Home Demonstration Division
N. C. State College
Raleigh, N. C.

Cornelia C. Morris
Extension Economist in Food
Conservation and Marketing

STRAWBERRY AND RASPBERRY PRODUCTS

Canned Raspberries

Make a syrup of one cup of sugar and one quart of water. Pack berries and hot syrup alternately into hot sterilized jars. Process fifteen minutes at boiling point. When canning raspberries in tin use the "R" or "Fruit Enamel" tin cans. Have syrup boiling hot, seal immediately and process thirteen minutes at boiling point.

Canned Strawberries

Wash berries thoroughly, but quickly. Do not allow them to stand in the water. Remove caps and measure. For every quart of berries used, add one cup of sugar. Do not add any water. Put berries and sugar into a shallow enamelware preserving kettle and bring slowly to the boiling point. Reduce the heat and let the berries simmer gently for ten minutes. Remove from stove. Cover and let stand overnight to absorb the syrup. The following morning reheat to boiling point and pour immediately into hot sterilized jars. Add enough hot syrup to cover the berries. Seal and process for five minutes at boiling point. This recipe preserves the color of the berries and they will not rise to the top of the jar.

Jam (Strawberry, Raspberry or Dewberry)

2 Quarts Berries (3 pounds) 4½ Cups Sugar (2¼ pounds)

Crush berries, add the sugar and cook until a sheet of jelly forms when poured from the side of a spoon. The jam should be stirred constantly with a wooden spoon during the cooking. When it is finished, pour immediately into hot sterilized jars and seal.

Strawberry Preserves

2 Quarts Berries (3 pounds) 6 Cups Sugar (3 pounds)

Cover the berries with boiling water for two minutes. Drain quickly and add four cups of sugar. Boil two minutes after the entire mass is bubbling. Remove from the fire and after all bubbling has stopped, add two more cups of sugar and boil for five minutes. Pour into shallow pans and let stand overnight. Next morning pack the cold preserves into hot sterilized jars, process five minutes at simmering point and seal immediately.

Simplified Methods for Home and Community Canning

To Be Used By Relief Committees

Prepared by

JANE S. McKIMMON
CORNELIA C. MORRIS

Division of Home Demonstration Work
N. C. Agricultural Extension Service
N. C. State College, Raleigh

Prepared for

NORTH CAROLINA
EMERGENCY RELIEF
ADMINISTRATION
RALEIGH, N. C.

Note: For instruction in canning non-acid vegetables and meats, see North Carolina Extension Circular No. 114.

FOREWORD

In "Simplified Methods For Home and Community Canning" the hot-water canner is recommended, as directions are given only for products that can be safely canned at boiling temperature, 212 degrees, F. This list includes only tomatoes, fruits, freshly-gathered, young, tender string beans, and a pre-cooked soup mixture containing a large proportion of tomatoes.

In communities where there are pressure canners, North Carolina Extension Circular No. 114 should be used, as this bulletin includes directions for canning meats and non-acid vegetables such as corn, peas, beans, spinach, squash, okra, etc.

Requests for Circular No. 114 should be sent to MRS. JANE S. MCKIMMON, State College, Raleigh, N. C.

HOT-WATER CANNERS

Several convenient types of canners are on the market. The simplest hot-water outfit is one to be placed on the kitchen stove. Another, more complete, has a fire box attached and is used out-of-doors. These outfits also include blanching trays, tongs for handling hot jars, and a false bottom.

The type of canner should be chosen with reference to the kind and amount of canning to be done. The small hot-water canner is the least expensive of the commercial outfits for home canning. For inexperienced people it is also more easily handled. This type of canner is preferable for canning fruits and tomatoes. They are canned safely at boiling temperature, and the texture, flavor, and color of the finished products are good.

A wash boiler, lard tin or any vessel that has a tight cover and is large enough to hold the required number of cans or jars will make a satisfactory canner, provided that it is fitted with a wooden rack or a piece of wire mesh to prevent jars from breaking by touching the bottom of the canner.

SOME THINGS TO BE OBSERVED WHEN CANNING

1. If hot-water canner is used, be sure the canner is partly filled with water before fire is built.

2. Keep the water at a jumping boil and do not allow fire to die down for an instant while cans are in the canner.

3. Keep cover on canner every moment of the boiling time. Steam plays a large part in cooking the contents of a can.

4. If possible, use two canners, one for blanching fruit and the other for canning. A large pot set over a fire will serve for blanching.

5. The quality or grade of the pack depends on the number of whole fruits or uniform pieces of fruit in the can, the color of the fruit, the weight, and the flavor.

6. The flavor is often injured by letting peeled fruit stand too long before cooking. Prepare at any one time as many cans only as can be processed immediately.

7. Let "Straight Fom Vine to Can" be the motto. Never can stale fruit.

8. Mark every tin can as it is filled with the name of its contents. A pencil may be used, as the writing will not boil off. This prevents confusion when labeling.

Use No Artificial Preservatives. Artificial preservatives in the form of "Acids," "Preserving Powders," and "Formulas" of various kinds should not be used. Some of these are injurious to health and are forbidden by the pure food laws.

The cheapest, surest, and only absolutely safe way to sterilize is by means of heat. The small amount of sugar and salt used in canning fruits and vegetables does not act as a preservative. It is added for flavor.

MEANING OF TERMS USED

Sterilizing—Boiling to destroy bacteria.

Blanching—Placing vegetables or fruits in a cotton bag or wire basket and plunging into boiling water before packing jars or cans to be processed. This improves flavor and softens product, so that more can be placed in a can.

Processing—Boiling fruits or vegetables in the jar or can.

CANNING IN GLASS

Glass jars are more economical for home canning than tin cans, as they can be used over and over again and the cost be spread over several years.

Glass jars with glass tops are preferable. When using screw top jars, new tops are preferable. Old tops should be thoroughly scrubbed and sterilized. See that wire clamps on glass top jars are in good condition before using.

Jar Rubbers.

It is important that good new rubbers be used, as the success of canning depends largely on the quality of the rubber rings used. Do not use rubbers the second time.

Sterilizing the Jars.

To sterilize glass jars, place them on a rack in the canner in tepid water. Do not fill the canner with more than three inches of water. Place cover on the canner. Bring the water to a boil and steam jars 8 minutes.

Rubbers should be sterilized by placing in a bowl of boiling water and allowing them to remain for three minutes.

Packing and Processing the Jars.

Remove the jars from the canner, prepare the fruits or vegetables, and pack them right into the neck of the jars, filling with water, brine, or syrup, as the packing proceeds. Wipe clean the rim of the jar and place the

rubber thereon. Push spring down lightly and place jar in the canner holding tepid water. Never place a cold jar in boiling water, as there is danger of breakage.

When the water begins to boil, count time. Consult the recipe, noting the exact number of minutes, and never cut this time short. Have a clock handy and do not guess at time.

Leave the jars lightly sealed during the whole processing, and when the time is up, remove one at a time from the canner, seal tightly, turn jars upside down, and set aside. **After screw top jars cool, do not tighten tops again as the seal will be broken and contents will spoil.**

CHECKING UP RESULTS

Mark all canned products that those in each batch can be distinguished. Examine the glass jars for signs of leakage. Hold canned products for a week or ten days, where they can be examined at least once a day to be sure that they are keeping. If the contents of any jars or cans show signs of spoilage, examine all of that lot carefully. After this store the canned goods.

CANNING IN TIN

Tin Cans.

Sanitary cans with an opening as large as the top of the cans should be used.

The No. 3 can is popular for tomatoes, peaches, etc., and holds a quart. No. 2 can is the next size smaller, and is used generally for peas, corn, soup mixture, etc. No. 10 is the so-called gallon, but holds slightly less.

Wash and sterilize all cans which are to be used. Place them in a canner where water is boiling. Let them remain ten minutes. Remove and turn upside down on clean surface until used.

After fruit or vegetables are blanched, pack them in sterilized cans until the can is filled to about one-quarter inch of the top. Begin to pack firmly with spoon when first bit of fruit or vegetable is put into a can, pressing down gently until the can is filled. Add hot brine or syrup as packing proceeds. Tomatoes must have no water added. There will be sufficient juice to fill crevices.

After the can has been sealed, it is ready for the processing. Processing is sterilizing by cooking continuously for a given length of time. Place cans for processing in trays and lower into the boiling water. The temperature of the water will then be reduced. Wait until boiling begins again before processing time is counted. Keep the water boiling every minute of the time during processing and remove cans promptly when time is up. Have a clock or watch at hand. Do not guess.

CANNING FRUITS AND BERRIES IN GLASS AND TIN

Dewberries, Blackberries and Raspberries.

To can dewberries, blackberries and raspberries, the following method will prove satisfactory: Gather berries when ripe but firm. Place in muslin sack and plunge into boiling water one minute (blanch). This will slightly soften the berries and allow the packing of almost twice as many in a can or jar. It will also prevent the condition where berries rise to the top of the jar.

Pack the sterilized can to within one-quarter inch of the top with berries. Fill glass jars quite full. Fill the spaces and cover the berries with a syrup made of one gallon of water and one pint of sugar.

The flavor of all canned berries is finer when syrup or sugar is added.

Process the filled No. 3 tin cans 8 minutes.

Process the filled quart glass jars 13 minutes, permitting jars to remain lightly sealed while processing. Lift jars from the canner and seal tightly immediately.

Canned strawberries do not make a very attractive product. They shrink badly and lose their color. If they are canned, the recipe for blackberries may be followed.

Huckleberries.—Huckleberries should be canned just as blackberries. Care should be taken that they are well stemmed and perfectly clean before blanching.

Huckleberries should be canned in glass jars as the acid will eat through the seams of a plain tin can.

Peaches.—Peaches should be selected when they are fully ripe and of a uniform size and color. Never pack fruit of varying colors in the same jar.

Peeling Peaches.—When semi-cling peaches, such as the Elberta, or a soft peach is canned, they may be peeled by first plunging into boiling water and then into cold water. It is difficult to peel ripe soft peaches without dipping.

After peeling, cut peaches into halves and remove the pit. Have ready a boiling syrup of 1 pound and 14 ounces of sugar and 1 gallon of water. Add a few cracked peach pits to the boiling syrup to improve the flavor and remove when syrup is cold. Drop peaches into boiling syrup one-fourth at a time, allowing them to cook for 1 minute, or until tender but not soft.

Place in jars in overlapping layers with the pit side down and the stem end towards the center of the jar. Add syrup bit by bit when packing.

Process a quart jar 25 minutes.

Process No. 3 can 20 minutes.

Canned Apples.—Late fall and winter apples which are slightly acid are best for canning. Peel, cut, and drop into a brine made of 2½ ounces of salt and 1 gallon of water. Cook in syrup made of one pound and fourteen ounces of sugar and one gallon of water.

Process No. 3 cans 8 minutes.

When canning apples in glass, process quart jars 15 minutes.

It is advisable to make mellow summer apples into apple sauce. Pour sauce hot into quart jars and process 15 minutes.

Canned Pears.—The Bartlett pear is best for canning. Select ripe, sound, medium-sized fruit (cut in halves, or if large in quarters). Remove all the hard portions around the seed and dip in brine similar to that used for apples to prevent discoloration.

Plunge the halves or quarters into boiling syrup and allow them to cook until they can be pierced with a straw, remove and pack closely in a No. 3 can or quart jar. Cover with a boiling syrup made of 3 pounds and 9 ounces of sugar and 1 gallon of water.

Process No. 3 can 20 minutes.

Process quart jar 25 minutes.

Canned Cherries.—Cherries are usually canned without the seed, and should be put in glass jars. Large wax cherries are often canned whole. They should be blanched for 1 minute.

Pack seeded or whole cherries in jar to within one-quarter inch of top, fill jar with syrup made of 3 pounds and 9 ounces sugar and 1 gallon of water.

Process quart jars 30 minutes.

Process pint jars 20 minutes.

Fruit may be successfully canned without the use of sugar; and when there is a scarcity, it is sometimes necessary. Sugar is not used to preserve the fruit, but to bring out the flavor and inprove the taste. Even a small amount of sugar will greatly improve flavor.

CANNING VEGETABLES IN GLASS AND TIN

Canned Tomatoes.—Select only ripe tomatoes for canning.

Blanch for one minute. The skin may then be removed easily. Do not peel any more than may be immediately canned, as tomatoes ferment quickly.

Be careful to remove hard part of tomato with sharp knife at stem end.

Pack into cans as many whole tomatoes as possible, cutting them only when they are too large to slip in. Fill can to within one-quarter inch of top, press gently and shake down fruit to fill crevices.

A level teaspoonful of sugar and a level teaspoonful of salt added to a No. 3 can or a quart jar of tomatoes improve the flavor of the product.

Use no water with tomatoes. If the can is properly filled the juice will be sufficient.

Process No. 3 tin cans 22 minutes.

When canning tomatoes in glass jars, fill quite full and process quart jars 25 minutes.

String Beans.—To can string beans, select those that are young and tender and which have few strings. The Green Pod Stringless is a good variety. If the beans are gathered when young and tender, and the strings removed, a good product results. Snap the beans at both ends, string, and place in a thin cotton bag, and dip in boiling water from 3 to 5 minutes. This improves the flavor of the beans and allows more to be packed in a can. Pack closely to within one-quarter inch of the top, and fill with hot water. Add 1 level teaspoonful of salt.

Process No. 3 cans 1 hour and 15 minutes.

Beans should be canned the same day they are gathered. "Straight From the Vine to the Can" should be the motto.

Old beans necessitate processing with steam pressure.

When canning string beans in glass jars, process quart jars 1 hour and 25 minutes.

Soup Mixture.—Corn, butterbeans, and okra are difficult to can in a hot-water canner without spoiling unless they are combined with tomatoes, as the acid in tomatoes helps to destroy the bacteria. Therefore, it is recommended that these products be made into soup mixture unless a pressure cooker is available.

Five quarts tomatoes, 2 quarts corn, 2 quarts okra or lima beans, 2 tablespoonfuls sugar (level), 2 tablespoonfuls salt (level). Scald and peel tomatoes, cutting out green or hard spots. Chop and measure. Cut young and tender field or sugar corn from cob. Slice okra in rings one-half inch thick. Place all in open agate kettle and boil until

thick. Pour into No. 2 cans while hot, seal, and process 1 hour and 15 minutes. Process No. 3 can 1½ hours.

Use an asbestos mat under the kettle when boiling soup mixture and stir constantly. It is very easily scorched.

When canning soup mixture in glass jars, process quart jars 1½ hours. Process pint jars 1 hour.

Sauerkraut.—For making sauerkraut in the home, 4, or 6-gallon stone jars are considered the best containers unless large quantities are desired, in which kegs or barrels may be used.

Select only mature, sound heads of cabbage. After removing all decayed or dirty leaves, quarter the heads and slice off the core portion. For shredding, one of the hand-shredding machines which can be obtained on the market is much the best, although an ordinary slaw cutter or a large knife will do.

In making sauerkraut the fermentation is carried out in a brine made from the juice of the cabbage which is drawn out by the salt. One pound of salt for every 40 pounds of cabbage makes the proper strength of brine to produce the best results. The salt may be distributed as the cabbage is packed in the jar or it may be mixed with the shredded cabbage before being packed. The distribution of 2 ounces of salt with every 5 pounds of cabbage probably is the best way to get an even distribution.

Pack the cabbage firmly, but not too tightly, in the jar or keg. When full, cover with a clean cloth and a board or plate. On the cover place a weight heavy enough to cause the brine to come up to the cover.

If the jar is kept at a temperature of about 86 degrees F., fermentation will start promptly. A scum soon forms on the surface of the brine. As this scum tends to destroy the acidity and may affect the cabbage, it should be skimmed off from time to time.

If kept at 86 degrees F., the fermentation should be completed within 10 days.

A well-fermented sauerkraut should show a normal acidity of approximately plus 20, or a lactic acid percentage of 1.8.

After fermentation is completed, set the sauerkraut in a cool place. If the cabbage is fermented late in the fall, or if it can be stored in a very cool place, it may not be necessary to do more than keep the surface skimmed and protected from insects, etc., otherwise it will be necessary to resort to one of the following measures to prevent spoilage.

(1) Pour a layer of hot paraffin over the surface, or as much of it as is exposed around the cover. Properly applied to a clean surface, this effectually seals the jar and protects the contents from contamination.

(2) After the fermentation is complete, pack the sauerkraut in glass jars, adding enough of the "kraut" brine, or a weak brine made by adding an ounce of salt to a quart of water, to completely fill the jars.

The second method is much to be preferred to the first. If it is heated before sealing in a water bath until the temperature of the center of the jar is about 160 degrees F., and then stored in a cool place, sauerkraut packed in this way will keep in good condition for a year or longer.

In the commercial canning of sauerkraut, where conditions and length of storage can not be controlled, heat must always be used.

SPECIAL DIRECTIONS TO BE FOLLOWED IN THE MOUNTAIN SECTION OF NORTH CAROLINA

When canning in a hot-water canner the temperature of water does not go beyond the boiling point (212 degrees F.) at sea level. The boiling point of water depends upon the atmospheric pressure which changes with altitude. Water boils at approximately two degrees lower for every 1000 feet above sea level, therefore, it is necessary to cook products longer in high altitudes, as the lower temperatures will not sterilize as readily as the sea level boiling point. As an example: In Madison and Avery Counties at an altitude of 3,000 feet above sea level, water will boil at 206 degrees F., which is six degrees lower than boiling point at sea level.

If the altitude is more than 1,000 feet above sea level, use the following time table for canning:

Tomatoes: No. 3 tin can—Process 27 minutes.

Tomatoes: Quart glass jar—Process 30 minutes.

String Beans: No. 3 tin can—Process 1 hour and 38 minutes.

String Beans: Quart glass jar—Process 1 hour and 50 minutes.

Soup Mixture: No. 2 tin can—Process 1 hour and 30 minutes.

Soup Mixture: No. 3 tin can—Process 1 hour and 50 minutes.

Soup Mixture: Quart glass jar—Process 1 hour and 50 minutes.

Berries: No. 3 tin can—Process 10 minutes.

Berries: Quart glass jar—Process 16 minutes.

Peaches: No. 3 tin can—Process 25 minutes.

Peaches: Quart glass jar—Process 30 minutes.

Apples: No. 3 tin can—Process 10 minutes.

Apples: Quart glass jar—Process 16 minutes.

Pears: No. 3 tin can—Process 25 minutes.

Pears: Quart glass jar—Process 30 minutes.

Cherries: Quart glass jar—Process 35 minutes.

Cherries: Pint glass jar—Process 25 minutes.

Altitude does not affect the temperature in a steam pressure cooker.

September, 1929 (Revisal and Reprint) Extension Circular No. 114

CANNING FRUITS AND VEGETABLES

NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING
AND
U. S. DEPARTMENT OF AGRICULTURE, CO-OPERATING
N. C. AGRICULTURAL EXTENSION SERVICE
I. O. SCHAUB, *Director*
STATE COLLEGE STATION
RALEIGH

DISTRIBUTED IN FURTHERANCE OF THE ACTS OF CONGRESS OF MAY 8 AND JUNE 30, 1914.

INTRODUCTION

The bulletin on CANNING FRUITS AND VEGETABLES was originally intended for the use of the North Carolina Home Demonstration Club members, but the demand from those outside the clubs for the methods and recipes has been so great that a sixth edition is necessary. To all regulations and standards given, the club members are expected to conform.

The purpose is to establish a uniform standard for canned products throughout the State.

Perhaps it would not be amiss to say here that there is not one unnecessary step taken in grading, packing, and processing fruits and vegetables to insure safe-keeping, and I would strongly advise any person canning for home use to adhere strictly to the standards here given that the percentage of spoils may be reduced to a minimum.

Mrs. Cornelia C. Morris has rendered valuable assistance in the revision of CANNING FRUITS AND VEGETABLES and is due credit for the preparation of the directions on canning meats.

JANE S. MCKIMMON,
Assistant Director of Extension,
State Home Demonstration Agent.

THE CANNING OF FRUITS AND VEGETABLES WITH 4-H RECIPES

SIXTH EDITION

JANE S. MCKIMMON
State Agent in Home Demonstration Work

CANNING SUPPLIES

It is the part of wisdom when deciding to can in tin or glass to order supplies early and to be in readiness when the fruit or vegetables ripen.

Cans.—In ordering tin cans the best are none too good. Always stipulate that they shall be twice dipped, as leaks may occur with the cheaper ones.

Sanitary Cans.—This can has an opening as large as the top of the can and is very easily packed. It is almost universally used.

The No. 3 can is popular for tomatoes, peaches, etc., and holds a quart. No. 2 is the next size smaller, and is used generally for peas, corn, soup mixture, etc. No. 1 is the size used for pimientos. No. 10 is the so-called gallon, but holds slightly less.

TYPES OF CANNERS

The Hot-Water Canner.—There are many excellent types of hot-water canners. They should have closely-fitting tops, as steam plays an important part in the sterilization of cans.

A type of cast-iron steam-pressure Canner. Will carry 30 pounds of pressure.

Hot-Water Canner.—Several convenient types of portable canners are on the market. The simplest hot-water outfit is one to be placed on the kitchen stove. Another, more complete, has a fire box attached and is used out-of-doors. These outfits also include blanching trays, tongs for handling hot jars, and a false bottom.

The type of canner should be chosen with reference to the kind and amount of canning to be done. The small hot-water canner is the least expensive of the commercial outfits for home canning. For inexperienced people it is also more easily handled. This type of canner is preferable for processing fruits and tomatoes. They are canned safely at boiling temperature and the texture, flavor, and color of the finished products so processed at this temperature are superior to those which have been subjected to the higher temperatures.

Steam-Pressure Canner.—The steam-pressure canner is constructed of strong material and is provided with a tightly-fitting lid, which when clamped in place makes it possible to hold steam under pressure and obtain a correspondingly high temperature. It has a steam gauge attached to the lid. This attachment registers the temperature and the corresponding number of pounds pressure. Since the steam canner is made of very heavy material, a greater degree of heat is required to bring up the temperature quickly.

The steam pressure canner is recommended for all non-acid vegetables, meats and sea foods.

DIRECTIONS FOR USING PRESSURE CANNER

Pour boiling water into the canner until the level is just below the rack that holds the jars. Be sure that there is enough to prevent boiling dry during processing.

When the canner has been filled, adjust the cover and fasten securely. In case the cover is fastened by several clamps fasten moderately tight those oposite each other, one pair at a time; then go back over the whole set and tighten each pair.

See that no steam escapes anywhere except at the pet cock.

Allow the pet cock to remain open until steam escapes from it in a steady stream for at least 3 minutes, indicating that no air remains inside, then close the pet cock.

Allow the pressure to rise until the gauge registers the pressure that indicates the desired temperature.

Count time from the moment the desired temperature and pressure are reached.

Maintain a uniform pressure during the processing period by regulating carefully the source of heat. Fluctuations in pressure, as from 10 pounds to 15 pounds and down again, are to be avoided in any case, and when canning in glass may result in loss of liquid. A sudden drop in pressure through cooling or release of steam may also cause this. It is especially important to avoid having the pressure go so high that the safety valve releases the steam suddenly, nor should the steam be allowed to escape suddenly by opening the pet cock.

At the end of the processing period remove the canner from the fire and proceed according to the following directions adapted to jars or cans:

When canning in glass jars, allow the canner to cool until the steam gauge registers zero before opening the pet cock, and even then open cautiously. This is to prevent too sudden a drop in pressure, which would cause the liquid to blow out of the jars, even though already sealed. Invert the jars, allow them to cool as quickly as possible to room temperature, and do not stack them while they are still hot.

When canning in tin, open the pet cock wide at once and allow the steam to escape rapidly. Remove the cans from the canner and plunge them into cold running water if possible, or if this is not available change the water as soon as it becomes warm. The more rapidly the cans are cooled the less danger there is of overcooking the product. Watch carefully for air bubbles that indicate imperfect sealing.

CHECKING UP RESULTS

Mark all canned products so that those in each batch can be distinguished. Examine the inverted glass jars for signs of leakage. Hold canned products at room temperature for a week or ten days, where they can be examined at least once a day to be sure that they are keeping. If the contents of any jars or cans show signs of spoilage, examine all of that lot carefully. After this observation period, store the canned goods in a cool place. A short storage at rather high temperature serves to bring out quickly defects that might not be noticed if the products were stored at a lower temperature. Results can thus be checked up and methods improved.

STEPS TO BE TAKEN WHEN CANNING IN TIN

DEFINITIONS OF TERMS USED

1. **Sterilizing.**—Wash and sterilize all cans which are to be used. Place them in a canner where water is boiling. Let them remain ten minutes. Remove and invert on clean surface until used.

2. **Sorting and Grading Fruit.**—Select only fresh, sound, thoroughly ripe fruit and vegetables, and grade as to size and color. Thoroughly clean or peel.

3. **Blanching.**—Where the recipe calls for blanching, never omit. This is necessary with string beans, peas, lima beans, etc., and with most fruits and berries. The flavor of the vegetable is made more delicate, the vegetable itself more pliable, and a full pack is made easier. To blanch, place vegetables or fruit in the wire basket of canner or in a thin muslin sack and plunge into boiling water. (Time of blanching is given in the time-table.) Plunge into cold water immediately afterward.

4. **Packing.**—After fruit or vegetables are blanched, pack them in sterilized cans until the can is filled to about one-quarter inch of the top. Begin to pack firmly with spoon or paddle when the first bit of fruit or vegetable is put into a can, pressing down gently until the can is filled. Add brine or syrup as packing proceeds. Tomatoes must have no water added. There will be sufficient juice to fill crevices. Be sure every filled can is up to standard weight. This is shown by placing can on the scales and consulting table.

5. **Paddling.**—In packing canned or preserved products in glass it is necessary to use a thin flexible wood or reed blade. This is used to help place fruit in the jar and also to remove air bubbles. The paddle is also quite useful in packing tin cans.

6. **Exhausting.**—Solder-sealed cans if packed cold should be exhausted in boiling water from three to five minutes.

If directions call for pre-cooking of products and they are packed while hot, exhausting is not necessary.

7. **Processing.**—After the can has been sealed, it is ready for the processing. Processing is sterilizing by cooking continuously for a given length of time. Plunge the cans under water to be sure there are no leaks.

(A bucket of warm water may be used for this purpose.) Place cans for processing in trays and lower into the boiling water. The temperature of the water will then be reduced. Wait until boiling begins again before processing time is counted. Keep the water boiling every minute of the time during processing and remove cans promptly when time is up. Consult time-table and have a clock or watch at hand. Do not guess.

Standard Packs in Tin

If steam-pressure canner is used, follow directions for steam-pressure canning.

8. **Cooling.**—Tin cans should be cooled as quickly as possible after processing. Place them in tubs of cold water, and when they are taken out separate in order that the air may keep them cool. Never stack cans while warm and never leave them in the sunshine. The flavor of the fruit is injured and the fiber or flesh breaks down if the can is left too long in a heated state. Always store canned products in a cool place. Never allow the can to rust by keeping it in a damp cellar. Its appearance will injure the chance of marketing, and rust may eat holes in the tin.

