HOME FOOD PRESERVATION

By

CANNING ★ DRYING ★ SALTING

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A. Canning

I. WHY DO CANNING?

The preservation of surplus products at home for family use makes possible a variety in the diet, reduces the cost of living, and releases commercial food products for Victory purposes. Filling every glass jar at home will help to release tin cans for war needs. Canning may wisely be limited to those foods that cannot be preserved successfully by less expensive and less laborious methods. Winter gardens, winter storage, and preservation by freezing involve less labor than canning. Salting, curing, and drying are less expensive methods of preservation than canning. Home-canned goods, however, have the advantage of being on hand, ready for use at short notice.

Good aims for canned products are: (1) safety for use; (2) freedom from spoilage; (3) palatability and attractiveness; (4) amounts and choice of foods carefully planned so that the family is assured enough for a year-round supply and also a well-balanced selection for good nutrition.

II. TWO FUNDAMENTAL PRINCIPLES IN PRESERVATION OF FOOD BY CANNING

1. Application of adequate heat. Every particle of food within the jar or can must be brought to a sufficiently high temperature and held at that tem-
perature a sufficiently long time to destroy the bacteria and other organisms that cause spoilage. Processing is the term applied to this heating of food that brings about sterilization or conditions that prevent the growth of organisms. Incomplete processing is a common cause of spoilage of canned goods.

Nonacid foods, such as meat, fish, poultry, and all vegetables except tomatoes, are canned safely only in a pressure cooker. Processing under pressure is recommended because the Clostridium botulinum, a deadly bacterium found in the soil in many states, has been known to withstand the temperature of boiling water (212° F.) continuously for 6 hours at sea level.

2. Airtight seal. Jars must be sealed so tightly at the end of the processing that air, which carries micro-organisms, cannot enter. Lack of airtight seal is very frequently the cause of spoilage in jars and cans. Never open jars after processing to add more liquid.

III. EQUIPMENT FOR CANNING

1. Containers. Use any standard type of glass jar that produces an airtight seal. Test jars with rubber rings for leakage by enclosing water and inverting. Screw-band lids that are slightly bent may often be bent back into shape. If jar with wire clamp is too tight or too loose, remove the larger wire and bend it up or down in the middle until adjusted.

Reserve jars that have nicks or lumps on the sealing surface for foods that can be sealed with paraffin or for the frozen pack. In opening jar with rubber, pull out rubber by the lip rather than by prying up the lid and denting it; or invert jar in warm water to loosen lid. Using two rubbers on a jar is not recommended.

2. Processing equipment. The use of the oven or steamer for canning is not recommended.

*Meat, fish, and nonacid vegetables:* A pressure cooker is the only safe processing equipment for nonacid foods, which include meats, poultry, fish, and vegetables, except tomatoes.

*Fruits:* A hot water bath kettle or a preserving kettle is used for fruits and tomatoes, preferably the former. Avoid utensils made of brass, iron, galvanized iron, and copper. These metals discolor some foods.

3. General equipment includes pans, stainless-steel knives, fork, brush, cup, measuring cups, quart measure, measuring spoons, jar funnel, jar lifter, ladle, long-handled spoon, hot-dish holders. Holders made from old inner tubes are convenient. Special devices are available for paring, coring, pitting, shelling, slicing, cubing, grinding, and sieving food.

IV. DIRECTIONS FOR USING A PRESSURE COOKER

1. Three rules for safe use of pressure cooker

a. Clean safety valve each day that the cooker is used. Unscrew, wipe valve head and valve seat, and see that opening in cover is not clogged.

b. Have at least 1 inch of water in bottom of cooker each time before using.

c. At end of processing period allow pressure to return to zero before opening cooker.
2. Steps for using the pressure cooker with glass jars

(1) Place the rack in the bottom of the cooker without its pins.
(2) Pour water in the pressure cooker until it reaches a depth of 1 inch. Use hot water in hot cooker for hot jars. Use lukewarm water for cold jars.
(3) Prepare jars as described under each food.
(4) Place prepared jars about ½ inch apart on rack in cooker. Place cover on cooker, steam cock open. Match arrow on cover with arrow on cooker, if so marked.
(5) Fasten cover into position. With covers having several clamps, fasten opposite clamps gradually until cover is tight.
(6) Test safety valve by pulling up on stem. It should pull up and snap back.
(7) Apply heat under cooker.
(8) Heat until steam escapes freely from the open cock. Let steam escape freely for 5 minutes if cooker is 10-quart size, 7 minutes if 18-quart size, to insure that all air has been driven out of the cooker. Otherwise the pressure gauge may indicate air pressure, not steam pressure within, and the temperature will be lower than the pressure gauge indicates. Steam pressure, not air pressure, is required to produce a high temperature.
(9) Close the petcock and continue heating until the desired pressure or temperature is reached. (See Tables I and III, pages 14 and 16.) Bringing the pressure up quickly improves the quality of the product.
(10) Begin to count cooking time when the gauge registers the correct pressure. If the cooker is equipped with a thermometer, disregard the gauge except for safety, and go by the thermometer.
(11) When the correct pressure or temperature is reached, reduce the heat or move the cooker back on the stove. It is important that the pressure remain constant. Fluctuation of pressure draws juice from jars. In using a wood range, a mat or rack might be placed under the cooker to keep the heat even.
(12) When the cooking time is up, remove the cooker from the stove and let it cool slowly until the gauge reaches zero. Then open the steam cock gradually. If steam cock is opened wide immediately, liquid is drawn from the jars.
(13) When the hissing has stopped, open the cooker. Tilt the cover so that steam rises on opposite side from operator. Remove jars one at a time as soon as violent bubbling stops. Tighten the lids at once unless of self-seal type.

