Canning

VEGETABLES · PICKLES · RELISHES

By Helen Cowgill

4-H CLUB CANNING PROJECT · DIVISION III

Oregon State System of Higher Education
Federal Cooperative Extension Service
Oregon State College
Corvallis

Club Series J-26 4-H Club Canning Project

Timetable for Canning Nonacid Vegetables With the Pressure Cooker

(From Farmers' Bulletin 1471, *Canning Fruits and Vegetables at Home.*)

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

Product	Method of treatment before processing	Processing period in pressure cooker	
		Quart glass jars	Pint glass jars
Asparagus	Tie uniform bundles, place in saucepan with boiling water over lower tough portion, cover tightly, boil 4 to 5 minutes, and pack hot into containers. Or cut in half-inch lengths, bring to boil in water to cover, and pack hot into containers.	40 minutes at 10 pounds pressure, or 240° F.	35 minutes at 10 pounds pressure, or 240° F.
Beans, string	Heat to boiling with water to cover. Pack hot into containers.	40 minutes at 10 pounds pressure, or 240° F.	35 minutes at 10 pounds pressure, or 240° F.
Beans, Lima	Can only young and tender beans, using method suggested for peas.	60 minutes at 10 pounds pressure, or 240° F.	55 minutes at 10 pounds pressure, or 240° F.
Baby beets	Can only young tender beets. Scald in boiling water or steam until the skins slip easily. Skin and pack hot into containers.	40 minutes at 10 pounds pressure, or 240° F.	35 minutes at 10 pounds pressure, or 240° F.
Corn	Cut off without precooking. Add half as much boiling water as corn by weight, heat to boiling, and pack hot into containers.	80 minutes at 15 pounds pressure, or 250° F.	75 minutes at 15 pounds pressure, or 250° F.
Greens, including spinach	Steam or heat in covered vessel until completely wilted, using just enough water to prevent burning. Pack hot into containers, taking care that the material is not packed too solidly and that there is liquid to cover.	90 minutes at 10 pounds pressure, or 240° F.	85 minutes at 10 pounds pressure, or 240° F.
Peas, green	Use only tender young peas. Bring to boil with water to cover and pack hot into containers.	50 minutes at 10 pounds pressure, or 240° F.	40 minutes at 10 pounds pressure, or 240° F.

Canning Vegetables, Pickles, and Relishes

By

HELEN J. COWGILL, Assistant State Club Leader

Your enrollment for the Canning Club Project, Division III, has been received. Enclosed you will find all necessary instructions and 1 report card.

Requirements for Division III. (1) The canning of at least 15 quarts of fruit to include at least one variety never canned before. (2) The making of at least 15 containers of jam, fruit butters, marmalades, and conserves—including one new kind. (3) The canning of at least 25 quarts of vegetables, at least two varieties. (4) The making of at least 10 containers of pickles and relishes. (5) A record of the work done. Please see Canning bulletin, Division I, for the basis of awards, exhibit, demonstrations, scoring and judging.

Oregon ranks top in the number of cold-storage plants that are in use today.

If you so desire you may prepare some of your products for freezing instead of processing them in the hot-water bath or pressure cooker.

Of course the exhibit will still be made of canned products, so at least half of your work will need to be canned as usual.

Instructions for preparing products for cold-storage lockers will accompany this bulletin.

CAUSES OF FOOD SPOILAGE

In Canning Division I, we learned that certain substances aid in the ripening of fruits and vegetables, and yeasts and molds cause spoilage in these products, and that all of these organisms can be quite easily killed at or below the boiling point temperature of water.

"The second and more important cause of food spoilage is the action of minute plants which are present in the air, soil, water, and, in fact, on everything. There are three groups of these plants —bacteria, yeasts, and molds. Yeasts and molds are easier to kill than bacteria and do not cause so much difficulty in canning. Many forms of bacteria are able when unfavorable conditions arise to go over into a so-called spore, a form in which they are very difficult to kill. For this reason bacteria are the chief factors to be considered in canning. If all bacteria are killed and the product is sealed

steaming hot within a sterile airtight container, the food is said to be sterilized. The application of heat to foods during canning in order to kill bacteria is called processing.

"The presence of air has always been associated with food spoilage, owing to the fact that these small plants are present in the air even though they can not be seen with the naked eye. When unheated air comes in contact with food it spoils, not because of the air but because of the bacteria, yeasts, and molds it contains."

