10 pounds pressure.
Water bath canner 60 minutes.

Squash and pumpkin

Wash and cut into small pieces. If squash is tender do not peel. Cook until tender, boil down or drain off water and pack boiling hot into jars. Add 1 teaspoon of salt to each quart. Add no water. Seal.

Process: Quart jars, 60 minutes at 10 pounds pressure.
Pint jars, 55 minutes at 10 pounds pressure.
No. 2 and No. 3 cans, 50 minutes at 10 pounds pressure.
Water bath canner 3 hours.

Tomatoes

Select firm, ripe tomatoes of medium size and uniform shape. Never use overripe tomatoes or any part of those from which you have removed decayed spots. Scald in wire basket or shallow pan until skins loosen, dip in cold water, peel, and

remove stem end. Pack closely without crushing into jars and cover with own juice. Never add water when canning tomatoes. Add 1 teaspoon of salt per quart.

Process: Quart jars, 10 minutes at 5 pounds pressure.
Water bath canner.
Quart jars, 45 minutes.
Pint jars, 45 minutes.
No. 2 and No. 3 cans, 35 minutes.

Seal.

Concentrated vegetable soup mixture

Almost any desired combination of vegetables may be canned for soup mixture. A good combination consists of 1 quart of thick tomato pulp, 1 pint of corn, tiny lima beans or peas, 1 pint of okra, 1 small onion chopped, ½ cup chopped sweet red peppers, 1½ teaspoonfuls salt. Cook together tomatoes pepper and onion; put thru a seive to remove seeds, and cook to the consistency of catsup. Add corn and other vegetables which have previously been prepared for canning. Bring to boil and pack hot.

Process: Quart or pint jars, 40 minutes at 10 pounds pressure.
Water bath 120 minutes.

DIRECTIONS FOR CANNING FRUITS

Apples

Select firm, sound, tart varieties. Wash, pare and core and if they must stand for any length of time cover with water salted in proportion of 1 tablespoon of salt to 1 quart of water to prevent discoloration. Boil five minutes in thin syrup to prevent shrinkage in jars. Pack in jars boiling hot and cover with syrup in which they were cooked. Process 5 minutes in boiling water.

Apples baked and seasoned may be packed hot into jars, covered with syrup and processed for all sized containers 5 minutes in boiling water.

Applesauce may be made from windfalls or green apples. Pack boiling hot and process containers of all sizes in boiling water 5 minutes.

Apricots

Same as peaches.

Berries

Practically the same methods of canning are used for dewberries, huckleberries, raspberries, blackberries, loganberries, blueberries, grapes and currants. Gather berries in shallow trays or baskets and can as soon as possible after gathering. Wash by placing berries in shallow colander and dipping in and out of water or pouring water over them. Use small or imperfect berries for juice.

Method No. 1. Remove caps and stems. Pack fruit into containers pressing gently into place to insure full pack, cover with medium thick syrup boiling hot. Process quart or pint glass jars for 20 minutes in boiling water, No. 2 and No. 3 tin cans (enamel lined) for 15 minutes.

Method No. 2. Precook berries by bringing to boil in medium syrup to prevent them from floating on top of syrup.

Method No. 3. To each pound of berries add one-half pound of sugar according to sweetness of fruit. Heat to boiling, stirring gently and boil 5 minutes. Pack boiling hot and process immediately containers of all sizes for 5 minutes in boiling water.

Gooseberries

Select firm berries discarding spotted or broken ones. Use method suggested for berries substituting thick for medium syrup. Or a sauce may be made by adding a small quantity of water to prepared berries and boiling fruit to a pulp. Add one-half cup of sugar or more if desired to each quart of pulp. Heat until sugar is dissolved and pack boiling hot into containers. Process all sizes of containers in boiling water for 5 minutes.

Strawberries

Strawberries contain so much water that they do not make so attractive a canned product as preserved. Prepare as directed for berries; then add to each quart of berries 1 cup of sugar and 2 tablespoonsful of water. Boil slowly 15 minutes and let stand overnight in syrup. In morning reheat mixture to boiling, fill containers immediately and process all sizes 5 minutes in boiling water.

All berries, including cherries, may be canned this way.

Cherries

Cherries may be canned pitted or unpitted. If used unpitted prick to prevent shrinkage. Pack in containers and cover with thick syrup if cherries are sour, medium syrup if sweet. Juice from pitting cherries should be used in making the syrup. Process quart and pint jars 25 minutes in boiling water and No. 2 or No. 3 tin cans for 20 minutes.