3. Care of pressure cooker

The pressure gauge should be tested each year for accuracy. (See county extension agent.) Remove gauge with pliers or wrench. When replacing, use plumber’s paste on threads to assure a tight seal.

A thermometer can be installed on any cooker and is desirable equipment because it indicates the degree of heat within the cooker.

A rack is necessary in the bottom of the cooker.

Wash the cooker after using, but do not place top in water. Avoid getting water or grease into the pressure gauge. Dry the top of the cooker before inverting it. Clean the safety valve each day after using. Store cooker with lid upside down; tightly closed cookers may give an off-flavor. Before inverting the cover on the cooker, cover the top of cooker with heavy paper to prevent marring or roughening the sealing surface.
V. HOW TO PRESERVE FOOD VALUE WHEN CANNING

Can foods very soon after they are gathered. Handle them in small lots at a time. Proceed rapidly with every step of the canning process. Precook foods for a short time. Pack them hot. Process them in the containers rather than in the open kettle. Expose them as little as possible to the air, especially after peeling or cutting.

Use the liquid in which they were precooked to fill the container. Use this liquid in some way when the can is opened.

VI. DIRECTIONS FOR CANNING FRUIT AND TOMATOES*

For equipment, see page 2. Time table for different fruits is given on page 15.

Procedure in canning fruit

1. Use firm sound fruits that are well ripened. Freshness means improved food value, flavor, and keeping qualities. To prevent crushing soft varieties such as berries, gather in shallow containers.

2. Most fruit should be carefully washed. Prepare as for the table.

Fruits that are peeled, such as pears, apples, and peaches, may be washed in a weak salt solution after peeling to prevent discoloration. Use 1 level tablespoon of salt and 1½ tablespoons white vinegar to 3 quarts of cold water. Rinse in cold water before canning.

Apricots need not be peeled or pitted unless so desired. Immerse peaches in boiling water 1 minute, or until skins slip, plunge into cold water, peel and pit. Simmer 4 to 8 minutes in thin or medium sirup to prevent discoloration; pack hot. Precook pears 4 to 8 minutes in hot, thin, or medium sirup to prevent discoloration; pack hot. Fresh rhubarb and gooseberries may be packed in sterilized jars, filled to overflowing with cold water, sealed and stored without processing. Strawberries may be plumped and distributed through the jar by boiling slowly in medium sirup from 1 to 3 minutes and letting stand overnight. Use the longer boiling time for firmer and larger berries. Next morning bring quickly to boiling, pack in containers, and process in hot water bath. The same method may be used with other fruit that tends to float.

Fruits that shrink a great deal in the jar, such as apples and apricots, may be precooked about 5 minutes in sirup, packed hot, and processed in hot water bath for a shorter period.

3. Process by cooking in the jar, called the hot water bath method; or by the open kettle method, preferably by the former. Cooking in the jar results in less contact with air and conserves vitamins better than the open kettle method. Products tend to be firmer, more palatable, and more attractive by the hot water bath method. A fuller pack is obtained by the open kettle method.

Packing and processing fruit by hot water bath method

1. Fill hot water bath cooker with enough water to come 1 inch over tops of jars. Start heating so that water will be boiling when jars are packed.

* For suggestions on war time canning, see HE 1687, Sugar Saving Methods of Canning and Freezing, available free of charge from County Extension Service offices, or Oregon State College, Corvallis.
2. Wash and rinse jars. If jars have rubber rings, attach them. Let jars stand on a rack or perforated tin covers in hot water so that they will be hot when packed.

3. Prepare sirup. Add sugar to water, stir to dissolve, and bring to a boil.
   
   Thin sirup (25 per cent): 1 cup of sugar to 3 cups of water. (War ration.)
   Medium sirup (33 per cent): 1 cup of sugar to 2 cups of water.
   Thick sirup (50 per cent): 1 cup of sugar to 1 cup of water.

   Sugar substitutes such as honey may be used in place of part of the sugar. Table III page 15 suggests type of sirup for each fruit. Strength of sirup may vary according to taste or circumstances. Allow about ½ cup sirup per pint jar.

4. Place fresh or precooked fruit in hot jar while jar is standing in hot water. Jar may be jolted on a wooden surface to help pack raw fruit. Fill jars to top with fruit. Pour boiling hot sirup over fruit to ½ inch from top of glass jar and ½ inch from top of tin can. Remove any particles from sealing surface of jar.

5. Place hot lids on jars. If self-seal type, screw lids down firmly tight. If wire-clamp type, snap the top clamp into place and leave the side clamp up, to seal jar partly. If using screw top with rubber ring, screw lid down, then back 1 inch to seal jar partly. Keep jars hot until all are ready to be processed.

6. Lower hot jars into boiling hot water with jar lifter or rack. Jars should be ½ inch or more apart and rack underneath should raise them at least ½ inch off the bottom. Water level should be 1 inch above tops of jars. Cover cooker. Record time when water boils again.

7. Keep water boiling actively for required period, counting from time water boils again. (See Table II, page 15.)

8. Remove jars from hot water bath at end of processing period and seal unless self-seal type. If screw band is loose on self-seal jar, hold the lid in place so it will not turn, and screw the band tight.

