Food PRESERVATION

CANNING INSTRUCTIONS FOR ALL DIVISIONS

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Club Series J-28 4-H Club Canning Project

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Food Preservation by Canning

by

HELEN COWGILL, Assistant State Club Leader

INSTRUCTIONS for the canning of fruits, vegetables, and meats, and the making of pickles, relishes, jellies, jams and conserves, are all included in this bulletin, which is to be used by all four divisions of canning club members.

If sugar is still scarce at jelly making time, please omit making jelly, jams, and conserves.

MOTHER-DAUGHTER FOOD PRESERVATION PROJECT

Because some mothers hesitate to allow their young daughters to attempt canning entirely unaided, we recommend that mothers work with their daughters until they feel that the girls are competent to carry on alone. Mother, naturally, will see to it that daughter has experience in all phases of canning before the canning season is over. Each girl is to take credit in her record book for one-half of the number of quarts of produce canned in cooperation with her mother at each canning session, and for the two jars she is to exhibit she is to do everything but put the jars into the boiling water and take them out.

Note: If mother is willing, the club member may do all her canning alone.

We recommend that the family food budget and not the division of canning requirements determine the amount to be canned in excess of the minimum requirements in any division.

Foods may be canned, frozen, or dried. No directions for freezing or drying are included in this bulletin, but bulletins giving full directions for freezing and drying are listed in the bibliography on the inside cover page and may be obtained free by writing to the Oregon State College Extension Service, Corvallis, Oregon.

REQUIREMENTS OF THE CANNING PROJECT

Canning Division I. (1) The canning of at least 25 quarts of fruits of not less than two varieties. (2) A record of work done.

Canning Division II. (1) The canning of at least 25 quarts of fruits, including at least one variety not canned in the first year's work. (2) The making of at least 20 containers of jam, fruit butter, marmalade, or conserve. (3) A record of the work done.

Canning Division III. (1) The canning of at least 15 quarts of fruit to include at least one variety never canned before. (2) The making of at least 15 containers of jams, fruit butters, marmalades, and conserves—including one new kind. (3) The canning of at least 25 quarts of vegetables, at least two varieties. (4) The making of at least 10 containers of pickles and relishes. (5) A record of the work done.

Canning Division IV. (1) At least 10 quarts of fruit. (2) At least 10 containers of jams, fruit butters, marmalades, and conserves. (3) At least 20 quarts of vegetables. (4) At least 10 containers of pickles and relishes. (5) At least 15 quarts of meats, fish, or fowl. (6) At least 20 glasses of jellies. (7) Record of work done.

EXHIBITS AND BASIS OF AWARDS

Canning Division I. The exhibit shall consist of two jars of fruit, one each of two varieties.

Basis of awards	
(a) Exhibit—fruit	75
(b) Record book and story	25
Possible Score	100

Canning Division II. The exhibit shall consist of (1) two jars of fruit, one each of two varieties, (2) one container of jam, (3) one container of fruit butter, conserve, or marmalade.

Basis of awards		
(a) Exhibit		75
Fruit	35	
Jam	20	
Butter or conserve	20	
(b) Record book and story		25
Possible Score		100

Canning Division III. The exhibit shall consist of (1) one jar of fruit, (2) one container of jam, marmalade, or conserve, (3) two jars, one each of two varieties of vegetables, (4) two containers, one each of two varieties of pickles or relish.

Basis of awards		
(a) Exhibit		75
Fruit	15	
Jam, butter, or conserve	10	
Vegetables	30	
Pickles or relish	20	
(b) Record book and story		25
Possible Score		100

Canning Division IV. The exhibit shall consist of (1) one jar of fruit, (2) one container of jam, butter, marmalade, or conserve, (3) one jar of vegetables, (4) one container of pickles or relish, (5) two jars of meat, fish, or fowl, one each of two varieties, (6) two containers of jelly, one each of two varieties.

Basis of awards		
(a) Exhibit		75
Fruit	10	
Jam, butter, or conserve	10	
Vegetable	10	
Pickle or relish	10	
Meat, fish, or fowl	20	
Jelly	15	
(b) Record book and story		25
Possible Score		100

FANCY PACK

Fancy packing of products is undesirable for the following reasons: (1) increases danger of spoilage, (2) takes too much time. Fancy packing means the placing of pieces of the product being canned, in regular order or pattern. This applies especially to berries, cherries, sliced carrots and similar products.

Note: Halves of peaches, pears, apricots, plums and prunes placed with cut side down in an overlapping pattern conserves space and is not considered fancy pack. String beans and asparagus cut the length of the jar, tied in bundles to fit the jar and packed quickly are acceptable.

We are recommending that judges at county and state fairs deduct for fancy packing on the following basis.

Canning I—15 points for each jar so packed.

Canning II—10 points for each jar so packed.

Canning III—5 points for each jar of fruit, 10 points for each jar of vegetables, 5 points for each jar of pickles.

Canning IV—5 points for each jar of fruit, 5 points for each jar of vegetables, 5 points for each jar of pickles.

THE ENTIRE EXHIBIT WILL BE DISQUALIFIED if one or more jars are not sealed.

Note: Jars may be opened at judges' discretion.

JAR SIZES AND LABELS

Your exhibit may be in either pint or quart jars depending on the size of container that is best suited to the size of your family. In some exhibits, especially Divisions III and IV, it is possible that both quart and pint jars may be used to advantage. Use the type of jar preferred.

Labels. Paste a label on the side of the jar that has no printing, giving information in the following form:

Name of product .....
Date of canning .....
*Method used .....
Time of processing .....

Name of product, *Crawford peaches*
Date of canning, *August 20, 1945*
Method used, *Hot pack*
Time of processing, *20 minutes*

On the bottom of the jar put another label giving information in the following form:

Name .....
Address .....
Division .....
Class .....
Product .....

Name, *Martha Allen*
Address, *Corvallis, Rt. 1*
Division, *I*
Class, (*this will be determined from the premium list for your county*)
Product, *Crawford peaches*

Paste these labels on neatly. Brushing the label with clear shellac after it is on the jar will keep it from coming off.

Be sure to put the labels on the sides of the jars so they are the same distance from the top or bottom. Do not make them any larger than necessary to contain the required information.

Be sure to consult the requirements for exhibits for the division you are carrying and see that you have everything that is called for.

RECORDS

Each club member is to receive a record book and *one* progress report card. The card is to be sent to the county extension agent or to the State Club Leader after the club member has canned at least 5 quarts of one or more products. Until this card is received, the club member is not rated as a club member in good standing.

Record book. Record all work done in the record book in the spaces provided for this purpose. Write neatly, preferably in ink. If more work is done than is required, record that also. If there is insufficient space for all records, extra pages may be inserted.

Important. Before turning in your record book, total the work

* Hot pack, cold pack, pressure cooker.

done and record the totals in the spaces provided in the back of the book. Fill in all the spaces on both sides of the back cover and write your story.

At fair time, be sure your record book is given either to your county extension agent or to the State Club Leader so it will be at the fair.

Note: If your fair is held before you have done all the canning for the year, ask to have your record book returned and complete your records before returning them to your county extension agent.

PLANNING THE YEAR'S WORK

Several things must be considered before we can decide on what and how much to can. The amount to can will depend on: (1) number in the family; (2) family preferences; (3) what can be stored; (4) what can be left in the garden; (5) what and how much can be frozen; (6) how much to provide for others; (7) fruits and vegetables in own orchard and garden or grown locally; (8) what meat or fowl can be raised and what fish can be caught; (9) what fruits and vegetables are abundant enough for a 2-year supply.

1. It is an economical practice to can or freeze the surplus products of the garden and orchard.

2. Since more than one fruit or vegetable has certain vitamins and minerals, family preferences can be considered—tomatoes are the exception.

3. Root crops (beets, carrots, turnips, parsnips), cabbage, kale, and cauliflower, grown west of the Cascades, can be left in the garden until needed. If you have a frozen food locker within driving distance, meats, fruits, and vegetables can be put in, and the locker should be kept filled to capacity.

4. There may be some people in your community who cannot do their own gardening and canning. They should be remembered.

5. Home raised beef, veal, lamb, pork, and fowl can be frozen, cured, or canned. A pound of meat equals one quart.

6. One pint of fruit or vegetables will serve three generously. Since it is highly desirable that tomatoes be served about four times a week, it is well to include a generous supply of canned tomatoes, which are just as healthful as the fresh product.

7. When a certain fruit is unusually plentiful it is often wise to can a 2-year supply; should that particular fruit be less plentiful the following year none need be canned. Usually some fruits are more plentiful than others, but seldom is the same fruit scarce 2 years in succession.

8. Because even canned products lose some of their food values after a time, it is best to can only what can be used within a 2-year limit.