Pitted cherries may be precooked 5 minutes with sugar to taste before being packed in containers and processed five minutes.

Currants

Same as for berries.

Grapes

Same as for berries.

Peaches

Select peaches which are ripe but not soft. Before preparing fruit make thin syrup, or richer if desired, allowing 1 cup for each quart jar. Add one cracked peach pit for each quart of syrup, boil 5 minutes and strain.

Immerse peaches about 1 minute in boiling water or until skins will slip easily, plunge at once into cold water, peel and stone. Pack in jars at once, placing the halves in overlapping layers, concave sides down with blossom end facing glass. Fill containers with syrup. Process quart and pint jars for 25 minutes in boiling water if fruit is fairly firm and hard, or 20 minutes if it is ripe and tender. Process No. 2 and No. 3 tin cans for 15 minutes.

"To peel peaches or apricots with lye, prepare in an agate-ware or iron kettle, never aluminum, a solution of one-fourth pound (4 ounces or about 4 level tablespoons) of granulated lye of a standard brand, in 2 gallons of water. Heat to boiling, and while actively boiling immerse the peaches or apricots in a wire basket until the skin is loosened and partially dissolved. This will usually require 30 to 60 seconds. Remove the fruit, wash it at once in running water, if possible, until skin and lye are removed, and thoroly rinse the fruit. If still water is used, rinse the fruit in a fresh supply after washing off skin and lye."*

Pears

Select firm, ripe pears. Peel, cut in halves, core and cook in boiling medium syrup 4 to 8 minutes according to size of fruit. This precooking makes hard varieties of pears easier to pack. Pack pears hot in containers, concave side down. Cover with boiling syrup and process ocntainers of all sizes 20 minutes in boiling water.

Pineapple

At the height of the season pineapple can sometimes be purchased so cheaply that it is economy to can it.

Use sound, thoroughly ripe pineapple. Peel, core and remove eyes. When flesh is firm cut into small cubes or remove core and slice. If texture is soft shred from the core using silver fork rather than a knife. Pack into containers and fill up with thin boiling syrup. Process quart and pint jars 30 minutes in boiling water, and No. 2 and No. 3 tin cans for 25 minutes.

Plums

Plums for canning should be a little underripe. Wash and prick plums with fork to prevent bursting. Pack tight without crushing and cover with boiling medium thick syrup. Process quart and pint glass jars 20 minutes in boiling water and No. 2 and No. 3 tin cans for 15 minutes. A sauce made by adding sugar to taste and with or without seeds and skins left in should be processed for all containers 5 minutes in boiling water.

*Taken from Farmers' Bulletin 1471, Canning Fruits and Vegetables at Home. 1927.

Rhubarb

The first stalks of rhubarb of the season are more tender and are richest in color and flavor. Cut stalks when they are between one-half and three-fourths of an inch in diameter. Trim, wash carefully and cut into desirable lengths ($\frac{1}{2}$-2 inches) being careful not to "string" in cutting. Pack into containers and cover with boiling thick syrup. Process quart and pint glass jars for 20 minutes in boiling water and No. 2 and No. 3 tin cans for 15 minutes.

Rhubarb may be steamed, boiled or baked in a little water until tender with one-fourth as much sugar as rhubarb by measure. Pack boiling hot in containers and process containers of all sizes for 5 minutes in boiling water.

SCORE CARDS FOR CANNED FRUITS AND VEGETABLES*

Canned Vegetable

Vegetable 60

- Condition of product chosen—uniformly well ripened—graded to secure uniformity of size, not defective—not tough or too old, stringy or woody, suitable condition for canning 20
- Condition of finished product—natural, clear, bright color, not unduly blanched nor darkened—no artificial coloring matter. Not overcooked, shape well preserved, tender and crisp 40

Pack 40

- Neatness and uniformity—fancy packs are not acceptable. Pieces of appropriate size to serve, and attractively arranged.
- Condition of liquid—liquid should be clear—not cloudy, no bubbles present, no sediment or foreign matter present.
- Proportion of liquid to vegetable—jar should be full of product but not crowded and the product should be well covered with liquid.
- Container—of uniform or specified size, of clear white glass. All containers clean and attractive, plainly and neatly labeled according to directions.

TOTAL SCORE 100

*Taken from Kentucky Extension Circular 206, Competitive Home Economics Exhibits for County and Community Fairs.