   Fruit juice is prepared by crushing washed fruit; adding ¼ cup water per quart if too dry; heating slowly to simmering point (about 180° F.) and holding several minutes; straining through thick, clean cloth; adding ¼ cup sugar to each quart of juice; bringing to simmering point (180° F.); pouring into jars to ½ inch from top, and processing in hot water bath at simmering temperature.

Canning tomatoes by hot water bath method

Blanch tomatoes in boiling water to loosen skins; then in cold water. Peel and remove all of green and white core. Follow directions for fruit. Press tomatoes into hot jar to top. Fill jar with hot tomato juice to ½ inch from top. Add 1 teaspoon salt per quart. Lower hot jars into boiling water. Process according to Table II page 15. Or cut into quarters, heat just to boiling, and pack hot.

Canning tomato juice by hot water bath

Heat peeled tomatoes enough to loosen juice (180° F.). Do not boil. Avoid use of copper, brass, and iron utensils. Sieve quickly to avoid undue exposure to air and consequent reduction of vitamin content. Reheat only to boiling point. Fill sterilized jars to ½ inch from top. Add ½ to 1 teaspoon salt per quart. Process in hot water bath 20 minutes. Seal unless self-seal jars.
Canning fruit by the open kettle method

This method is safe only for acid fruits and tomatoes. By the open kettle method, the entire processing is completed before packing the jars.

1. If rubber bands are used, place them on jars. Boil the jars, lids, and all utensils that are to come in contact with the food, such as cup, funnel, knife, etc., for 10 minutes. Have jars boiling hot when packed.

2. Wash, trim, and prepare food for cooking.

3. Add sirup or sugar to fruit. Adding sirup produces a juicier product of milder flavor than adding dry sugar. For strength of sirup for each fruit, see Table II, page 15. If dry sugar is added, the amount varies from \( \frac{1}{2} \) cup to 1 cup of sugar per quart of fruit, depending on tartness of the fruit, taste, or purpose.

4. Bring to a boil. Boil gently, in a kettle that is not tightly covered, until food looks done and centers of the sections of food have reached the boiling temperature, which will be from 10 to 20 minutes, depending on size of product.

5. Place funnel in jar, if convenient to the type of food.

6. Fill jars completely with fruit and sirup. Remove any particles from the sealing surface of the jar. A full pack is desirable by the open kettle method, as no further processing is done. Manufacturers of self-seal jars recommend leaving \( \frac{1}{2} \) inch of vacant space at top, to form vacuum seal and to assure a clean sealing surface.

7. Remove food and juice from rubber or other sealing surface.

8. Take lid from boiling water and fasten on jar. Complete the seal. Wipe the jar.

VII. DIRECTIONS FOR CANNING VEGETABLES

Caution. After emptying jar, and before tasting home-canned meats, fish, poultry, and nonacid vegetables, boil the food for 20 minutes on same day eaten. Burn canned products that show any signs of spoilage, or mix with 1 tablespoon of lye and bury. Do not taste home-canned nonacid food before boiling 20 minutes. Be sure that it boils the full time.

Procedure in canning vegetables (See processing time table, page 14.)

1. Use only pint or quart jars. Pint size is recommended because of better heat penetration. Wash all jars in clean soap suds and rinse. Let stand in boiling water before packing so that jars will be hot when packed.

2. Gather vegetables when they are young and tender. Can as soon after picking as possible. Gather in shallow ventilated containers and keep cool. Gather and can only small quantities at a time. Two hours from garden to can is a good rule.

3. Prepare as for cooking. Wash thoroughly. Cream style corn is prepared by cutting off tips of kernels and scraping out pulp. Peas may be shelled by dipping in hot water and running through wringer, stem end first. Pumpkin and squash may be baked or steamed until easily removed from the shell. Sieved spinach for infants should be packed in \( \frac{1}{2} \)-pint jars.

4. Precook food in boiling water until wilted and heated through. For corn, use half as much water as corn. Mushrooms should be peeled and dropped into cold water containing 1 tablespoon vinegar per quart; then precooked 3 to
4 minutes in boiling water that contains 1 tablespoon vinegar and 1 teaspoon salt per quart.

5. Pack hot into hot jars. Use an adequate amount of liquid in packing, as liquid aids heat penetration. Pack food loosely, especially greens, pumpkin, corn, and other compact foods of viscous texture. Cover food with liquid in which cooked. Leave 1 inch vacant space at top of jars. Add ½ teaspoon salt per pint. Remove any particles from the sealing surface of the jar.

The addition of small quantities of acid, such as vinegar or lemon juice, to a nonacid food, such as vegetable or meat, does not change the acidity enough to prevent the growth of dangerous bacteria. Bacteria will not grow, however, if enough acid is added to pickle the food.

6. If self-seal lids are used, screw down firmly tight. If using jars with rubber bands, partly seal jars. See Fruit, section 5, page 5.


8. At end of processing period, remove jars and seal, unless of self-seal type.

VIII. DIRECTIONS FOR CANNING MEAT AND POULTRY

Directions for canning meat

Meat is safely processed only in a pressure cooker.

1. Wash jars in warm soap suds and rinse.

2. Cut meat into pieces of suitable size for serving and to fit the jar. Trim off excess fat. Remove large bones. Allow about 1½ pounds of meat for each pint jar or No. 2 can.