9. **Labeling.**—Do not label a can until ready to sell. A fresh label will be a great asset. Use paste recipe given below, and put paste on one end only of the label. Pull the label tightly around can, making a neat and trim job. The 4-H label may be used by club members only, and then only when products are standard. The label must bear the name and address of member and net weight in ounces of contents of can.

10. **Paste.**—To 1 cup of flour add 1 cup of cold water, and mix thoroughly. Add 2½ to 3 cups of boiling water, stirring to prevent lumps. Place on stove and bring slowly to boiling point; boil 5 minutes. Stir to prevent burning. When cooked, add 1 teaspoonful of powdered alum and half a teaspoonful of oil of cloves. Pour into small glasses with covers. This will keep, and makes an excellent paste to use in labeling cans or jars.

SOME THINGS TO BE OBSERVED WHEN CANNING

1. If hot-water canner is used, be sure the canner is partly filled with water before fire is built.

2. Keep the water at a jumping boil and do not allow fire to die down for an instant while cans are in the canner.

3. Keep cover on canner every moment of the processing time. Steam plays a large part in cooking the contents of a can.

4. If possible, use two canners, one for blanching fruit and the other for canning. A large pot set over a fire will serve for blanching.

5. The quality or grade of the pack depends on the number of whole fruits or uniform pieces of fruit in the can, the color of the fruit, the weight, and the flavor.

6. The flavor is often injured by letting peeled fruit stand too long before cooking. Prepare at any one time as many cans only as can be processed immediately.

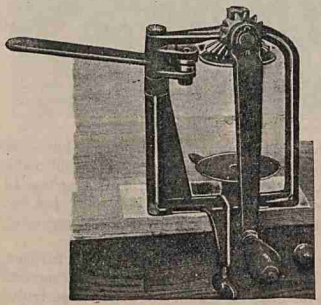
7. Let "Straight from Vine to Can" be the motto. Never can stale fruit.

8. Mark every can as it is filled with the name of its contents. A pencil may be used as the writing will not boil off. This prevents confusion when labeling.

Use No Artificial Preservatives.—Artificial preservatives in the form of "Acids," "Preserving Powders," and "Formulas" of various kinds are used in some localities in the preservation of foods. They are recommended by advertisements and agents as being perfectly harmless and are guaranteed to keep fruits and vegetables indefinitely. The object in using preservatives of any kind is to kill bacteria, thereby preventing fermentation and decay, and a preservative strong enough to do this may also be strong enough to cause digestive troubles when taken into the stomach.

The cheapest, surest, and only absolutely safe way is to sterilize by means of heat. The small amount of sugar and salt used in canning fruits and vegetables does not act as a preservative. It is added for flavor.

LIST OF ARTICLES REQUIRED FOR A CANNING DEMONSTRATION



A Hand-Sealer to be Used with the Sanitary Can

Canning Outfit:

Hand sealer.
Plenty of water.
Shelter in case of rain
Tin cans.
Rag mop.
Clean cloths.
Dish towels.
Lead pencil.
Watch or clock.
Household scales.
Three paring knives.
Four granite-ware pans.
Three tubs.
Three tables well scoured or covered with oil cloth.
Bucket and dipper.
Salt and sugar.
Three teaspoons.

Three tablespoons.
Glass jars with tops and rubbers.
Bag for blanching.
Wash basin.
Soap.
Hand towels.
Labels.
Paste.

INSTRUCTIONS TO AGENTS FOR PUBLIC CANNING DEMONSTRATIONS

There will be many calls for public demonstrations in canning. These are to be encouraged, as it is desirable that the public be taught to can; but care should be taken that both club members and county agents are experienced before attempting these demonstrations.

Have everything ready before the audience arrives; the canner filled with water first, and next a good fire to keep the water boiling. Detail one girl to look after this. Two canners are best, if possible, that there may be one for blanching fruit and the other for processing.

See that every girl has a white apron and cap, and do not have too many working at one time at a public demonstration. Six girls will make a team, one to attend to the fire, cooking, and timing of products; two to scald and peel; two to pack and weigh; and one to seal and label. Let the girls stand on one side of the table, that the audience may observe what is being done.

Be sure to impress the proper weight of cans upon club girls. Instruct them as to what is required before products can be put upon the market. Continually preach only **red, ripe tomatoes** and **firm, thoroughly ripe fruits and berries** for canning. The idea is prevalent that unripe fruit is good

enough for canning if it is well-cooked. Unripe fruit is poorly flavored and will lower the grade of the finished product.

Let no girl use the club label whose products are not up to standard.

The following standards are sent out by the United States Department of Agriculture:

STANDARDS FOR 4-H BRAND CANNED VEGETABLES

Tomatoes.—Cans to contain not less than 2 pounds 1 ounce tomatoes in No. 3 and not less than 1 pound 4 ounces tomatoes in No. 2. To be filled with sound ripe fruit, carefully peeled and cored; tomatoes to be whole or in large pieces, firm, uniformly red, and of good flavor.

String Beans.—Net weight in No. 3 can before liquor is added at least 1 pound 8 ounces, brine 8 to 10 ounces. Net weight No. 2, 13 ounces beans and about 8 ounces liquor. Beans to be tender, green, uniform in size, well-strung, and of good flavor. The net weight which appears on label should be for No. 3, 2 pounds, for No. 2, 1 pound 5 ounces.

Peas.—No. 2 cans to have at least 13½ ounces net weight of peas and about 8½ ounces liquor; peas to be fairly uniform in size, tender, whole, and of good flavor; liquor clear. Net weight appearing on label should be for No. 2 cans 1 pound 8 ounces.

Baby Beets.—To be packed in No. 2 lacquered tins, about 30 baby beets to each can, maximum size 1½ inches in diameter and average size 1 inch in diameter. No. 2 can to have at least 16 ounces whole beets and 4 ounces liquid. Net weight which appears on label should be for No. 2 can 1 pound 4 ounces.

Okra.—Net weight of contents in No. 3 can should appear on label, 2 pounds. Only young, tender okra should be packed, and it is best to remove the cap without cutting into the seed pod and pack whole. Brine is added as explained in the table.

Peppers.—No. 2 cans to contain between 8 and 10 whole peppers. Flat No. 1 cans to contain 4 or 5 whole peppers, and net weight of contents appearing on the label should be for No. 2 can not less than 1 pound, or flat No. 1 can not less than 8 ounces.

Soup Mixture.—No. 3 cans contain 34 ounces. Net contents.

STANDARDS FOR 4-H BRAND CANNED FRUITS

Figs.—Net weight contents No. 2 enamel-lined can of figs should appear on label not less than 1 pound 6 ounces. Figs should remain whole, and a No. 2 can contain about 30 whole figs.

Peaches.—No. 3 can to have at least 1 pound 5 ounces solids and 11 ounces liquid; to contain between 10 and 12 halves of peaches, and have net weight of contents appearing on label not less than 2 pounds.

Pears.—Net weight in No. 3 can should be not less than 2 pounds, having 11 ounces liquid, 1 pound 5 ounces solids, and between 12 and 14 halves.

Berries.—No. 3 can, blackberries or raspberries, net weight 2 pounds; No. 2 cans, net weight 1 pound 6 ounces, whole berries weighing about

one-half of total in each case. Berries to be large, whole, of good color and flavor.

Almost all No. 3 cans, no matter what they contain, weigh 38 ounces gross.

To make syrups recommended, boil sugar and water together in proportions given below:

Syrup No. 1, use 14 ounces to 1 gallon water.
Syrup No. 2, use 1 pound 14 ounces to 1 gallon water.
Syrup No. 3, use 3 pounds 9 ounces to 1 gallon water.
Syrup No. 4, use 5 pounds 8 ounces to 1 gallon water.
Syrup No. 5, use 6 pounds 13 ounces to 1 gallon water.
One pint sugar is one pound.

Number of cans per bushel yielded by the following vegetables:

1 bushel of tomatoes yields 24 No. 2 cans.
1 bushel of tomatoes yields 18 No. 3 cans.
1 bushel of beans yields 20 No. 2 cans.
1 bushel of beans yields 14 No. 3 cans.
1 bushel of peas in hull yields 25 No. 2 cans.
100 ears of corn yields 30 No. 2 cans.

SCORE FOR JUDGING THE QUALITY OF CANNED FRUITS AND VEGETABLES

	Score of 100
I. Appearance	25
(a) Color.	
(b) Clearness.	
II. Texture	10
III. Flavor	20
IV. Uniformity	15
(a) Ripeness.	
(b) Appropriate size.	
V. Pack (arrangement and weight)	15
VI. Container	15
(a) Appropriate package.	
(b) Label.	
(c) Neatness.	

PREPARATION OF MEAT FOR CANNING

1. Select fresh, clean meat. Discard the surplus fat.

2. Season and cook as for serving, but do not cook until done.

3. Cooking the meat before canning brings out the flavor and shrinks it, thus more can be put into the can.

4. Season lightly and do not over-cook. In frying use a minimum of flour.

5. Cut meat into pieces suitable for serving. Remove bones (except in fish and fried chicken). If bones are not removed the processing time must be increased.

6. Pack meat tightly to within three-fourths inch of the top of the jar.

7. Canned meats are more attractive if no liquid is added to the pack.

8. Meats should be hot when packed. If glass jars are used the tops should be wiped off carefully to remove all fat before the rubbers are adjusted as fat causes the rubber to disintegrate.

9. Pressure cookers only should be used in canning meats. Other methods are unsafe.

10. After processing, inspect cans and jars to be sure of a good seal.

Time-Table For Canning Meats With the Pressure Cooker

	Treatment Before Processing	*Process No. 3 Cans and Quart Jars*	*No. Pounds Pressure*	*Process No. 2 Cans and Fruit Jars*	*No. Pounds Pressure*
ROASTS: PORK BEEF MUTTON	Sear, season and cook until partly done. Slice and pack hot.	45 minutes	15	40 minutes	15
STEAK	Sear in hot pan, but do not cook done. Add seasoning. Pack hot.	45 minutes	15	40 minutes	15
STEWS	Cook as for serving and pack hot.	45 minutes	15	40 minutes	15
GROUND MEAT MIXTURE	Prepare as for serving. Do not pack jars too full.	45 minutes	15	40 minutes	15
FISH	Soak in salt water 20 minutes. Cook with seasoning and pack hot.	75 minutes	15	75 minutes	15
CHICKEN WITHOUT BONES	Boil or bake, cut into small pieces, remove bones and pack hot.	45 minutes	15	40 minutes	15
CHICKEN WITH BONES	Bake or fry. Pack hot.	90 minutes	15	90 minutes	15

Time-Table For Canning Fruits and Certain Vegetables in Tin and Glass in the Hot-Water Canner

Read Recipes Before Proceeding

	Treatment Before Processing	*Liquor*	*Number of Can*	*Process*	*Glass Jar*	*Process*
Apples	Precook 5 minutes in syrup.	No. 2 syrup	3	8 minutes	Quart	15 minutes
Beans (very young string)	Blanch 3 to 5 minutes.	Brine	3	1 hour	Quart	1 hour 15 minutes
Beets, Baby	Cook ¾ done.	Hot water	3	1 hour 30 minutes	Quart	1 hour 40 minutes
Blackberries	Blanch 1 minute.	No. 2 syrup	3	8 minutes	Quart	13 minutes
Cherries	Pack in jars or lacquered tin cans. Cover with syrup.	No. 3 syrup	3	20 minutes	Quart	30 minutes
Dewberries	Same as blackberries.					
Figs	Peel and cook in syrup until saturated.	No. 3 syrup	2	25 minutes	Quart	30 minutes
Huckleberries	Same as blackberries.					
Loganberries	Same as blackberries.					
Peaches	Cook in syrup 1 minute.	No. 3 syrup	3	20 minutes	Quart	25 minutes
Pears	Cook in syrup until tender.	No. 3 syrup	3	20 minutes	Quart	25 minutes
Plums	Prick, pack in jar or lacquered cans and cover with syrup.	No. 3 syrup	3	15 minutes	Quart	20 minutes
Pimientoes	Heat in oven until blistered. Peel.	No water	1	15 minutes	Pint	30 minutes
Raspberries	Same as blackberries.					
Sauerkraut	Pack in jars.	Brine	3	35 minutes	Quart	40 minutes
Soup Mixture	Cook until thick.		2	1 hour	Quart	1 hour 30 minutes
Sweet Potatoes	Boil until ¾ done. Peel and pack hot.	Two tablespoonfuls water.	3	3 hours	Quart	3 hours
Tomatoes	Blanch 1 minute.	Salt, sugar. No water.	3	22 minutes	Quart	25 minutes

If solder-sealed tin cans are used, products should be exhausted 3 minutes before processing.

Time-table For Processing Non-Acid Vegetables With the Pressure Cooker

	Treatment Before Processing	*Liquor*	*Number of Can*	*Process*	*Temp. Degrees F.*	*No. lbs. Pressure*	*Glass Jar*	*Process*	*Temp. Degrees F.*	*No. lbs. Pressure*
ASPARAGUS	Precook 4 to 5 minutes.	Brine	3	30 min.	240	10	Quart	40 min.	240	10
BABY BEETS	Cook until skins will slip off.	Hot water	3	30 min.	240	10	Quart	40 min.	240	10
BEANS, LIMA	Blanch 2 to 4 minutes.	Brine	2	50 min.	240	10	Pint	55 min.	240	10
BEANS, STRING	Blanch 3 to 5 minutes.	Brine	3	30 min.	240	10	Quart	40 min.	240	10
CORN	Blanch on cob 2 minutes. Cut from cob, cover with hot water and boil 10 minutes.	Water, salt and sugar	2	80 min.	250	15	Pint	90 min.	250	15
FIELD PEAS	Precook 10 minutes. Pack hot. Add 1 teaspoon salt. Cover with hot water.		2	50 min.	240	10	Pint	55 min.	240	10
GARDEN PEAS	Blanch 1 to 4 minutes.	Water, salt and sugar	2	45 min.	240	10	Pint	50 min.	240	10
OKRA	Blanch 3 minutes.	Brine	3	40 min.	240	10	Quart	45 min.	240	10
PUMPKIN	See recipe for squash.									
SQUASH	Cook until tender. Pack hot. Add 1 teaspoon salt to each jar.		3	85 min.	240	10	Quart	90 min.	240	10
SOUP MIXTURE	Cook until thick. Pack hot.		3	30 min.	240	10	Quart	30 min.	240	10
SPINACH	Wash and steam in covered vessel until wilted. Pack hot. Cover with liquor from steaming. Add teaspoon salt.		3	75 min.	240	10	Quart	80 min.	240	10
SWEET POTATOES	Boil until ¾ done. Peel and pack hot.	Two tablespoons water.	3	70 min.	250	15	Quart	75 min.	250	15

Time-Table For Intermittent Processing of Non-Acid Vegetables in the Hot-Water Canner If Pressure Cooker is Not Available

These vegetables must be processed the same length of time on each of three successive days.

	Blanch	*Liquor*	*Number of Can*	*Process*	*Glass Jars*	*Process*
ASPARAGUS	3 to 4 minutes	Heavy brine	3	1 hr. 15 min.	Quart	1 hr. 20 min.
BEANS, LIMA	2 to 4 minutes	Brine	2	1 hr. 10 min.	Pint	1 hr. 25 min.
BEANS, STRING (well-grown)	3 to 5 minutes	Brine	3	1 hr. 15 min.	Quart	1 hr. 30 min.
CORN	Precook 10 minutes	Water, salt and sugar	2	1 hr. 15 min.	Pint	1 hr. 20 min.
FIELD PEAS	Precook 10 minutes	Water and salt	2	1 hr. 15 min.	Pint	1 hr. 30 min.
GARDEN PEAS	1 to 5 minutes	Water, salt and sugar	2	1 hr. 15 min.	Pint	1 hr. 30 min.
OKRA	3 minutes	Brine	3	1 hr. 10 min.	Quart	1 hr. 15 min.
SQUASH	Precook 10 minutes	Salt	3	1 hr. 30 min.	Quart	1 hr. 40 min.
PUMPKIN	Precook 10 minutes	Salt	3	1 hr. 30 min.	Quart	1 hr. 40 min.
SPINACH	Steam 4 minutes	Salt	3	1 hr. 15 min.	Quart	1 hr. 30 min.

Corn, lima beans, and peas should never be packed in larger container than No. 2 can. Corn is cut from cob after blanching.

The brine used is made of 2½ ounces salt to 1 gallon of water, except for asparagus, which contains 4 ounces to 1 gallon.

Beets and rhubarb when packed in tin must be put in enamel-lined cans.

CANNING IN GLASS

Glass jars are more economical for home canning than are tin cans, as they can be used over and over again and the cost be spread over several years.

A Good General Exhibit

The Kind of Jar.—Select, if possible, a good jar of clear white glass. Fruit or vegetables show to great advantage through crystal-clear glass.

The square or round jar is used as an exhibit jar.

If clear glass cannot be had, green glass may be used, but the appearance of the canned product is much injured.

Sterilization, however, can be effected as well in one as in the other, and the green jars serve excellently well for home use.

A good spring top or a metal top, with which a hand-sealer is used, is preferable, though the Mason top will serve for one year. After that time it is advisable to fit old Mason jars with new tops.

Rubbers.—After the contents of a jar have been sterilized it is necessary that the jar be kept air-tight in order that whatever is enclosed may remain free from the action of bacteria. This may be done with rubber rings. Do not use rubbers the second time. The first season's heating destroys the life or elasticity of the rubber. For this reason it is important that good new rubbers be used. In buying rubbers, as in buying jars, get a good grade. Test the rubber for elasticity by stretching and folding. If it shows signs of cracking it is a poor product.

To Sterilize Jars.—To sterilize glass jars, place them in the canner in tepid water. Do not fill the canner with more than three inches of water.

Place cover on the canner. Bring the water to a boil and steam jars eight minutes.

No glass jars should be placed in a canner that does not have an extra bottom or basket to keep them from touching the true bottom of the canner. If this happens jars will break. A piece of half-inch mesh galvanized wire netting will answer the purpose.

Rubbers should be sterilized by placing in a bowl of boiling water and allowing them to remain for three minutes.

Packing or Filling the Jars.—Remove the jars from the sterilizer, prepare the fruits or vegetables, and pack them in the jars in symmetrical layers, using a thin reed paddle or a spoon to push into place and to remove air bubbles. Pack right into the neck of the jars, filling with water, brine, or syrup, as the packing proceeds. Wipe clean the rim of the jar and place the rubber thereon. Push spring down lightly and place jar in the canner holding tepid water. Never place a cold or even cool jar in boiling water as there is danger of breakage.

Processing.—When the water begins to boil, count time. Consult the time-table for glass, noting the exact number of minutes, and never cut this time short. Have a clock handy, and do not guess at time.

Leave the jars lightly sealed during the whole processing, and when the time is up, remove one at a time from the canner, seal tightly, and set aside.

It can be seen that exhaustion and processing take place at the same time with glass. This method prevents the blow-out of rubbers and makes the jars easy to handle. In processing a glass jar for three successive days, allow the jar to remain lightly sealed for the first day's processing, sealing tightly as you remove from the canner. Set aside until the next day. On the second day raise the clamp of the jar, place the jar in tepid water in the canner, process or boil for the same length of time as on the first day. Remove from the canner and seal tightly. Set aside until the third day, when the same process should be repeated.

Shrinkage of Water in a Jar.—If the water shrinks in a jar, as it will frequently do with string beans and peas, have a kettle of boiling water ready and, as the jar is taken from the canner, open and pour in boiling water until the jar is filled. Tightly seal immediately.

Processing Time for Glass Longer Than for Tin.—It is necessary to process products packed in glass jars longer than those packed in tin. Glass is not as good a conductor of heat as tin, and we therefore add five to ten minutes to the time given for tin when canning in glass.

Compare the time-tables.

Cooling.—Be careful not to set hot glass jars in a breeze or on a cold table top. Do not permit jars to touch each other. It is well to cover the table with a cloth.

Labeling.—Have every jar brightly polished and place label midway between the seams and one-quarter inch from the lower edge. For exhibition purposes all labels are pasted underneath the glass jar.

CANNING FRUITS AND BERRIES IN GLASS AND TIN

Dewberries, Blackberries, Raspberries, and Huckleberries.—To can dewberries, blackberries, raspberries, and huckleberries, the following method will prove satisfactory. Gather berries when ripe but firm. Place in a muslin sack and plunge into boiling water one minute (blanch). This will slightly soften the berries and allow the packing of almost twice as many in a can or jar. It will also prevent the condition where berries rise to the top of the jar.

Pack the sterilized can to within ¼-inch of the top with berries. Fill glass jars quite full. Fill the spaces and cover the berries with a syrup made of 1 gallon of water and 1 pint of sugar. (Use syrup No. 2 or No. 3 if sweeter berries are desired.)

The flavor of all canned berries is finer when syrup or sugar is added.

Process No. 3 tin cans 8 minutes.

Process quart glass jars 13 minutes, permitting jars to remain lightly sealed while processing. Lift jars from the canner and seal tightly immediately.

Read carefully the chapter on "Canning in Glass." Canned strawberries do not make a very attractive product. They shrink badly and lose their color. If they are canned, the recipe for blackberries may be followed.

Huckleberries.—Huckleberries should be canned just as are blackberries. Care should be taken that they are well-stemmed and perfectly clean before blanching.

Huckleberries should be canned in lacquered tin, as frequently the acid will eat through the seams of a plain tin can. Glass jars are best.

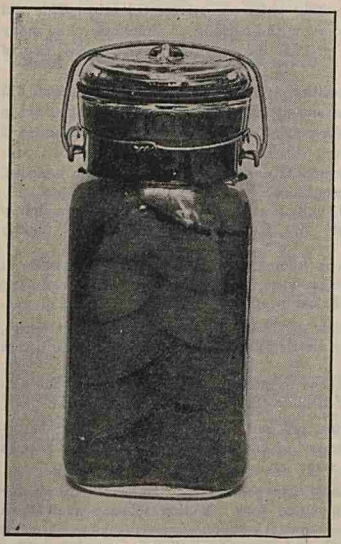
Peaches.—Clingstone peaches are best for canning and should be selected when they are fully ripe and of uniform size and color. Never pack fruit of varying colors in the same jar.

Peeling Clingstone Peaches.—Firm peaches may be peeled by placing them in a muslin bag and plunging into a boiling solution made from 4 tablespoonfuls of concentrated lye to 1 gallon of water. Allow the fruit to remain from 20 to 30 seconds and plunge immediately into plain boiling water for the same length of time. The last plunge is into a large vessel of cold water where the peaches are emptied from the bag and the skin removed. If peaches remain too long in the lye discoloration results. When semi-cling peaches, such as the Elberta, or a soft peach is canned, they may be peeled by first plunging into boiling and then into cold water. It is difficult to peel ripe soft peaches without dipping.

After peeling, cut peaches into halves and remove the pit. Have ready a boiling syrup made of 1 pound and 14 ounces of sugar and 1 gallon of water (syrup No. 2). For extra fine peaches use syrup No. 4. Add a few cracked peach pits to the boiling syrup to improve the flavor and remove when syrup is cold. Drop peaches into boiling syrup ¼ at a time, allowing them to cook for 1 minute or until tender but not soft.

NOTE:—Fruit may be successfully canned without the use of sugar; and when there is a scarcity, it is sometimes necessary. Sugar is not used to preserve the fruit, but to bring out the flavor and improve the taste. Even a small amount of sugar will greatly improve flavor. A No. 1 syrup may be used where heavier syrups are quoted.

Place in jars in overlapping layers with the pit side down and the stem end towards the center of the jar (see cut). Add syrup bit by bit when packing and paddle to remove all bubbles. (Use No. 4 syrup when packing in jars. Only a small amount is necessary for a close pack.)



A Good Pack of Peaches

Process a quart jar 25 minutes.

Process No. 3 can 20 minutes.

Read carefully the chapter on "Canning in Glass."

Canned Apples. — Late fall and winter apples which are slightly acid are best for canning. Peel, cut and drop into a brine made of 2½ ounces of salt and 1 gallon of water. Cook in No. 2 syrup 5 minutes.

Process 8 minutes.

When canning apples in glass, process quart jars 15 minutes.

It is advisable to make mellow summer apples into apple sauce. Pour hot into quart jars and process 15 minutes.

Read carefully the chapter on "Canning in Glass."

Canned Pears.—The Bartlett pear is best for canning. Select ripe, sound, medium-sized fruit (cut in halves or if large in quarters). Remove all the hard portions around the seed and submerge in brine similar to that used for apples to prevent discoloration.

Plunge the halves or quarters into boiling syrup and allow them to cook until they can be pierced with a straw, remove and pack closely in a No. 3 can or quart jar. Cover with a boiling syrup made of 3 pounds and 9 ounces of sugar and 1 gallon of water.

Process No. 3 can 20 minutes.

Process quart jar 25 minutes.

If pears are to be packed for exhibit purposes, small pears should be cut in halves and layered as are peaches. Larger pears may have a thick slice cut from each of the four sides. Hollow these slightly and pack in layers. The fruit remaining around the core can be ground and used in gingered pears.

Many complaints have come in regarding the hardness and lack of flavor in some canned pears. In every instance it was found that Keiffer pears not thoroughly ripe had been used and no precooking was done. Keiffer pears are not recommended for canning, but a palatable product may be had if the fruit is allowed to ripen thoroughly and care is taken to precook until it is tender. Both Keiffer and Pound pears are better made into preserves.

Canned Figs.—Peel 6 quarts of figs. Bring 2 quarts of No. 3 syrup to boiling and add the figs. Cook until saturated with sugar but not until fiber breaks down.

Place figs carefully in jars and fill with the syrup.

Process quart jars 30 minutes.

Canned Cherries.—Cherries are usually canned without the seed and should be put in glass jars or in lacquered tin cans. Large wax cherries are often canned whole. They should be blanched for 1 minute.

Pack seeded or whole cherries in jar to within ¼-inch of top, fill jar with No. 3 syrup. Process quart jars 30 minutes. Process pint jars 20 minutes.

Read carefully the chapter on "Canning in Glass."

CANNING VEGETABLES IN GLASS AND TIN

4-H Recipes

Canned Tomatoes.—Select only ripe tomatoes for canning. One green or light-colored tomato will ruin the grade of the pack.

Blanch for one minute. The skin may then be removed easily. Do not peel any more than may be immediately canned, as tomatoes ferment quickly.

Be careful to remove with sharp knife the hard part of tomato at stem.

Pack into cans as many whole tomatoes as possible, cutting them only when they are too large to slip in. Fill can to within ¼-inch of top, press gently and shake down fruit to fill crevices.

A level teaspoonful of sugar and a level teaspoonful of salt added to a No. 3 can or a quart jar of tomatoes improve the flavor of the product.

Use no water with tomatoes. If the can is properly filled the juice will be sufficient. A No. 3 can of tomatoes when filled should weigh 38 ounces.

Process No. 3 tin cans 22 minutes.

When canning tomatoes in glass jars, fill quite full and process quart jars 25 minutes.

Read carefully the chapter on "Canning in Glass."