Canned Fruit

Fruit 50

Condition when chosen—uniformly well ripened, graded to secure uniformity of size—not defective, tough or seedy, suitable condition for canning.... 20

Condition of finished product—natural, clear, bright color, no artificial coloring—neither overcooked, mushy, nor uncooked in appearance—no preservative used, tender, shape well preserved 30

Syrup 20

Color—clear, bright, natural color of fruit—no sediment or foreign material.

Consistency—neither watery nor thick like preserves.

Pack 30

Neatness and uniformity—arranged to make best use of space. Fancy packs not acceptable. Small fruits canned whole, large fruits of convenient size to serve—neatly arranged.

Proportion of fruit to syrup—jar should be well filled with product but not crowded and product well covered with syrup. Product evenly distributed thru jar—not settled at top or bottom.

Container—of uniform or specified size, of clear white glass. All containers should be clean, attractive, plainly and neatly labeled according to directions.

TOTAL SCORE 100

TIME TABLE FOR CANNING VEGETABLES

Precook all vegetables and pack boiling hot. Cover with water in which they were heated, adding boiling water if necessary. Add 1 teaspoon of salt for each quart of vegetables. Place containers in canner as soon as filled. If half-gallon glass jars are used, add 5 minutes to time for quart jars. All containers should be processed at ten pounds pressure unless otherwise noted.

Product	Precook by Boiling	Time of processing period (minutes)					
		Steam pressure canner, 10 lbs.			Water bath canner, steamer		Oven 250° to 275° F.
		Glass Jars		Tin Cans	Glass Jars	Tin Cans	
		Quart	Pint	No.2& No. 3	Quart Pint	No.2& No. 3	
Asparagus	4-5 min.	40	35	30	120	120	150
Beans							
Green or wax	5 min.	40	35	30	180	180	150
Lima	2-5 min.	60	55	50	180	180	180
Beets	Enough to loosen skin (about 15 min.)	40	35	30	90	90	150
Cabbage or brussels sprouts	10 min.	40	35	30	90	90	120
Carrots	10 min.	40	35	30	90	90	120
Cauliflower	3 min.	40	35	30	90	90	120
Corn	To boiling (see directions) (15 lbs. pres.) No. 2 only	80	75	70	180	180	180
Chard stalks	5-10 min.				120	120	
Eggplant	3 min. (Slices ¼"-½")	60	55	50	120	120	120
Greens (including spinach)	Until wilted	90	85	80	120	120	120
Kohlrabi and Parsnips (see carrots)							
Okra	To boiling	40	35	30	90	90	120
Peas, green	To boiling	50	40	30	180	180	180
Peas, black-eyed (See lima beans)							
Peppers							
Bell	3 min.	30	25	20	45	45	60
Pimiento	In oven 6-10 min.		40	30	45	45	60
Pumpkin	Until tender	60	55	50	180	180	180
Soup mixture	(See directions)	40			120	120	
Sauerkraut	(See recipe)	40	40	30	60	60	180
Squash	Until tender	60	55	50	180	180	180
Succotash	Corn, 5 min. / Beans, 3 min.	60	55	50	180	180	180
Sweetpotatoes	Until skins slip readily	60-70	50	60-70	240	240	250
Tomatoes	Scald before peeling (5 pounds pressure)	10	10	10	35	35	45

TIME TABLE FOR CANNING FRUITS

Product	Precook or Blanch	Syrup	Time of Processing		
			Water Bath Canner		Oven 250°-275° F
			Glass Jars	Tin Cans	
			Qt. or Pt.	No. 2 & No. 3	
Apples	Precook in thin syrup 5 min.	Thin	5 min.	5 min.	
	Not precooked	Thin	15 min.	10 min.	
As sauce	----------	----------	5 min.	5 min.	
Apricots	----------	Thin	20 min.	20 min.	30
Blackberris, Blueberries, Dewberries, Huckleberries, Loganberries, Raspberries	No precooking or Precook 5 min.	Medium	20 min.	15 min.	30
		Medium	5 min.	5 min.	10
Cherries	No precooking	Thick for sour cherries; Medium for sweet	25 min.	20 min.	30
Currants (see berries)	No precooking	Thick	20 min.	20 min.	30
Gooseberries	No precooking	Thick	20 min.	15 min.	30
Peaches	Blanch 1 min. to loosen skins	Medium	20 min. for ripe fruit; 25 min. for firm fruit	15 min.	30
Pears	Precook 4-8 min.	Medium	20 min.	20 min.	30
					35
Pineapple	No precooking	Thin	30 min.	25 min.	35
Plums	No precooking or To boiling with sugar	Medium	20 min.	16 min.	45
		----------	5 min.	5 min.	10
Quinces	Precook in syrup until tender	Thin	5 min.	5 min.	10
Rhubarb	Bake in ¼ as much sugar as rhubarb by measure or	----------	5 min.	5 min.	10
	No precooking	Medium	20 min.	15 min.	