3. Two methods of packing meat: hot and cold.

   a. Packing meat hot assures better heat penetration, shrinks the meat, and results in fuller jars. The procedure is as follows:

      a'). Make a broth by placing bones in cold water and simmering ½ hour. Place cut meat in broth and simmer until thoroughly heated through, about 12 to 20 minutes. Instead of simmering, meat may be roasted, made into cakes or sausage and fried, stewed, or made into soup. Avoid starchy coating.

      b'). Pack the hot precooked meat in clean hot jars. Pack loosely. Add hot broth to 1 inch from top of jars and to ½ inch from top of tin cans. In case of roasting or searing, add hot diluted pan drippings instead of broth.

      c'). Add 1 teaspoon salt to each pint jar.

      d'). Remove grease or other food from sealing surfaces. Partly seal. (See directions under canning fruit, section 5, page 5.)

      e'). Place hot jars in hot pressure cooker. Follow pressure cooker directions, page 2. Following processing time table, page 16.

      f'). Seal after processing, unless self-seal jar.

   b. Packing meat cold takes less time, but may result in less degree of safety.

      a'). Place cut meat into clean cold jars to top of jar. Add salt in middle of jar, 1 teaspoon salt per pint.
Directions for canning poultry

1. Wash jars in warm soap suds and rinse well.
2. Cut cleaned chicken into pieces as for frying. Remove flesh from breast and shoulders. Retain other bones. Use neck, wing tips, and breastbones for broth. Heart and gizzard may be canned with the rest, but not the liver, eggs, and kidneys. The latter may be canned separately.
3. Chicken may be canned raw, precooked 8 to 10 minutes, fried, or roasted. Avoid starchy coating. To pack chicken, place a drumstick in a jar, then place the thigh next to the drumstick, and two wings next to the thigh, fitting the elbow of one wing into the elbow of the other. Fit in remaining pieces to fill lower part of jar. Cover with breast meat.

The steam pressure cooker is the only method recommended for canning poultry.

Caution. After emptying jar, and before tasting home-canned meats, fish, poultry, and nonacid vegetables, boil the food for 20 minutes on the same day eaten. Burn canned products that show any signs of spoilage, or mix with 1 tablespoon of lye and bury. Do not taste of home-canned nonacid food before boiling 20 minutes. Be sure that it boils the full time.

Rabbit may be skinned and canned. Follow same directions as for meat, page 7.

IX. DIRECTIONS FOR CANNING FISH

1. Wash jars in warm soap suds and rinse.
2. Can only absolutely fresh fish. Remove head, tail, scales, entrails, and any dark membrane. Better quality product results if salmon is eviscerated as soon as caught. Scales may be loosened by pouring boiling water over them and scraping backwards. Save the skin of salmon for flavor, color, and food value. The fat of tuna must be removed by baking or steaming 2 to 4 hours until the natural oil has separated from the muscle. Discard tuna oil as it imparts an undesirable flavor. Remove skin of tuna. The backbone is usually removed from large fish such as salmon and tuna.
3. Cut large fish into convenient sized pieces for serving and for packing into jars. Pack raw (except tuna) or cooked to top of jar. Trout and smelt may be browned in hot fat and packed in diluted pan drippings. Pack small fish in an up-and-down direction.
4. Add salt in the middle of the jar, 1 teaspoon per pint. If desired, add 2 teaspoons salad oil per pint. Add no other liquid.
5. Thoroughly clean sealing surfaces of jars. Partly seal jars unless self-seal type. (See directions under fruit, section 5, page 5.)
X. COOLING, LABELING AND STORING CANNED FOODS

Set jars in upright position out of draft several inches apart to cool rapidly. Do not tighten lids after cooling; to do so may break the seal.

Hold at room temperature a few days and examine. Invert cold jars to test seal except self-seal jars, which are gently tapped on lid with tip of a teaspoon. A clear sound indicates that the jar is sealed; a dull sound, that it is not sealed. Label with name, date, type of processing, and period of processing. Store in cool, dry frostproof place with temperature of 45° to 60° F.

B. Drying Fruits and Vegetables

Drying is an economical and satisfactory method of preserving many fruits and vegetables in Oregon.*

Preparation of food for the drier. Use only fresh, ripe, firm, and perfectly clean food that is free from decay. Wash and slice or cut into \( \frac{1}{4} \)-inch slices or cubes for vegetables and \( \frac{1}{2} \) inch for fruits. Pieces or slices of uniform thickness dry more evenly. Use stainless steel knives. Keep knives or cutting machines clean and bright to prevent food from discoloring.

Blanch most vegetables in boiling water, the same as when preparing for the frozen pack. See "Drying Vegetables." Have a hot fire. Heat three or more gallons of water in a preserving kettle or canner to the boiling point. Place about 1 quart of prepared vegetables in a clean sugar sack or preferably a colander or wire basket and immerse in boiling water for the time specified under each individual vegetable. Keep kettle covered. Agitate vegetables during blanching. At end of scheduled time, remove sack of vegetables immediately from boiling water and immerse in a large panful of cold running water until thoroughly chilled. If you have no running water, change water several times. Dry. Boil blanching water again between lots.

Place prepared fruits or vegetables in thin single layers, not overlapping, on racks, trays, or plates to dry.

Methods of drying. Food is best dried by artificial heat, although in some areas in the state, the heat of the sun may be used to dry properly prepared fruits. The desirable temperature for drying fruits is between 140° and 150° F.; for drying vegetables is between 140° and 155° F. The drying process can be materially hastened by circulating this heated air with a fan. Vegetables require more steady, uniform heat to prevent spoilage while drying than fruits. Fruits are protected from spoilage to a certain extent by their acid and sugar content. Keep the fire going steadily when drying vegetables.