—Farmers' Bulletin 1471, *Canning Fruits and Vegetables at Home.*

TIMES AND TEMPERATURES REQUIRED FOR DESTROYING BACTERIA

"In killing bacteria by heat in canning both the degree of temperature and the length of time it is applied must be considered. A very high temperature may produce a sterile product that will keep well, but this may be at too great a sacrifice of flavor and texture. Therefore the temperature applied should ordinarily be the lowest necessary to accomplish the desired result, varying with the kinds of bacteria and with the acidity and other conditions of the juice. No growing or vegetative forms of bacteria will survive for any length of time at the temperature of boiling water (212 degrees Fahrenheit), but the spore form is killed at boiling temperature only by long continued heating, especially if the fruit or vegetable being canned has juice that is nearly neutral or only very slightly acid. When the juices are acid, as in fruits and tomatoes, both the vegetative and spore forms of bacteria are killed more quickly at the temperature of boiling water. The bacteria that require long-continued heating at boiling temperature may be killed more quickly at higher temperatures, such as are obtained in a pressure cooker. The necessary time of heating varies with the organism. Some of the more resistant organisms can only be destroyed by many hours' heating at 212 degrees Fahrenheit or one hour in a pressure cooker at 10 pounds pressure.

"The effectiveness of any given method of applying heat to kill bacteria is also influenced by the number present and the time necessary for the heat to reach every portion of the material being canned. This emphasizes the importance of thorough cleansing of the product before starting to can and the use of freshly gathered products free from decay. The distribution of heat throughout every portion of the material being canned depends upon a number of factors and can best be discussed under the detailed directions for different methods of packing and processing.

"The types of organisms present vary with different foodstuffs and to a certain extent with geographical distribution. Since some of the most resistant forms of bacteria are present in the soil, any condition of growth that makes products more liable to soil contamination, as in the case of low-growing spinach, or that makes such contamination more difficult to remove, as in the case of the fuzzy string bean, increases the possibility of infection.

"Since a number of cases of food poisoning have been directly traceable to botulism, the bacteria causing it have been studied in order to find the temperature and conditions necessary for destroying them. They will not grow in salt solutions where the percentage of salt is higher than 9 per cent. They are destroyed at boiling temperature if the solution is sufficiently acid. With nonacid vegetables and meats there is no assurance that they are killed at the temperature of boiling water unless the material is heated for as long as 6 hours. The heating time may be decreased very much if a higher temperature is used. This is the reason for the recommendation that meats and nonacid vegetables be canned under pressure. Special precaution must be taken in those regions where previous outbreaks of botulism or special difficulties in canning have shown the soil to be heavily contaminated with these or other heat-resisting bacteria."

—Farmers' Bulletin 1471, *Canning Fruits and Vegetables at Home.*

PRESSURE COOKERS

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

A pressure cooker is a vessel specially designed for obtaining temperatures higher than can be reached in a water bath. It is impossible to heat water alone to a temperature higher than the boiling point at the particular altitude at which the test is made unless the vessel in which the water is heated is closed and the cover clamped down so that the steam is held in under pressure. Such vessels are known as pressure canners, pressure cookers, and autoclaves.

A pressure cooker should be strongly built, and the top should clamp on tightly so that there is no leakage of steam when closed. There must be an air outlet with a pet cock, and the top should also be equipped with a pressure gauge, a thermometer, and a safety valve. Since the temperature is a measure of the pressure, it is ordinarily assumed that one can be interpreted in terms of the other.

The pressure gauge, however, does not always indicate the actual temperature within the cooker, and it is better to have both a gauge and a thermometer, for one then serves to check the accuracy of the other. The temperature reached in a pressure cooker is in direct proportion to the steam pressure and is dependent upon the air having been completely removed. Ordinarily this is accomplished by allowing 3 minutes to elapse after steam issues from the pet cock before it is closed, or it may be assured by never completely closing the pet cock.

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

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

Steam pressure	Temperature	
Lb.	*F.*	*C.*
5	228	109
10	240	115
15	250	121
20	259	126
25	267	131

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

—Taken from Farmers' Bulletin 1471.

CANNING VEGETABLES

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

It is necessary to make a wise choice in the matter of selecting the vegetables to be canned. Naturally it is a waste of time, effort,

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

Vegetable canning is of real value, however, in that it makes possible the saving of the garden surplus and prolongs the season for the summer vegetables every one likes so much. Peas, string beans, spinach and other greens, asparagus, tomatoes, green lima beans, and sweet corn are the most generally canned vegetables. Baby beets and baby carrots are also delicious and worth while if canned at the time the rows of these vegetables have to be thinned. In some parts of Oregon where no vegetables grow during the cold weather, it is advisable to can such vegetables as spinach and similar greens. Canning of cabbage, turnips, parsnips, onions, large carrots, and beets is not common and certainly is not to be recommended.

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

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

Hot pack method. The method described below as the Hot Pack method is recommended as the best for the canning of vegetables. Farmers' Bulletin 1471.

The advantage of the open-kettle method and any possible advantages of the cold-pack method of canning are combined in the hot pack. In this a short precooking of the material is substituted for the usually recommended blanching, and the cold dip is omitted. The theory that bacteria are killed by the shock of cold dipping has been proved to have no scientific basis. Precooking in this sense means heating the material in a minimum quantity of liquid until it boils, the material is thoroughly wilted and shrunken so as to facilitate packing, and any inclosed air is driven out. The material is then filled into the container boiling hot and processed immediately, and the time required for the material to reach the temperature of the canner is decreased in containers of all sizes.

A detailed description of the method for canning is taken from Farmers' Bulletin 1471, *Canning of Fruits and Vegetables at Home.*

DIRECTIONS FOR PREPARING AND PROCESSING NONACID VEGETABLES

"The water-bath canning method has been widely used in the canning of nonacid vegetables as well as fruits and tomatoes. Apparently there is considerable variation in the time required for processing under different conditions of latitude, altitude, and climate, and for that reason the United States Department of Agriculture does not present directions or a general time-table for canning nonacid vegetables by the water-bath method. Because of spoilage difficulties and the risk of poisoning from occasional contamination with botulinus bacteria when nonacid vegetables are canned by the water-bath method, the Department recommends the canning of such vegetables with the steam-pressure cooker. Where it is not practicable to use the steam-pressure cooker, times and methods to be used should be obtained from the specialist at the state college of agriculture.

"Asparagus. Asparagus for canning must be fresh and tender. Pick over carefully, discard any imperfect pieces, sort according to size, and wash thoroughly. Tie in uniform bundles, place in a saucepan, with boiling water over the tough lower portion only, cover tightly, and boil for 4 to 5 minutes; or cut in half-inch lengths, add enough water to cover, and boil for 2 minutes in an uncovered vessel. Pack boiling hot into containers, cover with the water in which boiled, and add 1 teaspoon of salt to each quart. Process immediately at 10 pounds pressure, or 240° F., quart glass jars for 40 minutes, pint glass jars for 35 minutes, and No. 2 and No. 3 tin cans for 30 minutes.

"String beans. Pick over carefully, string, wash thoroughly, and cut into pieces of desired size. Add enough boiling water to cover and boil for 5 minutes in an uncovered vessel. Pack in containers boiling hot, cover with the water in which boiled, and add 1 teaspoon of salt to each quart. Process immediately at 10 pounds pressure, or 240° F., quart glass jars for 40 minutes, pint glass jars for 35 minutes, and No. 2 and No. 3 tin cans for 30 minutes.

"Lima beans. Only young and tender lima beans should be canned. The older ones may be dried successfully. For the young, tender ones use the method suggested for peas. Process the hot-packed beans immediately at 10 pounds pressure, or 240° F., in quart glass jars for 60 minutes, pint glass jars for 55 minutes, and No. 2 and No. 3 tin cans for 50 minutes.

"**Baby beets.** Only young, tender beets should be canned, and the turnip-shaped varieties make a more attractive product. Wash thoroughly and scald in boiling water or steam for about 15 minutes until the skins slip easily. Leave on at least 1 inch of the stems and all of the roots during this cooking to prevent bleeding. Slip off the skins, fill into the containers, add 1 teaspoon of salt to each quart, and fill with hot water. Process immediately at 10 pounds pressure, or 240° F., quart glass jars for 40 minutes, pint glass jars for 35 minutes, and No. 2 and No. 3 tin cans for 30 minutes.

"**Corn.** The garden varieties of corn are the best for canning. They should be gathered about 17 to 25 days after silking, the exact time depending upon variety and season. Shuck, silk, and clean carefully. Cut from the cob without precooking. Add half as much boiling water as corn by weight, heat to boiling, add 1 teaspoon of salt and 2 teaspoons of sugar to each quart, and fill boiling hot into containers. Process immediately at 15 pounds pressure, or 250° F., quart glass jars for 80 minutes, pint glass jars for 75 minutes, and No. 2 tin cans for 70 minutes. Corn should not be canned in No. 3 tin cans, because of the difficulty of heat penetration.