Goals—

1. To provide an adequate food supply for the family.
2. To save summer fruits and vegetables.
3. To acquire skill and accuracy in canning.
4. To learn how to work with and for others.
5. To teach others through demonstrations.
6. To learn to know quality products by judging.

Requisites for successful canning—

1. A knowledge of why foods spoil.
2. Suitable equipment.
3. Fresh products of good quality.
4. A clean place to work.
5. A clean person dressed in clean clothing.
6. A willingness to follow up-to-date directions and time tables.
7. Careful attention to details.
8. Certainty that jars are sealed airtight.
9. Storage of canned food in a cool, dark, dry place.

PROGRAM OF WORK

A program of work is an orderly outline that indicates what is to be accomplished, the order in which it is to be accomplished, and the time when the work is to be done.

One of the requirements of a standard club is a program of work covering ten meetings. A blank program form will be sent to each leader.

A study of the requirements of the division to be covered will help in determining the subject matter and will furnish topics for roll call and discussion.

Demonstrations and judging should be included in some of the meetings.

The program of work should give (1) the time (2) place of meeting and (3) the general plan for each meeting.

We suggest that each meeting be divided into three parts as outlined under A, B, and C below:

A. The business meeting, presided over by the president (approximate time, 10 minutes).

(1) Call to order
(2) Flag salute

(3) Club pledge
(4) Roll call
(5) Old business
(6) New business
(7) Club song or yell
(8) Adjournment of business session

B. Project instruction, presided over by leader (approximate time, 40 minutes).

Timely instruction on subject matter either by the leader or by a demonstration given by one or two club members.

Note: At times it may be best to put B before A if some product requires long processing.

C. Recreation, presided over by the president or recreation committee (approximate time, 10 minutes). Songs, games, inspirational talk.

Note: Because canning is a summer project, it may be that the members will live too far apart to have many meetings. In the meantime girls will work at home with their mothers.

Remember though that meetings are an aid to keeping up enthusiasm and give time for careful and frequent instruction—so unless circumstances really prevent getting together, try to have as many meetings as possible.

If clubs are organized a month or six weeks before the close of school several meetings should be held before vacation and instructions given to help members interpret the instructions in the bulletin.

Roll call is often just answered by "present." For variety the president may announce at one meeting a special topic for roll call such as: Name a favorite fruit or vegetable, name a piece of canning equipment, why foods spoil, foods raised at home, points in judging, steps in canning. Of course, you will think of many other interesting topics.

Project instruction must cover not only how to can in general, but short discussions on causes of spoilage, planning the canning for winter, explanation of judging and scoring, news writing, keeping of records, officers' duties, helping with the home canning, etc. Demonstrations by club members will be in order, too.

Where possible a few minutes should be devoted to having a little fun. Of course before the members go home the meeting room should be restored to order.

PROGRAM PLANNING SUGGESTIONS

First meeting—discussion of containers (see pages 12-14).

If this meeting were held at the leader's home and the members

helped the leader check her own supply, the girls would understand clearly what they should do in their own homes later.

What to do before next meeting: Check jars and lids, kettles, and equipment for water-bath method of canning.

Second meeting—report by girls on their supply of jars and other necessary equipment.

Discussion of what and how much the various club members and their mothers should plan to can, freeze, and dry. Mothers might be invited to attend this meeting.

What to do before next meeting: List the kinds and amounts to be canned.

Third meeting—definite instructions for canning.

Either a demonstration by the leader or each member prepare and pack a jar. How to keep records will have to be taught also. If meetings can be held regularly during the summer, probably a demonstration by the leader at this meeting, followed at the next meeting by each girl canning one jar, would be the best procedure.

If meetings cannot be held regularly, the girls and their mothers will have to carry on from here with the help of this bulletin.

What to do at home: Can one or more quarts of fruit and take one jar to the next meeting. Follow the same plan for other meetings.

Last meeting

Last meeting may be held late in the summer and could be a picnic to which the families of the club members are invited. Whenever this meeting is held the club members could bring one jar of something they had canned, properly labeled, and their record books. Sometime during the day the club could hold a meeting, compare their work, check their record books, and plan their exhibits for the fair.

Some points to discuss with the girls at the various meetings:

First meeting—Where to find instructions on canning.
How to read the bulletin.

Second meeting—Selection of jars.
Preparation of jars.

Third meeting—Selection of product to be canned.
Preparation of product to be canned.
Making sirup.
Packing jars, partly sealing.
Processing—sealing, labeling, storing.

Additional activities:

Demonstrations.

Special contests.

National canning contest.

Exhibits.

Judging canned goods.

Record keeping.

GETTING READY FOR THE CANNING SEASON

It is a good practice to take stock of the jars on hand as early as March or April. Why not collect all the empty jars of all kinds and sizes and then sort them as to kind and size? Next check for condition. Put all cracked or chipped jars to one side. Some of them can be used for storing dry cereals, beans, rice, raisins, etc. Mayonnaise and coffee jars can be used for jams, preserves, pickles, and relishes, so keep them carefully too, but they are not safe for use in regular canning. Next check on the jars that are in good condition for regular canning. Make a list of the different types with the number of each kind. Check lids and rubber rings and place your order early for new ones if needed, so that you will be ready to begin canning as soon as there is something to be canned. In most localities, the first product is rhubarb.

EQUIPMENT

Equipment for the preparation of the products to be canned includes:

1. One or more large pans to hold the product, and in which it can be washed, pared, stemmed, or pitted.

2. A large vessel for scalding and precooking fruits and vegetables.

3. A wire basket or large square of cheesecloth for use in scalding fruits, for removal of skins.

4. A kettle or stew pan for making sirup.

5. A vessel for a hot water bath, which is essential in the can-

ning of fruits and tomatoes. Enamel kettles with close fitting lids are on the market. They will hold 7 pint or quart jars and are equipped with a wire rack. They must be at least 8 inches deep for pints and are more satisfactory if they are 10 to 12 inches deep. (See Figure 1.) Many housewives use the family wash boiler with a wooden rack on which to set the jars. Whatever kettle is used must be deep enough to allow the water to cover the tops of the jars 1 inch and not boil over.

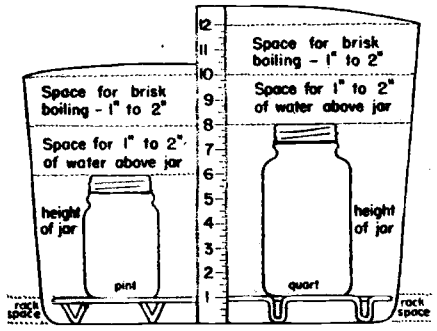

Figure 1.

Neither a steamer nor the oven can be recommended for canning any product.

CONTAINERS

Glass jars are in more general use for home canning than are tin cans. There are two main types of jars, both practical and equally satisfactory. The two types are: those that use a separate rubber ring and those that are self-sealing.

There are three types of jars that are sealed with rubber rings.

1. Zinc porcelain lined cap with shoulder rubber ring, to fit a standard mason jar. (A mason jar is any jar of any make that has threads at the top which close by a screw cap or band.) (See Figure 2.) Place wet rubber ring on the shoulder of the jar. Fill jar. Wipe the rim of the jar and the shoulder where the rubber ring is, then screw on the cap firmly and screw it back 1 inch, to prevent complete sealing before processing. After processing, immediately screw lid on firmly to complete the seal.

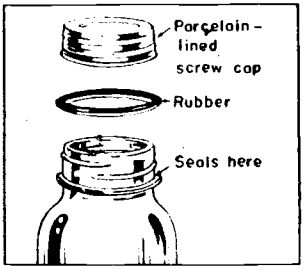

Figure 2.

2. The Lightning-type jars sealed with glass lid and rubber ring, held in place by wire bail. (See Figure 3.)

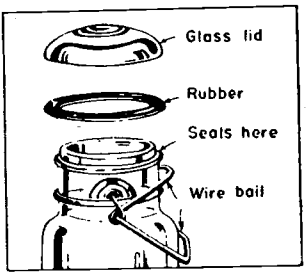

Figure 3.

Fit wet rubber ring on ledge at top of empty jar. Fill jar. Wipe sealing surface. Put on glass lid. Push long wire over top of lid, so it fits into groove. Leave short wire up. As soon as you take jar from canner, quickly push short wire down to complete seal.

3. Glass lid and top seal rubber ring, held in place by metal screw band. (See Figure 4.)

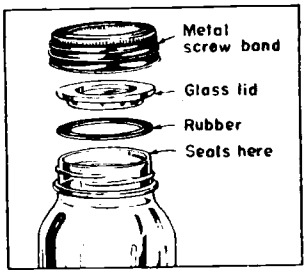

Figure 4.