String Beans.—To can string beans select those that are young and tender and which have few strings. The Green Pod Stringless is a good variety. If the beans are gathered when young and tender, and the strings removed, a good product results. Snap the beans at both ends, string, and place in a thin cotton bag. Blanch from 3 to 5 minutes. This improves the flavor of the beans and allows more to be packed in a can. Pack closely to within ¼-inch of the top, and fill with hot water. Add 1 level teaspoonful of salt. (Instead, a brine may be used: 1 gallon of water and 1-3 cup of salt.) Process 1 hour.

For No. 10 cans use 1 level tablespoonful of salt, and process 2 hours. Turn cans over once or twice while processing.

Beans should be canned the same day they are gathered. "Straight from the vine to the can" should be the motto.

Stale or mature beans necessitate processing with steam pressure.

When canning string beans in glass jars, process quart jars 1 hour and 15 minutes.

Read carefully the chapter on "Canning in Glass."

Soup Mixture.—Five quarts tomatoes, 2 quarts corn, 2 quarts okra or lima beans, 2 tablespoonfuls sugar (level), 2 tablespoonfuls salt (level). Scald and peel tomatoes, cutting out green or hard spots. Chop and measure. Cut young and tender field or sugar corn from cob. Slice okra in rings ½-inch thick. Place all in open agate kettle and boil until thick. Pour in No. 2 cans while hot, seal, and process 1 hour. Process a No. 3 can 1½ hours.

Use an asbestos mat under the kettle when boiling soup mixture. It is very easily scorched.

When canning soup mixture in glass jars, process quart jars 1½ hours. Process pint jars 1 hour.

Read carefully chapter on "Canning in Glass."

Brunswick Stew.—Five pounds chicken, squirrel or veal, 2 quarts corn, 2 quarts butter beans, 1 quart okra, 2 tablespoonfuls sugar, 2½ tablespoonfuls salt.

Cut chicken or meat into small pieces. Cover with cold water and simmer until tender (add more water if necessary). Remove bones, add vegetables, and cook until very thick. Pour while hot into No. 2 cans, seal, and process for 40 minutes in a steam pressure canner at 15 pounds pressure, 250 degrees F. (Do not use a hot-water canner for processing this product.)

Tomato Ketchup.—Select only ripe tomatoes for ketchup; wash, but do not peel; cut out green cores and bad places; quarter, measure, and place on stove in open-top porcelain-lined or agate vessel. For every gallon of tomatoes add 1 level cup of finely-chopped onions. Boil until both tomato and onion are soft. Strain juice and pulp through a coarse wire seive, mashing through all the pulp possible. Measure this strained pulp and juice and proceed as in the following recipe:

2 gallons strained mixture tomatoes and onions,
2½ level teaspoonfuls ground cloves,
3 level teaspoonfuls ground ginger,
2 level teaspoonfuls ground red pepper,
3 level tablespoonfuls ground allspice,
1 level tablespoonful ground black pepper,
1½ level cup (½-pint cup) sugar,
¾ level cup (½-pint cup) salt,
1 quart vinegar.

Place strained tomatoes in agate vessel; add spices, sugar, and salt; boil until thick; then add hot vinegar slowly and let boil 30 minutes before beginning to bottle mixture.

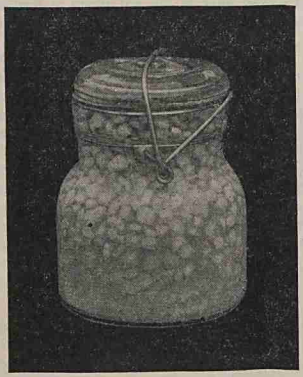
Use clear flint 10-ounce grape-juice bottle. Wash well with soda and place in vessel of hot water until ready to use. It is best to put wire netting in the bottom of the vessel, place the bottles filled with water thereon, and let come to a boil, thus sterilizing. Pour out water. Fill hot bottles with boiling ketchup. Cork tightly.

The measures for all recipes must be level. These measures have been taken accurately, and one should get good results if directions are followed to the letter.

A good ketchup may be made in winter by using 5 cans of 4-H tomatoes, 1 cup of chopped onions, and half the quantity of all other ingredients mentioned in the above recipe.

Chili Sauce.—Tomatoes for chili sauce are mashed through a colander instead of through a sieve, thus allowing the seed to remain in the finished product. Use the same recipe as for tomato ketchup, adding 2 level cups chopped green sweet bell peppers (leaving out seed), another level teaspoon of ground red pepper, and 1 level tablespoonful of salt. Boil until quite thick—much thicker than ketchup. Put up in pint or half-pint glass jars, sealing as in canned products.

Sweet Potatoes.—The Nancy Hall, Norton Yam, or other varieties of yellow potatoes are best for canning. Select potatoes of medium size as nearly uniform in shape as possible; place in wire trays or sacks and boil with skins on until three-fourths done. Remove peeling while very hot, cut in slices three-quarters of an inch thick, pack in a No. 3 can to within ¼-inch of top, using only 2 tablespoonfuls water in a can. This is known as a dry pack, and is the proper commercial pack. Potatoes should be packed rapidly after parboiling, as they turn dark upon standing.



Jar as Placed in Cooking Vessel Before Being Tightly Sealed

Process No. 3 can 3 hours.

When canning sweet potatoes in glass, process quart jars 3 hours. Process pint jars 2½ hours. If steam-pressure canner is used, see time-table.

An exhibit of sweet potatoes may contain small whole potatoes or sliced potatoes.

Read carefully the chapter on "Canning in Glass."

Canned Baby Beets. — When canning beets, use only young and tender ones, not over 1½ inches in diameter, preferably 1 inch.

Gather beets and allow at least 2 inches of stem and all of the root to remain. Wash, but do not peel; plunge into boiling water, and cook until three-fourths done.

Remove peeling, stem and root, grade as to size, and pack symmetrically, filling with hot water as you pack. (Never use cold water with beets.)

Seal. Process a No. 3 can 1½ hours. (Use lacquered can.)

If large beets are to be used, boil three-fourths done. Slice in ¼-inch slices, and proceed as with small beets.

When canning beets in glass jars, process quart jars 1 hour and 40 minutes. Process pint jars 1 hour and 20 minutes.

If steam-pressure canner is used see time-table.

Read carefully the chapter on "Canning in Glass."

Packing Pimientos in Tins.—Select sound, uniform pimientos of medium size. To remove seeds, cut around the stem of each with a slender paring knife and remove the inside partitions. To peel, place the peppers in a hot oven from 6 to 10 minutes (until the skin blisters and cracks), being careful not to allow them to burn. Then remove the skin with a slender paring knife. Flatten and pack in horizontal layers. Place whole uniform peppers in the cans, allowing four for the flat No. 1 can and eight for the No. 2 can.

This number makes the standard pack, the net weight of which should not be less than 1 pound for a No. 2 can and 8 ounces for a flat No. 1 can. The peppers should be so selected as to fill the cans. No liquid is used. The processing extracts a thick liquor, which almost covers the peppers. Process at boiling temperature, No. 1 cans for 15 minutes, No. 2 cans for 25 minutes.

When canning peppers in glass, use a 12-ounce or a pint jar and process 30 minutes.

Read carefully the chapter on "Canning in Glass."

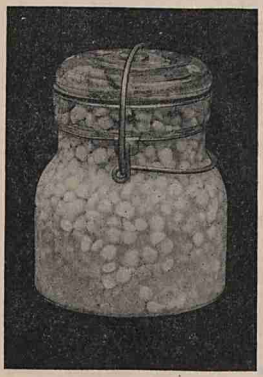
Fractional Sterilization, or the Three-Day Process.—Such vegetables as corn, beans, peas, squash, spinach, pumpkin, etc., cannot be sterilized in one day's processing at 212° F. The heat is not sufficient to destroy spores, therefore the following method is required if a hot-water canner is used:

Vegetables are prepared and packed as heretofore directed, and the filled cans placed in the canner and processed a given length of time to kill all active bacteria. This is usually accomplished in one cooking, but the spores from which bacteria develop are not destroyed. When the can is set aside to cool these spores develop into active bacteria, and by placing the can in the canner the second day in the same manner and for the same length of time as on the first, these bacteria are destroyed. Some spores are late in developing and bacteria appear after the second boiling, therefore it is necessary to place the can in the canner again on the third day and process the prescribed length of time. This completes the sterilizing process. After each day's processing the cans should be cooled quickly and set aside until the next day.

PRESERVING PRODUCTS IN GLASS

Process glass jars for the required number of minutes on first day. Push springs down tightly as you remove the jars from the canner. On the second day raise spring after the water has begun to boil, and close tightly when removing from the canner. Raise springs again on the third day when jars are in the canner, and seal tightly as jars are removed.

For screw-top jars, do not disturb the seal at the second and third processing unless the rubber has blown out.



Jar Tightly Sealed

Corn.—When canning corn, select that which is young and tender—at the milky stage—and see that it goes into the can immediately after it comes from the garden.

Sugar corn is best for canning, a particularly good variety being "The Country Gentleman." When sugar corn cannot be had very young, tender field corn is sometimes used.

Blanch corn on the cob for 2 minutes and cut from the cob with a sharp knife. If any of the grain is left after cutting, scrape off with the back of a knife.

Place the cut corn in a kettle and cover with hot water. Bring to a boil and boil for 10 minutes.

Pack in No. 2 cans or hot pint jars to within 1 inch of the top. If there is not sufficient water with the precooked corn, add enough boiling water to cover the grains. Add 1 level teaspoonful of sugar to each can. If field corn is used add 2 level teaspoonfuls.

Pre-cooking of corn makes a more uniform product as it provides in a great measure for the swelling of the grains before they are packed in the cans. It insures also a high temperature at the center of the can at the beginning of the processing.

Seal No. 2 cans. Place in the canner and process for 1 hour and 15 minutes on each of three successive days. After the first day's processing, the can is removed, cooled quickly by placing it in a tub of cold water, and is set aside until next day.

When the water in the canner is boiling on the second day, place the cans therein and again process for 1 hour and 15 minutes. Remove, cool as on the first day, set aside for 24 hours, and on the third day proceed as on the second.

This three-day method is the only sure way of preserving corn when a hot-water canner is used.

Corn should be processed if possible in a steam-pressure canner. (See steam-pressure time-table.)

When canning corn in glass use a pint jar—never anything larger—and observe the rules given in the chapter on "Canning in Glass."

Garden Peas.—Use No. 2 cans or pint jars when canning peas, as it is very difficult to sterilize them in larger containers.

Peas should be freshly-gathered, and it is essential that they be graded. Shaking peas through wire netting of different sizes will grade them nicely.

After grading, place small peas in a muslin sack and blanch for 3 minutes. Large or older peas must be blanched 5 minutes.

Pack peas in No. 2 can, fill with brine, and add 1 teaspoonful of sugar. Exhaust 3 minutes and process 1 hour and 15 minutes. For older peas process 1½ hours.

Peas must be processed the same length of time on each of three successive days.

A steam-pressure canner is best when canning peas.

When canning peas in glass, process pint jars of tender peas 1½ hours. Process pint jars of older peas 2 hours on each of 3 successive days. (If pressure canner is used, see time-table.)

Read carefully the chapter on "Canning in Glass."

Corn Field Peas.—Gather peas when young and tender, shell, place in muslin sack, and plunge in boiling water and allow to precook for 10 minutes. Remove and pack while hot in cans. Add 1 teaspoonful of salt and fill to within ¼-inch of the top with hot water.

Process a No. 2 can 2½ hours. Process a No. 3 can 3 hours. Older field peas will require a three-day sterilization period of 1½ hours each day.

Steam pressure is best for peas. See time-table.

Lima Beans.—Use No. 2 can or pint jar for beans. Select young and tender lima or butter beans, grade them as to size, blanch from 2 to 4 minutes, and pack can or jar to within ½-inch of the top. Fill can or jar with brine (1 gallon of water and 1-3 cup of salt).

Process 1 hour and 10 minutes on first day. Remove from canner and set aside for 24 hours.

After the water is boiling in canner on the second day, place the cans therein for a second processing or boiling of 1 hour and 10 minutes in length; remove; set aside for 24 hours, and process as on second day.

When canning butter beans in glass use a pint jar and process 1 hour and 25 minutes on each of three days. Steam pressure is best for lima beans. If pressure canner is used, see time-table.

Read carefully the chapter on "Canning in Glass."

Okra.—Gather young pods, wash in cold water, cut off stem, but do not cut into seed pod. Can okra whole. Place in muslin sack and blanch for 3 minutes.

Pack in jars or cans and fill with brine (1 gallon water to 1-3 cup of salt).

Process No. 3 tin cans 1 hour and 10 minutes. Process No. 2 tin cans 50 minutes. Remove from canner after processing and set aside for 24 hours.

After the water is boiling in the canner on the second day, place the cans therein for a second processing of the same length of time as on the first day. Remove from canner and set aside for 24 hours, and process on the third day in the same manner and for the same length of time as on the second day. When canning okra in glass, process 1-quart jar 1 hour and 15 minutes each day. Process 1-pint jar 1 hour each day. If pressure canner is used, see time-table.

Read carefully the chapter on "Canning in Glass."

Squash.—Can only young and tender squash. Cut in pieces and cook 10 minutes after boiling point is reached.

Pack in tin cans or jars to within ¼-inch of the top. Add 1 teaspoonful of salt to each quart can and fill with hot water.

Process 1½ hours.

Remove from canner and set aside for 24 hours. After water is boiling in canner on the second day place the cans therein for a second processing of the same length of time as on the first day. Remove from canner and set aside for 24 hours, and process on the third day for the same length of time and in the same manner as on the second day.

When canning squash in glass, process quart jars 1 hour and 40 minutes each day. Steam pressure is best for squash. See time-table.

Read carefully the chapter on "Canning in Glass."

Pumpkin.—Pumpkin is canned in the same manner as squash.

Spinach.—Prepare the spinach by cutting off all dead leaves and roots. Wash thoroughly through several cold waters; drain well. Blanch in boiling water for 4 minutes. Drain well, pack in No. 3 cans or jars, cover with boiling salt water (1 teaspoonful of salt to 1 quart of water). Process 1 hour and 15 minutes at boiling on each of three successive days. When canning spinach in glass, process a quart jar 1 hour and 30 minutes on each of three successive days. Steam pressure is best for spinach. See time-table.

Read carefully the chapter on "Canning in Glass."

Use of No. 10 Cans.—Only experienced canners should can in No. 10 cans. It is difficult to sterilize perfectly so large a filled container, and care must be exercised as to what is put in a can and to the processing.

String beans, tomatoes, soup mixture, peaches, pears, apples, and blackberries are successfully canned in these containers.

Do not can corn, peas, squash, or pumpkin in No. 10 cans.

June, 1931 (Revisal and Reprint) Extension Circular No. 114

CANNING FRUITS AND VEGETABLES

NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING
AND
U. S. DEPARTMENT OF AGRICULTURE, CO-OPERATING
N. C. AGRICULTURAL EXTENSION SERVICE
I. O. SCHAUB, *Director*
STATE COLLEGE STATION
RALEIGH

DISTRIBUTED IN FURTHERANCE OF THE ACTS OF CONGRESS OF MAY 8 AND JUNE 30, 1914

INTRODUCTION

The bulletin on CANNING FRUITS AND VEGETABLES was originally intended for the use of the North Carolina Home Demonstration Club members, but the demand from those outside the clubs for the methods and recipes has been so great that a seventh edition is necessary. To all regulations and standards given the club members are expected to conform.

The purpose is to establish a uniform standard for canned products throughout the State.

Perhaps it would not be amiss to say here that there is not one unnecessary step taken in grading, packing, and processing fruits and vegetables to insure safe-keeping, and I would strongly advise any person canning for home use to adhere strictly to the standards here given, that the percentage of spoils may be reduced to a minimum.

Mrs. Cornelia C. Morris has rendered valuable assistance in the revision of CANNING FRUITS AND VEGETABLES and is due credit for the preparation of the directions on canning meats.

JANE S. MCKIMMON.
Assistant Director of Extension,
State Home Demonstration Agent.

CANNING FRUITS AND VEGETABLES

SEVENTH EDITION

JANE S. MCKIMMON
State Agent in Home Demonstration Work

CANNING SUPPLIES

It is the part of wisdom when deciding to can in tin or glass to order supplies early and to be in readiness when the fruit or vegetables ripen.

Cans.—In ordering tin cans the best are none too good. Always stipulate that they shall be twice dipped, as leaks may occur with the cheaper ones.

Sanitary Cans.—This can has an opening as large as the top of the can and is very easily packed. It is almost universally used.

The No. 3 can is popular for tomatoes, peaches, etc., and holds a quart. No. 2 is the next size smaller, and is used generally for peas, corn, soup mixture, etc. No. 1 is the size used for pimientas. No. 10 is the so-called gallon, but holds slightly less.

TYPES OF CANNERS

The Hot-Water Canner.—There are many excellent types of hot-water canners. They should have closely-fitting tops, as steam plays an important part in the sterilization of cans.

A type of cast-iron steam-pressure Canner. Will carry 30 pounds of pressure.

Hot-Water Canner.—Several convenient types of portable canners are on the market. The simplest hot-water outfit is one to be placed on the kitchen stove. Another, more complete, has a fire-box attached and is used out-of-doors. These outfits also include blanching trays, tongs for handling hot jars, and a false bottom.

The type of canner should be chosen with reference to the kind and amount of canning to be done. The small hot-water canner is the least expensive of the commercial outfits for home canning. For inexperienced people it is also more easily handled. This type of canner is preferable for processing fruits and tomatoes. They are canned safely at boiling temperature, and the texture, flavor, and color of the finished products so processed at this temperature are superior to those which have been subjected to the higher temperatures.

Steam-Pressure Canner.—The steam-pressure canner is constructed of strong material and is provided with a tightly-fitting lid, which when clamped in place makes it possible to hold steam under pressure and obtain a correspondingly high temperature. It has a steam gauge attached to the lid. This attachment registers the temperature and the corresponding number of pounds pressure. Since the steam canner is made of very heavy material, a greater degree of heat is required to bring up the temperature quickly.

The steam-pressure canner is recommended for all non-acid vegetables, meats, and sea foods.

DIRECTIONS FOR USING PRESSURE CANNER

Pour boiling water into the canner until the level is just below the rack that holds the jars. Be sure that there is enough to prevent boiling dry during processing.

When the canner has been filled, adjust the cover and fasten securely. In case the cover is fastened by several clamps, fasten moderately tight those opposite each other, one pair at a time; then go back over the whole set and tighten each pair.

See that no steam escapes anywhere except at the pet-cock.

Allow the pet-cock to remain open until steam escapes from it in a steady stream for at least 3 minutes, indicating that no air remains inside, then close the pet-cock.

Allow the pressure to rise until the gauge registers the pressure that indicates the desired temperature.

Count time from the moment the desired temperature and pressure are reached.

Maintain a uniform pressure during the processing period by regulating carefully the source of heat. Fluctuations in pressure, as from 10 pounds to 15 pounds and down again, are to be avoided in any case, and when canning in glass may result in loss of liquid. A sudden drop in pressure through cooling or release of steam may also cause this. It is especially important to avoid having the pressure go so high that the safety valve releases the steam suddenly, nor should the steam be allowed to escape suddenly by opening the pet-cock.

At the end of the processing period remove the canner from the fire and proceed according to the following directions adapted to jars or cans:

When canning in glass jars, allow the canner to cool until the steam gauge registers zero before opening the pet-cock, and even then open cautiously. This is to prevent too sudden a drop in pressure, which would cause the liquid to blow out of the jars, even though already sealed. Invert the jars, allow them to cool as quickly as possible to room temperature, and do not stack them while they are still hot.

When canning in tin, open the pet-cock wide at once and allow the steam to escape rapidly. Remove the cans from the canner and plunge them into cold running water if possible, or, if this is not available, change the water as soon as it becomes warm. The more rapidly the cans are cooled the less danger there is of overcooking the product. Watch carefully for air bubbles that indicate imperfect sealing.

CHECKING UP RESULTS

Mark all canned products so that those in each batch can be distinguished. Examine the inverted glass jars for signs of leakage. Hold canned products at room temperature for a week or ten days, where they can be examined at least once a day to be sure that they are keeping. If the contents of any jars or cans show signs of spoilage, examine all of that lot carefully. After this observation period, store the canned goods in a cool place. A short storage at rather high temperature serves to bring out quickly defects that might not be noticed if the products were stored at a lower temperature. Results can thus be checked up and methods improved.

STEPS TO BE TAKEN WHEN CANNING IN TIN

Definitions of Terms Used

1. **Sterilizing.**—Wash and sterilize all cans which are to be used. Place them in a canner where water is boiling. Let them remain ten minutes. Remove and invert on clean surface until used.

2. **Sorting and Grading Fruit.**—Select only fresh, sound, thoroughly ripe fruit and vegetables, and grade as to size and color. Thoroughly clean or peel.

3. **Blanching.**—Where the recipe calls for blanching, never omit. This is necessary with string beans, peas, lima beans, etc., and with most fruits and berries. The flavor of the vegetable is made more delicate, the vegetable itself more pliable, and a full pack is made easier. To blanch, place vegetables or fruit in the wire basket of canner or in a thin muslin sack and plunge into boiling water. (Time of blanching is given in the time-table.)

4. **Packing.**—After fruit or vegetables are blanched, pack them in sterilized cans until the can is filled to about one-quarter inch of the top. Begin to pack firmly with spoon or paddle when the first bit of fruit or vegetable is put into a can, pressing down gently until the can is filled. Add hot brine or syrup as packing proceeds. Tomatoes must have no water added. There will be sufficient juice to fill crevices. Be sure every filled can is up to standard weight. This is shown by placing can on the scales and consulting table.

5. **Paddling.**—In packing canned or preserved products in glass it is necessary to use a thin, flexible wood or reed blade. This is used to help place fruit in the jar and also to remove air bubbles. The paddle is also quite useful in packing tin cans.

6. **Exhausting.**—Solder-sealed cans, if packed cold, should be exhausted in boiling water from three to five minutes.

If directions call for precooking of products and they are packed while hot, exhausting is not necessary.

7. **Processing.**—After the can has been sealed, it is ready for the processing. Processing is sterilizing by cooking continuously for a given length of time. Plunge the cans under water to be sure there are no leaks. (A bucket of warm water may be used for this purpose.) Place cans for processing in trays and lower into the boiling water. The temperature of

the water will then be reduced. Wait until boiling begins again before processing time is counted. Keep the water boiling every minute of the time during processing and remove cans promptly when time is up. Consult time-table and have a clock or watch at hand. Do not guess.

Standard Packs in Tin

If steam-pressure canner is used, follow directions for steam-pressure canning.

8. **Cooling.**—Tin cans should be cooled as quickly as possible after processing. Place them in tubs of cold water, and when they are taken out separate in order that the air may keep them cool. Never stack cans while warm, and never leave them in the sunshine. The flavor of the fruit is injured and the fiber or flesh breaks down if the can is left too long in a heated state. Always store canned products in a cool place. Never allow the can to rush by keeping it in a damp cellar. Its appearance will injure the chance of marketing, and rust may eat holes in the tin.

9. **Labeling.**—Do not label a can until ready to sell. A fresh label will be a great asset. Use paste recipe given below, and put paste on one end only of the label. Pull the label tightly around can, making a neat and trim job. The 4-H label may be used by club members only, and then only when products are standard. The label must bear the name and address of member and net weight in ounces of contents of can.

10. **Paste.**—To 1 cut of flour add 1 cup of cold water, and mix thoroughly. Add 2½ to 3 cups of boiling water, stirring to prevent lumps. Place on stove and bring slowly to boiling point; boil 5 minutes. Stir to prevent burning. When cooked, add 1 teaspoonful of powdered alum and half a teaspoonful of oil of cloves. Pour into small glasses with covers. This will keep, and makes an excellent paste to use in labeling cans or jars.

SOME THINGS TO BE OBSERVED WHEN CANNING

1. If hot-water canner is used, be sure the canner is partly filled with water before fire is built.

2. Keep the water at a jumping boil and do not allow fire to die down for an instant while cans are in the canner.

3. Keep cover on canner every moment of the processing time. Steam plays a large part in cooking the contents of a can.

4. If possible, use two canners, one for blanching fruit and the other for canning. A large pot set over a fire will serve for blanching.

5. The quality or grade of the pack depends on the number of whole fruits or uniform pieces of fruit in the can, the color of the fruit, the weight, and the flavor.

6. The flavor is often injured by letting peeled fruit stand too long before cooking. Prepare at any one time as many cans only as can be processed immediately.

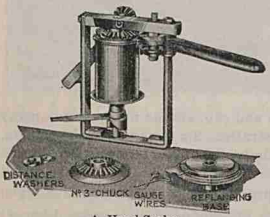
7. Let "Straight from Vine to Can" be the motto. Never can stale fruit.

8. Mark every can as it is filled with the name of its contents. A pencil may be used, as the writing will not boil off. This prevents confusion when labeling.

Use No Artificial Preservatives.—Artificial preservatives in the form of "Acids," "Preserving Powders," and "Formulas" of various kinds are used in some localities in the preservation of foods. They are recommended by advertisements and agents as being perfectly harmless and are guaranteed to keep fruits and vegetables indefinitely. The object in using preservatives of any kind is to kill bacteria, thereby preventing fermentation and decay, and a preservative strong enough to do this may also be strong enough to cause digestive troubles when taken into the stomach.

The cheapest, surest, and only absolutely safe way is to sterilize by means of heat. The small amount of sugar and salt used in canning fruits and vegetables does not act as a preservative. It is added for flavor.

LIST OF ARTICLES REQUIRED FOR A CANNING DEMONSTRATION



A Hand-Sealer
To be used with the Sanitary Can

Canning Outfit:

Hand sealer.
Plenty of water.
Shelter in case of rain.
Tin cans.
Clean cloths.

Three tables, well scoured or covered with oil cloth.
Salt and sugar.
Three teaspoons.
Three tablespoons.
Glass jars with tops and rubbers
Dish towels.
Lead pencil.
Watch or clock.
Household scales.
Three paring knives.
Four granite-ware pans.
Three tubs.
Bucket and dipper.
Bag for blanching.
Wash basin.
Soap.
Hand towels.
Labels.
Paste.

INSTRUCTIONS TO AGENTS FOR PUBLIC CANNING DEMONSTRATIONS

There will be many calls for public demonstrations in canning. These are to be encouraged, as it is desirable that the public be taught to can; but care should be taken that both club members and county agents are experienced before attempting these demonstrations.

Have everything ready before the audience arrives; the canner filled with water first, and next a good fire to keep the water boiling. Detail one girl to look after this. Two canners are best, if possible, that there may be one for blanching fruit and the other for processing.

See that every girl has a white apron and cap, and do not have too many working at one time at a public demonstration. Six girls will make a team, one to attend to the fire, cooking, and timing of products; two to scald and peel; two to pack and weigh; and one to seal and label. Let the girls stand on one side of the table, that the audience may observe what is being done.

Be sure to impress the proper weight of cans upon club girls. Instruct them as to what is required before products can be put upon the market. Continually preach only **red, ripe tomatoes** and **firm, thoroughly ripe fruits and berries** for canning. The idea is prevalent that unripe fruit is good enough for canning if it is well cooked. Unripe fruit is poorly flavored and will lower the grade of the finished product.