A variety of evaporating trays and cabinets can be made at home from odd pieces of seasoned lumber, boxes, and tin cans.†

How to use the cabinet dehydrator. It is better not to load all of the trays when starting evaporation. When first put into the drier, food is placed on the lower shelves and is gradually moved to the upper shelves for completing

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* For information on food values of dried fruits and vegetables, see HE 1686, *Factors Influencing Losses of Vitamin during Preservation, Storage, and Cooking of Food in the Home*. For frozen pack see Extension Bulletin 593, *Food Preservation by Freezing*.

† Instructions for building home-made dehydrators are available at county extension offices or at Home Economics Extension Service, Oregon State College, Corvallis. Ask for HE 1683, *Home-made Evaporators*. 
evaporation. Additional food can then be placed in the drier on the lower shelves.

Drying time varies with the thickness and texture of the food. In order to obtain a uniform product, stir or turn the product and turn the shelves end for end several times a day during the drying process. Test a drying product by breaking a section in two at the thickest part. If no moisture can be squeezed from the broken end, the food has dried sufficiently. Dried fruits should be leathery and pliable; dried vegetables should be brittle. The food should be dried uniformly throughout, but not baked or scorched. Food insufficiently dried will mold.

Drying vegetables. (See paragraphs on preparation.)

Asparagus: Wash and cut into \( \frac{1}{4} \)-inch pieces. Blanch before starting to dry, for at least 3 minutes in boiling water.

Snap beans: Use only stringless beans. Snip and wash. Cut into pieces \( \frac{1}{2} \) to 1 inch long. Blanch 2 to 5 minutes in boiling water, depending on maturity of the beans. Drain and dry between two cloths. Shell pod beans and Blanch 2 minutes.

Corn: Gather only young, fresh, tender corn. Prepare immediately. Boil 2 to 5 minutes, long enough to set the milk. Cut from the cob in whole grains, or cut tops of kernels and scrape off remainder.

Peppers: Red or green. Wash, cut in half, and remove seeds. Blanch 2 to 3 minutes.

Peas: Wash, shell by hand or by wash wringer, blanch 2 to 3 minutes.

Spinach and other greens: Trim, remove leaves from roots, wash. Blanch 1 to 2 minutes. Cutting into \( \frac{1}{4} \) inch strips hastens drying.

Tomatoes: Cook ripe tomatoes for 10 minutes. Strain through ricer. Cook pulp as dry as possible without burning. Spread on plates in \( \frac{1}{4} \)-inch thickness and set in drier. When paste is dry on top, turn it over. Continue drying until paste is brownish red. Use in gravies, soups, and many other ways in which canned tomatoes are used.

Drying fruits.* (See section on preparation.)

Apples: Peel, core, trim, and cut into eighths, or slice in rings \( \frac{1}{4} \) inch thick. To prevent discoloration, dip into cold salt water bath, using 1 teaspoon of salt to 1 quart of cold water. Remove surplus moisture. Sulphuring improves product.

Apricots: Wash, pit. Cut in halves. Sulphur or dip in salt water as with apples. Dry with cut side up.

* Sulphuring fruits. In commercial dehydration, the following fruits are usually treated with sulphur, which helps to protect the food from spoilage, discoloration, and loss of natural flavor: apples, apricots, Royal Anne cherries, peaches, pears, quinces, and strawberries. Sulphuring is done out of doors by placing the trays of prepared fruit, before drying, under a tight box and burning arsenic-free sulphur under them for a period of 30 minutes or more. Halves of peaches, apples, and pears are sulphured for 1, 1\( \frac{1}{2} \), or 2 hours according to size. The lower tray is raised off the ground several inches by placing it on four blocks of wood at the corners. A tier of trays may be piled above the first one by separating each tray by blocks of wood at the corners. Spread fruit in a single layer on the tray. A shallow hole may be dug in the earth at the front of the box for inserting the pan of burning sulphur under the tight box. Ignite the sulphur with live coals or shavings. When sulphuring, use cloth mosquito netting on trays. Wire trays may be wound with string to prevent contact of fruit with metal. Fasten a sheet of metal with wires about four inches above the sulphur pan to spread the gas.
Berries: Wash, stem, spread in thin layers and dry slowly to prevent loss of color and flavor by dripping. Large strawberries should be cut in two and placed cut side up on the rack. Strawberries are much improved by sulphuring. A common rule is to stop drying at the point berries fail to stain the hand when pressed.

Cherries: Use fully ripe. Wash, stem, and dry with or without pitting. May be pitted when partly dry. Royal Anne cherries need to be sulphured for good quality.

Peaches: Peel, pit, and cut into halves or preferably into smaller pieces. Sulphur or dip in salt water. Best color if sulphured. Dry with cut side up.

Pears and quinces: Dry same as apples. Steaming 10 minutes renders more tender. Use firm ripe pears.

Prunes: Use tree-ripened prunes. Prunes dry slightly more quickly if dipped into boiling water until skins check. May then be pitted or left whole.

Apple sauce: Core and peel well-flavored early apples and cook with small amount of water. Put through sieve. Dry like tomato paste.