Fill jar, wipe sealing surface of jar, fit rubber ring on glass lid. Put lid on jar with rubber side down. Screw metal band on lightly; then, using your thumb as a guide, turn back almost a quarter turn, or so that the band and jar just mesh together. *Caution:* If the band is screwed too tight, the jar may break. As soon as you take jar from canner, screw band down tight. The next day when jar has cooled, take off screw band if you can without forcing. If the band sticks, cover for a minute or two with a hot, damp cloth, to loosen.

There are two types of self-sealing jars. Both are sealed with a metal disk edged with a sealing compound.

1. One of these jars seals on the upper edge of the jar; therefore this edge must be flat and wide enough for the sealing compound on the lid to effect a seal on cooling. This metal lid is held in place during processing by a shallow metal screw band. This screw band must be screwed on very firmly *before* processing and not touched *after* processing. The next day this ring should be removed and washed and dried, after which it may be replaced on the jar for safe keeping. When the contents of the jar have been used and the jar washed and dried this screw band should be put on the jar, and the jar inverted in the box to keep it clean and to prevent the rim of the jar from being nicked. (See Figure 5.)

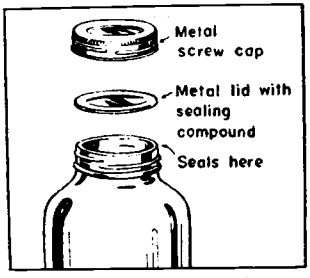

Figure 5.

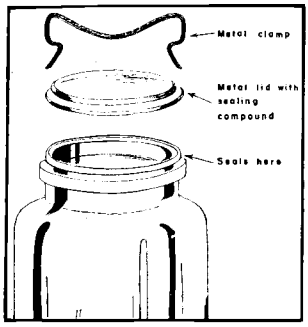

Figure 6.

2. Another self-seal jar has a metal lid with sealing compound around the edge and seals just on a level with the top rim. This lid is held in place during processing by a metal clamp. This lid can be used only on the kind of jar for which it is made. (See Figure 6.)

Jars in which coffee, salad dressing, and other commodities are packed are recommended *only* for jams, conserves, pickles, and relishes since these jars are not made with the exacting care that manufacturers use in making jars for home canning, and frequently break during the canning process.

We have devoted some time and space to the discussion of containers and how each is closed and sealed. Regardless of the type or make of jar there are certain things that must be checked to make sure the jars you have can be used as you plan.

1. See that there are no cracks in the sides or bottom of the jar.
2. The sealing surface must be free from nicks.
3. The lid to be used must fit properly and be in good condition.
4. Porcelain lining of metal lids must be free from cracks.
5. Rim of screw type lid must be straight, smooth, and free from holes or cracks.
6. Self-sealing jars must have the correct lid.
7. Lids with sealing composition cannot be used with jars having too narrow, slanting, or curved rims or sealing surfaces.

WHAT IS CANNING?

Canning is a method of using heat and airtight containers to preserve food as nearly as possible in the condition in which it would be served when freshly cooked. It is a desirable and economical method of preserving many foods, by means of which their use is distributed over seasons and in places where they are not available fresh. Canned foods thus add variety and make possible a better-balanced diet at all seasons, the value of which to health can not be measured in dollars and cents.

CAUSES OF FOOD SPOILAGE

Successful canning depends on an understanding of the important causes of food spoilage.

All fresh fruits and vegetables contain substances called enzymes. Enzymes are what bring about the normal ripening of fruits and vegetables and, if not checked, the decay of the product. Enzymes are easily destroyed by heat. By canning fruits and vegetables as soon as possible after gathering, we preserve them at their best.

Another and more important cause of food spoilage is the action of bacteria, yeasts, and molds, which are everywhere, in the air, soil, and water. Both yeasts and molds are easily killed at or below the boiling point. The problem with them in canning, is first to kill those organisms on the product and then to seal the container airtight to prevent new ones entering the jar.

All bacteria are not as easily destroyed as yeasts and molds, for some of them form spores and these spores are much more difficult to kill. Spores are the resting or dormant form of certain bacteria. These spore forming bacteria cannot grow in acid, so are not a problem in canning fruits and tomatoes, but vegetables and meats, which are known as nonacid foods, present ideal conditions for their growth. These spore forming bacteria can only be killed at a temperature higher than that of boiling water and therefore nonacid vegetables and meats must be processed in a pressure cooker in which higher temperatures can be obtained.

Spoilage. Any one of a number of causes may be responsible for spoilage in canning.

1. Use of stale or unsound products.
2. Jars and lids not tested for leakage before packing.
3. Use of old rubbers, or two rubbers on one jar.
4. Particles of food, grease, or other obstruction on sealing surfaces.
5. Opening jars to refill with liquid.
6. Too short a processing period.
7. Temperature too low, or irregular, during processing period.
8. Too long delay between steps in canning; canning too much at a time; food waiting too long in warm kitchen, especially if piled in deep covered containers; filled jars waiting too long at lukewarm temperature before processing.
9. Filling jars too full, especially in canning corn, beans, greens, and lima beans.
10. Packing jars too tightly, and thus causing slow heat penetration.

11. Cooling jars too slowly.
12. Not allowing extra time when canning in high altitudes.
13. Storing jars at hot or freezing temperatures.
14. Lifting jars by tops, thus breaking the seal.
15. Pressure of clamp against lip of rubber, or any other pressure against rubber.
16. Tightening jar lids after jars have cooled.
17. Failure to hold lid steady while adjusting screw band.
18. Using lids on jars not intended for that type of lid.

Recognizing spoilage. When in doubt as to its wholesomeness, burn or bury food. *Caution:* Always boil nonacid vegetables, meat, fish, or fowl for 10 minutes as soon as the jar is opened and before testing. Many indications of spoilage are readily apparent, such as the following:

1. Cloudiness of liquid. Overmature peas may be cloudy though not spoiled.
2. Discoloration of food.
3. Off-odor of food.
4. Off-flavor of fruit.
5. Presence of gas.
6. Change in texture of product; slippery, slimy, mushy.
7. Swelling or bulging of ends of tin cans.

Safety precautions. Hot water, steam, glass, knives, and tin involve danger to workers. Accidents can be prevented if care is used.

1. Be sure that handles of utensils in which hot water or hot food are to be carried are in sound condition.
2. Do not lift or carry boiler filled with hot water. Transfer hot water in small quantities. Keep children away from hot foods and liquids.
3. Let pressure return to zero before unfastening the lid of the pressure cooker.
4. Test spring of safety valve each time before using. Clean safety valve each time cooker is washed.
5. Avoid injury from breaking glass. Place cold jars in cold cooker and hot jars in hot cooker.

KEEPING LIQUID IN JARS

Though loss of liquid does not affect the keeping quality of food if the jar is properly sealed, loss of liquid is nevertheless undesirable. Loss can be partly prevented by observing the following directions accurately:

1. Overfilling jars is the most common error.
   a. Raw fruit should be packed to the top of the jar. The sirup should come to within 1½ inches of the top. Berries and cherries are cold packed.
   b. Precooked fruits and vegetables should be packed loosely to within ½ inch of the top with the liquid coming to the same height.
   c. Both raw and cooked meats should come only to within 1 inch of the top of the jar. (One reason for leaving 1 inch head space in meat canning is to prevent fat running over and preventing a seal.)
2. When using the water bath be sure to have the water cover the tops of the jars 1 inch.
3. Be sure the water in the water bath boils continuously after it once begins to boil.
4. When using a pressure cooker keep the pressure as steady as possible.
5. Prevent escape of steam from the safety valve by regulating the heat carefully during processing.
6. At the end of the processing period keep the pet cock closed and remove the cooker from the fire to prevent overprocessing. Allow the pressure to reach zero, and then wait 2 or 3 minutes before opening the pet cock. Open the pet cock cautiously. If steam begins to escape, close the pet cock immediately. Leave it closed only until all steam has condensed. Then open cooker slowly, carefully lifting the edge of the lid farthest from you first to prevent steam from burning you. Remove the jars and complete the seal immediately of the jars with rubber rings.

CANNING FRUITS

Preliminary steps—

1. See that both the kitchen and you are clean.
2. Get out the necessary equipment.
3. Put the canner on the stove with enough water to cover the jars.
4. Test the jars for cracks and nicks.
5. Wash the jars in hot, soapy water. Scald.
6. Put on the rubber ring (not needed in the automatic seal jar). When the ring is put on after washing the jar, it prevents the burning of fingers later and does not allow any fruit or sirup to get under the rubber. Invert jars on a clean towel. The jars may be prepared the day before if more convenient.

When raspberries or sweet cherries are to be canned, the jars need only to be turned over and filled with raw fruit and sirup that has been brought to a boil and cooled to 150°-180° F. This keeps the fruit from shrinking.