Let no girl use the club label whose products are not up to standard.

The following standards are sent out by the United States Department of Agriculture:

STANDARDS FOR 4-H BRAND CANNED VEGETABLES

Tomatoes.—Cans to contain not less than 2 pounds 1 ounce tomatoes in No. 3 and not less than 1 pound 4 ounces tomatoes in No. 2. To be filled with sound, ripe fruit, carefully peeled and cored; tomatoes to be whole or in large pieces, firm, uniformly red, and of good flavor.

String Beans.—Net weight in No. 3 can before liquor is added at least 1 pound 8 ounces, brine 8 to 10 ounces. Net weight No. 2, 13 ounces beans and about 8 ounces liquor. Beans to be tender, green, uniform in size, well strung, and of good flavor. The net weight which appears on label should be, for No. 3, 2 pounds, for No. 2, 1 pound 5 ounces.

Peas.—No. 2 cans to have at least 13½ ounces net weight of peas and about 8½ ounces liquor; peas to be fairly uniform in size, tender, whole, and of good flavor; liquor clear. Net weight appearing on label should be for No. 2 cans 1 pound 8 ounces.

Baby Beets.—To be packed in No. 2 lacquered tins, about 30 baby beets to each can, maximum size 1½ inches in diameter and average size 1 inch in diameter. No. 2 can to have at least 16 ounces whole beets and 4 ounces liquid. Net weight which appears on label should be for No. 2 can 1 pound 4 ounces.

Okra.—Net weight of contents in No. 3 can should appear on label, 2 pounds. Only young, tender okra should be packed, and it is best to remove the cap without cutting into the seed pod, and pack whole. Brine is added as explained in the table.

Peppers.—No. 2 cans to contain between 8 and 10 whole peppers. Flat No. 1 cans to contain 4 or 5 whole peppers, and net weight of contents appearing on the label should be for No. 2 can not less than 1 pound, or flat No. 1 can not less than 8 ounces.

Soup Mixture.—No. 3 cans contain 34 ounces. Net contents.

STANDARDS FOR 4-H BRAND CANNED FRUITS

Figs.—Net weight contents No. 2 enamel-lined can of figs should appear on label not less than 1 pound 6 ounces. Figs should remain whole, and a No. 2 can contain about 30 whole figs.

Peaches.—No. 3 can to have at least 1 pound 5 ounces solids and 11 ounces liquid; to contain between 10 and 12 halves of peaches, and have net weight of contents appearing on label not less than 2 pounds.

Pears.—Net weight in No. 3 can should be not less than 2 pounds, having 11 ounces liquid, 1 pound 5 ounces solids, and between 12 and 14 halves.

Berries.—No. 3 can, blackberries or raspberries, net weight 2 pounds; No. 2 cans, net weight 1 pound 6 ounces, whole berries weighing about one-half of total in each case. Berries to be large, whole, of good color and flavor.

Almost all No. 3 cans, no matter what they contain, weigh 38 ounces gross.

To make syrups recommended, boil sugar and water together in proportions given below:

Syrup No. 1, use 14 ounces to 1 gallon water.
Syrup No. 2, use 1 pound 14 ounces to 1 gallon water.
Syrup No. 3, use 3 pounds 9 ounces to 1 gallon water.
Syrup No. 4, use 5 pounds 8 ounces to 1 gallon water.
Syrup No. 5, use 6 pounds 13 ounces to 1 gallon water.
One pint sugar is one pound.

Number of cans per bushel yielded by the following vegetables:

1 bushel of tomatoes yields 24 No. 2 cans.
1 bushel of tomatoes yields 18 No. 3 cans.
1 bushel of beans yields 20 No. 2 cans.
1 bushel of beans yields 14 No. 3 cans.
1 bushel of peas in hull yields 25 No. 2 cans.
100 ears of corn yields 30 No. 2 cans.

SCORE FOR JUDGING THE QUALITY OF CANNED FRUITS AND VEGETABLES

	Score of 100
I. Appearance	25
(a) Color.	
(b) Clearness.	
II. Texture	10
III. Flavor	20
IV. Uniformity	15
(a) Ripeness.	
(b) Appropriate size.	
V. Pack (arrangement and weight)	15
VI. Container	15
(a) Appropriate package.	
(b) Label.	
(c) Neatness.	

PREPARATION OF MEAT FOR CANNING

1. Select fresh, clean meat. Discard the surplus fat.

2. Season and cook as for serving, but do not cook until done.

3. Cooking the meat before canning brings out the flavor and shrinks it, thus more can be put into the can.

4. Season lightly and do not over-cook. In frying use a minimum of flour.

5. Cut meat into pieces suitable for serving. Remove bones (except in fish and fried chicken). If bones are not removed the processing time must be increased.

6. Pack meat tightly to within three-fourths inch of the top of the jar.

7. Canned meats are more attractive if no liquid is added to the pack.

8. Meats should be hot when packed. If glass jars are used the tops should be wiped off carefully to remove all fat before the rubbers are adjusted, as fat causes the rubber to disintegrate.

9. Pressure cookers only should be used in canning meats. Other methods are unsafe.

10. After processing inspect cans and jars to be sure of a good seal.

Time-Table for Canning Meats With the Pressure Cooker

	Treatment Before Processing	*Process No. 3 Cans and Quart Jars*	*No. Pounds Pressure*	*Process No. 2 Cans and Pint Jars*	*No. Pounds Pressure*
PORK ROASTS: BEEF MUTTON	Sear, season and cook until partly done. Slice and pack hot.	45 minutes	15	40 minutes	15
STEAK	Sear in hot pan, but do not cook done. Add seasoning. Pack hot.	45 minutes	15	40 minutes	15
STEWS	Cook as for serving and pack hot.	45 minutes	15	40 minutes	15
GROUND MEAT MIXTURE	Prepare as for serving. Do not pack jars too full.	45 minutes	15	40 minutes	15
FISH	Soak in salt water 20 minutes. Cook with seasoning and pack hot.	75 minutes	15	75 minutes	15
CHICKEN WITHOUT BONES	Boil or bake, cut into small pieces, remove bones and pack hot.	45 minutes	15	40 minutes	15
CHICKEN WITH BONES	Bake or fry. Pack hot.	90 minutes	15	90 minutes	15

Time-Table for Canning Fruits and Certain Vegetables in Tin and Glass in the Hot-Water Canner

Read Recipes Before Proceeding

	Treatment Before Processing	*Liquor*	*Number of Can*	*Process*	*Glass Jar*	*Process*
APPLES	Precook 5 minutes in syrup.	No. 2 syrup	3	8 minutes	Quart	15 minutes
BEANS (very young string)	Blanch 3 to 5 minutes.	Brine	3	1 hour	Quart	1 hour 15 minutes
BEETS, BABY	Cook ¾ done.	Hot water	3	1 hour 30 minutes	Quart	1 hour 40 minutes
BLACKBERRIES	Blanch 1 minute.	No. 2 syrup	3	8 minutes	Quart	13 minutes
CHERRIES	Pack in jars or lacquered tin cans. Cover with syrup.	No. 3 syrup	3	20 minutes	Quart	30 minutes
DEWBERRIES	Same as blackberries.					
FIGS	Peel and cook in syrup until saturated.	No. 3 syrup	2	25 minutes	Quart	
HUCKLEBERRIES	Same as blackberries.					
LOGANBERRIES	Same as blackberries.					
PEACHES	Cook in syrup 1 minute.	No. 3 syrup	3	20 minutes	Quart	25 minutes
PEARS	Cook in syrup until tender.	No. 3 syrup	3	20 minutes	Quart	25 minutes
PLUMS	Prick, pack in jar or lacquered cans and cover with syrup.	No. 3 syrup	3	15 minutes	Quart	20 minutes
PIMIENTAS	Heat in oven until blistered. Peel.	No water	1	15 minutes	Pint	30 minutes
RASPBERRIES	Same as blackberries.					
SAUERKRAUT	Pack in jars.	Brine	3	35 minutes	Quart	40 minutes
SOUP MIXTURE	Cook until thick.		2	1 hour	Quart	1 hour 30 minutes
SWEET POTATOES	Boil until ¾ done. Peel and pack hot.	Two tablespoonfuls water	3	3 hours	Quart	3 hours
TOMATOES	Blanch 1 minute.	Salt, sugar. No water.	3	22 minutes	Quart	25 minutes

If solder-sealed tin cans are used, products should be exhausted 3 minutes before processing.

Time-Table for Processing Non-Acid Vegetables With the Pressure Cooker

	Treatment Before Processing	*Liquor*	*Number of Can*	*Process*	*Temp. Degrees F.*	*No. Lbs. Pressure*	*Glass Jar*	*Process*	*Temp. Degrees F.*	*No. Lbs. Pressure*
ASPARAGUS	Precook 4 to 5 minutes.	Brine	3	30 min.	240	10	Quart	40 min.	240	10
BABY BEETS	Cook until skins will slip off.	Hot water	3	30 min.	240	10	Quart	40 min.	240	10
BEANS, LIMA	Blanch 2 to 4 minutes.	Brine	2	50 min.	240	10	Pint	55 min.	240	10
BEANS, STRING	Blanch 3 to 5 minutes.	Brine	3	30 min.	240	10	Quart	40 min.	240	10
CORN	Blanch on cob 2 minutes. Cut from cob, cover with hot water and boil 10 minutes.	Water, salt, and sugar	2	80 min.	250	15	Pint	90 min.	250	15
FIELD PEAS	Precook 10 minutes. Pack hot. Add 1 teaspoon salt. Cover with hot water.		2	50 min.	240	10	Pint	55 min.	240	10
GARDEN PEAS	Blanch 1 to 4 minutes.	Water, salt, and sugar	2	45 min.	240	10	Pint	50 min.	240	10
OKRA	Blanch 3 minutes.	Brine	3	40 min.	240	10	Quart	45 min.	240	10
PUMPKIN	See recipe for squash.									
SQUASH	Cook until tender. Pack hot. Add 1 teaspoon salt to each jar.		3	85 min.	240	10	Quart	90 min.	240	10
SOUP MIXTURE	Cook until thick. Pack hot.		3	30 min.	240	10	Quart	30 min.	240	10
SPINACH	Wash and steam in covered vessel until wilted. Pack hot. Cover with liquor from steaming. Add teaspoon salt.		3	75 min.	240	10	Quart	80 min.	240	10
SWEET POTATOES	Boil until ¾ done. Peel and pack hot.	Two tablespoons water	3	70 min.	250	15	Quart	75 min.	250	15

Time-Table for Intermittent Processing of Non-Acid Vegetables in the Hot-Water Canner If Pressure Cooker Is Not Available

These vegetables must be processed the same length of time on each of three successive days.

	Blanch	*Liquor*	*Number of Can*	*Process*	*Glass Jars*	*Process*
ASPARAGUS	3 to 4 minutes	Heavy brine	3	1 hr. 15 min.	Quart	1 hr. 20 min.
BEANS, LIMA	2 to 4 minutes	Brine	2	1 hr. 10 min.	Pint	1 hr. 25 min.
BEANS, STRING (well-grown)	3 to 5 minutes	Brine	3	1 hr. 15 min.	Quart	1 hr. 30 min.
CORN	Precook 10 minutes	Water, salt, and sugar	2	1 hr. 15 min.	Pint	1 hr. 30 min.
FIELD PEAS	Precook 10 minutes	Water and salt	2	1 hr. 15 min.	Pint	1 hr. 30 min.
GARDEN PEAS	1 to 5 minutes	Water, salt, and sugar	2	1 hr. 15 min.	Pint	1 hr. 30 min.
OKRA	3 minutes	Brine	3	1 hr. 10 min.	Quart	1 hr. 15 min.
SQUASH	Precook 10 minutes	Salt	3	1 hr. 30 min.	Quart	1 hr. 40 min.
PUMPKIN	Precook 10 minutes	Salt	3	1 hr. 30 min.	Quart	1 hr. 40 min.
SPINACH	Steam 4 minutes	Salt	3	1 hr. 15 min.	Quart	1 hr. 30 min.

Corn, lima beans, and peas should never be packed in larger container than No. 2 can. Corn is cut from cob after blanching.

The brine used is made of 2½ ounces salt to 1 gallon of water, except for asparagus, which contains 4 ounces to 1 gallon.

Beets and rhubarb when packed in tin must be put in enamel-lined cans.

CANNING IN GLASS

Glass jars are more economical for home canning than are tin cans, as they can be used over and over again and the cost be spread over several years.

The Kind of Jar.—Select, if possible, a good jar of clear white glass. Fruit or vegetables show to great advantage through crystal-clear glass.

The square or round jar is used as an exhibit jar.

If clear glass cannot be had, green glass may be used, but the appearance of the canned product is much injured.

Sterilization, however, can be effected as well in one as in the other, and the green jars serve excellently well for home use.

A good spring top or a metal top, with which a hand-sealer is used, is preferable, though the Mason top will serve for one year. After that time it is advisable to fit old Mason jars with new tops.

Rubbers.—After the contents of a jar have been sterilized it is necessary that the jar be kept air-tight in order that whatever is enclosed may remain free from the action of bacteria. This may be done with rubber rings. Do not use rubbers the second time. The first season's heating destroys the life or elasticity of the rubber. For this reason it is important that good new rubbers be used. In buying rubbers, as in buying jars, get a good grade. Test the rubber for elasticity by stretching and folding. If it shows signs of cracking it is a poor product.

To Sterilize Jars.—To sterilize glass jars, place them in the canner in tepid water. Do not fill the canner with more than three inches of water. Place cover on the canner. Bring the water to a boil and steam jars 8 minutes.

No glass jars should be placed in a canner that does not have an extra bottom or basket to keep them from touching the true bottom of the canner. If this happens jars will break. A piece of half-inch mesh galvanized wire netting will answer the purpose.

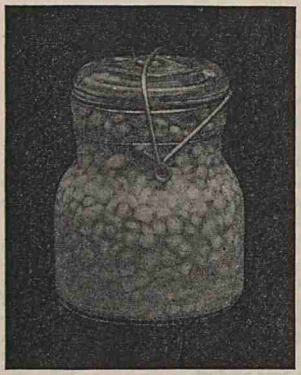
Rubbers should be sterilized by placing in a bowl of boiling water and allowing them to remain for three minutes.

Packing or Filling the Jars.—Remove the jars from the sterilizer, prepare the fruits or vegetables, and pack them in the jars in symmetrical layers, using a thin reed paddle or a spoon to push into place and to remove air bubbles. Pack right into the neck of the jars, filling with water, brine, or syrup, as the packing proceeds. Wipe clean the rim of the jar and place the rubber thereon. Push spring down lightly and place jar in the canner holding tepid water. Never place a cold or even cool jar in boiling water, as there is danger of breakage.

Processing.—When the water begins to boil, count time. Consult the time-table for glass, noting the exact number of minutes, and never cut this time short. Have a clock handy and do not guess at time.

Leave the jars lightly sealed during the whole processing, and when the time is up remove one at a time from the canner, seal tightly, and set aside.

It can be seen that exhaustion and processing take place at the same time with glass. This method prevents the blow-out of rubbers and makes the jars easy to handle. In processing a glass jar for three successive days, allow the jar to remain lightly sealed for the first day's processing, sealing



Jar as Placed in Cooking Vessel Before Being Tightly Sealed

Jar Tightly Sealed

tightly as you remove from the canner. Set aside until the next day. On the second day raise the clamp of the jar, place the jar in tepid water in the canner, process or boil for the same length of time as on the first day. Remove from the canner and seal tightly. Set aside until the third day, when the same process should be repeated.

Shrinkage of Water in a Jar.—If the water shrinks in a jar, as it will frequently do with string beans and peas, have a kettle of boiling water ready and, as the jar is taken from the canner, open and pour in boiling water until the jar is filled. Tightly seal immediately and process 10 minutes.

Processing Time for Glass Longer Than for Tin.—It is necessary to process products packed in glass jars longer than those packed in tin. Glass is not as good a conductor of heat as tin, and we therefore add five to ten minutes to the time given for tin when canning in glass.

Compare the time-tables.

Cooling.—Be careful not to set hot glass jars in a breeze or on a cold table top. Do not permit jars to touch each other. It is well to cover the table with a cloth.

Labeling.—Have every jar brightly polished and place label midway between the seams and one-quarter inch from the lower edge. For exhibition purposes all labels are pasted underneath the glass jar.

CANNING FRUITS AND BERRIES IN GLASS AND TIN

Dewberries, Blackberries, Raspberries, and Huckleberries.—To can dewberries, blackberries, raspberries, and huckleberries the following method will prove satisfactory: Gather berries when ripe but firm. Place in a muslin sack and plunge into boiling water one minute (blanch). This will slightly soften the berries and allow the packing of almost twice as many in a can or jar. It will also prevent the condition where berries rise to the top of the jar.

Pack the sterilized can to within one-quarter inch of the top with berries. Fill glass jars quite full. Fill the spaces and cover the berries with a syrup made of 1 gallon of water and 1 pint of sugar. (Use Syrup No. 2 or No. 3 if sweeter berries are desired.)

The flavor of all canned berries is finer when syrup or sugar is added.

Process No. 3 tin cans 8 minutes.

Process quart glass jars 13 minutes, permitting jars to remain lightly sealed while processing. Lift jars from the canner and seal tightly immediately.

Read carefully the chapter on "Canning in Glass." Canned strawberries do not make a very attractive product. They shrink badly and lose their color. If they are canned, the recipe for blackberries may be followed.

Huckleberries.—Huckleberries should be canned just as are blackberries. Care should be taken that they are well stemmed and perfectly clean before blanching.

Huckleberries should be canned in lacquered tin, as frequently the acid will eat through the seams of a plain tin can. Glass jars are best.

Peaches.—Clingstone peaches are best for canning and should be selected when they are fully ripe and of uniform size and color. Never pack fruit of varying colors in the same jar.

Peeling Clingstone Peaches.—Firm peaches may be peeled by placing them in a muslin bag and plunging into a boiling solution made from 4 tablespoonfuls of concentrated lye to 1 gallon of water. Allow the fruit to remain from 20 to 30 seconds and plunge immediately into plain boiling water for the same length of time. The last plunge is into a large vessel of cold water, where the peaches are emptied from the bag and the skin removed. If peaches remain too long in the lye discoloration results. When semi-cling peaches, such as the Elberta, or a soft peach is canned, they may be peeled by first plunging into boiling and then into cold water. It is difficult to peel ripe soft peaches without dipping.

After peeling, cut peaches into halves and remove the pit. Have ready a boiling syrup made of 1 pound and 14 ounces of sugar and 1 gallon of water (Syrup No. 2). For extra fine peaches use Syrup No. 4. Add a few cracked peach pits to the boiling syrup to improve the flavor and remove when syrup is cold. Drop peaches into boiling syrup one-fourth at a time, allowing them to cook for 1 minute, or until tender but not soft.

NOTE:—Fruit may be successfully canned without the use of sugar; and when there is a scarcity, it is sometimes necessary. Sugar is not used to preserve the fruit, but to bring out the flavor and improve the taste. Even a small amount of sugar will greatly improve flavor. A No. 1 syrup may be used where heavier syrups are quoted.

Place in jars in overlapping layers with the pit side down and the stem end towards the center of the jar (see cut). Add syrup bit by bit when packing and paddle to remove all bubbles. (Use No. 4 syrup when packing in jars. Only a small amount is necessary for a close pack.)

Process a quart jar for 25 minutes.

Process No. 3 can 20 minutes.

Read carefully the chapter on "Canning in Glass."

Canned Apples.—Late fall and winter apples which are slightly acid are best for canning. Peel, cut, and drop into a brine made of 2½ ounces of salt and 1 gallon of water. Cook in No. 2 syrup 5 minutes.

Process 8 minutes.

When canning apples in glass, process quart jars 15 minutes.

It is advisable to make mellow summer apples into apple sauce. Pour hot into quart jars and process 15 minutes.

Read carefully the chapter on "Canning in Glass."

Canned Pears.—The Bartlett pear is best for canning. Select ripe, sound, medium-sized fruit (cut in halves, or if large in quarters). Remove all the hard portions around the seed and submerge in brine similar to that used for apples to prevent discoloration.

Plunge the halves or quarters into boiling syrup and allow them to cook until they can be pierced with a straw, remove and pack closely in a No. 3 can or quart jar. Cover with a boiling syrup made of 3 pounds and 9 ounces of sugar and 1 gallon of water.

Process No. 3 can 20 minutes.

Process quart jar 25 minutes.

If pears are to be packed for exhibit purposes, small pears should be cut in halves and layered as are peaches. Larger pears may have a thick slice cut from each of the four sides. Hollow these slightly and pack in layers. The fruit remaining around the core can be ground and used in gingered pears.

Many complaints have come in regarding the hardness and lack of flavor in some canned pears. In every instance it was found that Keiffer pears not thoroughly ripe had been used and no precooking was done. Keiffer pears are not recommended for canning, but a palatable product may be had if the fruit is allowed to ripen thoroughly and care is taken to precook until it is tender. Both Keiffer and Pound pears are better made into preserves.

Canned Figs.—Peel 6 quarts of figs. Bring 2 quarts of No. 3 syrup to boiling and add the figs. Cook until saturated with sugar, but not until fiber breaks down.

Place figs carefully in jars and fill with the syrup.

Process quart jars 30 minutes.

Canned Cherries.—Cherries are usually canned without the seed, and should be put in glass jars or in lacquered tin cans. Large wax cherries are often canned whole. They should be blanched for 1 minute.

Pack seeded or whole cherries in jar to within one-quarter inch of top, fill jar with No. 3 syrup. Process quart jars 30 minutes. Process pint jars 20 minutes.

Read carefully the chapter on "Canning in Glass."

CANNING VEGETABLES IN GLASS AND TIN

4-H Recipes

Canned Tomatoes.—Select only ripe tomatoes for canning. One green or light-colored tomato will ruin the grade of the pack.

Blanch for one minute. The skin may then be removed easily. Do not peel any more than may be immediately canned, as tomatoes ferment quickly.

Be careful to remove with sharp knife the hard part of tomato at stem.

Pack into cans as many whole tomatoes as possible, cutting them only when they are too large to slip in. Fill can to within one-quarter inch of top, press gently and shake down fruit to fill crevices.

A level teaspoonful of sugar and a level teaspoonful of salt added to a No. 3 can or a quart jar of tomatoes improve the flavor of the product.

Use no water with tomatoes. If the can is properly filled the juice will be sufficient. A No. 3 can of tomatoes when filled should weigh 38 ounces.

Process No. 3 tin cans 22 minutes.

When canning tomatoes in glass jars, fill quite full and process quart jars 25 minutes.

Read carefully the chapter on "Canning in Glass."

String Beans.—To can string beans select those that are young and tender and which have few strings. The Green Pod Stringless is a good variety. If the beans are gathered when young and tender, and the strings removed, a good product results. Snap the beans at both ends, string, and place in a thin cotton bag. Blanch from 3 to 5 minutes. This improves the flavor of the beans and allows more to be packed in a can. Pack closely to within one-quarter inch of the top, and fill with hot water. Add 1 level teaspoonful of salt. (Instead, a brine may be used: 1 gallon of water and one-third cup of salt.) Process 1 hour.

For No. 10 cans use 1 level tablespoonful of salt and process 2 hours. Turn cans over once or twice while processing.

Beans should be canned the same day they are gathered. "Straight from the Vine to the Can" should be the motto.

Stale or mature beans necessitate processing with steam pressure.

When canning string beans in glass jars, process quart jars 1 hour and 15 minutes.

Read carefully the chapter on "Canning in Glass."

Soup Mixture.—Five quarts tomatoes, 2 quarts corn, 2 quarts okra or lima beans, 2 tablespoonfuls sugar (level), 2 tablespoonfuls salt (level). Scald and peel tomatoes, cutting out green or hard spots. Chop and measure. Cut young and tender field or sugar corn from cob. Slice okra in rings one-half inch thick. Place all in open agate kettle and boil until thick. Pour in No. 2 cans while hot, seal, and process 1 hour. Process a No. 3 can 1½ hours.

Use an asbestos mat under the kettle when boiling soup mixture. It is very easily scorched.

When canning soup mixture in glass jars, process quart jars 1½ hours. Process pint jars 1 hour.

Read carefully the chapter on "Canning in Glass."

Brunswick Stew.—Five pounds chicken, squirrel, or veal, 2 quarts corn, 2 quarts butterbeans, 5 quarts tomatoes, 1 quart okra, 2 tablespoonfuls sugar, 2½ tablespoonfuls salt.

Cut chicken or meat into small pieces. Cover with cold water and simmer until tender (add more water if necessary). Remove bones, add vegetables, and cook until very thick. Pour while hot into No. 2 cans, seal, and process for 40 minutes in a steam-pressure canner at 15 pounds pressure, 250 degrees F. (Do not use a hot-water canner for processing this product.)

Tomato Ketchup.—Select only ripe tomatoes for ketchup; wash, but do not peel; cut out green cores and bad places; quarter, measure, and place on stove in open-top porcelain-lined or agate vessel. For every gallon of tomatoes add 1 level cup of fine chopped onions. Boil until both tomatoes and onions are soft. Strain juice and pulp through a coarse wire sieve, mashing through all the pulp possible. Measure this strained pulp and juice and proceed as in the following recipe:

2 gallons strained mixture tomatoes and onions,
2½ level teaspoonfuls ground cloves,
3 level teaspoonfuls ground ginger,
2 level teaspoonfuls ground red pepper,
3 level tablespoonfuls ground allspice,
1 level tablespoonful ground black pepper,
1½ level cup (½-pint cup) sugar,
¾ level cup (½-pint cup) salt,
1 quart vinegar.

Place strained tomatoes in agate vessel; add spices, sugar, and salt; boil until thick; then add hot vinegar slowly and let boil 30 minutes before beginning to bottle mixture.

Use clear flint 10-ounce grape-juice bottles. Wash well with soda and place in vessel of hot water until ready for use. It is best to put wire netting in the bottom of the vessel, place the bottles filled with water thereon, and let come to a boil, thus sterilizing. Pour out water. Fill hot bottles with boiling ketchup. Cork tightly.

The measures for all recipes must be level. These measures have been taken accurately, and one should get good results if directions are followed to the letter.

A good ketchup may be made in winter by using 5 cans of 4-H tomatoes, 1 cup of chopped onions, and half the quantity of all other ingredients mentioned in the above recipe.

Chili Sauce.—Tomatoes for chili sauce are mashed through a colander instead of through a sieve, thus allowing the seed to remain in the finished product. Use the same recipe as for tomato ketchup, adding 2 level cups chopped green sweet bell peppers (leaving out seed), another level teaspoon of ground red pepper, and 1 level tablespoonful of salt. Boil until quite thick—much thicker than ketchup. Put up in pint or half-pint glass jars, sealing as in canned products.

Sweet Potatoes.—The Nancy Hall, Norton Yam, or other varieties of yellow potatoes are best for canning. Select potatoes of medium size as nearly uniform in shape as possible; place in wire trays or sacks and boil with skins on until three-fourths done. Remove peeling while very hot, cut in slices three-quarters of an inch thick, pack in a No. 3 can to within one-quarter inch of top, using only 2 tablespoonfuls water in a can. This is known as a dry pack, and is the proper commercial pack. Potatoes should be packed rapidly after parboiling, as they turn dark upon standing.