Storing dried products. Infestation by certain beetles and moths may occur during storage, resulting in loss of the entire dried product. As a precaution, just before sealing and storing, spread products 1 inch deep on pans or trays and set them in an oven with temperature from 150° to 160° F. Heat for 30 minutes or until hot to the touch, then store at once. Glass jars or tin cans are suitable containers for storing dried products. Cloth bags are not sufficient protection from insects, but sealed paper bags of fruit may be placed inside cloth bags and hung from hooks or nails. The ends of paper bags must be securely sealed with glue or tape.

Store dried foods in a dark, dry place. They change color if exposed to light. It is a good practice to store the products in small units, so that the entire quantity will not be exposed to the air each time the container is opened.

Examine dried products every few months, and as a precautionary measure reheat them occasionally in an oven for 30 minutes at 150° F. Watch for mold on fruit if stored in too tight containers.

C. Salting

PRESERVATION OF VEGETABLES BY SALTING

Salt draws water from vegetables by the process of osmosis, forming a brine that acts as a germicide and so prevents spoilage. Vegetables may be salted in two ways: with a small proportion of salt that allows fermentation, and with a larger proportion of salt that prevents fermentation. By either method considerable food value is lost.

Dry salting with fermentation. Cabbage, string beans, beet tops, and turnip tops are the vegetables most frequently preserved by dry salting with fermentation.

Sauerkraut. Equipment needed: (1) A stoneware crock, a hardwood keg free from undesirable flavors and odors, or glass jars. (2) A good grade of
Procedure in making sauerkraut: Use only sound cabbage. Trim off any undesirable parts. Wash cabbage. Shred fine, retaining core if desired. Weigh shredded cabbage and weigh 2½ to 3 per cent as much salt as cabbage. That is, use from 2½ to 3 pounds of salt to 100 pounds of shredded cabbage; 2½ per cent of salt is the same as 1 pound of salt to 40 pounds of cabbage or 4 ounces of salt to 10 pounds of cabbage. The smaller amount of salt may be used with very clean cabbage, very clean utensils, and the right temperature. The more salt, the less risk of spoilage. Too much salt, however, spoils the flavor.

Place a 3-inch layer of shredded cabbage in the container and pack down with the hands or with a tamper. Sprinkle with some of the salt. Add more cabbage, pack in firmly, and add more salt. Continue placing alternate layers of cabbage and salt and pack down each layer firmly, until the container is ⅔ full. The weighed salt should be evenly distributed throughout the cabbage, but in case extra salt is left, sprinkle it on the top layer. Spread the cloth over the mixture, tucking it down at the sides. On the cloth place the board or plate and on the board place the stone. The weight should be heavy enough to cause a brine to come up to the cover in a day or two. Leave in a warm clean place, preferably at 80° F., until bubbling or fermentation stops. The time needed for fermentation varies from 2 to 4 weeks. If scum or mold appears, skim it off, as it may completely spoil the kraut. After fermentation stops, seal the kraut in one of various ways. A common method used is to move the container to a cool place, remove the cloth and any scum or mold, adjust the amount of brine and weight so that the brine comes up to, but not over the cover, and pour very hot melted paraffin over the surface of the brine that is exposed. Do not move the container after pouring in the paraffin. After kraut is taken from the container, cover soon again with paraffin. If the kraut is to keep a considerable length of time, scum and mold must be prevented from forming.

Kegs of sauerkraut may be sealed by heading the filled keg and filling to the top through a bung-hole with brine using ⅔ cup salt to a gallon of water. Keep the brine level in the bung-hole. Sauerkraut may be canned.

To preserve other vegetables than cabbage by dry salting with fermentation, wash and trim them as for cooking and proceed by the same method described for sauerkraut.

Dry salting without fermentation. String beans, corn, dandelion greens, beet tops, spinach, chard, and kale are preserved by salting without fermentation.

Use one-fourth as much salt as vegetables by weight, that is, 1 pound of salt to 4 pounds of vegetables. This proportion of salt largely prevents fermentation and growth of molds.

Proceed by the method described under Sauerkraut, except that layers of vegetables should be about 1 inch thick. If a brine does not form in 24 hours
after application of the weight, add a strong brine until it comes up to the cover, using 1 pound of salt to 2 quarts of water.

*Using brined products:* Soak food preserved in salt without fermentation several hours in cold water before cooking, changing the water several times. Cook and season as in preparing fresh vegetables, except that salt is omitted.

**CORNING BEEF**

(By A. W. Oliver, Associate Professor of Animal Husbandry)

**Corning beef.** Use the cheaper cuts of meat, such as the plate, rump, and chuck, in making corned beef. Meat from fat animals makes better corned beef than meat from thin animals. It is desirable to corn at one time only such an amount as can be used within a month or 6 weeks.

1. Cut the beef into pieces 5 or 6 inches square. Cut pieces uniform in thickness so that they may be packed in even layers in the barrel.

2. Cool meat thoroughly, then proceed with corning as soon as possible. Meat that has begun to spoil is unwholesome and will probably sour during the corning process. Do not cure meat that is in a frozen condition.

3. Weigh the meat and for each 100 pounds allow 8 pounds of salt.

4. Sprinkle a layer of salt ¼ inch in depth over the bottom of a clean stone jar or wooden barrel.

5. Pack the cuts of meat as closely as possible, making a layer 5 or 6 inches thick.

6. Add alternate layers of salt and meat, being careful to cover the top layer of meat with considerable salt.

7. Allow the salted meat to stand over night.

8. Make a brine as follows: For each 100 pounds of meat use

   - 4 pounds sugar
   - 2 ounces baking soda
   - 4 ounces saltpeter
   - 1 gallon lukewarm water
   - 3 gallons cold water

   Dissolve sugar, soda, and saltpeter in lukewarm water. Add the cold water and cool.