For hot packing other fruits, the jars may be put into either hot water or a warm oven, until time to fill.

Sirup—

Note: One half the amount of sugar called for may be replaced by corn sirup if sugar is scarce.

Thin. Use 1 cup of sugar to 3 cups of water—for apples and pears.

Medium. Use 1 cup of sugar to 2 cups of water—for cherries and peaches.

Heavy. Use 1 cup of sugar to 1 cup of water—for cane berries, plums, prunes, rhubarb, and strawberries.

You will find that 1 cup of sugar and 1 cup of water will make 1½ cups of sirup. Usually, when jars are solidly packed with fruit, about ½ cup of sirup is required for every pint, so you can plan accordingly.

In making sirup, put the required amount of water in the pan in which the sirup is to be made, then pour the sugar in slowly. Any little specks or impurities in the sugar will stay on the top of the water and may be skimmed off.

Whatever kind of sirup you make should just boil up. It is then ready to use.

Pears, apricots, apples, sour cherries, sweet cherries if pitted, rhubarb, and gooseberries.

1. Prepare the jars as given under preliminary steps.
2. Make the sirup following the directions above.
3. Prepare enough fruit at one time to fill as many jars as will be processed at one time. Peaches and pears may be kept from turning brown by putting them in cold water to which has been added 4 teaspoons of salt to 1 gallon of water.
4. Select firm, ripe fruit.
5. Wash carefully.
6. Remove the skin of pears and apples—and pits of apricots and cherries. Cut rhubarb into 1 inch pieces but do not remove the skin.
7. Have the sirup boiling on the stove. There should be enough sirup to make it 1½ inches deep; if your kettle is 10 inches in diameter you will need 6 cups of sirup. Put in only enough fruit at one time to fill 1 quart or 2 pint jars. Cook only 3 minutes.

8. Fill the jar to within ½ inch of the top with fruit and add juice to the same level.
9. With a clean damp cloth or piece of paper toweling, wipe around the rim of the jar both inside and out to remove any particles of fruit, seeds, or sirup.
10. Partly seal the jars requiring separate rubber rings.
11. For self-seal jars, place metal disk with sealing compound next to the glass and screw the ring on very firmly. In the case of self-seal jars using the metal clamp, put on lid and one clamp that has been adjusted.
12. Process in a hot water bath—having the water cover the jars about 1 inch. See timetable for processing each fruit. When we cook in the jar we say "process."
13. Remember to wait until the water is at a rolling boil before beginning to count time.
14. Be sure to follow the time table exactly. Do not count time until the water in the canner is *boiling.*
15. When processing is complete, remove the jars from the kettle and complete the seal of the jars with rubber rings but do not disturb the self-seal jars.
16. Avoid placing the jars in a draft and do not put them on a tile or metal surface unless it is covered with a towel or several thicknesses of paper. Place the jars several inches apart to hasten cooling.
17. The next day check to see that the seal is complete. Remove the metal rings, wash the jars, label (see page 6).
18. Store in a cool, dry, dark place.

Tomatoes—

1. Prepare jars as for other fruits.
2. Select ripe, firm tomatoes, free from blemishes.
3. Wash carefully.
4. Scald just long enough to make skins slip easily, usually from 1 to 3 minutes.
5. Dip into cold water so they can be easily handled.
6. Remove the skins, and green or white core at stem end. Be sure to remove all of this core as it is nonacid and often causes the tomatoes to spoil.
7. Small and medium sized tomatoes may be left whole or cut into quarters. Large tomatoes should be cut at least into quarters.
8. Put enough tomatoes to fill 1 quart or 2 pint jars in a kettle and bring *just to the boiling point.* Allowing them to boil causes them to separate.

9. Put into clean hot jars, filling the jars to within ½ inch of the top. Add 1 teaspoon of salt to a quart, ½ teaspoon to a pint.
10. With a clean, damp cloth or piece of paper toweling wipe around the rim of the jar both inside and out to remove any seeds or particles of tomato.
11. Put on the lid, adjusting correctly for the type.
12. Put in the hot water bath and process for *10 minutes* after the water is at a rolling boil.
13. Proceed from here as for fruits.

Tomato juice. Heat the tomatoes to 180° F., strain through a sieve, reheat to 180° F., fill jars to ½ inch of top. Adjust lids. Process for 20 minutes.

See pages 4-6 for preparation of exhibits, labeling, scoring, and judging.

Jams. Jams are made from berries or other fruit. Wash the fruit carefully. Remove all hulls, stems, and decayed berries. Cook slowly in a granite or enamel vessel, crushing the fruit to obtain sufficient liquid. Stir frequently. When the mixture begins to thicken add from one-half to two-thirds as much sugar as fruit. Cook until thick enough to spread nicely. Remember that the jam will be thicker when cool so do not overcook. Jam made with this proportion of sugar is best put into hot glass jars and completely sealed.

Fruit butters. The term butter is used in referring to a smooth jam, made from peaches, apples, pears, apricots, or plums. The process is the same as for jam, except that when the fruit is tender it is rubbed through a sieve to remove the skin, core, and seeds. Butter should be of the same consistency as jam when finished. Some people like to add spices to fruit butters.

Marmalades. "A marmalade is a product having a jelly-like consistency and contains fruit in comparatively large pieces."

—University of Illinois bulletin, *Suggestions for Making Jelly, Jam, Butter, and Marmalade*

Orange marmalade—

1 dozen oranges (medium size)
3 lemons
3 pounds sugar

Preparation of lemons. Cut off ends and discard. Cut into slices and simmer in small amount of water until tender. Strain through colander or jelly bag to remove seeds and pulp.

Preparation of oranges. Cut off ends and discard. Cut into thin slices and simmer 1 hour. Add juice from boiled lemons and the sugar and boil down to 220° F. or until it gives the jellying test. Cool to 170° F., dip into containers, seal immediately.

CAUTION. If the orange peel is thick and bitter, remove the peel and cut into narrow strips. Soak over night in a weak brine. The next morning soak in several changes of fresh water. It is sometimes advisable to discard a part of the peel. Cut pulp into thin slices; add peel and water and simmer 1 hour; then add sugar and juice from boiled lemons and boil down as in first method.

TIMETABLE FOR CANNING FRUITS AND TOMATOES

The times given for processing in boiling water apply only to places with altitudes of 1,000 feet or less. For all altitudes above 1,000 feet the time should be increased 20 per cent for each additional 1,000 feet.

When half-gallon glass jars are used, add 5 minutes to time given for quart glass jars.

Product	Method of treatment before processing	Processing period in boiling water, glass jars	
		Pints	Quarts
		Minutes	*Minutes*
Apples	Hot pack	10	15
Apricots	Hot pack	20	25
Blackberries	Cold pack	15	20
Blueberries	Cold pack	15	20
Dewberries	Cold pack	15	20
Huckleberries	Cold pack	15	20
Loganberries	Cold pack	20	20
Raspberries	Cold pack	20	20
Cherries	Cold pack	25	30
	Hot pack	10	15
Gooseberries	Hot pack	10	10
Peaches	Hot pack	15	15
Pears	Hot pack	20	20
Plums	Cold pack	20	20
	Hot pack	10	10
Rhubarb	Hot pack	10	10
Strawberries	Hot pack	10	10
Tomatoes	Hot pack	10	15
Tomato juice	Hot pack	20	20

Conserves. A conserve is a marmalade made by combining two or more fruits. Nuts may be added if desired.

Cherry conserve.

2 pounds Royal Ann cherries
2 pounds sugar
1 orange
½ lemon

Wash and remove seeds from the fruit. Put all three fruits through the food chopper. Put the fruit in a preserving kettle. When boiling add the sugar. Boil until thick and jelly-like. Pour into hot jelly glasses or half-pint glass jars and seal immediately.

Apricot and pineapple conserve.

5 pounds apricots
1 large can pineapple (broken pieces)

Quarter the apricots and boil until clear in the pineapple juice. Add the pineapple, which has been cut into small pieces. Weigh and add equal weight of sugar. Then boil until it thickens on a cold plate. Put into hot jars and seal immediately.

Rhubarb conserve.

1 pound finely cut rhubarb
3 large oranges

Pare off the peeling of the orange. Remove the seeds and put the three oranges through the food chopper. Put the oranges and the rhubarb together and cook until the rhubarb is tender. After the rhubarb and oranges have cooked and have been reduced about one-half, weigh the quantity and add equal weight of sugar. Boil until it thickens on a cold plate. Put into hot jars and seal immediately.

Carrot marmalade.

2 pounds carrots
1 lemon
2 oranges (medium sized)

Clean and scrape or peel the carrots. Grind the carrots. Cook until tender in barely enough water to cover.

Wash and remove seeds from lemon and oranges. Run both through the meat grinder. Add the carrots and cook until clear looking. Add an equal measure of sugar and cook until the mass jells. Put into hot jars and seal.

Plum or prune conserve.

5 pounds plums or prunes
3 oranges
2 pounds seeded raisins
¾ pound English walnuts
sugar

To plums or prunes add water to cover. Boil until soft. Run through coarse colander, or cut into small pieces. Take 3 oranges, peel carefully, remove white from peel and cut peeling into very fine strips; boil until tender. Take pulp, juice, and boiled peel of oranges and add to pulp of plums or prunes; then add ¾ pound sugar to every pound of fruit. Add 2 pounds seeded raisins cut fine and cook to consistency of marmalade. Just before cooking is complete add ¾ pound English walnuts chopped fine; fill into jars, seal immediately. Avoid cooking too long as this makes the product too thick.

Gooseberry conserve.

3 pounds gooseberries
1 pound raisins
3 oranges
1 lemon
3 pounds sugar
1 pint water

Cut oranges into thin slices or small pieces, remove peel from lemon and cut pulp into thin slices or fine pieces. Stem gooseberries. Add water and sugar and mix all together. Cook slowly until thick.

Pack while hot into containers; seal immediately.

Medley fruit conserve.

2 pounds peaches
1 pound oranges
½ pound apples
1½ pounds pears
3 lemons
4 pounds sugar
1 pint water
½ pound blanched chopped nuts, if desired

Stone peaches and cut into small pieces. Cut off ends of oranges and discard; cut oranges into thin slices or small pieces. Peel and core apples and pears and cut fine. Remove rind from lemons and cut pulp into thin slices. Add water and sugar. Mix all together and cook slowly until thick.

Chopped nuts—pecans, almonds, or walnuts—may be added a few minutes before cooking is finished.

While hot, pack into containers; seal immediately.

When you have done the required amount of canning and preserving, see that your records are complete and then total your value, cost, and profit columns, fill in the spaces in the back of your record

book, write your story, and give or send your record book to your county extension agent or to Mr. H. C. Seymour, State Club Leader. Oregon State College, Corvallis, Oregon.

THE PRESSURE COOKER

In canning fruits only a hot water bath is required but because of the greater difficulty experienced in canning vegetables and meats, a pressure cooker is advised and in fact considered a necessity. If every girl in the club cannot afford such a cooker, the club as a whole might purchase one for the use of all the members.

A pressure cooker is a vessel especially designed for obtaining temperatures higher than can be reached in a water bath. It is impossible to heat water alone to a temperature higher than the boiling point at the particular altitude at which the test is made unless the vessel in which the water is heated is closed and the cover clamped down so that the steam cannot escape. Such vessels are known as pressure cookers.

A pressure cooker should be strongly built, and the top should clamp on tightly so that there is no leakage of steam when closed. There must be an air outlet with a pet cock, and the top should also be equipped with a pressure gauge, a thermometer, and a safety valve. Since the temperature is a measure of the pressure, it is ordinarily assumed that one can be interpreted in terms of the other. The pressure gauge, however, does not always indicate the actual temperature within the cooker, and it is better to have both a gauge and a thermometer, for one then serves to check the accuracy of the other. The temperature reached in a pressure cooker is in direct proportion to the steam pressure and is dependent upon the air having been completely removed. Ordinarily this is accomplished by allowing 10 minutes to elapse after steam issues from the pet cock before it is closed, or by never completely closing the pet cock.

STEAM PRESSURE OBTAINED IN PRESSURE COOKERS AND APPROXIMATE CORRESPONDING DEGREES OF TEMPERATURE UNDER STANDARD CONDITIONS AT SEA LEVEL[1]

Steam pressure *Lb.*	Temperature *F.*
5	228
10	240
15	250

[1]The reading of the pressure gauge is affected by altitude. For this reason it must be increased 1 pound for each 2,000 feet elevation in order to maintain the same relationship between temperature and pressure indicated in the above table. The pressures and times in the table apply from sea level to 2,000 feet. Commencing with 2,000 feet add 1 pound for each 2,000 feet elevation. In case the cooker is equipped with a thermometer the pressure reading may be disregarded and the thermometer used as an indicator of the pressure.

—Taken from Farmers' Bulletin 1762

In selecting a pressure cooker, all foregoing requirements should be carefully checked. Also in size it should be suited to the kind of containers and the probable number to be handled at one time. In case the cooker must be lifted on and off the stove during the canning it is also important that it should not be too heavy. The relationship between steam pressure and temperature is shown in the table.

A pressure cooker is required for nonacid vegetables, meats, fish, and fowl.

There are several types of pressure cookers on the market and specific instructions for the proper use and care of each are furnished by the manufacturer. These instructions *must* be accurately followed if best results are to be obtained. Whatever type of pressure cooker you have must be kept clean. The pressure gauge must be cleaned after every use to prevent it sticking.

Use of pressure cooker. The following practices must be used:

1. See that the rack is in the cooker before putting in the jars.
2. Have 2 inches of water in the cooker unless the directions with your cooker call for more.
3. Put in the filled jars, with lids adjusted according to directions, and place so they do not touch each other or the sides of the cooker.
4. Place the lid on the cooker so the arrow on the cooker matches the one on the lid. Leave the pet cock open.
5. Fasten the cover on according to the directions for the kind in use. The kind that is fastened down with lugs must have opposite lugs screwed down evenly and all lugs must be fastened steam tight. CAUTION: This does not mean as tight as a very strong person can get it.
6. When steam is escaping from the pet cock, begin counting time and let steam escape for 10 minutes. Write down time steam begins to escape and when the pet cock should be closed.
7. Close the pet cock and bring the pressure up to desired point. Write down time pressure reaches desired point and time to stop cooking.
8. Keep the pressure at the desired point for the required length of time, then set the cooker back or off the stove and let the pressure go down gradually. This aids in retaining the liquid in the jars.

Note: Set cooker on a board.

9. When the pressure is down to zero very cautiously start to open the pet cock, but close it again for a few minutes if steam is escaping. When no steam is escaping, open the pet cock slowly and after you are certain all the steam is condensed and the cooker is filled with air, open the cooker. It is best to lift the lid off by lifting the back part up before the part toward you to avoid the danger of having steam burn the hands or face.
10. It is best to leave the jars in the open cooker until the bubbling has nearly ceased. Then the jars should be taken out carefully to avoid breaking, and sealed. Use a heavy dry cloth to lift the jars out to avoid burning your hands. Place the jars on a dry cloth away from drafts. Complete the seal on the screw and glass top jars but do not disturb the lid on the self-seal jars.

Care of pressure cooker. Wash carefully after use, but do not put the lid in water. If the lid is wiped as soon as it is removed from the cooker it will need no further care, except to see that the pet cock is clean, dry, and free from rust. If there is a safety valve as well as a pet cock, see that it is also clean and free from rust.

The cooker should not be closed tight for storage or it may develop a musty odor. Follow any special directions for the care of the cooker given by the manufacturer.

The steam gauge should be tested every year before the canning season begins. Your county extension agent will take care of this for you.

CANNING VEGETABLES*

The steps in vegetable canning up to a certain point are like the steps in the canning of fruit. The same care must be taken in selecting, testing, washing, and heating the jars and rubber rings and even greater care must be used in selecting fresh products in their prime.

It is necessary to make a wise choice in the matter of selecting the vegetables to be canned. Naturally it is a waste of time, effort, and fuel to can a vegetable that can be kept perfectly all winter in the ground or a root cellar. Also it is undesirable to can so many of the summer vegetables that the family cannot eat all of them they care for while they are fresh. A garden authority says that in many parts of Oregon we should be able to have at least five kinds of vegetables from our gardens any day in the year.

* This section is taken from Farmers' Bulletin 1762, *Home Canning of Fruits, Vegetables, and Meats.*

Vegetable canning is of real value, however, in that it makes possible the saving of the garden surplus and prolongs the season for the summer vegetables every one likes so much. Peas, string beans, spinach and other greens, asparagus, tomatoes, green lima beans, and sweet corn are the most generally canned vegetables. Peas, string beans, asparagus, greens, sweet corn may be frozen if desired. Baby beets and baby carrots are also delicious and worth while if canned at the time the rows of these vegetables have to be thinned.

In some parts of Oregon where no vegetables grow during the cold weather, it is advisable to can such vegetables as spinach and similar greens. Canning of cabbage, turnips, parsnips, onions, large carrots, and beets is not common and certainly is not to be recommended.

Root vegetables and such vegetables as grow near the ground must be washed thoroughly until every trace of soil is gone. The most dangerous bacteria and those most difficult to kill are in the soil. A wire basket is a help in washing but should not be loaded too heavily. Always lift the material out of the water rather than pour the water off.

The vegetable is next prepared as if it were to be cooked for the table and then the Hot Pack method is recommended.

DIRECTIONS FOR PREPARING AND PROCESSING NONACID VEGETABLES

Asparagus. Asparagus for canning must be fresh and tender. Pick over carefully, discard any imperfect pieces, sort according to size, and wash thoroughly. Tie in uniform bundles, place in a saucepan, with boiling water over the tough lower portion only, cover tightly, and boil for 4 to 5 minutes; or cut in half-inch lengths, add enough water to cover, and boil for 2 minutes in an uncovered vessel. Pack boiling hot into containers, add the water in which boiled, and 1 teaspoon of salt to each quart, have produce and liquid come to within 1 inch of the top of the jar. Adjust the lid and process immediately at 10 pounds pressure, or 240° F., quart glass jars for 40 minutes, pint glass jars for 35 minutes.

String beans. Pick over carefully, string, wash thoroughly, and cut into pieces of desired size. Add enough boiling water to cover and boil for 5 minutes in an uncovered vessel. Pack in containers boiling hot, cover with the water in which boiled, and add 1 teaspoon of salt to each quart. Have liquid and beans come to within 1 inch of the top of the jar. Process immediately at 10 pounds pressure,

or 240° F., quart glass jars for 40 minutes, pint glass jars for 30 minutes.

Lima beans. Only young and tender lima beans should be canned. The older ones may be dried successfully. For the young, tender ones use the method suggested for peas. Process the hot-packed beans immediately at 10 pounds pressure, or 240° F., in quart glass jars for 60 minutes, pint glass jars for 55 minutes.

Baby beets. Only young, tender beets should be canned, and the turnip-shaped varieties make a more attractive product. Wash thoroughly and scald in boiling water or steam for about 15 minutes until the skins slip easily. Leave on at least 1 inch of the stems and all of the roots during this cooking to prevent bleeding. Slip off the skins, fill into the containers, add 1 teaspoon of salt to each quart, and fill with hot water. Process immediately at 10 pounds pressure, or 240° F., quart glass jars for 40 minutes, pint glass jars for 35 minutes.

Corn. The garden varieties of corn are the best for canning. They should be gathered about 17 to 25 days after silking, the exact time depending upon variety and season. Shuck, silk, and clean carefully. Cut from the cob without precooking. Add half as much boiling water as corn by weight, heat to boiling, add 1 teaspoon of salt and 2 teaspoons of sugar to each quart, and fill boiling hot into containers. Process immediately at 10 pounds pressure, or 250° F., quart glass jars for 80 minutes, pint glass jars for 75 minutes.

Greens, including spinach. Pick over the greens, discarding any imperfect leaves and tough, fibrous stems. Wash carefully in running water or through a number of waters, lifting the greens out each time. Steam or heat the greens in a covered vessel until completely wilted, adding in the latter case just enough water to prevent burning. Pack boiling hot into the containers, taking care that the material is not packed too solidly and that there is sufficient liquid to cover, adding boiling water if necessary. Add 1 teaspoon of salt to each quart. Process immediately at 10 pounds pressure, or 240° F., pint glass jars for 60 minutes.

Peas. Use only young, tender peas. Shell, discarding any imperfect peas, and wash. Bring to boil in water to cover. Pack boiling hot into the containers, and add 1 teaspoon of salt to each quart. Process immediately at 10 pounds pressure, or 240° F., quart glass jars for 50 minutes, pint glass jars for 45 minutes.

Because peas are so tender they are really better frozen than canned so those who have a frozen food locker should save space for peas.

Note: Very tender young peas tend to become mushy when canned in quarts.

Note: Peas may be graded by putting them into cold water to which a handful or two of salt has been added. The tenderest peas will float. A second grading may be used by adding more salt to the vessel when the next best peas will come to the surface.

Timetable for Canning Nonacid Vegetables With the Pressure Cooker

Pack vegetables as nearly boiling hot as possible, using additional boiling water if necessary. Add 1 teaspoon of salt to each quart for all vegetables, and 2 teaspoons sugar, if desired, to corn. Place jars in hot cooker as soon as they are filled.

Boil all home canned vegetables 10 minutes before tasting.

Product	Method of treatment before processing	Processing period in pressure cooker at 10 pounds pressure (240° F.)	
		Pint glass jars	Quart glass jars
		Minutes	*Minutes*
Asparagus	Hot pack	35	40
Beans, string	Hot pack	35	40
Beans, Lima	Hot pack	55	60
Baby Beets	Hot pack	35	40
Baby Carrots	Hot pack	35	40
Corn	Hot pack	75	80
Greens, including spinach	Hot pack	60	....
Peas	Hot pack	45	....
Pumpkin and Squash	Hot pack	70	....

EXAMINATION OF CANNED FOOD BEFORE USE

It is important that all canned food be carefully examined before using. Spoilage is frequently indicated by the exterior of the can or jar. In glass jars the cover, if of metal without porcelain lining, should be firm and flat or curved slightly inward. There should be no sign of leakage around the rubber ring or elsewhere. The contents should appear sound, and the liquid should be no more cloudy than when the material was first canned.

When the can is opened there should not be any sudden outrush of air or spurting of liquid. Smell the contents at once. The odor should be characteristic of the product. Any "off" odor probably indicates spoilage.

The two types of spoilage most frequently occurring are "swells" and "flat-sours." Both these are easily distinguished, the swells by the outrush of gas, and the flat-sours by the sour odor. A third type of spoilage, that due to the presence of *Bacillus botulinus*, is more difficult to detect. If the spores of this bacterium are not killed during canning but germinate in the closed container, a toxin or poison is formed that is very deadly. In some cases this organism may develop and form this poison with very little indication of spoilage in the food, and **death has resulted from even a taste to determine whether the product was suitable for use.** When present in small quantities, this toxin is destroyed by boiling, and it is therefore recommended that all canned vegetables and meats be boiled for at least **10 minutes before they are tasted.** In case the liquid in the container is not sufficient to cover the product, add boiling water. Smell the hot food carefully, since boiling brings out odors not noticeable in cold canned food. If any liquid from the jar is on the hands, wash them immediately with soap and water.

Canned products showing signs of spoilage should always be destroyed. If the botulinus toxin should be present, it will poison animals as well as human beings; therefore every precaution should be taken to see that any spoiled canned goods are disposed of safely. Boiling with a generous tablespoonful of lye for each quart will destroy both toxin and bacteria, after which the product should be buried so deep it cannot be scratched up by chickens or dogs.

CANNING MEAT

An excellent publication on canning meat that is the result of recent experimental work, gives such clear directions step by step that a copy of it accompanies this bulletin. If the club member is not canning meat, perhaps her mother will welcome the information.

DRYING AND FREEZING

Also included in this mailing are two Oregon State College bulletins, one on drying and the other on freezing; therefore no directions for these processes are included in this bulletin.

JELLY MAKING

Fruit juice contains a large amount of water, smaller quantities of flavoring substances, some sugar, fruit acids, and what is known as pectin. It is the pectin that causes the juice to jell, provided there is enough acid present.

Certain fruits such as partly ripened grapes, sour apples, currants, huckleberries, raspberries, blackberries, and crabapples, are

rich in both pectin and acid, and are therefore excellent for jelly making.

Very sour fruits, such as sour cherries, are lacking in pectin and used alone do not make good jelly.

Very sweet fruits, such as peaches, pears, and sweet apples, have not enough acid to jell, although they are rich in pectin.

It is possible to make good jelly from those fruits that are lacking in acid by combining the juice with just enough lemon juice to make the juice about as acid as sour apples and then proceeding as for juice having enough acid.

When pectin is lacking, combine the juice with apple juice, using as much as half and half.

It is not a good plan to bottle apple juice in the late fall as the early apples make the best jelly.

Preparation of juice. In case of very juicy fruits, such as berries and currants: Wash the fruit. Put in pan, adding just enough water to prevent burning. Cover and cook slowly, stirring occasionally with a wooden spoon. Cook until the fruit is tender. Crush slightly with a wooden spoon just sufficiently to break the skin.

Pour the mash into a jelly bag or a square of cheesecloth doubled. Some people use canton flannel, which makes the juice very clear and sparkling. Let the juice drip but do not squeeze or press the juice out. The pulp may then be returned to the kettle, water added and the whole again boiled, and again allowed to drip. This second extraction may be added to the first, but the jelly will not be as sparkling clear as that made from only the first extraction.

Less juicy fruits such as apples, crabapples, and quinces should be washed and cut up but not peeled or cored. Enough water to cover the fruit is put on and the whole covered and cooked slowly until the fruit is tender. Mash thoroughly and strain through a jelly bag.

From this point the work should be done rapidly.

For currants and grapes boil the juice 4 to 5 minutes and to each cup of juice add 1 cup of sugar; continue boiling 4 or 5 minutes longer or until the jellying point is reached.

Test for jellying by taking a little of the hot sirup in the spoon. If when the drops come together it will sheet or break off as it drops back into the kettle, the jellying point has been reached.

Note: There is a little instrument on the market that makes jelly making more certain. If you are interested we can supply you with its name.

Heating the sugar in the oven will help in making good jelly.

Blackberries and apples require more boiling—10 to 12 minutes before adding the sugar; but they require only $\frac{3}{4}$ cup of sugar to one cup of juice.

The exact amount of sugar necessary depends entirely on the amount of acid and pectin in the juice. Too little sugar makes tough jelly, too much sugar makes a sirupy mass that no amount of cooking will jell. Where too much sugar has been used, more juice can be added and good jelly obtained, provided too much time was not used in trying to make the sirup jell.

Ideal fruit jelly.

1. Beautifully colored.
2. Transparent.
3. Tender.
4. Will quiver, not flow.
5. Palatable.
6. Cuts easily with a spoon.
7. Flavor characteristic of the fruit from which it is made.
8. Firm enough so that the angle formed by cutting will have sharp edges.
9. Not brittle but will break with a distinct cleavage.

PICKLES AND RELISHES

Nearly everyone enjoys a bit of pickle or relish with meat. If not too highly spiced and if eaten in moderation, pickles and relishes are excellent in the diet.

SUGGESTIONS FOR PICKLING

1. Never use a poor grade of vinegar, fruits, vegetables, or spices. Fruits and vegetables should be fresh, crisp, and unbruised. Leave on at least one-half inch of the stem when the whole cucumber is used.

2. In using vinegars it should be remembered that there is a great difference in their acidity. Vinegar should be diluted if too sour. If diluted too much the pickles will become soft from fermentation. If boiled too long vinegar loses its strength. Pickles heated too long in vinegar become soft from overcooking. If hot vinegar is poured over pickles or if too much sugar is used, they become shriveled.

3. Spices should be used in moderation. The spice flavor should not conceal the flavors of the main ingredients. Tie the spices in a cloth bag so that they may be removed when the vinegar is sufficiently spiced. If spices are boiled with vinegar for any length of time a bitter flavor develops.

4. A few pieces of horseradish leaves added to vinegar will prevent formation of scum.

5. Grape leaves added to cucumbers impart a bright green color and characteristic flavor. The color may also be brightened by pouring the vinegar over the cucumbers while cold and heating gradually to boiling.

6. Glassware receptacles are best for storing pickles. Use jars with glass lids as the pickling solution is injurious to metal tops. Vinegars sometimes act upon the glazing of earthenware jars, forming unwholesome products.

7. The receptacle in which pickles stand during the making should be carefully covered with cloth to exclude harmful organisms.

HOW TO AVOID SHRIVELED, SOFT, OR HOLLOW PICKLES

Shriveling. Avoid using too much salt or sugar, use 1⅔ cups salt to a gallon of water. If a very sweet or sour pickle is wanted, the strength of the solution may be increased after a few days.

Softening results from too weak a brine. Use brine given under shriveling.

Hollow pickles are caused by using cucumbers that have been gathered too long before brining.

RECIPES

Sweet cucumber pickles. Wash cucumbers carefully and soak them over night in salt brine (a pound of salt to five quarts of water). Take cucumbers out of this carefully so as not to break them and plunge them into clear, cold water. Wipe them and arrange in jars. Heat the following to the boiling point and pour over the cucumbers:

1 quart vinegar — 4 pounds brown sugar
¼ ounce whole cloves — ¼ ounce stick cinnamon
1 ounce mustard seed

Seal at once. These should not be used before the end of two weeks.

Mixed pickles. 1¾ lb. green tomatoes; 1¾ lb. ripe tomatoes; 3 bunches celery (medium); 3 onions (medium); 3 red peppers; 3 green peppers; 1 head cabbage (medium); ½ cup salt; 1 large cucumber. Chop and let stand overnight. Drain. Fill jars. Bring the following mixture to the boiling point: 1 qt. vinegar; 1 lb. sugar, 1 teaspoon mustard seed, 1 teaspoon pepper, 1 teaspoon celery seed. Cover pickles and seal.

—Taken from Circular 83, New Mexico

Piccalilli. Chop together 8 quarts of green tomatoes, a head of cabbage, eight large onions, and three red or green peppers. Add a

cupful of salt and let the mixture stand over night. In the morning drain off the liquid, add two quarts of vinegar, one pound of brown sugar, a quarter of a pound of mustard seed, two tablespoons of cinnamon, two tablespoons of ground black pepper, a quarter of a teaspoon of cayenne pepper, and a bag containing a tablespoon of cloves, a tablespoon of allspice, and two tablespoons of ginger. Boil the mixture for thirty minutes, stirring it frequently to prevent scorching, and seal the piccalilli in glass jars.

—Taken from Ball Blue Book

Cucumber oil pickle. Slice fifteen medium-sized cucumbers thin without paring them, place them in a large jar with alternate layers of salt, and let them stand all night. In the morning rinse them and pour over them a mixture of one-fourth teaspoonful of pulverized alum dissolved in a little vinegar, one cupful of olive oil, one-quarter pound of whole black mustard seed, one-eighth pound of white mustard seed, and one and one-half teaspoons of celery seed. Place the mixture in glass jars and fill them to overflowing with cold vinegar. Slice a few onions, place them in ice water for three hours, add a few slices to the top of each jar and seal the jars.

Indian relish. Chop fine 8 quarts of ripe tomatoes, drain them and add three cups of chopped celery, two cups of chopped onions, and half a cup of salt. Let the mixture stand two hours; then add two pints of vinegar, three cups of brown sugar, one-half cup of white mustard seed, two red peppers chopped fine, one tablespoon of ground cinnamon, one tablespoon of allspice, and one-half tablespoon of cloves.

Mix the ingredients well and seal the relish in glass jars without cooking.

—Taken from Ball Blue Book

Sweet green tomato pickles. Mix together 8 quarts of green sliced tomatoes, six large sliced onions, and one cup of salt. Let the mixture stand over night, and in the morning drain off the liquid. Boil the mixture for five minutes in two quarts of water and one quart of vinegar. Drain it again. Boil for fifteen minutes four quarts of vinegar, one quart of brown sugar, one tablespoon of ground mustard, one tablespoon of cloves, two tablespoons of cinnamon, two tablespoons of ginger. Put the drained tomatoes and onions in glass jars, pour over them the boiling liquid and seal the jars at once.

—Taken from Ball Blue Book

Oil pickles. 100 cucumbers, 3 to 4 inches long; 25 medium onions; 1½ cups of oil (olive oil, corn or cotton-seed oil or peanut);

1½ tablespoons white mustard seed; 4 tablespoons celery seed; 4 quarts vinegar; 1 cup salt. Slice cucumbers very thin. Do not peel. Into a jar put a layer of cucumbers, a layer of salt, and a layer of onions until all are used. Weigh and let stand for three hours; then turn into a cheesecloth and drain for two hours or until well drained. Pack in glass jars and pour over the dressing of oil, seeds, and vinegar. Seal. Do not cook.

—University of Illinois, Extension Bulletin on Pickles.

Sweet pickled peaches. 4 quarts of peaches; 2 pounds brown sugar; 1 ounce stick cinnamon; few cloves; 1 pint vinegar. Remove skins from peaches by dipping in boiling water for one and one-half minutes. Drain. Stick cloves into peaches. Make a sirup by boiling the sugar, vinegar, and cinnamon for 20 minutes. Add only one-half of the peaches at the beginning and cook until soft. Remove from sirup and put into jars. Repeat for the other half of the peaches. Fill the jars with hot, diluted vinegar and seal.

—University of Illinois, Extension Bulletin on Pickles.

Tomato catsup. 1 gallon tomato juice; 1 quart cider vinegar; 1 pound brown sugar; 4 ounces salt; 1 ounce whole peppercorns; 1 ounce whole spice; ½ ounce whole cloves; ½ ounce whole ginger; 1 ounce ground mustard. Add the other ingredients to the tomato juice, tying the whole spices in a piece of cheesecloth. Simmer for 1½ hours. Bottle and seal.

—*Selection and Preparation of Food* by Bevier.

Chili sauce. 12 ripe tomatoes; 1 red pepper; 1 green pepper; 1 large onion; 2 cups vinegar; 1 cup brown sugar; 1 tablespoon salt; 1 teaspoon whole allspice; 1 teaspoon cinnamon; 1 teaspoon ground nutmeg; 1 teaspoon ground ginger. Remove skins from tomatoes and chop with the peppers and onions. Add the vinegar and spices and bring to a boil. Stir to prevent burning. Boil until sauce begins to thicken (about 1 hour). Pour the chili sauce into hot jars and seal it at once.

—University of Illinois, Extension Bulletin on Pickles.

Corn relish. 18 ears corn; 1 pepper, ground or chopped; 2 teaspoons mustard; ¾ cup sugar; 4 onions, ground; 1 quart vinegar; 1 cabbage, sliced very thin. Cut corn from cob, mix with other ingredients and cook for 30 minutes. Put into hot jars and seal.

Mustard pickles. 1 pint small cucumbers; 1 pint large cucumbers, sliced; 1 pint pickling onions; 1 cup string beans, cut diagonally into 1-inch pieces; 1 pint small green tomatoes cut in halves or quarters; 1 pint cauliflower cut in small pieces; 3 red peppers, chopped; 3 green peppers chopped; 1 cup small or sliced carrots. The whole

cucumbers should not be longer than two inches. All the vegetables should be tender. Soak all the vegetables in brine (one cup salt to one gallon of water) overnight. Drain them and soak them in clear water for three hours. Drain. Mix a sufficient amount of vinegar and water in equal quantities to cover the vegetables. Allow them to stand in this vinegar for one hour and then scald them in this liquid.

Make a dressing of the following ingredients: 1 quart vinegar; 4 tablespoons of flour; 1 cup brown sugar; 3 tablespoons of ground mustard; ½ tablespoon tumeric; 1 teaspoon crushed celery seed. Make the dressing by mixing all dry ingredients and adding this mixture to the vinegar which has been heated. Cook until smooth and thickened. Pour this dressing over the well drained vegetables. Mix well and put into clean hot jars.

Red pepper rings. Slice bright red bell peppers into rings about ¼-inch wide. Remove all seeds. Drop into hot water and boil until tender. Pack loosely into glass jars and cover with a pickling liquid made by boiling 1 quart of vinegar with 1 pound of white sugar, 1 teaspoon of salt, and a pinch of cayenne. These are very decorative to use in salads or in sandwiches.

—From Home Canning Text Book.

Of course there are many other excellent pickle recipes and you may use any of your own that you like.

DEMONSTRATIONS

A demonstration is one means of teaching others something one has learned to do. Demonstrations may be given by one person, but they are usually more interesting when presented by a team of two. Call it a "show how" if that will make it easier.

A demonstration should be on a subject that is very familiar to the members of the team giving it. Therefore, a subject should be chosen from the work required in the division carried by the demonstrators. When one member of a demonstration team is in one division and the second member is in another division, the demonstration should be chosen from the lower division.

How to prepare a demonstration—

1. Select a subject (see list, or use your own ideas).
2. Make an outline of what to do and say.
3. Decide on equipment and supplies that will be needed. (Equipment should be conveniently placed before the demonstration begins.)

4. Study the reasons for every step of the process.

5. Plan to have one team member explain the work of the other as it is being done.

6. See that the demonstration has an introduction, body, and conclusion.

7. In the introduction tell (1) who is demonstrating, (2) where from, (3) what is to be demonstrated.

8. In the body of the demonstration, give the demonstration step by step.

AN OUTLINE FOR A DEMONSTRATION

Canning Peaches

Demonstrator No. 1	Demonstrator No. 2
I. Talks 1. Introduction Who (introduce team mate before self) Where from Subject of demonstration 2. Explains work being done Selection and preparation of jars, etc. 3. Preparation of fruit 4. Making sirup (can make it for team mate).	II. Works 1. Stands quietly Acknowledges introduction 2. Prepares jars, etc. 3. Prepares fruit
I. Works 1. Packs jars 2. Puts in sirup 3. Partly seals jars 4. Puts jars in hot water bath	II. Talks 1. Explains packing jars 2. Explains putting in sirup 3. Reasons for partly sealing 4. Explains processing, gives time, etc.
I. Talks 1. Sums up demonstration 2. Asks for questions 3. If product is to come out later, announces time and invites audience to return to see it.	II. Works Sees that the product is cooking and if the time has arrived to take the jars out she can do it. She should leave the demonstration table in good order.

Note: The number of changes that should be made to keep the demonstration interesting and instructive will depend on the nature of the demonstration.

9. In the conclusion, sum up briefly what has been demonstrated.

10. Plan to have each member do part of the work and part of the talking. Sometimes it is advisable to have the one who is talking assist with the work. It will depend on the demonstration whether more than one change from talking to working should be made.

11. Use illustrative material when it will be effective.

12. Have everything ready to begin on time.

13. Learn to speak clearly and distinctly.
14. Be neat and clean in appearance.
15. Be happy for the opportunity to help others.

Little things that help to make a good demonstration—

1. Avoid chewing gum.
2. Avoid touching the hair or face.
3. Speak with confidence—know your subject.
4. Avoid memorizing a part, as this makes the demonstration mechanical.
5. If a mistake is made, correct it, don't try to cover it up.
6. Repeat the question before answering it.
7. Time yourself during practice so you won't have any reason to feel hurried.
8. Check carefully your equipment and materials before leaving home and again before beginning the demonstration.

Subjects for demonstration—

DIVISIONS I AND II.

1. Preparing jars for canning.
2. Canning a large fruit (any one fruit).
3. Canning a small fruit (any one fruit).
4. Scoring and judging canned fruit.

DIVISION III.

Any demonstration listed under Canning I and II.

5. The use of a pressure cooker.
6. Canning any nonacid vegetable using the pressure cooker.
7. Making pickles or relishes (any one kind).
8. Making jam or conserve (any one kind).
9. Making catsup.
10. Scoring and judging canned vegetables.
11. Scoring and judging pickles and relishes.

DIVISION IV.

Any demonstration listed under Canning I, II, and III.

12. Canning meat.
13. Canning fish.
14. Canning fowl.
15. Making jelly (any one kind).
16. Scoring and judging canned meat, fish, fowl, and jelly.

SCORING AND JUDGING CANNED PRODUCTS

When learning to do something new, it is always interesting and helpful to measure one's progress and skill either by comparing the work with that done by others, or by following a score card that tells what a perfect product should be.

How would you like to compare your finished products with the score cards given here?

After you have learned to score your own work well, why not score the work of some of your club friends and ask them to score yours?

Try judging to determine the best jar of any one product. After that you will be ready to take part in a judging contest where you have to place four containers of one kind of product. This is the method used in all judging contests and every club member should participate at some time in a judging contest.

SCORE CARD FOR CANNED FRUITS, VEGETABLES, AND MEATS

Texture	25
Color	25
Pack	25
Liquid	15
Appearance	10

The **texture** should be firm but tender. This can be obtained only by using products in first-class condition and cooking just the required length of time.

The **color** should be characteristic of the product canned. Fading or bleaching is often due to storing in a light place.

See page 5 for rules on fancy pack.

The **pack** should be attractive in appearance. Do not arrange in a pattern (called fancy pack), but take care in selecting pieces and putting them in the jar without crushing them and in such a manner as to fill the jar.

The **liquid** should be clear without any sediment in the bottom of the jar, and no bits of skin or other foreign matter should be in it. The liquid should come well up toward the top of the jar and be in good proportion to the quantity of product.

The **appearance** of the container is important also. The jar should be clean. It should be neatly labeled, giving the name of the product and the year of canning. The lid should be in good condition, likewise the rubber ring.

It would be a good plan to score your products from time to time for practice.

SCORE CARD FOR PICKLES AND RELISHES

Pack		10
Attractive, practical		
Liquid		10
Clear (except in mustard pickles)		
Product		45
Freedom from spoilage	10	
Color, natural, not too bright	15	
Crisp, not soft	15	
Attractive in shape	5	
Flavor		35
Characteristic of the product, not too sour, sweet, highly seasoned.		
Total		100

—*Home Economics Judging in Montana Clubs,* Circular

SCORE CARD FOR JELLY

Container		15
Well filled	5	
Thin crust of paraffin	5	
Label neat, gives necessary information, not too large	5	
Appearance		30
Color—natural fruit	15	
Clear—sparkling	15	
Flavor		15
Natural, fruity	5	
Mild	5	
Not scorched	5	
Consistency		40
Tender, cuts easily, holds shape when turned out on a plate	10	
No crystals	10	
Not sirupy or gummy	10	
No mold	10	
Total possible score		100

SCORE CARD FOR JAMS AND BUTTERS

Homogeneity, or smoothness	25
Flavor	35
Consistency and texture	30
Color	10
Total possible score	100

SCORE CARD FOR MARMALADES

Evenness of distribution of material	15
Flavor	35
Consistency and texture	25
Clearness	15
Color	10
Total possible score	100

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