Process No. 3 can 3 hours.

When canning sweet potatoes in glass, process quart jars 3 hours. Process pint jars 2½ hours. If steam-pressure canner is used, see time-table.

An exhibit of sweet potatoes may contain small whole potatoes or sliced potatoes.

Read carefully the chapter on "Canning in Glass."

Canned Baby Beets.—When canning beets, use only young and tender ones, not over 1½ inches in diameter, preferably 1 inch.

Gather beets and allow at least 2 inches of stem and all of the root to remain. Wash, but do not peel; plunge into boiling water, and cook until three-fourths done.

Remove peeling, stem and root, grade as to size, and pack symmetrically, filling with hot water as you pack. (Never use cold water with beets.)

Seal. Process a No. 3 can 1½ hours. (Use lacquered can.)

If large beets are to be used, boil three-fourths done. Slice in quarter-inch slices, and proceed as with small beets.

When canning beets in glass jars, process quart jars 1 hour and 40 minutes. Process pint jars 1 hour and 20 minutes.

If steam-pressure canner is used, see time-table.

Read carefully the chapter on "Canning in Glass."

Packing Pimientas in Tins.—Select sound, uniform pimientas of medium size. To remove seeds, cut around the stem of each with a slender paring knife and remove the inside partitions. To peel, place the peppers in a hot oven from 6 to 10 minutes (until the skin blisters and cracks), being careful not to allow them to burn. Then remove the skin with a slender paring knife. Flatten and pack in horizontal layers. Place whole uniform peppers in the cans, allowing four for the flat No. 1 can and eight for the No. 2 can.

This number makes the standard pack, the net weight of which should not be less than 1 pound for a No. 2 can and 8 ounces for a flat No. 1 can. The peppers should be so selected as to fill the cans. No liquid is used. The processing extracts a thick liquor which almost covers the peppers. Process at boiling temperature, No. 1 cans for 15 minutes, No. 2 cans for 25 minutes.

When canning peppers in glass, use a 12-ounce or a pint jar and process 30 minutes.

Read carefully the chapter on "Canning in Glass."

Fractional Sterilization, or the Three-Day Process.—Such vegetables as corn, beans, peas, squash, spinach, pumpkin, etc., cannot be sterilized in one day's processing at 212° F. The heat is not sufficient to destroy spores, therefore the following method is required if a hot-water canner is used:

Vegetables are prepared and packed as heretofore directed, and the filled cans placed in the canner and processed a given length of time to kill all active bacteria. This is usually accomplished in one cooking, but the spores from which bacteria develop are not destroyed. When the can is set aside to cool these spores develop into active bacteria, and by placing the can in the canner the second day in the same manner and for the same length of time as on the first, these bacteria are destroyed. Some spores are late in developing and bacteria appear after the second boiling, therefore it is necessary to place the can in the canner again on the third day and process the prescribed length of time. This completes the sterilizing process. After each day's processing the cans should be cooled quickly and set aside until the next day.

PRESERVING PRODUCTS IN GLASS

Process glass jars for the required number of minutes on first day. Push springs down tightly as you remove the jars from the canner. On the second day raise spring after the water has begun to boil, and close tightly when removing from the canner. Raise springs again on the third day when jars are in the canner, and seal tightly as jars are removed.

For screw-top jars, do not disturb the seal at the second and third processing unless the rubber has blown out.

Corn.—When canning corn, select that which is young and tender—at the milky stage—and see that it goes into the can immediately after it comes from the garden.

Sugar corn is best for canning, a particularly good variety being "The Country Gentleman." When sugar corn cannot be had very young, tender field corn is sometimes used.

Blanch corn on the cob for 2 minutes and cut from the cob with a sharp knife. If any of the grain is left after cutting, scrape off with the back of a knife.

Place the cut corn in a kettle and cover with hot water. Bring to a boil and boil for 10 minutes.

Pack in No. 2 cans or hot pint jars to within 1 inch of the top. If there is not sufficient water with the precooked corn, add enough boiling water to cover the grains. Add 1 level teaspoonful of sugar to each can. If field corn is used, add 2 level teaspoonfuls.

Precooking of corn makes a more uniform product, as it provides in a great measure for the swelling of the grains before they are packed in the cans. It insures, also, a high temperature at the center of the can at the beginning of the processing.

Seal No. 2 cans. Place in the canner and process for 1 hour and 15 minutes on each of three successive days. After the first day's processing the can is removed, cooled quickly by placing it in a tub of cold water, and is set aside until the next day.

When the water in the canner is boiling on the second day, place the cans therein and again process for 1 hour and 15 minutes. Remove, cool as on the first day, set aside for 24 hours, and on the third day proceed as on the second.

This three-day method is the only sure way of preserving corn when a hot-water canner is used.

Corn should be processed, if possible, in a steam-pressure canner. (See steam-pressure time-table.)

When canning corn in glass use a pint jar—never anything larger—and observe the rules given in the chapter on "Canning in Glass."

Garden Peas.—Use No. 2 cans or pint jars when canning peas, as it is very difficult to sterilize them in larger containers.

Peas should be freshly gathered, and it is essential that they be graded. Shaking peas through wire netting of different sizes will grade them nicely.

After grading, place small peas in a muslin sack and blanch for 3 minutes. Large or older peas must be blanched 5 minutes.

Pack peas in No. 2 can, fill with brine, and add 1 teaspoonful of sugar. Exhaust 3 minutes and process 1 hour and 15 minutes. For older peas process 1½ hours.

Peas must be processed the same length of time on each of three successive days.

A steam-pressure canner is best when canning peas.

When canning peas in glass, process pint jars of tender peas 1½ hours. Process pint jars of older peas 2 hours on each of 3 successive days. (If pressure canner is used, see time-table.)

Read carefully the chapter on "Canning in Glass."

Cornfield Peas.—Gather peas when young and tender, shell, place in muslin sack, and plunge in boiling water and allow to precook for 10 minutes. Remove and pack while hot in cans. Add 1 teaspoonful of salt and fill to within one-quarter inch of the top with hot water.

Process a No. 2 can 2½ hours. Process a No. 3 can 3 hours. Older field peas will require a three-day sterilization period of 1½ hours each day.

Steam pressure is best for peas. See time-table.

Lima Beans.—Use No. 2 can or pint jar for beans. Select young and tender lima or butter beans, grade them as to size, blanch from 2 to 4 minutes, and pack can or jar to within one-half inch of the top. Fill can or jar with brine (1 gallon of water and one-third cup of salt).

Process 1 hour and 10 minutes on first day. Remove from canner and set aside for 24 hours.

After the water is boiling in canner on the second day, place the cans therein for a second processing or boiling of 1 hour and 10 minutes in length; remove; set aside for 24 hours, and process as on second day.

When canning butter beans in glass, use a pint jar and process 1 hour and 25 minutes on each of three days. Steam pressure is best for lima beans. If pressure canner is used, see time-table.

Read carefully the chapter on "Canning in Glass."

Okra.—Gather young pods, wash in cold water, cut off stem, but do not cut into seed pod. Can okra whole. Place in muslin sack and blanch for 3 minutes.

Pack in jars or cans and fill with brine (1 gallon water to one-third cup of salt.)

Process No. 3 tin cans 1 hour and 10 minutes. Process No. 2 tin cans 50 minutes. Remove from canner after processing and set aside for 24 hours.

After the water is boiling in the canner on the second day, place the cans therein for a second processing of the same length of time as on the first day. Remove from canner and set aside for 24 hours, and process on the third day in the same manner and for the same length of time as on the second day. When canning okra in glass, process 1-quart jars 1 hour and 15 minutes each day. Process 1-pint jars 1 hour each day. If pressure canner is used, see time-table.

Read carefully the chapter on "Canning in Glass."

Squash.—Can only young and tender squash. Cut in pieces and cook 10 minutes after boiling point is reached.

Pack in tin cans or jars to within one-quarter inch of the top. Add 1 teaspoonful of salt to each quart can and fill with hot water.

Process 1½ hours.

Remove from canner and set aside for 24 hours. After water is boiling in canner on the second day place the cans therein for a second processing of the same length of time as on the first day. Remove from canner and set aside for 24 hours, and process on the third day for the same length of time and in the same manner as on the second day.

When canning squash in glass, process quart jars 1 hour and 40 minutes each day. Steam pressure is best for squash. See time-table.

Read carefully the chapter on "Canning in Glass."

Pumpkin.—Pumpkin is canned in the same manner as squash.

Spinach.—Prepare the spinach by cutting off all dead leaves and roots. Wash thoroughly through several cold waters; drain well. Blanch in boiling water for 4 minutes. Drain well, pack in No. 3 cans or jars, cover with boiling salt water (1 teaspoonful of salt to 1 quart of water). Process 1 hour and 15 minutes at boiling on each of three successive days. When canning spinach in glass, process a quart jar 1 hour and 30 minutes on each of three successive days. Steam pressure is best for spinach. See time-table.

Read carefully the chapter on "Canning in Glass."

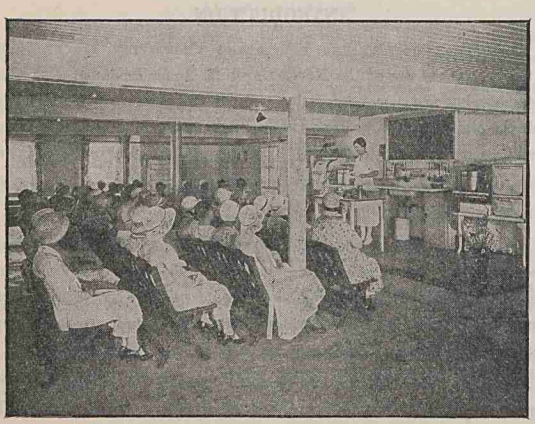
Use of No. 10 Cans.—Only experienced canners should can in No. 10 cans. It is difficult to sterilize perfectly so large a filled container, and care must be exercised as to what is put in a can and to the processing.

String beans, tomatoes, soup mixtures, peaches, pears, apples, and blackberries are successfully canned in these containers.

Do not can corn, peas, squash, or pumpkin in No. 10 cans.

April, 1935 (Revisal and Reprint) Extension Circular No. 114

CANNING FRUITS AND VEGETABLES



A Home Demonstration Club Meeting
The Canning Lesson

NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING
AND
U. S. DEPARTMENT OF AGRICULTURE, CO-OPERATING
NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE
I. O. SCHAUB, DIRECTOR
STATE COLLEGE STATION
RALEIGH, NORTH CAROLINA

DISTRIBUTED IN FURTHERANCE OF THE ACTS OF CONGRESS OF MAY 8 AND JUNE 30, 1914

INTRODUCTION

The bulletin on CANNING FRUITS AND VEGETABLES was originally intended for the use of the North Carolina Home Demonstration Club members, but the demand for the methods and recipes from those outside the clubs has been so great that an eighth edition is necessary. Club members are expected to conform to all regulations and standards given.

The purpose is to establish a uniform standard for canned products throughout the State.

Perhaps it would not be amiss to say here that there is not one unnecessary step taken in grading, packing, and processing fruits and vegetables to insure safe-keeping, and I would strongly advise any person canning for home use to adhere strictly to the standards here given, that the percentage of spoils may be reduced to a minimum.

Mrs. Cornelia C. Morris has rendered valuable assistance in the revision of CANNING FRUITS AND VEGETABLES and is due credit for the preparation of the directions on canning meats.

JANE S. MCKIMMON,
Assistant Director of Extension,
State Home Demonstration Agent,
North Carolina College of Agriculture and Engineering.

CANNING FRUITS AND VEGETABLES

EIGHTH EDITION

JANE S. McKIMMON
State Agent in Home Demonstration Work

CANNING SUPPLIES

It is the part of wisdom when deciding to can in tin or glass to order supplies early and to be in readiness when the fruit or vegetables ripen.

Cans.—In ordering tin cans the best are none too good. Always stipulate that they shall be twice dipped, as leaks may occur with the cheaper ones.

Plain tin cans are used for most products.

Enameled tin cans should be used for highly colored products such as beets, berries and cherries to prevent bleaching of the product and pinholing of the can.

Another type of enameled can is used for sea foods and corn to prevent discoloration.

TYPES OF CANNERS

The No. 3 can is popular for tomatoes, peaches, etc., and holds a quart. No. 2 is used generally for peas, corn, soup mixture, etc. No. 1 is the size used for pimientas. No. 10 is the so-called gallon, but holds slightly less.

The Hot-Water Canner.—There are many excellent types of hot-water canners. They should have closely-fitting tops, as steam plays an important part in the sterilization of cans.

Several convenient types of portable canners are on the market. The simplest hot-water outfit is one to be placed on the kitchen stove. Another, more complete, has a fire-box attached and is used out-of-doors. These outfits also include blanching trays, tongs for handling hot jars, and a false bottom.

The type of canner should be chosen with reference to the kind and amount of canning to be done. The small hot-water canner is the least expensive of the commercial outfits for home canning. For inexperienced people it is also more easily handled. This type of canner is preferable for processing fruits and tomatoes. They are canned safely at boiling temperature, and the texture, flavor, and color of the finished products so processed at this temperature are superior to those which have been subjected to the higher temperatures.

Steam-Pressure Canner.—The steam-pressure canner is constructed of strong material and is provided with a tightly-fitting lid, which when clamped in place makes it possible to hold steam under pressure and ob-

tain a correspondingly high temperature. It has a steam gauge attached to the lid. This attachment registers the temperature and the corresponding number of pounds pressure. Since the steam canner is made of very heavy material, a greater degree of heat is required to bring up the temperature quickly.

The steam-pressure canner only is recommended for non-acid vegetables, meats, and sea foods. Other methods are considered unsafe.

Oven Canning.—Oven canning is not recommended.

DIRECTIONS FOR USING PRESSURE CANNER

Pour boiling water into the canner until the level is just below the rack that holds the jars. Be sure that there is enough to prevent boiling dry during processing.

When the canner has been filled with jars or cans, adjust the cover and fasten securely. In case the cover is fastened by several clamps, fasten moderately tight those opposite each other, one pair at a time; then go back over the whole set and tighten each pair.

See that no steam escapes anywhere except at the pet-cock.

Allow the pet-cock to remain open until steam escapes from it in a steady stream for at least 3 minutes, indicating that no air remains inside, then close the pet-cock.

Allow the pressure to rise until the gauge registers the pressure that indicates the desired temperature.

Count time from the moment the desired temperature and pressure are reached.

Maintain a uniform pressure during the processing period by regulating carefully the source of heat. Fluctuations in pressure, as from 10 pounds to 15 pounds and down again, are to be avoided in any case, and when canning in glass may result in loss of liquid. A sudden drop in pressure through cooling or release of steam may also cause this. It is especially important to avoid having the pressure go so high that the safety valve releases the steam suddenly, nor should the steam be allowed to escape suddenly by opening the pet-cock.

At the end of the processing period remove the canner from the fire and proceed according to the following directions adapted to jars or cans:

When canning in glass jars, allow the canner to cool until the steam gauge registers zero before opening the pet-cock, and even then open cautiously. This is to prevent too sudden a drop in pressure, which would cause the liquid to blow out of the jars, even though already sealed. Remove jars from canner, allow them to cool as quickly as possible to room temperature, and do not stack them while they are still hot.

When canning in tin, open the pet-cock wide at once and allow the steam to escape rapidly. Remove the cans from the canner and plunge them into cold running water if possible, or, if this is not available, change the water as soon as it becomes warm. The more rapidly the cans are cooled the less danger there is of overcooking the product. Watch carefully for air bubbles that indicate imperfect sealing.

CHECKING UP RESULTS

Mark all canned products so that those in each batch can be distinguished. Examine the glass jars for signs of leakage. Hold canned products at room temperature for a week or ten days, where they can be examined at least once a day to be sure that they are keeping. If the contents of any jars or cans show signs of spoilage, examine all of that lot carefully. After this observation period, store the canned goods in a cool place. A short storage at rather high temperature serves to bring out quickly defects that might not be noticed if the products were stored at a lower temperature. Results can thus be checked up and methods improved.

STEPS TO BE TAKEN WHEN CANNING IN TIN

Definitions of Terms Used

1. **Washing Cans.**—Wash all cans thoroughly, and invert on clean surface until used.

2. **Sorting and Grading Fruit.**—Select only fresh, sound, thoroughly ripe fruit and vegetables, and grade as to size and color. Thoroughly clean or peel.

3. **Blanching.**—Where the recipe calls for blanching, never omit. This is necessary with string beans, peas, lima beans, etc., and with most fruits and berries. The flavor of the vegetable is made more delicate, the vegetable itself more pliable, and a full pack is made easier. To blanch, place vegetables or fruit in the wire basket of canner or in a thin muslin sack and plunge into boiling water. (Time of blanching is given in the time-table.)

4. **Packing.**—After fruit or vegetables are blanched, pack them into cans until the can is filled to about one-quarter inch of the top. Begin to pack firmly with spoon or paddle when the first bit of fruit or vegetable is put into a can, pressing down gently until the can is filled. Add hot brine or syrup as packing proceeds. Tomatoes must have no water added. There will be sufficient juice to fill crevices. Be sure every filled can is up to standard weight. This is shown by placing can on the scales and consulting table.

5. **Exhausting.**—Products in tin should be exhausted in boiling water from three to five minutes before sealing to insure a good vacuum.

If directions call for precooking of products and they are packed while boiling hot, exhausting is not necessary.

6. **Processing.**—After the can has been exhausted and sealed, it should be processed immediately. Processing is sterilizing by cooking continuously for a given length of time. Place cans for processing in trays and lower into the boiling water. The temperature of the water will then be reduced. Wait until boiling begins again before processing time is

counted. Keep the water boiling every minute of the time during processing and remove cans promptly when time is up. Consult time-table and have a clock or watch at hand. Do not guess.

Standard Packs in Tin

After processing, plunge cans under water to see that there are no leaks. The hot-water method is used for fruits, tomatoes and pre-cooked soup mixture (five parts tomatoes and four parts other vegetables).

For non-acid vegetables use steam-pressure canner only. Follow directions given for steam-pressure canning.

7. **Cooling.**—Tin cans should be cooled as quickly as possible after processing. Place them in tubs of cold water, and when they are taken out separate in order that the air may keep them cool. Never stack cans while warm, and never leave them in the sunshine. The flavor of the fruit is injured and the fiber or flesh breaks down if the can is left too long in a heated state. Store canned products in a cool place. Never allow the can to rust by keeping it in a damp cellar. Its appearance will injure the chance of marketing, and rust may eat holes in the tin.

8. **Labeling.**—Do not label a can until ready to sell. A fresh label will be a great asset. Use paste recipe given below, and put paste on one end only of the label. Pull the label tightly around can, making a neat and trim job. The 4-H label may be used by club members only, and then only when products are standard. The label must bear the name and address of member and net weight in ounces of contents of can.

9. **Paste.**—To 1 cup of flour add 1 cup of cold water, and mix thoroughly. Add 2½ to 3 cups of boiling water, stirring to prevent lumps. Place on stove and bring slowly to boiling point; boil 5 minutes. Stir to prevent burning. When cooked, add 1 teaspoonful of powdered alum and half a teaspoonful of oil of cloves. Pour into small glasses with covers. This will keep, and makes an excellent paste to use in labeling cans or jars.

SOME THINGS TO BE OBSERVED IN CANNING

1. If hot-water canner is used, be sure the canner is partly filled with water before fire is built.

2. Keep the water at a jumping boil and do not allow fire to die down for an instant while cans are in the canner.

3. Keep cover on canner every moment of the processing time. Steam plays a large part in cooking the contents of a can.

4. If possible, use two canners, one for blanching fruit and the other for canning. A large pot set over a fire will serve for blanching.

5. The quality or grade of the pack depends on the number of whole fruits or uniform pieces of fruit in the can, the color of the fruit, the weight, and the flavor.

6. The flavor is often injured by letting peeled fruit stand too long before cooking. Prepare at any one time as many cans only as can be processed immediately.

7. Let "Straight from Vine to Can" be the motto. Never can stale fruit.

8. Mark every can as it is filled with the name of its contents. A pencil may be used, as the writing will not boil off. This prevents confusion when labeling.

Use No Artificial Preservatives.—Artificial preservatives in the form of "Acids," "Preserving Powders," and "Formulas" of various kinds are used in some localities in the preservation of foods. They are recommended by advertisements and agents as being perfectly harmless and are guaranteed to keep fruits and vegetables indefinitely. The object in using preservatives of any kind is to kill bacteria, thereby preventing fermentation and decay, and a preservative strong enough to do this may also be strong enough to cause digestive troubles when taken into the stomach.

The cheapest, surest, and only absolutely safe way is to sterilize by means of heat. The small amount of sugar and salt used in canning fruits and vegetables does not act as a preservative. It is added for flavor.

LIST OF ARTICLES REQUIRED FOR A CANNING DEMONSTRATION

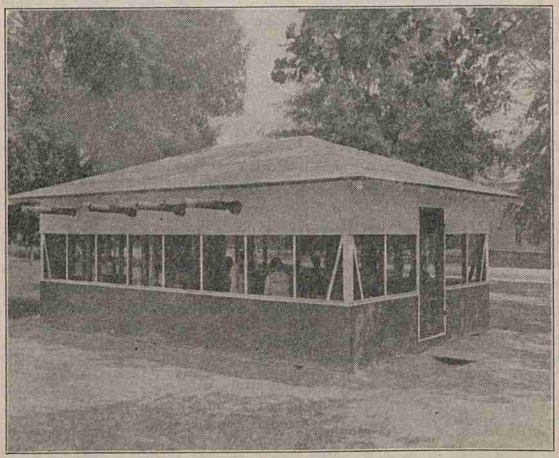
Canning Outfit

Hand sealer.
Plenty of water.
Shelter in case of rain.
Tin cans.
Clean cloths.
Three tables, well scoured or covered with oil cloth.
Salt and sugar.
Three teaspoons.
Three tablespoons.
Glass jars with tops and rubbers.
Dish towels.
Lead pencil.
Watch or clock.
Household scales.
Three paring knives.
Four granite-ware pans.
Three tubs.
Bucket and dipper.
Bag for blanching.
Wash basin.
Soap.
Hand towels.
Labels.
Paste.

INSTRUCTIONS TO AGENTS FOR PUBLIC CANNING DEMONSTRATIONS

There will be many calls for public demonstrations in canning. These are to be encouraged, as it is desirable that the public be taught to can; but care should be taken that both club members and county agents are experienced before attempting these demonstrations.

Have everything ready before the audience arrives; the canner filled with water first, and next a good fire to keep the water boiling. Detail one girl to look after this. Two canners are best, if possible, that there may be one for blanching fruit and the other for processing.



A Community Cannery

See that every girl has a white apron and cap, and do not have too many working at one time at a public demonstration. Six girls will make a team, one to attend to the fire, cooking, and timing of products; two to scald and peel; two to pack and weigh; and one to seal and label. Let the girls stand on one side of the table, that the audience may observe what is being done.

Be sure to impress the proper weight of cans upon club girls. Instruct them as to what is required before products can be put upon the market. Continually preach only **red, ripe tomatoes and firm, thoroughly ripe fruits and berries** for canning. The idea is prevalent that unripe fruit is good enough for canning if it is well cooked. Unripe fruit is poorly flavored and will lower the grade of the finished product.

Let no girl use the club label whose products are not up to standard.

The following standards are sent out by the United States Department of Agriculture:

STANDARDS FOR 4-H BRAND CANNED VEGETABLES

Tomatoes.—Cans to contain not less than 2 pounds 1 ounce tomatoes in No. 3 and not less than 1 pound 4 ounces tomatoes in No. 2. To be filled with sound, ripe fruit, carefully peeled and cored; tomatoes to be whole or in large pieces, firm, uniformly red, and of good flavor.

String Beans.—Net weight in No. 3 can before liquor is added at least 1 pound 8 ounces, brine 8 to 10 ounces. Net weight No. 2, 13 ounces beans and about 8 ounces liquor. Beans to be tender, green, uniform in size, well strung, and of good flavor. The net weight which appears on label should be, for No. 3, 2 pounds, for No. 2, 1 pound 5 ounces.

Peas.—No. 2 cans to have at least 13½ ounces net weight of peas and about 8½ ounces liquor; peas to be fairly uniform in size, tender, whole, and of good flavor; liquor clear. Net weight appearing on label should be for No. 2 cans 1 pound 8 ounces.

Baby Beets.—To be packed in No. 2 lacquered tins, about 30 baby beets to each can, maximum size 1½ inches in diameter and average size 1 inch in diameter. No. 2 can to have at least 16 ounces whole beets and 4 ounces liquid. Net weight which appears on label should be for No. 2 can 1 pound 4 ounces.

Okra.—Net weight of contents in No. 3 can should appear on label, 2 pounds. Only young, tender okra should be packed, and it is best to remove the cap without cutting into the seed pod, and pack whole. Brine is added as explained in the table.

Peppers.—No. 2 cans to contain between 8 and 10 whole peppers. Flat No. 1 cans to contain 4 or 5 whole peppers, and net weight of contents appearing on the label should be for No. 2 can not less than 1 pound, or flat No. 1 can not less than 8 ounces.

Soup Mixture.—No. 3 cans contain 34 ounces. Net Contents.

STANDARD FOR 4-H BRAND CANNED FRUITS

Figs.—Net weight contents No. 2 enamel-lined can of figs should appear on label not less than 1 pound 6 ounces. Figs should remain whole, and a No. 2 can contain about 30 whole figs.

Peaches.—No. 3 can to have at least 1 pound 5 ounces solids and 11 ounces liquid; to contain between 10 and 12 halves of peaches, and have net weight of contents appearing on label not less than 2 pounds.

Pears.—Net weight in No. 3 can should be not less than 2 pounds, having 11 ounces liquid, 1 pound 5 ounces solids, and between 12 and 14 halves.

Berries.—No. 3 can, blackberries or raspberries, net weight 2 pounds; No. 2 cans, net weight 1 pound 6 ounces, whole berries weighing about one-half of total in each case. Berries to be large, whole, of good color and flavor. Enameled cans should be used for berries.

Almost all No. 3 cans, no matter what they contain, weigh 38 ounces gross.

To make the syrups recommended, boil sugar and water together in proportions given below:

Syrup No. 1, use 14 ounces sugar to 1 gallon water.
Syrup No. 2, use 1 pound 14 ounces sugar to 1 gallon water.
Syrup No. 3, use 3 pounds 9 ounces sugar to 1 gallon water.
Syrup No. 4, use 5 pounds 8 ounces sugar to 1 gallon water.
Syrup No. 5, use 6 pounds 13 ounces sugar to 1 gallon water.
One pint sugar is one pound.

Number of cans per bushel yielded by the following vegetables:

1 bushel of tomatoes yields 24 No. 2 cans.
1 bushel of tomatoes yields 18 No. 3 cans.
1 bushel of beans yields 20 No. 2 cans.
1 bushel of beans yields 14 No. 3 cans.
1 bushel of peas in hull yields 25 No. 2 cans.
100 ears of corn yields 30 No. 2 cans.