   9. Pour brine over meat, after the meat has stood over night.

10. Keep the meat entirely under the brine by using a loose board cover with a weight on it. If any of the meat is not covered with brine, the brine will spoil in a short time.

11. Keep brine in a cool place, as the sugar in the brine has a tendency to ferment.

12. Keep the meat in brine from 28 to 40 days, to effect a good cure.

13. Watch the brine closely for spoilage. Meat cured during the winter that must be kept into the summer season is more likely to spoil during the spring than at any other season. If the brine appears to be ropy, the pieces of meat should be removed, washed vigorously with a stiff brush and warm water, then repacked as above directed, using only 6 pounds of salt for each 100 pounds of meat, and covered with new brine.
TIME TABLE FOR CANNING VEGETABLES

**Table I**

See page 6 for canning vegetables.

**CAUTION.** After emptying jar and before tasting, boil home-canned meat, fish, and nonacid vegetables 20 minutes on same day eaten. Canned food showing any signs of spoilage should be burned, or mixed with 1 tablespoon of lye and buried. Avoid placing where animals can find it.

Where 10 pounds pressure is indicated, temperature should be 240° F.; 15 pounds, 250° F.

<table>
<thead>
<tr>
<th>Product</th>
<th>Pressure</th>
<th>Time, pint jars</th>
<th>Time, quart jars</th>
<th>Time, No. 2 cans, No. 2½ cans</th>
<th>Product</th>
<th>Pressure</th>
<th>Time, pint jars</th>
<th>Time, quart jars</th>
<th>Time, No. 2 cans, No. 2½ cans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pounds</td>
<td>Minutes</td>
<td>Minutes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asparagus, <strong>†</strong> hot</td>
<td>10</td>
<td>35</td>
<td>40</td>
<td>30</td>
<td>Mushrooms, ** †** hot</td>
<td>10</td>
<td>30</td>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>Beans, string, <strong>†</strong> hot</td>
<td>10</td>
<td>35</td>
<td>40</td>
<td>30</td>
<td>Peas, ** †** hot</td>
<td>10</td>
<td>45</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Beans, lima, ** †** hot</td>
<td>10</td>
<td>55</td>
<td>60</td>
<td>50</td>
<td>Pumpkins and squash, ** †**</td>
<td>15</td>
<td>70</td>
<td>70</td>
<td>40</td>
</tr>
<tr>
<td>Beets, ** †** baby, hot</td>
<td>10</td>
<td>35</td>
<td>40</td>
<td>35</td>
<td>Spinach, hot sieved for infants** †** (See greens above)</td>
<td>15</td>
<td>15</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Carrots, ** †** baby, hot</td>
<td>10</td>
<td>35</td>
<td>40</td>
<td>30</td>
<td>Tomatoes (See time table for fruits)</td>
<td>15</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn, whole grain, ** †** hot</td>
<td>10</td>
<td>75</td>
<td>90</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn, cream style, ** †** hot</td>
<td>10</td>
<td>105</td>
<td></td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greens, ** †** hot includes spinach, beet tops, chard, etc.</td>
<td>15</td>
<td>60</td>
<td></td>
<td>55 (No. 2)</td>
<td>Tomatoes (See time table for fruits)</td>
<td>15</td>
<td>60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* See CAUTION at head of table.
† In using the pressure cooker above 2,000 feet elevation, add one pound of pressure for each 2,000 feet.
‡ Containers larger than pint jars or No. 2 cans are not recommended.
The time tables given below for hot pack require that the jars and contents are hot when put into the hot water bath.

For higher altitudes with water bath canning, for each additional 1,000 feet altitude above 1,000 feet, increase the processing time recommended in canning tables by 20 per cent. For example, for berries, add 20 per cent of 20 or 4 minutes at 2,000 feet; add 8 minutes at 3,000 feet; add 12 minutes at 4,000 feet. For half gallon jars, add 5 minutes.

### Table I

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Thickness of sirup</th>
<th>Pint or quart jars</th>
<th>No. 2 or No. 2½ tin cans</th>
<th>Kind of tin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Min.</td>
<td>Min.</td>
<td></td>
</tr>
<tr>
<td>Apples, hot, boiled 5 minutes</td>
<td>Medium</td>
<td>5</td>
<td>5</td>
<td>Plain</td>
</tr>
<tr>
<td>Apricots, raw</td>
<td>Medium</td>
<td>25</td>
<td>15</td>
<td>Plain</td>
</tr>
<tr>
<td>Blackberries, raw</td>
<td>Medium</td>
<td>15</td>
<td>15</td>
<td>Plain</td>
</tr>
<tr>
<td>Gooseberries, raw</td>
<td>Thin</td>
<td>20</td>
<td>15</td>
<td>Fruit en.</td>
</tr>
<tr>
<td>Huckleberries, raw</td>
<td>Thin</td>
<td>20</td>
<td>15</td>
<td>Fruit en.</td>
</tr>
<tr>
<td>Loganberries, raw</td>
<td>Thin</td>
<td>20</td>
<td>15</td>
<td>Fruit en.</td>
</tr>
<tr>
<td>Raspberries, raw</td>
<td>Medium</td>
<td>20</td>
<td>15</td>
<td>Fruit en.</td>
</tr>
<tr>
<td>Berries, hot, boiled</td>
<td>Medium</td>
<td>5</td>
<td>5</td>
<td>Fruit en.</td>
</tr>
<tr>
<td>Cherries, raw</td>
<td>Medium</td>
<td>25</td>
<td>20</td>
<td>Fruit en.</td>
</tr>
<tr>
<td>Peaches, raw</td>
<td>Medium</td>
<td>25-35</td>
<td>20-30</td>
<td>Plain</td>
</tr>
<tr>
<td>Pears, hot, simmered 4-8 minutes</td>
<td>Medium</td>
<td>15</td>
<td>15</td>
<td>Plain</td>
</tr>
<tr>
<td>Pears, hot baked</td>
<td>Medium</td>
<td>20</td>
<td>20</td>
<td>Plain</td>
</tr>
</tbody>
</table>