"**Greens, including spinach.** Pick over the greens, discarding any imperfect leaves and tough, fibrous stems. Wash carefully in running water or through a number of waters, lifting the greens out each time. Steam or heat the greens in a covered vessel until completely wilted, adding in the latter case just enough water to prevent burning. Pack boiling hot into the containers, taking care that the material is not packed too solidly and that there is sufficient liquid to cover, adding boiling water if necessary. Add 1 teaspoon of salt to each quart. Process immediately at 10 pounds pressure, or 240° F., quart glass jars for 90 minutes, pint glass jars for 85 minutes, and No. 2 tin cans for 80 minutes. Greens should not be canned in No. 3 tin cans, because of the difficulty of heat penetration.

"**Peas, green.** Use only young, tender peas. Shell, discarding any imperfect peas, and wash. Bring to boil in water to cover. Pack boiling hot into the containers, and add 1 teaspoon of salt to each quart. Process immediately at 10 pounds pressure, or 240° F., quart glass jars for 50 minutes, pint glass jars for 40 minutes, and No. 2 and No. 3 tin cans for 30 minutes."

—Farmers' Bulletin 1471, *Canning Fruits and Vegetables at Home.*

Note: Peas may be graded by putting them into cold water into which a handful or two of salt has been put. The tenderest

peas will float. A second grading may be used by adding more salt to the vessel when the next best peas will come to the surface.

EXAMINATION OF CANNED FOOD BEFORE USE

"It is important that all canned food be carefully examined before using. Spoilage is frequently indicated by the exterior of the can or jar. In tin cans both ends should be flat or curved slightly inward. Neither end should bulge or snap back when pressed. All seams should be tight and clean, with no trace of leaks. In glass jars the cover, if of metal without porcelain lining, should be firm and flat or curved slightly inward, as suggested in the case of tin cans. There should be no sign of leakage around the rubber ring or elsewhere. The contents should appear sound, and the liquid should be no more cloudy than when the material was first canned.

"When the can is opened there should not be any sudden outrush of air or spurting of liquid. Smell the contents at once. The odor should be characteristic of the product. Any 'off' odor probably indicates spoilage. At this stage examine any material which has been canned in tin to see whether it appears sound and normal in color. Examine the inside of the can. It should be smooth and clean, or well lacquered, not extensively blackened or markedly corroded.

"The two types of spoilage most frequently occurring are 'swells' and 'flat-sours.' Both these are easily distinguished, the swells by the bulging of the ends of the tin or the outrush of gas, and the flat-sours by the sour odor. A third type of spoilage, that due to the presence of *Bacillus botulinus*, is more difficult to detect. If the spores of this bacterium are not killed during canning but germinate in the closed container, a toxin or poison is formed that is very deadly. In some cases this organism may develop and form this poison with very little indication of spoilage in the food, and death has resulted from even a taste to determine whether the product was suitable for use. When present in small quantities, this toxin is destroyed by boiling, and it is therefore recommended that all canned vegetables and meats be boiled for at least 10 minutes before they are tasted. In case the liquid in the container is not sufficient to cover add boiling water. Smell the hot food carefully, since boiling brings out odors not noticeable in cold canned foods. [Note: Authorities differ as to length of time for boiling. Some say as long as 25 minutes.]

"Canned products showing signs of spoilage should always be destroyed. If the botulinus toxin should be present, it will poison

animals as well as humans; therefore every precaution should be taken to see that any spoiled canned goods are disposed of safely. If buried, it should be so deep that it can not be scratched up by chickens or dogs. Boiling with a generous tablespoonful of lye for each quart will destroy both toxin and bacteria."

—Farmers' Bulletin 1471, *Canning Fruits and Vegetables at Home.*

PICKLES AND RELISHES

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

SUGGESTIONS FOR PICKLING

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

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

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

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

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

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

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

HOW TO AVOID SHRIVELED, SOFT, OR HOLLOW PICKLES

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

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

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

RECIPES

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

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

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

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

—Taken from Circular 83, New Mexico.

Piccalilli. Chop together a peck of green tomatoes, a head of cabbage, eight large onions, and three red or green peppers. Add a cupful of salt and let the mixture stand over night. In the morning drain off the liquid, add two quarts of vinegar, one pound of brown sugar, a quarter of a pound of mustard seed, two tablespoons of cinnamon, two tablespoons of ground black pepper, a quarter of a

teaspoon of cayenne pepper, and a bag containing a tablespoon of cloves, a tablespoon of allspice, and two tablespoons of ginger. Boil the mixture for thirty minutes, stirring it frequently to prevent scorching and seal the piccalilli in glass jars.

—Taken from Ball Blue Book.

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

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

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

—Taken from Ball Blue Book.

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

—Taken from Ball Blue Book.

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

vinegar; 1 cup salt. Slice cucumbers very thin. Do not peel. Into a jar put a layer of cucumbers, a layer of salt, and a layer of onions until all are used. Weight and let stand for three hours; then turn into a cheese-cloth and drain for two hours or until well drained. Pack in glass jars and pour over the dressing of oil, seeds, and vinegar. Seal. Do not cook.

—University of Illinois, Extension Bulletin on Pickles.

Sweet pickled peaches. ½ peck peaches; 2 pounds brown sugar; 1 ounce stick cinnamon; few cloves; 1 pint vinegar. Remove skins from peaches by dipping in boiling water for one and one-half minutes. Wipe dry. Stick cloves into peaches. Make a sirup by boiling the sugar, vinegar, and cinnamon for 20 minutes. Add only one-half of the peaches at the beginning and cook until soft. Remove from sirup and put into jars. Repeat for the other half of the peaches. Fill the jars with hot, diluted vinegar and seal.

—University of Illinois, Extension Bulletin on Pickles.

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

—*Selection and Preparation of Food* by Bevier.

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

—University of Illinois, Extension Bulletin on Pickles.

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

Mustard pickles. 1 pint small cucumbers; 1 pint large cucumbers, sliced; 1 pint pickling onions; 1 cup string beans, cut diagonally into 1-inch pieces; 1 pint small green tomatoes cut in halves or quar-

ters; 1 pint cauliflower cut in small pieces; 3 red peppers, chopped; 3 green peppers, chopped; 1 cup small or sliced carrots. The whole cucumbers should not be longer than two inches. All the vegetables should be tender. Soak all the vegetables in brine (one cup salt to one gallon of water) overnight. Drain them and soak them in clear water for three hours. Mix a sufficient amount of vinegar and water in equal quantities to cover the vegetables. Allow them to stand in this vinegar for one hour and then scald them in this liquid.

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

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

—From Home Canning Text Book.

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

DEMONSTRATIONS, JUDGING, AND EXHIBIT

Demonstrations are such a valuable part of all 4-H Club projects that we urge you to give some time to them. Detailed instructions are to be found in Canning bulletin, Division I.

Judging. In order to "make the best better" it is necessary to know good quality. Learn to score your work and to judge it, too. See Canning bulletin, Division I, for information on scoring and judging.

Exhibit. In order that you may have an opportunity to compare your work with that done by others, we urge that every member complete his project by exhibiting at the county fair. See Canning bulletin, Division I, as to what to exhibit. Be sure your jars are clean and well labeled. A small label placed near the bottom of the container on the smooth side of the jar should bear the name of

the product. A label should be pasted on the bottom of the jar giving your name and address, the name of the product, the class and lot in which the exhibit is to be entered, and the day and year of canning.

Wrap each jar carefully and put the jars in a paper carton.

NOTE: PLEASE KEEP THIS BULLETIN AND CANNING I AND II BULLETINS FOR USE NEXT YEAR.

THE NATIONAL CLUB MOTTO

is "To Make the Best Better." This should be the aim of every club member and his guide in all that he does every day.

THE 4-H CLUB CREED

I believe in Boys' and Girls' 4-H Club Work for the opportunity it gives me to become a useful citizen.

I believe in the training of my HEAD for the power it will give me to THINK, PLAN, and REASON.

I believe in the training of my HEART for the nobility it will give me to be KIND, SYMPATHETIC, and TRUE.

I believe in the training of my HANDS for the ability it will give me to be HELPFUL, SKILLFUL, and USEFUL.

I believe in the training of my HEALTH for the strength it will give me to ENJOY LIFE, RESIST DISEASE, and MAKE FOR EFFICIENCY.

I believe in the United States of America, in the State of Oregon, and in my responsibility for their development.

I am therefore willing to devote my efforts for the fulfillment of these things which I believe.

Cooperative Extension Work in Agriculture and Home Economics
Wm. A. Schoenfeld, Director
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