SCORE FOR JUDGING THE QUALITY OF CANNED FRUITS AND VEGETABLES

		Score of 100
I.	Appearance	25
	(a) Color.	
	(b) Clearness.	
II.	Texture	10
III.	Flavor	20
IV.	Uniformity	15
	(a) Ripeness.	
	(b) Appropriate size.	
V.	Pack (arrangement and weight)	15
VI.	Container	15
	(a) Appropriate package.	
	(b) Label.	
	(c) Neatness.	

CANNING IN GLASS

Glass jars are more economical for home canning than tin cans, as they can be used over and over again and the cost be spread over several years.

The Kind of Jar.—Select, if possible, a good jar of clear white glass. Fruit or vegetables show to great advantage through crystal-clear glass.

The square or round jar is used as an exhibit jar.

If clear glass cannot be had, green glass may be used, but the appearance of the canned product is much injured.

Sterilization, however, can be effected as well in one as in the other, and the green jars serve well for home use.

Tops.—There are a number of different jar tops on the market. Those most commonly used are the Mason screw top and the glass top with metal spring. Both of these are fitted with rubber rings.

Another type has a lacquered metal top with a sealing composition flowed on and does not require a rubber ring. The top is held in place by a metal band which is screwed on during processing.

Do not use metal tops with waxed paper inset for canning as these are designed for honey, syrup and other products which do not require processing.

Rubbers.—After the contents of a jar have been sterilized it is necessary that the jar be kept air-tight. Do not use rubbers the second time. The first season's heating destroys the life or elasticity of the rubber. For this reason it is important that good new rubbers be used. In buying rubbers, as in buying jars, get a good grade. Test the rubber for elasticity by stretching and folding. If it shows signs of cracking it is a poor product.

To Sterilize Jars.—To sterilize glass jars, place them in the canner in tepid water. Do not fill the canner with more than three inches of water. Place cover on the canner. Bring the water to a boil and steam jars 8 minutes.

No glass jars should be placed in a canner that does not have an extra bottom or basket to keep them from touching the true bottom of the canner. If this happens jars will break. A piece of half-inch mesh galvanized wire netting will answer the purpose.

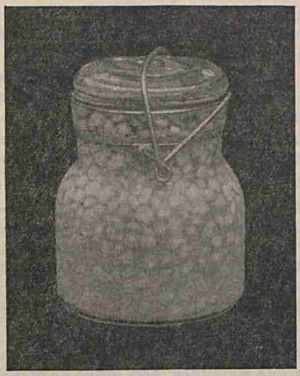
Rubbers should be sterilized by placing in a bowl of boiling water and allowing them to remain for three minutes.

Packing or Filling the Jars.—Remove the jars from the sterilizer, prepare the fruits or vegetables, and pack them in the jars in symmetrical layers, using a thin reed paddle or a spoon to push into place and to remove air bubbles. Pack into the neck of the jars, filling with water, brine, or syrup, as the packing proceeds. Wipe clean the rim of the jar, adjust top and place jar in the canner holding tepid water. Never place a cold or even cool jar in boiling water, as there is danger of breakage.

Processing.—When the water begins to boil in hot-water canner or the desired pressure is reached in the pressure canner, count time. Consult the time table for glass, noting the exact number of minutes, and never cut this time short. Have a clock handy and do not guess at time.

Leave the jars lightly sealed during the whole processing, and when the time is up remove one at a time from the canner, seal tightly, and set aside.

Exhausting and processing take place at the same time when canning in glass. If products are packed when boiling hot the seal may be completed before processing.



Jar as Placed in Cooking Vessel Before Being Tightly Sealed

Jar Tightly Sealed

Shrinkage of Water in a Jar.—If the water shrinks in a jar, as it will frequently do with string beans and peas, have a kettle of boiling water ready and, as the jar is taken from the canner, open and pour in boiling water until the jar is filled. Seal immediately and process 10 minutes.

Processing Time for Glass Longer Than for Tin.—It is necessary to process products packed in glass jars longer than those packed in tin. Glass is not as good a conductor of heat as tin, and we therefore add five to ten minutes to the time given for tin when canning in glass.

Compare the time tables.

Cooling.—Be careful not to set hot glass jars in a breeze or on a cold table top. Do not permit jars to touch each other. It is well to cover the table with a cloth.

Labeling.—Have every jar brightly polished and place label midway between the seams and one-quarter inch from the lower edge. For exhibition purposes all labels are pasted underneath the glass jar.

CANNING FRUITS AND BERRIES IN GLASS AND TIN

Dewberries, Blackberries, Raspberries, and Huckleberries.—To can dewberries, blackberries, raspberries, and huckleberries the following method will prove satisfactory: Gather berries when ripe but firm. Place in a muslin sack and plunge into boiling water one minute (blanch). This will

slightly soften the berries and allow the packing of almost twice as many in a can or jar. It will also prevent the condition where berries rise to the top of the jar.

Pack the sterilized can to within one-quarter inch of the top with berries. Fill glass jars quite full. Fill the spaces and cover the berries with a syrup made of 1 gallon of water and 1 pint of sugar. (Use Syrup No. 2 or No. 3 if sweeter berries are desired.)

The flavor of all canned berries is finer when syrup or sugar is added.

Process No. 3 tin cans 8 minutes.

Process quart glass jars 13 minutes, permitting jars to remain lightly sealed while processing. Lift jars from the canner and seal tightly immediately.

Strawberries.—Canned strawberries do not make an attractive product when canned by ordinary methods, as they lose color and rise to the top of the jar. To prevent this condition use equal parts sugar and berries, heat to boiling point, let stand overnight; then heat to boiling point; pack hot and process five minutes.

When canning berries in tin, enamel cans will prevent the loss of color.

Read carefully the chapter on "Canning in Glass."

Peaches.—Clingstone peaches are best for canning and should be selected when they are fully ripe and of uniform size and color. Never pack fruit of varying colors in the same jar.

Peeling Clingstone Peaches.—Firm peaches may be peeled by placing them in a muslin bag and plunging into a boiling solution made from 4 tablespoonfuls of concentrated lye to 1 gallon of water. Allow the fruit to remain from 20 to 30 seconds and plunge immediately into plain boiling water for the same length of time. The last plunge is into a large vessel of cold water, where the peaches are emptied from the bag and the skin removed. If peaches remain too long in the lye discoloration results. When semi-cling peaches or soft peaches are canned, they may be peeled by first plunging into boiling and then into cold water.

After peeling, cut peaches into halves and remove the pit. Have ready a boiling syrup made of 1 pound and 14 ounces of sugar and 1 gallon of water (Syrup No. 2). For extra fine peaches use Syrup No. 4. Drop peaches into boiling syrup one-fourth at a time, allowing them to cook for 1 minute, or until tender but not soft.

Place in jars in overlapping layers with the pit side down and the stem end towards the center of the jar. Add syrup bit by bit when packing and paddle to remove all bubbles. (Use No. 4 syrup when packing in jars. Only a small amount is necessary for a close pack.)

Process a quart jar for 25 minutes.

Process No. 3 can 20 minutes.

Read carefully the chapter on "Canning in Glass."

Canned Apples.—Late fall and winter apples which are slightly acid are best for canning. Peel, cut, and drop into a brine made of 2½ ounces of salt and 1 gallon of water. Cook in No. 2 syrup 5 minutes.

NOTE: Fruit may be successfully canned without the use of sugar; and when there is a scarcity, it is sometimes necessary. Sugar is not used to preserve the fruit, but to bring out the flavor and improve the taste. Even a small amount of sugar will greatly improve flavor. A No. 1 syrup may be used where heavier syrups are quoted.

Process tin cans 8 minutes.

When canning apples in glass, process quart jars 15 minutes.

It is advisable to make mellow summer apples into apple sauce. Pour hot into quart jars and process 15 minutes.

Read carefully the chapter on "Canning in Glass."

Canned Pears.—The Bartlett pear is best for canning. Select ripe, sound, medium-sized fruit (cut in halves, or if large in quarters). Remove all the hard portions around the seed and submerge in brine similar to that used for apples to prevent discoloration.

Plunge the halves or quarters into boiling syrup and allow them to cook until they can be pierced with a straw, remove and pack closely in a No. 3 can or quart jar. Cover with a boiling syrup made of 3 pounds and 9 ounces of sugar and 1 gallon of water.

Process No. 3 can 20 minutes.

Process quart jar 25 minutes.

If pears are to be packed for exhibit purposes, small pears should be cut in halves and layered as are peaches. Larger pears may have a thick slice cut from each of the four sides. Hollow these slightly and pack in layers. The fruit remaining around the core can be ground and used in gingered pears.

Many complaints have come in regarding the hardness and lack of flavor in some canned pears. In every instance it was found that Keiffer pears not thoroughly ripe had been used and no precooking was done. Keiffer pears are not recommended for canning, but a palatable product may be had if the fruit is allowed to ripen thoroughly and care is taken to precook until it is tender. Both Keiffer and Pound pears are better made into preserves.

Canned Figs.—Peel 6 quarts of figs. Bring 2 quarts of No. 3 syrup to boiling and add the figs. Cook until saturated with sugar, but not until fiber breaks down.

Place figs carefully in jars and fill with the syrup.

Process quart jars 30 minutes.

Canned Cherries.—Cherries are usually canned without the seed, and should be put in glass jars or in lacquered tin cans. Large wax cherries are often canned whole. They should be blanched for 1 minute.

Pack seeded or whole cherries in jar to within one-quarter inch of top, fill jar with No. 3 syrup. Process quart jars 30 minutes. Process pint jars 20 minutes.

Read carefully the chapter on "Canning in Glass."

CANNING VEGETABLES IN GLASS AND TIN

4-H Recipes

Canned Tomatoes.—Select only ripe tomatoes for canning. One green or light-colored tomato will ruin the grade of the pack.

Blanch for one minute. The skin may then be removed easily. Do not peel any more than may be immediately canned, as tomatoes ferment quickly.

Be careful to remove with sharp knife the hard part of tomato at stem.

Pack into cans as many whole tomatoes as possible, cutting them only when they are too large to slip in. Fill can to within one-quarter inch of top, press gently and shake down fruit to fill crevices.

A level teaspoonful of sugar and a level teaspoonful of salt added to a No. 3 can or a quart jar of tomatoes improve the flavor of the product.

Use no water with tomatoes. If the can is properly filled the juice will be sufficient. A No. 3 can of tomatoes when filled should weigh 38 ounces.

Process No. 3 tin cans 35 minutes.

When canning tomatoes in glass jars, fill quite full and process quart jars 40 minutes.

Read carefully the chapter on "Canning in Glass."

String Beans.—To can string beans select those that are young and tender and which have few strings. The Green Pod Stringless is a good variety. If the beans are gathered when young and tender, and the strings removed, a good product results. Snap the beans at both ends, string, and place in a thin cotton bag. Blanch from 3 to 5 minutes. This improves the flavor of the beans and allows more to be packed in a can. Pack closely to within one-quarter inch of the top, and fill with boiling water. Add 1 level teaspoonful of salt. (Instead, a brine may be used: 1 gallon of water and one-third cup of salt.) Process 40 minutes at 10 pounds pressure.

Beans should be canned the same day they are gathered.

Read carefully the chapter on "Canning in Glass."

Soup Mixture.—Five quarts tomatoes, 2 quarts corn, 2 quarts okra or lima beans, 2 tablespoonfuls sugar (level), 2 tablespoonfuls salt (level). Scald and peel tomatoes, cutting out green or hard spots. Chop and measure. Cut young and tender field or sugar corn from cob. Slice okra in rings one-half inch thick. Place all in open agate kettle and boil until thick. Pour in No. 2 cans while hot, seal, and process 1 hour. Process a No. 3 can 1½ hours.

Use an asbestos mat under the kettle when boiling soup mixture. It is very easily scorched.

When canning soup mixture in glass jars, process quart jars 1½ hours. Process pint jars 1 hour.

Read carefully the chapter on "Canning in Glass."

See time table for processing with steam under pressure.

Brunswick Stew.—Five pounds chicken, squirrel, or veal, 2 quarts corn, 2 quarts butterbeans, 5 quarts tomatoes, 1 quart okra, 2 tablespoonfuls sugar, 2½ tablespoonfuls salt.

Cut chicken or meat into small pieces. Cover with cold water and simmer until tender (add more water if necessary). Remove bones, add vegetables, and cook until very thick. Pour while hot into No. 2 cans, seal, and process for 40 minutes in a steam-pressure canner at 15 pounds pressure, 250 degrees F. (Do not use a hot-water canner for processing this product.)

Tomato Ketchup.—Select only ripe tomatoes for ketchup; wash, but do not peel; cut out green cores and bad places; quarter, measure, and place on stove in open-top porcelain-lined or agate vessel. For every gallon of tomatoes add 1 level cup of fine chopped onions. Boil until both tomatoes and onions are soft. Strain juice and pulp through a coarse wire sieve, mashing through all the pulp possible. Measure this strained pulp and juice and proceed as in the following recipe:

2 gallons strained mixture tomatoes and onions,
2½ level teaspoonfuls ground cloves,
3 level teaspoonfuls ground ginger,
2 level teaspoonfuls ground red pepper,
3 level tablespoonfuls ground allspice,
1 level tablespoonful ground black pepper,
1½ level cup (½-pint cup) sugar,
¾ level cup (½-pint cup) salt,
1 quart vinegar.

Place strained tomatoes in agate vessel; add spices, sugar, and salt; boil until thick; then add hot vinegar slowly and let boil 30 minutes before beginning to bottle mixture.

Use clear flint 10-ounce grape-juice bottles. Wash well with soda and place in vessel of hot water until ready for use. It is best to put wire netting in the bottom of the vessel, place the bottles filled with water thereon, and let come to a boil, thus sterilizing. Pour out water. Fill hot bottles with boiling ketchup. Cork tightly.

The measures for all recipes must be level. These measures have been taken accurately, and one should get good results if directions are followed.

A good ketchup may be made in winter by using 5 cans of 4-H tomatoes, 1 cup of chopped onions, and half the quantity of all other ingredients mentioned in the above recipe.

Chili Sauce.—Tomatoes for chili sauce are mashed through a colander instead of through a sieve, thus allowing the seed to remain in the finished product. Use the same recipe as for tomato ketchup, adding 2 level cups chopped green sweet bell peppers (leaving out seed), another level teaspoon of ground red pepper, and 1 level tablespoonful of salt. Boil until quite thick—much thicker than ketchup. Put up in pint or half-pint glass jars. Process 15 minutes and seal.

Sweet Potatoes.—The Nancy Hall, Norton Yam, or other varieties of yellow potatoes are best for canning. Select potatoes of medium size as nearly uniform in shape as possible; place in wire trays or sacks and boil with skins on until three-fourths done. Remove peeling while very hot, cut in slices three-quarters of an inch thick, pack in a No. 3 can to within one-quarter inch of top, using only 2 tablespoonfuls water in a can. This is known as a dry pack, and is the proper commercial pack. Potatoes should be packed rapidly after parboiling, as they turn dark upon standing.

Process No. 3 cans 70 minutes at 15 pounds pressure.

Process quart jars 75 minutes at 15 pounds pressure.

An exhibit of sweet potatoes may contain small whole potatoes or sliced potatoes.

Read carefully the chapter on "Canning in Glass."

Canned Baby Beets.—When canning beets, use only young and tender ones, not over 1½ inches in diameter, preferably 1 inch.

Gather beets and allow at least 2 inches of stem and all of the root to remain. Wash, but do not peel; plunge into boiling water, and cook until three-fourths done.

Remove peeling, stem and root, grade as to size, and pack symmetrically, filling with hot water. (Never use cold water with beets.)

Seal. Process a No. 3 can 30 minutes at 10 pounds pressure. (Use lacquered cans.)

If large beets are to be used, boil three-fourths done. Slice in quarter-inch slices, and proceed as with small beets.

When canning beets in glass jars, process quart jars 40 minutes at 10 pounds pressure.

Read carefully the chapter on "Canning in Glass."

Packing Pimientas in Tins.—Select sound, uniform pimientas of medium size. To remove seeds, cut around the stem of each with a slender paring knife and remove the inside partitions. To peel, place the peppers in a hot oven from 6 to 10 minutes (until the skin blisters and cracks), being careful not to allow them to burn. Then remove the skin with a slender paring knife. Flatten and pack in horizontal layers. Place whole uniform peppers in the cans, allowing four for the flat No. 1 can and eight for the No. 2 can.

This number makes the standard pack, the net weight of which should not be less than 1 pound for a No. 2 can and 8 ounces for a flat No. 1 can. The peppers should be so selected as to fill the cans. No liquid is used. The processing extracts a thick liquor which almost covers the peppers. Process at boiling temperature, No. 1 cans for 15 minutes, No. 2 cans for 25 minutes.

When canning peppers in glass, use a 12-ounce or a pint jar and process 30 minutes.

Read carefully the chapter on "Canning in Glass."

NON-ACID PRODUCTS TO BE CANNED WITH STEAM UNDER PRESSURE

Corn.—When canning corn, select that which is young and tender—at the milky stage—and see that it goes into the can immediately after it comes from the garden.

Sugar corn is best for canning, a particularly good variety being "The Country Gentleman." When sugar corn cannot be had very young, tender field corn is sometimes used.

Blanch corn on the cob for 2 minutes and cut from the cob with a sharp knife. If any of the grain is left after cutting, scrape off with the back of a knife.

Place the cut corn in a kettle and cover with hot water. Bring to a boil and boil for 10 minutes.

Pack in No. 2 cans or hot pint jars to within 1 inch of the top. If there is not sufficient water with the precooked corn, add enough boiling water to cover the grains. Add 1 level teaspoonful of sugar to each can. If field corn is used, add 2 level teaspoonfuls.

Precooking of corn makes a more uniform product, as it provides in a great measure for the swelling of the grains before they are packed in the cans. It insures, also, a high temperature at the center of the can at the beginning of the processing.

Process No. 2 cans 1 hour, 20 minutes at 15 pounds pressure.

Process glass jars 1 hour, 30 minutes at 15 pounds pressure.

Garden Peas.—Peas should be freshly gathered, and it is essential that they be graded. Shaking peas through wire netting of different sizes will grade them nicely.

After grading, place small peas in a muslin sack and blanch for 3 minutes. Large or older peas must be blanched 5 minutes.

Pack peas in No. 2 can, fill with brine, and add 1 teaspoonful of sugar.

Process No. 2 cans 45 minutes at 10 pounds pressure.

Process glass jars 50 minutes at 10 pounds pressure.

Read carefully the chapter on "Canning in Glass."

Cornfield Peas.—Gather peas when young and tender, shell, place in muslin sack, and plunge in boiling water and allow to precook for 10 minutes. Remove and pack while hot in cans. Add 1 teaspoonful of salt and fill to within one-quarter inch of the top with hot water.

Process a No. 2 can 50 minutes at 10 pounds pressure.

Process glass jars 55 minutes at 10 pounds pressure.

Lima Beams.—Select young and tender lima or butter beans, grade them as to size, blanch from 2 to 4 minutes, and pack can or jar to within one-half inch of the top. Fill can or jar with brine (1 gallon of water and one-third cup of salt).

Process No. 2 cans 50 minutes at 10 pounds pressure.

Process glass jars 55 minutes at 10 pounds pressure.

Read carefully the chapter on "Canning in Glass."

Okra.—Gather young pods, wash in cold water, cut off stem, but do not cut into seed pod. Can okra whole. Place in muslin sack and blanch for 3 minutes.

Pack in jars or cans and fill with brine (1 gallon water to one-third cup of salt).

Process No. 3 tin cans 40 minutes at 10 pounds pressure.

Process glass jars 45 minutes at 10 pounds pressure.

Read carefully the chapter on "Canning in Glass."

Squash.—Can only young and tender squash. Cut in pieces and cook 10 minutes after boiling point is reached.

Pack into tin cans or jars to within one-quarter inch of the top. Add 1 teaspoonful of salt to each quart can and fill with hot water.

Process No. 3 can 85 minutes at 10 pounds pressure.
Process glass jars 90 minutes at 10 pounds pressure.
Read carefully the chapter on "Canning in Glass."

Pumpkin.—Pumpkin is canned in the same manner as squash.

Spinach.—Prepare the spinach by cutting off all dead leaves and roots. wash thoroughly through several cold waters; drain well. Blanch in boiling water for 4 minutes. Drain well, pack in No. 3 cans or jars, cover with boiling salt water (1 teaspoonful of salt to 1 quart of water).
Process No. 3 cans 75 minutes at 10 pounds pressure.
Process glass jars 80 minutes at 10 pounds pressure.
Read carefully the chapter on "Canning in Glass."

Turnip Salad and Mustard.—Use directions for spinach.

Use of No. 10 Cans.—Only experienced canners should can in No. 10 cans. It is difficult to sterilize perfectly so large a filled container, and care must be exercised as to what is put in a can and to the processing.
String beans, tomatoes, soup mixtures, peaches, pears, apples, and blackberries are successfully canned in these containers.
Do not can corn, peas, squash, or pumpkin in No. 10 cans.

PREPARATION OF MEAT FOR CANNING

1. Select fresh, clean meat. Discard the surplus fat.

2. Season and cook as for serving, but do not cook until done.

3. Cooking the meat before canning brings out the flavor and shrinks it, thus more can be put into the can.

4. Season lightly and do not over-cook. In frying use a minimum of flour.

5. Cut meat into pieces suitable for serving. Remove bones (except in fish and fried chicken). If bones are not removed the processing time must be increased.

6. Pack meat tightly to within three-fourths inch of the top of the jar.

7. Canned meats are more attractive if no liquid is added to the pack.

8. Meats should be packed hot (170°-180°F.) to insure a good vacuum, and should be processed immediately.

9. Wipe top rim of cans and jars to remove any grease which may be present. Grease causes the rubber to disintegrate and any foreign matter on the rim of tin cans will interfere with a good seal.

10. Pressure cookers only should be used in canning meats. Other methods are unsafe.

11. After processing inspect cans and jars to be sure of a good seal.

Time-Table for Canning Meats With the Pressure Cooker

	Treatment Before Processing	Process No. 3 Cans and Quart Jars	No. Pounds Pressure	Process No. 2 Cans and Pint Jars	No. Pounds Pressure
ROASTS: PORK, BEEF, MUTTON	Sear, season and cook until partly done. Slice and pack hot.	60 minutes	15	60 minutes	15
STEAK	Sear in hot pan, but do not cook done. Add seasoning. Pack hot.	60 minutes	15	60 minutes	15
STEWS	Cook as for serving and pack hot.	60 minutes	15	60 minutes	15
GROUND MEAT MIXTURE	Prepare as for serving. Do not pack jars too full. Pack hot.	60 minutes	15	60 minutes	15
FISH	Soak in salt water 20 minutes. Cook with seasoning and pack hot.	90 minutes	10	90 minutes	10
CHICKEN WITHOUT BONES	Boil or bake, cut into small pieces, remove bones and pack hot.	60 minutes	15	60 minutes	15
CHICKEN WITH BONES	Bake or fry. Pack hot.	90 minutes	15	90 minutes	15

Time-Table for Canning Fruits and Certain Vegetables in Tin and Glass in the Hot-Water Canner

Read Recipes Before Proceeding

	Treatment Before Processing	Liquor	Number of Can	Process	Glass Jar	Process
APPLES	Precook 5 minutes in syrup	No. 2 syrup	3	8 minutes	Quart	15 minutes
BLACKBERRIES	Blanch 1 minute	No. 2 syrup	3	8 minutes	Quart	13 minutes
CHERRIES	Pack in jars or lacquered tin cans. Cover with syrup	No. 3 syrup	3	20 minutes	Quart	30 minutes
DEWBERRIES	Same as blackberries					
FIGS	Peel and cook in syrup until saturated	No. 3 syrup	2	25 minutes	Quart	30 minutes
HUCKLEBERRIES	Same as blackberries					
LOGANBERRIES	Same as blackberries					
PEACHES	Cook in syrup 1 minute	No. 3 syrup	3	20 minutes	Quart	25 minutes
PEARS	Cook in syrup until tender	No. 3 syrup	3	20 minutes	Quart	25 minutes
PLUMS	Prick, pack in jar or lacquered cans and cover with syrup.	No. 3 syrup	3	15 minutes	Quart	20 minutes
PIMIENTAS	Heat in oven until blistered, Peel.	No water	1	15 minutes	Pint	30 minutes
RASPBERRIES	Same as blackberries					
SAUERKRAUT	Pack in jars	Brine	3	35 minutes	Quart	40 minutes
SOUP MIXTURE	Cook until thick		2	1 hour	Quart	1 hour 30 minutes
TOMATOES	Blanch 1 minute	Salt, sugar. No water	3	35 minutes	Quart	40 minutes

If solder-sealed tin cans are used, products should be exhausted 3 minutes before processing.

Time-Table for Processing Non-Acid Vegetables with the Pressure Cooker

	Treatment Before Processing	Liquor	Number of Can	Process	Temp. Degrees F.	No. Lbs. Pressure	Glass Jar	Process	Temp. Degrees F.	No. Lbs. Pressure
ASPARAGUS	Precook 4 to 5 minutes	Brine	3	30 min.	240	10	Quart	40 min.	240	10
BABY BEETS	Cook until skins will slip off	Hot water	3	30 min.	240	10	Quart	40 min.	240	10
BEANS, LIMA	Blanch 2 to 4 minutes	Brine	2	50 min.	240	10	Pint	55 min.	240	10
BEANS, STRING	Blanch 3 to 5 minutes	Brine	3	30 min.	240	10	Quart	40 min.	240	10
CORN	Blanch on cob 2 minutes. Cut from cob, cover with hot water and boil 10 minutes	Water, salt, and sugar	2	80 min.	250	15	Pint	90 min.	250	15
FIELD PEAS	Precook 10 minutes. Pack hot. Add 1 teaspoon salt. Cover with hot water		2	50 min.	240	10	Pint	55 min.	240	10
GARDEN PEAS	Blanch 1 to 4 minutes	Water, salt, and sugar	2	45 min.	240	10	Pint	50 min.	240	10
OKRA	Blanch 3 minutes	Brine	3	40 min.	240	10	Quart	45 min.	240	10
PUMPKIN	See recipe for squash									
SQUASH	Cook until tender. Pack hot. Add 1 teaspoonful salt to each jar.		3	85 min.	240	10	Quart	90 min.	240	10
SOUP MIXTURE	Cook until thick. Pack hot.		3	30 min.	240	10	Quart	30 min.	240	10
SPINACH TURNIP GREENS MUSTARD	Wash and steam in covered vessel until wilted. Pack hot. Cover with liquor from steaming. Add teaspoon salt		3	75 min.	240	10	Quart	80 min.	240	10
SWEET POTATOES	Boil until ¾ done. Peel and pack hot	Two tablespoons water	3	70 min.	250	15	Quart	75 min.	250	15

June, 1931 (Revised and Reprinted) Extension Circular No. 113

NORTH CAROLINA
STATE COLLEGE OF AGRICULTURE AND ENGINEERING AND
U. S. DEPARTMENT OF AGRICULTURE CO-OPERATING
N. C. AGRICULTURAL EXTENSION SERVICE
I. O. SCHAUB, *Director*
RALEIGH

JELLY, PRESERVES, JAM, AND PICKLE

JANE S. MCKIMMON, *State Home Demonstration Agent*
CORNELIA C. MORRIS, *District Agent*

EQUIPMENT FOR MAKING JELLY, PRESERVES, AND JAM

Only a few utensils are necessary for preserving and jelly-making. Have on hand several sharp fruit knives for paring and cutting; a large kettle for cooking; a colander, cheese cloth and flannel jelly bag for straining and filtering; and a wooden paddle or spoon for stirring. A thermometer is a necessity if perfect products are desired. Other tests are fairly accurate; but they take time, patience, and experience, and even then good materials are often spoiled by over or under-cooking. Accurate scales and measuring cups are also necessary. A wash-boiler with wooden rack in the bottom makes an excellent sterilizer for glasses, bottles and jars, and can also be used for pasteurizing and processing.