### Table II

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Thickness of sirup</th>
<th>Pint or quart jars</th>
<th>No. 2 or No. 2½ tin cans</th>
<th>Kind of tin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Min.</td>
<td>Min.</td>
<td></td>
</tr>
<tr>
<td>Prunes or plums, raw</td>
<td>Medium</td>
<td>20</td>
<td>15</td>
<td>Fruit en.</td>
</tr>
<tr>
<td>Hot, boiled 3-5 minutes</td>
<td>Medium</td>
<td>5</td>
<td>5</td>
<td>Fruit en.</td>
</tr>
<tr>
<td>Rhubarb, hot, brought to boil</td>
<td>Medium</td>
<td>10</td>
<td>10</td>
<td>Fruit en.</td>
</tr>
<tr>
<td>Strawberries, hot, brought to boil</td>
<td>Medium</td>
<td>45</td>
<td>35</td>
<td>Plain</td>
</tr>
<tr>
<td>Tomatoes, raw</td>
<td>Medium</td>
<td>10</td>
<td>10</td>
<td>Plain</td>
</tr>
<tr>
<td>Tomatoes, hot, brought to a boil</td>
<td>Medium</td>
<td>20</td>
<td>20</td>
<td>Plain</td>
</tr>
<tr>
<td>Fruit juice, hot, brought to simmering point</td>
<td>Medium</td>
<td>30 at 30 at</td>
<td>30 at</td>
<td>Fruit en.</td>
</tr>
<tr>
<td>Tomato juice, hot, brought to a boil</td>
<td>Medium</td>
<td>20</td>
<td>20</td>
<td>Plain</td>
</tr>
<tr>
<td>Narine, hot, brought to simmering point</td>
<td>Medium</td>
<td>25-pints.</td>
<td>15</td>
<td>Plain</td>
</tr>
</tbody>
</table>

### Note:
- Before using berry juice, a good general rule is to first dilute 1 to 3 with cold water and add sugar to taste. Use 1 part of loganberry juice to 6 or 7 parts of cold water and add sugar to taste.
- Use fruit enamel cans for dark and red cherries; use plain cans for light cherries.
**TIME TABLE FOR CANNING MEATS, POULTRY, AND FISH**

**TABLE III**

See page 7 for canning meat, poultry, and fish.

The time tables given below for "packed hot" require that the jars and contents are hot when put into the pressure cooker.

**CAUTION.** After emptying jar and before tasting, boil home-canned meat, fish, and nonacid vegetables 20 minutes on same day eaten. Canned food showing any signs of spoilage should be burned, or mixed with 1 tablespoon of lye and buried. Avoid placing where animals can find it.

---

<table>
<thead>
<tr>
<th>Product</th>
<th>Pressure</th>
<th>Time, pint jars</th>
<th>Time, quart jars</th>
<th>Time, No. 2 cans, No. 2 cans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef, veal, lamb, mutton, venison,** raw</td>
<td>15</td>
<td>110</td>
<td>130</td>
<td>110 (No. 2)</td>
</tr>
<tr>
<td>Packed hot</td>
<td>15</td>
<td>85</td>
<td>120</td>
<td>85 (No. 2)</td>
</tr>
<tr>
<td>Chicken, with bone,** raw</td>
<td>15</td>
<td>90</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>Packed hot</td>
<td>15</td>
<td>65</td>
<td>75</td>
<td>65 (No. 2)</td>
</tr>
<tr>
<td>Chicken, boned**</td>
<td>15</td>
<td>100</td>
<td>110</td>
<td>100 (No. 2)</td>
</tr>
<tr>
<td>Pork,** raw</td>
<td>15</td>
<td>110</td>
<td>130</td>
<td>110 (No. 2)</td>
</tr>
<tr>
<td>Packed hot</td>
<td>15</td>
<td>85</td>
<td>120</td>
<td>85 (No. 2)</td>
</tr>
<tr>
<td>Pork sausage, raw</td>
<td>15</td>
<td>110</td>
<td>130</td>
<td>110 (No. 2)</td>
</tr>
<tr>
<td>Packed hot</td>
<td>15</td>
<td>90</td>
<td>120</td>
<td>90 (No. 2)</td>
</tr>
<tr>
<td>Rabbit**</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>115 (No. 2)</td>
</tr>
</tbody>
</table>

* See **CAUTION** at head of table.

† The following modification for altitude is recommended. For pressure cooker, after the first 2,000 feet of elevation add one pound pressure for each 2,000 feet.

‡ Containers larger than pint jars or No. 2 cans are not recommended.