BUDGET FOR CANNING AND STORING VEGETABLES AND FRUITS FOR A FAMILY OF SIX

A definite plan for the winter supply of vegetables and fruits, or a "budget," should be made. Vegetables and fruits may be preserved by storing, drying and canning. The following table indicates which vegetables may be satisfactorily dried or stored and which require canning in order to preserve them for the unproductive season.

Dried	Stored	Canned
Apples	Potatoes	Spring carrots
Corn	Sweetpotatoes	Baby beets
Lima beans	Cabbage	Beans
Seed beans	Fall squash	Greens
Shell beans	Pumpkin	Peas
	Parsnips	Asparagus
	Salsify	Corn
	Sauerkraut	Young lima beans
	Onions	Soup mixtures
	Apples	Peppers
		Pimientoes
		Tomatoes
		Succotash

Since it is economical of time, energy and money to dry or store vegetables, only those which cannot be preserved otherwise should be canned.

The Kentucky Food Habit Score Card suggests two servings of fruit and two serving of vegetables besides potatoes and dried beans every day. Fruit jellies, preserves, jams, etc., do not take the place of canned fruits because of the small proportion of fruit and large proportion of sugar.

This budget is intended for families having no access to fresh foods after the growing season is over. In case fresh foods such as celery, lettuce and spinach, oranges, bananas and grapefruit are purchased, the budget may be reduced accordingly. Where both stored and canned vegetables and fruits are mentioned the stored supply should be used first and the canned after that supply is exhausted.

The budget suggests how many containers should be filled. The contents of a container should serve the family for one meal. A pint jar will serve a family of from three to four persons and a quart jar will serve a family of from six to eight. It is economical for a small family to can in pint and a large family in quart jars.

FRUIT AND VEGETABLE PRESERVATION BUDGET

Food	Times Served Each Week	No. Weeks Stored or Canned Food Needed	Amounts	
			Stored	Canned Containers
Greens, wild and cultivated	3	16		48
Squash, Pumpkin, Carrots, Beets, Parsnips, Salsify, Turnips	2-3	18	24 together; 5 bushels	
Peas, Green beans, Asparagus	2	24		48
Tomatoes	2-3	34		68
Soup mixture	2	16		32
Sauerkraut, Cabbage, Onions	2	20	6 gallons; 100 heads; 2 bushels	8
Corn, Lima beans	1	32	8 quarts	24
Pimientoes, Peppers	For garnish			Canned
Potatoes or S. potatoes	6	36	10 bus. together	
Navy beans	1		18 quarts	
Berries, Cherries, Grapes, Plums, Rhubarb, Peaches, Pears	7	30		210
Apples	7 (4 mo. fresh. 3 mo. canned)	28	5 bushels	24
Total			22 bu. fruits and veg. 100 heads cabbage 24 pumpkins and squash 6 gals. kraut 26 qts. dried beans	234 containers fruit 228 containers veg.

FOOD HABIT SCORE CARD
For the Average Person Over Six Years of Age

DAILY FOOD SERVINGS	Daily Credit	
MILK (Buttermilk may be substituted for half the amount)		
4 cups for person under 20 years 2 cups for adult	25	
2 cups for person under 20 years 1 cup for adult		15
VEGETABLES (other than potatoes)		
2 or more servings	20	
1 serving		10
FRUIT		
2 or more servings	15	
1 serving		10
If one serving is raw fruit, fresh or canned tomatoes, add	5	5
EGGS, CHEESE, MEAT		
1 serving meat or cheese	5	
Meat not more than once a day, preferably only three or four times a week.		
1 serving eggs	5	
WHOLE GRAIN CEREALS		
Including breakfast foods, bread, etc.		
1 or more servings	10	
WATER		
6 glasses (full)	15	
4 glasses (full)		10
TOTAL CREDITS	100	50

The companies listed below handle all equipment necessary for canning. This list is not exhaustive.

Dixie Canner Company, Little Rock, Arkansas.
Virginia Can Company, Roanoke, Virginia.
National Canning Supply Company, LaGrange, Ill.