JELLY

"Jelly is the juice of fruits boiled with sugar to an elastic consistency." Good jelly should be firm enough to hold its shape, and should be tender, clear and brilliant.

Selecting the Fruit

The fruits best suited for jelly-making are grapes, plums, apples, crab apples, and blackberries, as these fruits contain the necessary properties for making good jelly—that is, pectin with an acid. The fruit should be firm and in good condition. One-half should be ripe to give color and flavor with one-half under-ripe fruit to supply acid. Strawberries, peaches, and cherries are lacking in pectin and will not make jelly unless this property is supplied from some other source.

Pectin

Pectin is a carbohydrate akin to starch, and is usually found just under the skin of fruits. It is necessary to cook the fruit in order to extract the pectin.

Pectin Test

To determine the amount of pectin in fruit juices use one teaspoonful grain alcohol and one teaspoonful cooked fruit juice (cooled to room temperature), mix in a glass, let stand one minute. Pour mixture gently into another glass. If a solid mass has formed, the juice will stand measure for measure of sugar. If the mass is slightly broken it will be safer to use three-fourths as much sugar as juice. If only a small amount of pectin is present, one-half measure of sugar to a measure of juice is advisable. Crab apple usually yields a heavy pectin, and an equal volume of sugar and juice may be used. Apples and blackberries contain a smaller amount of pectin and will usually require three-fourths as much sugar as juice. Grapes require from one-half to three-fourths as much sugar as juice.

Orange Pectin

The following method of extracting pectin from orange peel has been suggested by Dr. M. N. Straughn of the Bureau of Chemistry:

Peel every particle of the outside yellow skin of the orange, cutting it off as thin as possible. Remove all the white peel. Grind this white peel with a meat chopper, and to each cupful pressed down add the juice of one lemon and allow to stand one hour. Add two cups of water. Heat to boiling point and boil five minutes. Set aside until next morning; then add four cups of water, heat to boiling, and boil ten minutes. Allow to cool, drip through cheese cloth, and then through bag. This pectin may be prepared, poured into jars while hot, sealed, sterilized, and kept for later use. The peel which has been allowed to drain may be again treated as described and a quantity of pectin obtained.

Making the Jelly

Cooking the Fruit. The juice of fruit is extracted for jelly-making by cooking fruit with water until it is soft. This usually requires from 25 to 45 minutes. Long cooking destroys the pectin.

Straining. After cooking the fruit, it is placed in a square of cheese cloth and allowed to drain without pressing. The juice is then filtered by pouring through a flannel jelly bag.

The Jelly Bag. A square of white flannel with the two adjacent sides French-seamed makes the best jelly bag. The bag may be hung on nails to drain if loops are placed at the top.

Adding the Sugar. As soon as the juice begins to boil add the sugar and cook rapidly until the jelly stage is reached. By adding the sugar at the beginning there is less danger of crystalization, as the sugar is inverted when cooked with an acid.

Too little sugar makes a tough jelly. Too much sugar causes the jelly to be soft and syrupy. Overcooking and the use of too much sugar cause many failures in jelly-making.

Test juices with alcohol (see Pectin Test) to determine the amount of sugar to use. Either medicated or denatured alcohol can be used.

Testing the Jelly. The skillful use of the thermometer will save many failures in jelly-making. Different juices jell at slightly different temperatures. Grapes usually require a higher temperature than berries and apples.

A good thermometer costs very little money and will soon pay for itself in materials saved. To test the jelly without a thermometer, take a little of the boiling juice in a spoon and cool. When the jellying point is reached, the juice will form a sheet and break from the side of the spoon when poured out. The use of the thermometer, however, will give more accurate results.

The temperatures in this bulletin are for sea level. In the mountain districts 2 degrees F. should be deducted for every thousand feet above sea level. For instance, in the recipe for apple jelly, the temperature of the finished product at sea level is given as 222 degrees F. If this jelly is made at an altitude of 2,000 feet above sea level, the temperature would be 218 degrees F.

Skimming the Jelly. As soon as the jelly stage is reached, skim. There is less waste when the skimming is done at the last.

Pouring Jelly into Glasses. The glasses should be washed and sterilized. Remove them from the water and drain while hot. When the jelly is fin-

ished, pour it immediately into the hot sterilized glasses. Fill the glasses full. When the jelly is firm it will have shrunken, leaving a space for the melted paraffin.

Covering the Jelly. When cold, cover the jelly with a thin layer of melted paraffin to exclude the air. Cover glasses with lacquered tin tops.

Hermetic Caps. If hermetic caps are used, paraffin will be unnecessary as the jelly is sealed and processed while hot.

Jelly Stock (Pectin Extract)

During the summer months when fruit is plentiful, it is advisable to can jelly stock and make it into jelly as it is needed. The jelly stock will keep, while jelly, unless it is hermetically sealed, occasionally will ferment and lose its delicate fruity flavor. The method of preparing the stock is simple. After the fruit is cooked and juice extracted and strained ready for jelly-making, it is poured into jars and processed for 20 minutes. It is then stored. When ready to use, add the required amount of sugar and cook until the jelly stage is reached. If this method is put into practice it will be found that the products from orchard and vineyard can be very rapidly disposed of and the tedious work of jelly- and jam-making postponed until winter. Clearer jelly can be made from jelly stock than from the fresh fruits that have just been cooked, as long standing causes the solids to settle and only the clear juice is used.

Apple Jelly Stock

Wash apples, cut in small pieces, and cover with water. After boiling point is reached, cook from 35 to 45 minutes. Strain and pour juice at once into hot sterilized jars and process 20 minutes. Store in a cool place until ready to make jelly.

Apple Jelly (made from stock)

1 pint apple jelly stock. 1½ cup sugar.

Cook to 222 degrees F., or 105½ degrees C. Skim and pour into sterilized glasses.

Winesap Apple Jelly Stock

4 pounds apples 5 pounds water (to cover).

Wash apples, cut in small pieces, weigh them, and add water to cover. After boiling point is reached, cook for 35 minutes. Proceed as in apple jelly stock.

Winesap Apple Jelly (made from stock)

2 cups winesap apple jelly stock 1½ cup sugar

Cook to 222 degrees F., and pour into hot sterilized glasses.

Apple Jelly

Wash apples and cut into small pieces; cover with water and boil from 35 to 45 minutes. Strain and measure juice. Test with alcohol to determine amount of sugar to be added. Apples usually require three-fourths as much sugar as juice. Cook to 222 degrees F., or 105½ degrees C. Skim and pour into hot glasses.

Crab Apple Jelly

Cut apples in small pieces, cover with water, and when the boiling point is reached cook for 45 minutes. Strain through cheese cloth. Filter by pouring juice through a heavy flannel bag and for each cup of juice use a cup of sugar. Crab apples contain a large amount of pectin and are also very acid. The jelly stage will be reached at 220 degrees F. This jelly is very firm and is excellent in flavor.

Grape Jelly Stock

8 pounds grapes (one-half under-ripe) 2 pounds water (one quart)

Crush grapes and boil with water 20 minutes; strain through cheese cloth and pour juice through a flannel bag. Pour into sterilized jars and process 20 minutes. Store in a cool place until ready to make jelly.

In grape jelly stock the cream of tartar crystals slowly settle to the bottom and by this method crystallization in the jelly is reduced to a minimum. Orange pectin is frequently used with grape jelly stock to prevent the formation of crystals.

Grape Jelly (made from stock)

Test juice with alcohol and add the required amount of sugar. Grapes usually require from one-half to three-fourths as much sugar as juice. Cook to 223 degrees F., or 106 degrees C. Sometimes a higher temperature than this is required for grape jelly. Pour into hot, sterilized glasses.

Muscadine Jelly Stock

Proceed as in directions for grape jelly stock. Any of the following varieties may be used: Scuppernong, Thomas, Mish, James, Eden, Memory, Smith, Flowers, and Luola.

Muscadine Grape Jelly (made from stock)

4 cups muscadine grape jelly stock 1 cup pectin (orange)
3¾ cups sugar.

As soon as the juice begins to boil, add the sugar gradually and cook to 223 degrees F., or 106 degrees C. Pour immediately into hot sterilized glasses.

Scuppernong Grape Jelly

Wash and crush grapes. Add water in the proportion of 1 quart water to 4 pounds grapes. Cook from 20 to 30 minutes. Strain through cheese cloth and filter through flannel jelly bag.

To 4 cups juice add 2 cups orange pectin (see recipe) and 4½ cups sugar. Cook to 223 degrees F., or 106 degrees C. Pour immediately into hot sterilized glasses.

Paste Stock

Cook grape pulp until seeds separate.
Put through potato ricer or colander.
Process in jars 20 minutes.
Store in a cool dry place and make paste fresh when needed.
The Flowers is the best muscadine variety for paste.

Grape Paste

2 pounds paste stock 1 pound sugar (granulated or pulverized).

Cook carefully, stirring constantly until mass will hold its shape. Use large flat pan and wooden paddle.

When finished, the paste is of the consistency of fudge and should be poured out on oiled platters or on a marble slab to dry. When cold cut in one inch squares, roll in granulated sugar, and pack in airtight boxes. This makes a wholesome confection for children as well as for adults.

Strawberry Jelly

Cap, wash, and crush berries; add only enough water to keep them from burning. Cook until soft and strain juice through flannel jelly bag. To 1 pint strawberry juice add 1 pint orange pectin juice and 1 pound sugar. As soon as juices boil add sugar and cook to 223 degrees F., or 106 degrees C. Skim and pour at once into hot sterilized glasses.

Blackberry Jelly Stock

6 quarts blackberries. 1 pint water.

Wash berries, place over heat and after boiling point is reached cook for 15 minutes. Strain through double cheese cloth and process in pint jars for 20 minutes. This will yield 3 pints of jelly stock. Store in cool place.

Blackberry Jelly (made from stock)

2 pints jelly stock. 1½ pound sugar.

As soon as the boiling point is reached, add sugar gradually and cook to 222 degrees F. Skim and pour immediately into hot sterilized glasses.

Mint Jelly

1 pint orange pectin juice. 2 drops oil of peppermint.
1 pound sugar. Small amount of green coloring paste.

Bring the pectin to boiling point, add sugar, and cook rapidly until jelly-ing point is reached (223 degrees F., or 106 degrees C.) Skim quickly and add peppermint and coloring. Stir thoroughly and pour into glasses.

Quince Jelly Stock

Cut quinces into small pieces, cover with water and cook until tender. Strain through cheese cloth and process in pint jars for 20 minutes.

Quince Jelly

2 cups quince jelly stock. 2 cups sugar.

Strain stock through a flannel jelly bag, place on stove, and add sugar when boiling point is reached. Cook to 220 degrees F. Skim and pour immediately into hot sterilized glasses.

Quince and Crab Apple Jelly

1 cup quince jelly stock.
1 cup crab apple jelly stock.
2 cups sugar.

As soon as boiling point is reached, add sugar and cook to 220 degrees F. This jelly has a very fine flavor.

Orange Marmalade Number 1

6 oranges.
3 lemons.

Remove and discard the thin yellow rind from half of the oranges. Cut oranges and lemons into very thin slices and for every measure of fruit add three measures of water. Let stand over night. Cook until fruit disintegrates. Measure and add an equal volume of sugar. Cook to 220 degrees F. The finished marmalade should have the consistency of jelly. A combination of lemon and orange gives a more delicate flavor than orange alone.

Orange Marmalade No. 2

1 lb. peeled oranges.
¼ lb. peel removed from oranges.
1 qt. water.
14 oz. sugar.
Juice of 1 lemon.

Wash fruit, remove one-fourth of the peel and cut into thin slices. Cover with water and boil ten minutes. Drain. Repeat this process twice, cooking in the last water until tender.

With a sharp knife, remove and discard the yellow part from the skin which remains on the oranges. Leave the white peel for it contains the pectin. Weigh the fruit, cut it into small pieces. For each pound of fruit, use 14 ounces of sugar. Put the fruit into a preserving kettle, add one quart of cold water, and cook until the fruit disintegrates—about 20 minutes. Heat to boiling point. Add the sugar and cooked peel. Cook until it sheets from the side of the spoon.

Marmalade

1 grapefruit.
1 orange.
1 lemon.
3½ qts. cold water.
5 lbs. sugar.

Wash fruit, cut in thin slices and discard seeds. Add water and let stand overnight. Cook until the peel is tender. (It will take 4 or 5 hours simmering on top of the stove.) Again set aside overnight. Add the sugar and cook, stirring occasionally until the syrup thickens on a cold dish or flakes from a spoon—218 degrees F. Cool the mixture a little before putting it into glasses so that the fruit will remain in suspension.

Carrot Marmalade

3 c. carrots.
4 c. sugar.
2 oranges.
3 lemons.
1 c. water.

Wash carrots, scrape, and chop in small pieces. Cook until tender. Wash and peel oranges. Cut peeling into fine strips. Boil these until tender in water to cover. Cut the orange pulp in small pieces. Squeeze the juice from the lemons. To the hot carrots add sugar, water, lemon juice, orange pulp and cooked peeling. Cook until syrup is thick and fruit is clear.

PRESERVES

To make preserves, take whole berries, small fruits, or uniform pieces of large fruits, and cook in syrup until they are saturated. The proportions are usually 1 pound of fruit to ¾ pound of sugar.

When fruit is cooked in syrup, osmosis or a diffusion between the fruit juices and the syrup takes place. If the syrup is thin when the fruit is put into it, the mixing or diffusion of the fruit juices and the syrup, through the cells of the fruit, takes place evenly and the fruit remains plump; but if the syrup is very heavy, the fruit juices are drawn out rapidly and the syrup cannot enter the fruit rapidly enough to prevent shrinkage or shriveling. It is necessary, therefore, to start preserving in a thin syrup. Boil until the syrup is of the desired density. Remove the fruit and place in a shallow dish, allowing it to stand in some of the syrup while the remainder boils thicker. Pour this syrup over the fruit on the platter and let stand until cold or until the next day, when the whole may be returned to the kettle, allowed to come to a boil, and the fruit removed and set aside in a shallow dish until the syrup is again boiled down.

When thick enough, this syrup is poured over the fruit as at first and the vessel covered and allowed to stand until next morning. The fruit is packed in jars, the syrup poured in little by little as the packing progresses, and until the jar is quite full. The packer must use a reed paddle to remove air bubbles and to push the fruit in place. All jars packed with preserves must be processed after filling to destroy mold spores.

Never use metal kettle for preserves, jams, or jellies. Porcelain-lined or agate kettles are desirable. Cook preserves, jams, and jellies in open vessel that evaporation may take place easily.

Peach Preserves

Peel peaches, cut in halves if small, in quarters if large. Use 1 pound of fruit to ¾ pound of sugar. Put enough water with sugar to make a thin syrup, and proceed as in directions for preserving. Cool, pack in jars as symmetrically as possible. Paddle. After packing, process jars 15 minutes.

Pear Preserves

Large pound pears are excellent for preserves. Peel pears and cut into uniform pieces that are not too small. Use 1 pound of fruit to ¾ pound of sugar. Put enough water with sugar to make thin syrup. Proceed as in directions for preserving. Let cool, pack in jars, and process for 15 minutes.

Cherry Preserves

Seed and weigh cherries. For each pound of fruit use ¾ pound of sugar and ¼ cup of cherry juice. Cook sugar and juice together. When cool add cherries and cook rapidly to 106½ degrees C., or 224 degrees F. Pack in jars when cold and process 15 minutes.

Gingered Pears

10 pounds pears, peeled and quartered.
7½ pounds sugar.
4 ounces ginger root or 2 level tablespoonfuls powdered ginger.
Juice and the grated yellow part of the rind of 3 lemons.

Grind pears through meat chopper. Place all ingredients in enameled kettle. Cook until amber colored and of the consistency of jam. Pack in jars while boiling hot.

Strawberry Preserves

None but freshly-picked berries should be preserved. Practically the same methods are to be followed in the preserving of all berries. Berries should be gathered in shallow trays or baskets, and not in deep vessels which allow them to be bruised and crushed. They should be uniform, ripe, and sound; only large firm berries should be selected for preserving. All berries should be carefully sorted and lightly washed by placing in colander and pouring water over them rather than by putting them into a pan of water.

Recipe No. 1

(Especially fancy pack but not as economical as recipe No. 2, since a considerable amount of extra syrup is usually left over to be canned separately.)

2 pounds whole berries. 1 pint berry juice.
2½ pounds sugar.

If the best possible color and flavor is to be secured for the finished product, the syrup for preserved berries should be made of berry juice, obtained by crushing, heating and straining the softer, broken berries. Boil together the berry juice and the sugar, and skim and cool the syrup before dropping the berries into it, to prevent shrivelling and toughening the fruit. Return to the fire and bring slowly to a boil in a covered pan. Remove the cover and cook until the fruit looks clear, being very careful not to overcook; the berries should remain whole. If a thermometer is used the cooking may be finished at 222 degrees to 224 degrees F. Skim and cool in a covered pan. If berry preserves are covered for five minutes before removing from the fire and the vessel left covered while cooling, the product will be more plump. The fruit will be better if allowed to cool in shallow trays or pans and stand in the syrup over night; it improves the shape and flavor, as the berries absorb more of the syrup, become heavier, and pack better. Lift the berries out of the syrup carefully and pack cold. Cap; process pint jars for 10 minutes at 180 degrees F.

Recipe No. 2

2 pounds berries. ½ cup berry juice.
1½ pounds sugar.

Wash, cap, and stem the strawberries. Make a syrup of the sugar and juice and add the berries. Cook to 222 degrees F., or 105½ degrees C., or until the syrup is very thick. Cool quickly, pack into jars previously sterilized for 10 to 15 minutes, and seal as for preserves. More of the natural flavor is retained by using this method, and no syrup will be left over, which means a saving in sugar, but the yield is not so great and the fruit does not remain whole and plump as in the first method given above.

Sun-cooked Preserves

The berries should be washed, capped, stemmed, drained, and measured. Allow an equal weight of sugar for fruit. For every 2 pounds of berries measure one-fourth cupful of berry juice and heat with the sugar. Cook and pour over the whole berries in shallow trays. Stand in the sun for three or four days, bringing indoors each night. Dampness is a great foe to successful sun cookery. Allow the fruit to remain in the sun until it is well plumped and the syrup is thickened almost to a jelly. If the sun

fails to shine, keep the preserves in a cool oven. Pack in sterilized jars and seal. (Recipes for strawberry preserves from leaflet U. S. Department Agriculture.)

Fig Preserves

Gather figs when just ripe (they must not be soft or cracked). Peel carefully, trying not to cut too near the seed. Use 1 pound of sugar and the juice of ½ lemon to each pound of fruit. Place sugar in preserving kettle with enough water to keep it from sticking. Stir occasionally until it begins to boil. Add lemon juice. This will prevent crystals from forming. Add part of the figs, let them boil until clear and transparent. Remove to a platter, which should be placed in the sun if possible. Add more of the figs to the boiling syrup until all are used. When all figs are removed, boil syrup down until as thick as honey. Add the figs which have been sunning or standing; boil 2 minutes. Set aside until next morning, when they may be packed in jars. Process filled jars for 15 minutes.

Packing. Arrange figs in rows in the jars with stems up, pouring in a little syrup as each row is placed. Use paddle to remove bubbles.

Figs which are peeled by hand should be labeled "Skinless Figs," as they bring a better price in the market than those that have the skins removed by scalding in soda water.

Preserved Watermelon Rind

Make a saturate solution of lime, using 2½ tablespoonfuls (½ oz.) lime (calcium oxide) to 1 gallon of water. After 4 or 5 hours pour off water, leaving excess lime. Remove peel and pink part from 2 pounds watermelon rind and cut rind in 1-inch squares. Soak over night in lime water. Drain, soak in clear water 2 hours and boil for 10 minutes in ginger water (1 ounce ginger to 4 quarts of water). Make a thin syrup, using 2 pounds of sugar, the juice of 1 lemon, and 2¼ quarts water. Add gradually the rind to the syrup and cook until tender and clear. When cold, pack in jars, cover with syrup, and process 15 minutes.

JAM

Jam is more easily made than preserves, and is a marketable product. It differs from preserves in the method of cooking, the object being to cook the fruit into a smooth paste of jelly-like consistency.

Blackberries, strawberries, raspberries, and such soft fruits as clearstone peaches and figs make excellent jam. At least three-fourths of the fruit should be fully ripe to give flavor and color to the finished product; one-fourth slightly under-ripe fruit will improve the consistency of the jam.

As in preserves, 1 pound of fruit to ¾ pound of sugar is the proportion used.

Put fruit and sugar into preserving kettle with just enough water to prevent burning. Add sugar and mash fruit with a wooden spoon or bat. Cook slowly until fruit is a smooth thick mass. The temperature of the jam when finished will range from 221 degrees F., or 105 degrees C., to 223 degrees F., or 106 degrees C., depending upon the kind of fruit used.

Packing Jam. After jam is cooked it should be poured immediately into hot sterilized jars. Seal and process 15 minutes.

Strawberry Jam

Three-fourths of the berries should be fully ripe. Wash and cap, and to 1 pound of fruit add ¾ pound sugar and proceed as in directions for jam.

Raspberry Jam

Follow directions for strawberry jam.

Blackberry Jam

Select wild berries, if possible; they are well flavored and have small seed. For flavor, be sure three-fourths of the berries are fully ripe. Use 1 pound of fruit to ¾ pound of sugar, and proceed as in directions for jam.

Peach Jam

Select soft clear-stone peaches. Cut into small pieces, mash, and add ¾ pound sugar to each pound of fruit. Proceed as in directions for jam.

Fig Jam

Select soft, thoroughly ripe figs. Peel and mash. Use 1 pound fruit to ¾ pound of sugar with juice of ½ lemon for every pound of fruit. Proceed as in directions for jam.

Damson Jam

Wash fruit and pick off stems. To seed, place a small quantity in a colander and lower in hot water. Allow them to heat slowly. Press out the seed and remove. Keep water over a slow fire until all are seeded. Use 1 pound fruit to ¾ pound sugar, and proceed as in directions for jam.

Grape Jam

Have one-fourth of the grapes under-ripe. Wash the fruit and remove stems. Separate the skins from the pulp and cook pulp until seeds can be removed by pressing fruit through a colander. Boil the skins with a little water until they are tender. Add pulp and to 1 pound of fruit use ½ pound sugar. Proceed as in directions for jam. The skins may be left out if desired.

FRUIT JUICES

Fruit juices are easily and quickly made, and require very little equipment. A crusher of some kind is necessary. In making large quantities a cider mill can be used or if one is not available a wooden crusher can be made at home. If only a small quantity of fruit is to be handled a potato-masher will give satisfactory results. Buckets for holding the juice, cheese-cloth and flannel for straining, a large pan for heating the fruit and a wash-boiler for pasteurizing will complete the list of equipment.

The juices of grapes, strawberries, raspberries, blackberries, and cherries make a healthful, delicious drink.

Only sound ripe fruit should be used. The fruit is crushed and heated to simmering point, 180 degrees F. It is then strained through cheese-cloth and allowed to run slowly through a flannel bag. Add 1 cup of sugar

for every gallon of juice. Pour juice into hot sterilized jars or bottles and process at simmering point for 30 minutes. If bottles are used cap before processing. In using jars adjust tops and raise clamps. Seal after processing.

Muscadine Grapes

The muscadine family includes the following well-known varieties: Scuppernong, Thomas, Mish, Eden, James, Memory, Smith, Flowers, and Luola. Most of these grapes make excellent juice of fine flavor. The Thomas is perhaps the best, and does not require the addition of any sugar. The cold pressed juice is very superior in flavor to the hot pressed juice.

Muscadine Grape Juice (cold pressed)

Crush grapes, strain through cheesecloth, let stand 1 hour.

Strain or filter through flannel.

Pasteurize in jars or bottles at 185 degrees F. 1 to 2 minutes.

Let stand for 8 months. Syphon off juice and repasteurize.

In repasteurizing do not use a higher temperature than first pasteurization, as more solids will form.

One bushel of grapes will yield from 3 to 4 gallons of juice.

Hot Pressed Muscadine Grape Juice

Pick, wash, press, and cook grapes until seeds separate.

Strain through cheesecloth, cool, and filter through flannel. Add one cup of sugar for every gallon of juice.

Pour into hot sterilized jars or bottles, cap, and pasteurize at 185 degrees F. 1 to 2 minutes.

Flavoring Syrup (French method)

5 cups juice (see above). 3 pounds sugar.

3 cups water.

Cook sugar and water to 243 degrees F. Add juice immediately. Bring to boiling point, skim, and pour into hot sterilized bottles. Cap immediately.

Process for 5 minutes at 212 degrees F.

Making Jelly from Pomace

After grapes are crushed to obtain cold-pressed grape juice the pomace can be made into an excellent jelly. Four pounds of pomace will yield 2 dozen 4-ounce glasses of jelly. The wet pomace is cooked for 15 minutes with enough water to barely cover. It is then strained and the juice tested for pectin and the required amount of sugar added. Cook to 223 degrees F., or 106 degrees C., and pour immediately into hot sterilized glasses.

Pomace left from cider-making can be made into apple jelly by using the above method. The temperature for the finished product will be 222 degrees F., or 105½ degrees C.

PICKLES

Pickle-making begins with the brine, and to carelessly-made or carelessly-maintained brine is attributed most of the soft and unfit pickles.

Dr. Edwin Le Favre, of the Bureau of Chemistry, U. S. Department of Agriculture, has written an excellent bulletin (Farmers' Bulletin, 1159) on Fermented Pickles. Every pickle maker is advised to read this bulletin in full. Much of the chapter on brines and the recipes for dill pickles and sauerkraut are reprinted here.

Salt Pickles

In the household, where pickles usually are made in small quantities, stone jars constitute very useful receptacles. A 4-gallon jar, which will hold approximately 12 pounds (¼ bushel) of cucumbers, is a convenient size.

Wash the cucumbers if dirty, pack them in the jar, and cover with 6 quarts of a 10 per cent brine (22½ ounces salt to 6 quarts water, 40 degrees on salinometer scale). At the time of making up the brine, or not later than the following day, add more salt at the rate of 1 pound for every 10 pounds of cucumbers used, in this case 1 pound and 3 ounces. This is necessary in order to maintain the strength of the brine. Cover with a round board or plate and on top of this place a weight heavy enough to keep the cucumbers well below the surface. At the end of one week and of each succeeding week for 5 weeks add (in this case) ¼ pound of salt. In adding salt always place it on the cover. If the salt is added directly to the brine it may sink to the bottom, as a result of which the salt solution at the bottom would be very strong, while that near the surface might be so weak that the pickles would spoil. A scum, made up usually of wild yeasts and molds, will form on the surface. As this may prove injurious by destroying the acidity of the brine, it should be removed by skimming.

Clean, water-tight barrels should be used in making larger quantities of pickles. With a barrel holding from 40 to 45 gallons, proceed as follows: Put into the barrel from 5 to 6 inches of a 40 degree brine. To this brine it is well to add 1 quart of good vinegar. In this brine place the cucumbers as they are gathered. To keep the cucumbers below the brine, put a loose wooden cover over them and weight it with a stone heavy enough to bring the brine over the cover. The cucumbers should be weighed each time before they are added. After the cover and stone have been replaced add to the brine over the cover 1 pound of salt for every 10 pounds of cucumbers added.

If the cucumbers are not added too rapidly it will be unnecessary to add more brine, for when a sufficient weight is maintained on the cover the cucumbers make their own brine. If, however, the cucumbers are added rapidly, or if the barrel be filled at once, more brine may be required. In such case add a sufficient amount of the 40-degree brine to cover the cucumbers.

When the barrel is full, add 3 pounds of salt each week for 5 weeks (15 pounds to a 45-gallon barrel). In adding the salt place it on the cover. Added in this way it goes into solution slowly, insuring a brine of uniform strength throughout, and a gradually increasing salt concentration. Thus shriveling of the pickles is prevented to a great extent and the growth and activity of the lactic bacteria are not seriously checked. Stirring or agitation of the brine is not advisable and may be harmful for the reason that the introduction of air bubbles is conducive to the growth of spoilage bac-

teria. The scum which forms from time to time on the surface should be removed.

If the cucumbers are kept well under the brine and salt is added in the proportion indicated, it will not be necessary to exclude the air or seal in any manner.

Pickles prepared in this way are known as salt pickles or salt stock. If they are well covered by the brine and if the surface remains clean they should keep indefinitely. A proper curing requires from 6 weeks to 2 months or possibly longer, according to the temperature at which it is carried out and the size and variety of cucumbers used.

After a partial soaking in water to remove excess of salt, these cucumbers may be eaten as salt pickles. Many prefer them in this form. Most people, however, like them better after they have been given an additional treatment in vinegar alone, or in vinegar combined with sugar and spices. Whatever the final disposition, pickles should first receive this perfect curing in brine. Attempts to use short cuts or to make pickles "over night," as is sometimes advised, are based on an erroneous conception as to what really constitutes a pickle.

Salt percentages, corresponding salinometer readings, and amount of salt required to make 6 quarts of brine

Salt in Solution	Salinometer Reading	Amount of Salt Present in 6 Quarts of Finished Brine	Salt in Solution	Salinometer Reading	Amount of Salt Present in 6 Quarts of Finished Brine
Per Cent	Degrees	Ounces	Per Cent	Degrees	Ounces
1.06	4	2	8.48	32	18
2.12	8	4¼	9.54	36	20
3.18	12	6½	10.6	40	22½
4.24	16	8½	15.9	60	35
5.3	20	11	21.2	80	48
6.36	24	13	26.5	100	64
7.42	28	14½			

The figures given in the first two columns of tables are correctly stated. Those in the last column are correct within the possibilities of ordinary household methods. In making up a brine from this table, first dissolve the required amount of salt in a smaller volume of water, then add water to make up as nearly as possible to the required 6 quarts.

A brine in which a fresh egg just floats is approximately a 10 per cent solution.

Fermentation takes place fairly well in brines of 40 degrees strength, and will, to some extent at least, up to 60 degrees. At 80 degrees all fermentative action ceases.

The amount of brine necessary to cover vegetables is equal to about one-half of the volume of the material to be fermented. For example, if a 5-gallon keg is to be packed, 2½ gallons of brine are required.

Causes of Failure and How to Avoid Them

A soft or slippery condition is one of the most common forms of spoilage in making pickles. This is the result of bacterial action, and always occurs when pickles are exposed above the brine and very often when the brine

is too weak to prevent the growth of spoilage organisms. Prevention lies in keeping the pickles well below the brine and the brine at the proper strength. Experiments have shown that in order to insure the keeping of pickles for more than a very few weeks a brine should contain 10 per cent of salt. Once pickles have become soft or slippery as a result of bacterial action, no form of treatment will restore them to a normal condition.

Hollow pickles sometimes occur during the process of curing. This is, indeed, one of the most frequent causes of failure in pickle-making. This condition does not, however, mean a total loss, as in the case of softening, for the reason that such pickles may be utilized in the making of mixed pickles or certain forms of relish. Hollow pickles are generally believed to be the result of a faulty development or nutrition of the cucumber. While there are good reasons to believe that this trouble is inherent in the cucumber, there is also a strong probability that faulty methods may contribute to this condition. One of these is allowing too long a time to intervene between gathering and brining. This period should not exceed 6 or 8 hours.

Hollow pickles frequently become *floaters*. This condition is the result of the formation of gas within the pickle. This lowers the relative weight of the pickles and causes them to rise to the surface.

The use of so-called hard waters should be avoided in making up a brine. The presence of large amounts of calcium salts and possibly of other salts found in many natural waters may prevent the proper acid formation and thus interfere with a normal curing of the pickles. The addition of a small amount of vinegar serves to overcome alkalinity and is valuable, especially where hard water must be used in making up brine. Iron, if present in any appreciable amount, is very objectionable. The presence of iron, under certain conditions, may cause a blackening of the pickles.

Shriveling of pickles often occurs when they have been placed at once in very strong salt or sugar solutions or even in very strong vinegars. For this reason such solutions are to be avoided so far as possible. When their use is desirable, the pickles should first be given a preliminary treatment in a weaker solution. This difficulty is most often encountered in the making of sweet pickles. The presence of sugar in high concentrations is certain to cause shriveling unless proper precautions are taken.

Dill Pickles

The method for making dill pickles differs from that for making salt pickles in two important particulars: (1) A much weaker brine is used, and (2) spices are added, chief of which is dill. Dill herb, the entire stalk of which is used, gives a distinctive flavor to pickles.

By reason of the weaker salt concentration, a much more rapid curing of the pickles takes place. As a result they can be made ready for use in about half the time required for ordinary brined pickles. This shortening of the period of preparation, however, is gained at the expense of the keeping quality of the product. For this reason it is necessary to resort to measures which will prevent spoilage.

For making dill pickles in the home, use stone jars, or clean, water-tight kegs or barrels. If a 4-gallon jar is used, proceed as follows: Place in the bottom a layer of dill and ½ ounce of mixed spice. Then fill the jar to within two or three inches of the top with washed cucumbers which are as uniform in size as possible. Add another ½ ounce of spice and a layer of dill. If they can be obtained, it is a good plan to place over the top a layer of grape leaves. In fact, it would be well to place these at both the bottom and top. They make a very suitable covering and have been found

to have a greening effect on the pickles. Pour over the pickles a brine made up as follows: Salt, 1 pound; vinegar, ¾ quart; and water, 10 quarts. Cover with a board cover or plate with sufficient weight on top to hold the cucumbers well below the brine. If the cucumbers are packed at a suitable temperature (about 86 degrees F.), an active fermentation will at once set in. This should be completed in from 10 days to 2 weeks, if a temperature of about 86 degrees F. is maintained. A scum soon forms on the surface. This consists usually of wild yeasts, but often contains molds and bacteria, and should be skimmed off.

After active fermentation has ceased, it is necessary to protect the pickles in some way against spoilage. This may be done in one of two ways: (1) Cover with a layer of paraffin. This should be poured while hot over the surface or as much of it as is exposed around the edges of the board cover. When cooled this forms a solid coating which effectually seals the pickles. (2) Seal the pickles in glass jars or cans. As soon as it is found that they are sufficiently cured, which may be determined by their agreeable flavor and dark-green color, transfer them to glass jars (2-quart size), and fill with a fresh brine made as directed. Add a small amount of dill and spice. In this case it is well to bring the brine to a boil, and, after cooling slightly, pour it over the pickles. Seal the jars tight.

In this connection it may be well to call attention to the fact that in no case should a hot brine be used at the start of a fermentation. In all probability the hot brine would kill the organisms present, thus preventing any fermentation.

The plan of preserving dill pickles by sealing in jars has the merit of permitting the use of a small quantity without the necessity of opening up and again resealing a large bulk, as is the case when pickles are packed in large containers and sealed with paraffin.

If it is desired to put up dill pickles in barrel lots, select none but clean, tight barrels. Anything in the barrels which would give the pickles an "off" flavor must be removed. A careful observance of this precaution may save much trouble and disappointment.

Fill the barrel with washed cucumbers, adding from 6 to 8 pounds of green or brined dill, or half that amount of dry dill, and 1 quart of mixed spices. If brined dill is used, it is well to add about 2 quarts of the dill brine. The dill and spices should be evenly distributed at the bottom, middle, and top of the barrel. Also add 1 gallon of good vinegar.* Head up tight and through a hole bored in the head fill the barrel with a brine made by adding salt in the proportion of ½ pound to the gallon of water. Add brine until it overflows the head and level with top of the rim. This level should be maintained by adding brine from time to time as required. Remove the scum which soon forms on the surface. During the period of active fermentation the barrel should be kept in a warm place, and the hole in the head should remain open to allow gas to escape. When active fermentation is over, as indicated by the cessation of bubbling and frothing on the surface, the barrel may be plugged up tight and placed in storage, preferably in a cool place. It is well to bear in mind, however, that, on account of leakage and other causes, the brine in a barrel of pickles may recede at any time. Occasional inspection, therefore, should be made to determine this

*The addition of vinegar is not essential in the making of dill pickles, and many prefer not to use it. Its use, however, in the proportion indicated would be favorable to the growth of the lactic bacteria and at the same time would be inhibitive, to some extent at least, to the growth of spoilage organisms. Its use, therefore, is to be regarded with favor. Some prefer also to omit the use of mixed spices for the reason that they interfere with the distinctive flavor of the dill herb which by many is considered most desirable.

matter, and, if necessary, more brine added. Pickles put up in this way should be ready for use within about 6 weeks.

In case it is desired to hold the pickles in storage for a long time, it would be advisable to use a brine somewhat stronger than that indicated. A 30-degree brine, made by adding 10 ounces of salt to a gallon of water, is used for this purpose. Pickles packed in a brine of this strength will keep a year if the barrels are kept filled and in a cool place. The important factor in preserving pickles put up in a weak brine such as is ordinarily used for dill pickles, is the exclusion of air. When put up in tight barrels this is accomplished by keeping the barrels entirely filled with brine.

Sauerkraut

Fermented salt cabbage, commonly called sauerkraut, is a form of food which has much to commend it to popular favor. The making of sauerkraut offers a good means of utilizing surplus stock of cabbage and at the same time affords a food which to most people is both palatable and wholesome. It also enables the housewife to carry over into the winter months a form of vegetable food which helps to vary the diet at a time when this often consists too largely of meat.

For making sauerkraut in the home 4- or 6-gallon stone jars constitute the best containers, unless very large quantities are desired, in which case kegs or barrels may be used.

Select only mature, sound heads of cabbage. Quarter them and slice off the core portion. For shredding, one of the hand shredding machines which can be obtained on the market is much the best, although an ordinary slaw cutter or a large knife will do.

In making sauerkraut the fermentation is carried out in a brine made from the juice of the cabbage which is extracted by the action of salt. One pound of salt for every 40 pounds of cabbage makes the proper strength of brine to produce the best results. This may be distributed as the cabbage is packed in the jar or it may be mixed with the shredded cabbage before being packed. Thus, the distribution of 2 ounces of salt with every 5 pounds of cabbage probably is the best way to secure an even distribution. The cabbage should be packed firmly but not too tightly in the jar or keg. When full, cover with a clean cloth and a board cover or plate. On the cover place a weight heavy enough to cause the brine to come up to the cover. If the jar is kept at a temperature of about 86 degrees F., fermentation will start promptly. A scum soon forms on the surface. As it tends to destroy acidity and may injure the cabbage beneath, it should be skimmed off from time to time. If kept at the temperature indicated the fermentation should be completed in from 6 to 8 days.

A well-fermented sauerkraut should show a normal acidity of approximately +20 or a lactic acid percentage of 1.8.

After fermentation is complete, the kraut should be set in a cool place. If the cabbage is fermented late in the fall or if it can be stored in a very cool place, it may not be necessary to do more than keep the surface skimmed and protected from insects, etc. Otherwise, it will be necessary to resort to measures to prevent spoilage. This may be done, as suggested in the case of dill pickles, by one or two methods: (1) A layer of hot paraffin may be poured over the surface, or as much of it as is exposed around the cover. Properly applied to a clean surface, this effectually seals the jar and protects the contents from contamination. (2) After the fermentation is complete, pack the kraut in glass jars or cans, adding enough of the kraut brine, or, in lieu of this, a weak brine made by adding 1 ounce of

salt to a quart of water, to completely fill the jars. Seal the jars tight, and set them away in a cool place. If it has reached the proper degree of acidity, sauerkraut preserved in this way should keep as long as desired.—*Farmers Bulletin, 1159.*

Soaking Brined Pickles

Before making brined cucumbers into sweet or sour pickles the salt should be partially but not entirely removed by soaking the cucumbers in cold water.

Where small amounts (1 or more pecks) are made, place pickles in two or more large porcelain dishpans, cover with cold water, and let stand overnight.

Change water twice in the morning and let stand for at least an hour before pickling.

Good Vinegar

Frequently pickles are spoiled by the use of inferior vinegar. Select a good, clear vinegar of 40 to 60 grain strength (4 to 6 per cent of acetic acid).

If fruit vinegar is used, it should be filtered to remove sediment. (If filter paper is not available, fairly satisfactory results may be had by filtering through doubled flannel.)

Spiced Vinegar

To 1 gallon vinegar add
½ ounce allspice.
½ ounce cloves.
1 stick cinnamon.
1 piece mace.
1 pound sugar for sour pickle.
2 pounds sugar for less acid pickle.

For sweet pickle use from 4 to 6 pounds of sugar to the gallon of vinegar. Granulated sugar is always best.

Tie spices in muslin bag, drop in vinegar, add sugar, and boil for fifteen minutes. Set spiced vinegar aside for three weeks before removing spice bag.

Cooking Pickles

Place the spiced vinegar in porcelain or agate vessel, bring to a boil, add pickle, a few at a time; let boil again; remove pickles and pack in stone or large glass jars. Continue until all cucumbers have been cooked. One gallon of vinegar will pickle three-fourths of a peck of cucumbers.

It is advisable to pack pickles in large jars first, that enough vinegar may be added to cover well.

Osmosis takes place and a weakened liquor results. It is necessary, therefore, to keep pickles at least six weeks in plenty of spiced vinegar before packing closely in commercial jars where there is room for only a small amount of vinegar.

Commercial Packing

Always add fresh spiced vinegar when packing in commercial jars. Pack cucumbers of one size only in a jar and arrange symmetrically. Use as a model a well packed jar of pickles, which can be found in any good grocery store.

Jars after being packed with pickles, should be put into the canner and processed 15 minutes to prevent mold.

Cucumber Pickle

Select small cucumbers from 1½ to 2½ inches long. Brine and soak as directed.

To ¾ peck of cucumbers use 1 gallon spiced vinegar. If sweeter pickle is desired add 2 pounds of sugar.

Bring vinegar to a boil, add cucumbers ¼ of quantity at a time, and let them boil for 2 minutes but not until soft. Place in large stone or glass jars as they are taken from the kettle. When all have been packed, cover pickle with the boiling vinegar.

Seal jar, or cover top of crock with layers of thick paper tied tightly to exclude the air. Let pickle remain in vinegar 6 weeks before packing in commercial jars. Remove spice bag after 3 weeks.

Never leave loose spice in jars as it will darken the pickle and in time produce a bitter taste.

Garnish by placing on each side of the jar 1 pod of red pepper from which the seed have been removed.

Process packed jar 15 minutes to prevent mold.

Sliced Cucumber Pickle

36 large cucumbers.
1 quart sliced onions.
To 1 gallon spiced vinegar add
2 tablespoonfuls tumeric.
1 tablespoonful black pepper, ground.
2 tablespoonfuls celery seed.
3 tablespoonfuls white mustard seed.
2 tablespoonfuls ground mustard.
2 pounds granulated sugar.

All measures level.

Let mixture boil and add pickles which have been previously prepared.

To prepare pickles, remove cucumbers from brine, soak over night in an abundance of cold water, drain, and cut in cross slices or rings ¾ inch thick.

Slice onions, scald with boiling brine, drop in cold water for a minute. Mix cucumbers and onions and boil for 15 minutes.

Do not boil until the cucumbers soften.

Leave pickles loosely packed in large jar and well covered with vinegar for at least six weeks before packing closely in small jars.

All pickles should be processed for 15 minutes after packing to prevent mold. Garnish with red pepper.

Onion Pickle

Select small silver-skin onions, sort in sizes ½ inch in diameter. Remove skins until the smooth surface is reached.

Place in a large jar or crock and pour over them a strong brine. Let stand for 24 hours.

The following day make a strong brine, bring to a boil, drop in the onions, and boil for 5 minutes. Remove, drop onions in cold water for 1 hour. Drain, place in large jars, and pour over them boiling spiced vinegar. (See recipe spiced vinegar.)

Let these stand for at least six weeks before packing in commercial jars.

Process packed jars for 15 minutes as in cucumber pickles.

Garnish with a sprig of mace on each side of jar. Add, also, small rings of hot red pepper.

Fresh spiced vinegar should be added when onions are packed in jars.

Stuffed Bell Pepper Pickle

4½ pints of chopped white cabbage (1 medium size head).
2 dozen bell peppers, green.
1 gallon spiced vinegar.
3 tablespoonfuls white mustard seed.
2 tablespoonfuls celery seed.
¼ cup salt.

All measures level.

Sprinkle cabbage with ¼ cup salt and allow to stand for 4 hours. Squeeze dry by placing in muslin bag and twisting tightly.

Thoroughly mix with the cabbage the mustard and celery seed.

Peppers. Select sweet bell peppers of uniform size, cut off the top with the stem, remove every seed, stuff peppers with the cabbage, replace top and stitch firmly with needle and coarse thread.

Place stuffed peppers in stone jars, pouring over them enough boiling spiced vinegar to cover thoroughly. (Remove spice bag from vinegar after 3 weeks.) Allow peppers to remain in vinegar 6 weeks before packing in commercial jars. Use fresh spiced vinegar for packing.

Process packed jar 15 minutes.

Pickles Which Do Not Require Long Brining

Sliced green tomato pickles, chow chow, and Dixie Relish do not require long or careful brining as do cucumbers, and for that reason are more easily made.

The person inexperienced in pickle making is advised to begin with this type of pickle.

Sliced Green Tomato Pickle

½ gallon sliced green tomatoes.
1 pint onions, sliced.
½ teaspoonful ground black pepper.
1 small red pepper.
3 tablespoonfuls white mustard seed.
2 tablespoonfuls celery seed.
1 pound brown sugar.
½ tablespoonful allspice.
½ tablespoonful cloves.
½ cup salt.

All measures level.

Sprinkle sliced tomatoes and sliced onion with salt. Let stand 4 hours in separate bowls. Place each in a thin muslin bag and squeeze gently until juice is removed.

When ingredients are prepared, place in porcelain kettle, mixing with them the mustard and celery seed, sugar, and pepper. Cover with good vinegar (1½ pints), to which the spices tied in a bag have been added.

Boil slowly until quite soft and tender. This pickle is not good if removed from the fire before the tomatoes are tender.

After cooking pour into jars and seal while hot. Be careful to use a liberal amount of the vinegar in which pickle was cooked when packing.

Chow Chow

1 gallon chopped cabbage.
½ gallon chopped green tomatoes.
1 dozen large onions (chopped).
1 dozen sweet bell peppers, green (chopped).
½ dozen sweet bell peppers, red (chopped).
2 pounds sugar.
½ cup ground mustard.
6 tablespoonfuls white mustard seed.
3 tablespoonfuls celery seed.

1 tablespoonful ground ginger.
1 ounce cloves mashed and tied in bag.
Vinegar to cover mixture (about one gallon).

Sprinkle lightly with salt the chopped ingredients, putting each in separate bowl. Let stand for 4 hours. Press the juice from the tomatoes. Place the chopped peppers and cabbage in separate muslin bags and squeeze the juice from them.

Mix all ingredients, being careful to rub mustard and ginger to a smooth paste with a little vinegar before adding.

Pour over these the vinegar and boil the mixture slowly for one-half hour.

Pour into large jar. Cover tightly. Remove spice bag after 3 weeks. After 6 weeks chow chow may be packed in commercial jars. Use the same vinegar in which pickles were cooked when packing chow chow.

Process packed jars 15 minutes.

Mustard Pickle

½ pound ground mustard.
½ ounce tumeric.
½ cup flour.
1½ pound brown sugar.

Rub these to a smooth paste with one cup of vinegar. Add ½ ounce of celery seed. Add gradually 1 gallon of vinegar. Place on stove until mixture thickens, stir constantly.

This dressing may be poured over:

1 pint very small whole cucumbers which have been taken from brine and soaked over night according to directions for brining and soaking.

1 pint sliced brined cucumbers.
1 pint small onions (treated first as in onion pickle).
3 sweet bell peppers, green (chopped, leaving out seed).
3 sweet bell peppers, red (chopped, leaving out seed).
1 pint tiny green tomatoes (cut in half).
All measures level.

Keep in large jar for six weeks. Pack in small jars, using same dressing in which it has stood. Process packed jars 15 minutes.

Dixie Relish

1 quart chopped or ground cabbage.
1 pint chopped or ground white onions.
1 pint chopped or ground sweet green pepper.
1 pint chopped or ground sweet red pepper.

Distribute ½ cup salt over these chopped ingredients and let each stand in separate bowl for 4 hours. Squeeze in muslin bag until they are free from juice. Place all ingredients in porcelain-lined kettle with

4 tablespoonfuls mustard seed.
2 tablespoonfuls celery seed.
1 quart vinegar.
1½ pound granulated sugar.
1 tablespoonful salt.
1 tablespoonful allspice, unground.
1 tablespoonful cloves, unground.
1 stick cinnamon.

Spices should be tied in bag. Boil mixture for 10 minutes. Pour into jars, seal while hot.

Sweet Pickled Peaches

½ bushel firm clingstone peaches.
1 gallon vinegar.
10 pounds granulated sugar.
1 ounce cloves.
3 sticks cinnamon.
Tie spices in bag.

Select ripe, firm peaches, absolutely sound. Peel by hand, endeavoring to do it as smoothly as possible.

Boil vinegar, sugar and spices for 5 minutes. To boiling vinegar add ¼ quantity of peaches at a time, allow these to remain for 1 minute but not until soft, remove from fire, place in large jar, and when all have been scalded, pour over them sufficient boiling vinegar to cover well. Seal the jar. Let pickle stand for 6 weeks before packing in commercial jars. Remove the spice bag after 3 weeks.

Process packed jars for 15 minutes.

Watermelon Rind Sweet Pickle

7 pounds prepared watermelon rind.
3 pints vinegar.
4 pounds sugar.
¾ ounce cloves (whole).
2 sticks cinnamon.
1½ ounce ginger root.

Prepare 7 pounds of rind. Remove the green part and cut off the pink melon until the rind is firm. Cut these pieces into uniform strips 1¼ inches wide and 2½ inches long.

Let stand over night in weak brine. Rinse and scald until tender in alum water. (2 level teaspoonfuls powdered alum to 1 quart water.) Rinse again in cold water.

Place in porcelain-lined kettle, add vinegar, sugar, cinnamon, slightly pounded ginger-root, and spice in bag. Cook until rind is tender. Place in jars, seal, and allow pickle to stand 6 weeks before packing in commercial jars. Remove spice bag after 3 weeks. Process packed jars 15 minutes.

Yellow Cucumber Sweet Pickle

Thoroughly ripe cucumbers that have turned yellow can be treated in the same manner as the watermelon rind and made into excellent sweet pickle.

TOMATO CATSUP

Select red-ripe tomatoes. Small and broken fruit, which will not do for canning, may be used, if it is sound and red. Any green or yellowish parts of fruit will make a catsup inferior in flavor and color and not good for market. Use whole spices tied loosely in a bag while cooking, and remove before bottling to prevent darkening the product.

Cook the tomatoes thoroughly, put through a colander or sieve, saving all pulp, and measure. For every 2½ gallons of pulp use the following:

2 cups finely chopped onion.
3 teaspoonfuls cloves.
3 teaspoonfuls cinnamon.
3 teaspoonfuls red pepper.
3 tablespoonfuls allspice.
1 tablespoonful ground black pepper.
1½ cup sugar.
1 cup salt.
1 quart vinegar.

Boil all ingredients in a porcelain kettle until the mixture thickens. Add hot vinegar and boil for thirty minutes more. Pour boiling catsup into sterilized bottles and cork immediately. Use new corks.

This recipe will make twenty-two twelve-ounce bottles of catsup.

Food Preservation for the Farm Home

RECORD OF

NAME_____

ADDRESS_____

COUNTY_____

NAME OF CLUB_____

NORTH CAROLINA
STATE COLLEGE OF AGRICULTURE AND ENGINEERING AND
U. S. DEPARTMENT OF AGRICULTURE CO-OPERATING
N. C. AGRICULTURAL EXTENSION SERVICE
I. O. SCHAUB, *Director*
STATE COLLEGE STATION
RALEIGH

DISTRIBUTED IN FURTHERANCE OF THE ACTS OF CONGRESS OF MAY 8, AND JUNE 30, 1914

FOOD PRESERVATION RECORD FOR THE FARM HOME

Date canning started?----------

Date canning completed?----------

Did you use hot water canner?----------

Did you use steam pressure canner?----------

Were you on canning demonstration team?----------

List any equipment especially helpful in your canning----------

---

Did you make a canning budget for your family?----------

Have you met its requirements?----------

PRODUCTS CANNED

VEGETABLES	PTS.	QTS.
Total		

Products Canned

Fruits and Fruit Juices	Pts.	Qts.
Total		

Jellies	Pts.	Jams, Marmalade, & Preserves	Pts.
Total		Total	

Pickles	Pts.	Brined & Dried	Pounds Fresh Products	
			Brined	Dried
Total		Total		

PRODUCTS CANNED

MEATS	PTS.
Total	

SUMMARY OF FOOD PRESERVATION

	BY GIRLS	BY WOMEN
Total number pints vegetables canned		
Total number pints fruit canned		
Total number pints meat		
Total number pints fruit juices		
Total number pints jelly		
Total number pints jams, marmalade and preserves		
Total number pints pickles		
Total		
Total number pounds fresh products dried		

REMARKS: