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1944

CANNING

FOR THE

HOMIE

BULLETIN NO. 128

REVISED
JUNE, 1944

AGRICULTURAL EXTENSION SERVICE

U. S. DEPARTMENT OF AGRICULTURE
Work in Agriculture and Home Economics,
Bureau of Home Economics, United States
Department of Agriculture cooperating

CANNING FOR THE HOME



PLAN
PLANT
PRESERVE
PROSPER



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ASSISTANCE OFFERED BY THE AGRICULTURAL EXTENSION SERVICE OF THE
VIRGINIA POLYTECHNIC INSTITUTE

The Agricultural Extension Service carries the State College and United States Department of Agriculture to the farmer and farm home. It endeavors to meet their problems in soils and crops, horticulture, dairying, livestock, poultry, agricultural engineering, forestry, home economics, agricultural economics and community development. This is done by personal visits, meetings, and correspondence of County Farm and Home Demonstration Agents and Specialists; through boys' and girls' and women's club work, cow testing, purebred livestock, horticultural, and other associations and organizations; through radio programs; and through the distribution of bulletins, circulars, newspaper articles, etc.

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Canning for the Home

Raise those vegetables, grow those fruits,
 "Living-at-Home" needs more recruits,
 Cows, pigs, chicks, and all the rest —
 A farm food supply can be the best!

What Is "Living-at-Home"?

It is producing on the farm all possible food supplies. This includes:

1. An adequate vegetable garden to meet the family's needs of at least 3 vegetables for each person daily (including 1 serving of potatoes daily).
2. Sufficient fruit trees, vines, and bushes to provide at least 2 servings of fruit daily.
3. Cows to supply 1 quart of milk for each child and 1 pint for each adult and adequate butter and cheese, 365 days a year.
4. Poultry to provide meat and egg supply throughout the year.
5. Meat supply (hogs, cows, and sheep) for year-around use — fresh, canned, and cured.

Virginia Canning Plan

A canning plan or "budget" is necessarily different for every family. The amount of food that will be canned depends on the amount of vegetables stored as well as on the amount to be grown in the winter garden, such as kale, spinach, parsnips, and salsify. This plan is to provide every member of the family with

Product	Serve (Fresh, Canned, Dried, Frozen, or Stored)	Yearly Amount for One Person	Yearly Amount for Family of Five
Greens..... Spinach, kale, broccoli, chard, mustard, turnip greens, cabbage, lettuce	4 times a week (½ cup at each serving)	5 quarts	25 quarts (for 2 months)
Tomatoes.....	4 times a week * (¾ cup at each serving)	30-40 quarts	160 quarts (for 8 months)
Other vegetables..... Carrots, beets, peas, beans, squash	6 times a week (½ cup at each serving)	30-40 quarts	160 quarts (for 8 months)
Fruits or Fruit juices.....	14 times a week (½ cup at each serving)	40-50 quarts	225 quarts (for 8 months)
Meats and Poultry.....	7 times a week	15 quarts	75 quarts

* Seven times a week for children, unless oranges are available.

at least 3 servings of vegetables (including 1 serving of potatoes), 2 of fruit and 1 of meat or poultry daily, the recommended amount for best health. If stored and fresh foods are not available, it will be necessary to can more. Increased amounts of tomatoes are recommended when young children are in the family. Where quick-freeze facilities are available, frozen food may replace much of the canned foods. The tomato is the important vegetable which does not freeze successfully.

Food Needed for One Person for One Year

Milk or its equivalent	75 gallons
(5 ounces of American cheese may be substituted for 1 quart)	
Lean meat, poultry, fish	100 pounds
40 pounds fresh	
30 pounds cured	
30 pounds canned (about 15 quarts)	
Eggs	30 dozen
Fats (butter, bacon, etc.)	60 pounds
Sugars (including 5 pounds of honey and 15 pounds of molasses)	50 pounds
Vegetables	300 pounds
Tomatoes (or citrus fruits)	
2½ bushels, from which can 30 to 40 quarts	
Green, leafy, yellow, and others	
60 pounds fresh	
125 pounds stored (including cabbage)	
25 pounds canned (about 10 quarts)	
Potatoes (3 bushels, sweet and Irish)	180 pounds
Fruits	250 pounds
100 pounds fresh	
20 pounds dried (5 pounds after drying)	
100 pounds canned (50 quarts)	
Flour or cereals	180 pounds
160 pounds wheat, for bread and cereals	
20 pounds corn meal	
Dried beans and nuts	25 pounds
5 pounds peanuts	
5 pounds other nuts	
15 pounds dried beans and peas	

The amounts of canned greens and other vegetables may be reduced by using a cold frame or hot bed, by having a large fall garden, or by raising spinach, kale, etc., all winter, thereby giving more weeks of fresh products in the garden. Use of fresh, stored, frozen or dried fruits and vegetables reduces the amount of canned foods needed.

For children from 2 to 6 years, use $\frac{1}{2}$ the adult serving. For those 6 to 10, $\frac{3}{4}$ adult serving. Tomatoes or oranges are recommended for children every day.

Can It to Keep It!

Canning is the process of heating food long enough and hot enough to kill all organisms which might cause the food to spoil. Canning frequently overcooks foods, because the time needed to kill the spoilage organisms is longer than the time to cook the food.

Starchy foods need to be processed longer than the cooking time (corn, peas, beans).

Acid foods need relatively short processing times (tomatoes).

Meats and all protein foods need long processing times.

All processing times are based on research work. They are the shortest times that will insure safe-keeping of food under all conditions.

Common Food Spoilages

Flat Sour.—This is a term used for the condition of canned vegetables in which taste and odor are bad, though appearance may be good. In canning peas, beans, corn, and asparagus, flat sour is probably responsible for more failures than any other cause. Use only absolutely fresh products and avoid piling them up as they are prepared, for the overheating of peas or beans, as often happens at the bottom of the pile, may start these foods to spoil before they ever enter the jar. Either spread them out on trays or drop them into cold water. Flat sour may develop in vegetables if there is delay at any stage of the canning process—standing too long before canning, standing packed too long in the jars before processing, or not cooling rapidly enough after sealing. Flat sour develops at two ranges in temperature, the lower from 70° to 90° Fahrenheit and the higher 140° to 159° Fahrenheit. Never use canned goods with flat sour.

Mold.—Fruits and tomatoes are often molded. It is not safe to remove the mold and eat the food, because certain types of mold reduce the acidity to a point where botulinus spores may develop.

Planned Yearly Food Supply for the Farm Family



A person eats about 1,500 pounds of food a year.

Botulinus.—Bacteria, found in the soil, called bacillus botulinus may be present on vegetables and if not destroyed in processing, will thrive in non-acid foods and meats after they are canned. The bacteria create a toxin that is deadly poisonous. Thorough cleaning can help remove the botulinus but gives no assurance of preventing spoilage by this organism. Even boiling water is not hot enough to kill it; consequently canning with steam under pressure is the only safe way. If a pressure canner is in good working order and reliable canning recommendations are followed, there is no danger of botulinus poisoning. However, for safety, it is better to boil non-acid vegetables and meats 10 minutes before tasting. Boiling will destroy the toxin. Canned food that has spoiled should be buried, as botulism is fatal to animals.

Methods of Canning

Cold Pack—the method where foods are blanched and packed into jars while cold, then processed. Shrinkage in this method is greater than when hot pack is used, but the ease of packing makes it very popular. It is recommended only for tomatoes and acid fruits, and where there is *no* shortage of jars.

Hot Pack—the method which employs a precooking period. The food is heated to boiling in a small amount of liquid, then food and liquid are both put into the jar while hot.

Open Kettle—the method suitable *only* for preserves and jams. The foods are cooked completely and packed into thoroughly sterilized jars while still boiling hot, and sealed at once. No further processing is done. This method is not recommended for tomatoes or fruits.

Canning Equipment

A boiling water bath to process fruits and tomatoes should always have a rack in the bottom for jars to rest on and should be at least 3 inches deeper than the tops of the jars as they stand on the rack. This allows for 1 or 2 inches of water to cover and some head-space to prevent boiling over. It is important that the water be kept boiling throughout the process and that it cover the jars at all times.

A pressure canner is recommended for all vegetables except tomatoes and for all meats. The gauge should be checked each year to be sure it is accurate and the valve and petcock should be kept clean and dry at all times. Canners should be cleaned out and dried at once after being used, for if liquid stands in it, the bottom may become pitted and rough. If the canner is stored for several months, put some crumpled paper inside to keep it dry.

A steamer should never be confused with a steam pressure canner. Most steamers have shelves for holding jars and a small amount of water in the bottom produces steam for processing. The time must be $\frac{1}{3}$ longer in a steamer than in a boiling water bath. This method of processing is recommended for only fruits and tomatoes.

Oven canning is not recommended because of the danger from exploded jars and because many oven regulators are not accurate enough to keep a constant temperature.

Know Your Jar Tops and How to Seal Them!

Read and follow carefully manufacturers' directions on sealing jars. Use only standard jars in pressure cooker. Save mayonnaise, coffee, and similar jars for canning fruits, tomatoes, jams, and preserves.

Warning: Screw-bands for glass-top closures cannot be used with metal cap or the ones for metal cannot be used with glass-top.

All jar openings are standard Mason size except one which is slightly smaller, called No. 63. Current types of closures are:

1. Porcelain-lined zinc cap, or metal cap with white lacquer lining — fits jar with shoulder. For processing, tighten and turn back $\frac{1}{4}$ of a turn. After processing, screw tight.

2. Three-piece cap (metal screw-band, glass disk, top-seal rubber) — fits deep-thread jar with or without shoulder. To seal, tighten, and turn back $\frac{1}{4}$ turn. Remove screw-band after 24 hours.

3. Two-piece cap (metal screw-band, a little shallower than three-piece cap, and metal disk with made-on rubber) — fits jar with standard thread, with or without shoulder. To seal, screw tight. *Do not* retighten after processing. Remove screw-band after 24 hours.

4. Glass cap with shoulder rubber — fits glass top jar with bale. To seal, place long bail wire in center of groove on top of lid. Leave short wire up during processing. When jar is removed from canner, push short bale wire down against side of can.

5. Metal disk with made-on rubber (No. 63) — fits mayonnaise jar, etc. It is necessary to have a metal lid (be sure to remove cardboard lining and puncture lid from inside for ease in removing) to hold disk in place. To seal, screw lid down tight. Do not tighten after processing. Remove lid after 24 hours.

General Suggestions for Safety in Canning

1. Know the correct method before you start.
2. Use only clean, sound, fresh foods of prime ripeness. Lose no time between picking and processing.
3. After picking, keep foods cold if they must wait. This helps to prevent steaming, flat sour, or other spoilage.
4. Make sure that containers in which food is processed are clean and free from defects.
5. Prepare all jars, tops, rings, and rubbers before preparing the food. Jars should be boiled 10 minutes and kept hot until food is packed.
6. The water bath method is not safe except for acid vegetables and fruits. For this method be sure that the water in the canner comes at least 1 inch over the top of the jars. Keep boiling water ready to refill if water gets below this point. Do not begin to count the time until the water begins to boil or until the pressure reaches the desired point. Keep the water boiling or the pressure steady during the entire heating process.
7. Process non-acid vegetables and meats in a pressure cooker for complete safety.
8. Prepare only as much at one time as can be processed at once. Food that is ready for canning but must wait may develop flat sour.

9. For complete safety all home canned meats and non-acid vegetables should be boiled 10 minutes before serving.

10. The best temperature for storing canned goods is 45° to 60° Fahrenheit. The temperature at which canned goods are stored has a pronounced effect on the keeping qualities. All the bacteria present in food are not necessarily killed during processing and those remaining are much more apt to grow and spoil the product if jars are stored in a very warm place.

11. The white sediment in the bottom of some jars after they have stood awhile may be due to careless washing, to old products, or to hard water containing lime compounds. Liquid surrounding beans is often cloudy, but this does not mean that the beans are spoiled. If vegetables are old they contain considerable starch and if they are cut or overcooked the starch comes out into the liquid. If liquid becomes increasingly cloudy, look out for spoilage.

12. Altitude and climate affect the length of time for processing in the water bath. Time tables are given at sea level or in altitudes up to 1,000 feet. If the altitude is over 1,000 feet, increase the time of processing 10 percent for each additional 500 feet. At sea level, 10 pounds pressure is equivalent to 240° Fahrenheit, 15 pounds pressure to 250° Fahrenheit.

Approximate Amounts of Food Required, To Aid in Planning Your Budget

Product	Amount of Fresh Food Needed to Can One Quart	Number Pounds in One Bushel	Number Quarts Canned to One Bushel
Apples ¹	2½ pounds	48 pounds	20
Asparagus.....	4 pounds (2 large bunches)	40 pounds	10
Beans, butter.....	4 quarts in hull	28 pounds	8
Beans, snap.....	1½ pounds	24 pounds	19
Beets.....	2½ pounds	56 pounds	22
Berries.....	1½ quarts	36 pounds ²	18
Carrots.....	2½ pounds	50 pounds	20
Cherries.....	1½ quarts (whole)	64 pounds	25
Corn.....	8 ears	72 pounds	8
Grapes.....	2½ pounds	48 pounds	20
Greens.....	2½ pounds	12 pounds	5
Peaches ¹	2½ pounds	48 pounds	20
Pears.....	2½ pounds	48 pounds	20
Peas.....	4 quarts in hull	32 pounds	7
Squash.....	2 pounds	40 pounds	20
Tomatoes.....	3 pounds	60 pounds	20

¹ A bushel of apples or peaches, if dried, will make about 5 pounds.

² Weight of 24-quart crate.

Other Bulletins on Food Production and Conservation Available from Any Virginia County Extension Office

Home Canning of Fruits and Vegetables, AWI-93.

Oven Drying, AWI-59.

Preparing Home-Grown Vegetables and Fruits for Freezing, AWI-100.

Take Care of Pressure Canners, AWI-65.

How to Dehydrate Food at Home, Virginia Agricultural Extension Service.

Grow Your Own Food for Freedom, E-351.

Canning Fruits and Vegetables for Victory, E-359 (Revised).

Saving Fruits and Vegetables by Drying, Brining, Sulphuring, E-360.
How to Store Your Victory Garden Products, E-363 (Revised).
Home Canning of Meats, Poultry and Fish, E-364.
Family Food Plan, Virginia Agricultural Extension Service.
Preservation of Vegetables by Salting or Brining, Farmers' Bulletin No. 1932,
U. S. D. A.
Home Storage of Vegetables and Fruits, Farmers' Bulletin No. 1939, U. S. D. A.
Making Fermented Pickles, Farmers' Bulletin No. 1438, U. S. D. A.
Beef on the Farm, Slaughtering, Cutting, Curing, Farmers' Bulletin No. 1415,
U. S. D. A.
Home Canning of Fishery Products, Conservation Bulletin 28 (U. S. Department
of Interior).
Pork on the Farm, Killing, Curing, and Canning, Farmers' Bulletin No. 1186,
U. S. D. A.

Vegetables

Always select young, fresh vegetables. Can them the day they are picked and as soon after picking as possible.

Plan to handle at one time only the quantity which will fill the canner once. When more than enough containers to fill the canner are prepared at one time, those which have to wait to be canned after the first lot is done are likely to develop flat sour unless kept in hot water or kept cold.

Clean the vegetables and prepare them as for cooking. Sort them according to size so that all those in one can will cook uniformly.

Blanch or precook all vegetables (see directions below).

Pack the vegetables in clean, sound jars to within $\frac{1}{2}$ inch of the top (1 inch from the top for corn). Shake the jars to get a firm pack, but do not press the vegetables down with a spoon.

Add 1 teaspoon of salt to each quart jar. Fill the jars with boiling water or juice to within $\frac{1}{4}$ inch of the top.

Blanching or Precooking

The three reasons for this step are:

1. To reduce bulk. Greens of all kinds should be precooked.
2. To remove the skins from such foods as tomatoes, carrots, beets, peaches, and the like.
3. To set juices, such as the milk of corn.

A wire frying basket is a convenient piece of equipment for blanching. Large vegetables may be placed in this basket and lowered into a kettle of boiling water or over steam for the necessary length of time. Short precooking is recommended for many vegetables in place of blanching.

Always use the hot liquid in which the vegetable is precooked to fill the jars. In this way more of the food value is saved. This rule does not apply to greens such as dandelions which have a very strong flavor. For such greens, fill the jars with hot water, as the water in which the greens were blanched is bitter and should be discarded.

Tomatoes should be dipped into boiling water, then removed immediately and dipped in cold water to make them easier to handle while the skins are being removed.

Carrots, beets, parsnips, and the like should be dipped into boiling water for several minutes, until their skins may be slipped off easily.

Corn may be blanched on the cob, a small amount at a time, or may be cut from the cob and precooked.

Asparagus

Select young, tender stalks. Can immediately, as asparagus loses its color and flavor rapidly. Wash thoroughly and remove tough ends. Grade according to size. Cut pieces just to fit the jar. (Can short pieces for soup.) Pack with tips up except the 3 center pieces, which may be packed with tips down. Pack closely. Add 1 teaspoon of salt to each quart jar and fill jar with boiling water. Process pints 35 minutes, quarts 40 minutes, at 10 pounds pressure.* To remove from jar when using, pull out the 3 center pieces; then slide the rest out.

Asparagus Puree

When canning asparagus, the tough ends may be used for soup, instead of being wasted. Cook the pieces in as little water as possible until they are soft enough to press through a sieve. Turn pulp into clean jars and to each quart add 1 teaspoon of salt and if desired, 1 tablespoon grated onion. Process pints 35 minutes, quarts 45 minutes, at 10 pounds pressure.* This makes excellent cream soups or may be mixed with meat stocks.

Beets

Acid Method.—Small beets from 1" to 1½" in diameter of deep red color are best for canning. Beets of this size may be canned whole; larger ones should be sliced. Boil beets for 20 minutes, remove skins and pack beets in jars. Add 1 tablespoon of vinegar to each pint jar and fill with boiling water. Do not add salt, for it tends to draw out the color. Process for 1½ hours in boiling water. Beets canned under steam pressure are likely to lose much of their color, so where acid flavor is not objectionable, this method helps preserve the color.

Non-acid Method.—Prepare as above. Pack into jars. Cover with boiling water. Process pints 40 minutes, quarts 50 minutes, at 10 pounds pressure.*

Lima or Butter Beans

Only young and tender beans should be canned. The older ones may be dried. For tender beans, follow the directions given for peas. Process the hot-packed beans immediately at 10 pounds pressure in quart glass jars for 55 minutes, pint glass jars for 45 minutes.*

String or Snap Beans

Select beans without rust or spots. String, wash thoroughly, and cut into pieces or leave whole. Precook in boiling water for 5 minutes. Pack, cover with the water in which they are boiled, and add 1 teaspoon of salt to each

* Boiling water bath takes 3 times as long as pressure canning at 10 pounds; is not as safe for non-acid vegetables.

quart. Process immediately at 10 pounds pressure, quart glass jars for 40 minutes, pint glass jars for 30 minutes.*

Carrots

Only young and tender carrots should be used for canning. The small ones thinned out of rows (fingerlings), which are often discarded, are delicious when canned. Wash them well and boil them for 5 minutes. Dip them into cold water and slip off skins. Pack into the jars lengthwise without cutting. Cook them for 1 hour under 10 pounds pressure.*

Cauliflower

Separate heads into small pieces and place in a weak brine (4 tablespoons of salt per gallon of water) for several minutes. Blanch in boiling water for 5 minutes, and cool at once in cold water. Pack into containers. Add $\frac{1}{2}$ teaspoon salt per pint and fill with hot water. Process pints 35 minutes, quarts 40 minutes, at 10 pounds pressure.*

Corn

For best results in canning, corn should be carefully selected; use only corn that is before the "dough" stage. Since corn loses its flavor very quickly, it should never be allowed to stand longer than a few minutes after being taken from the stalks before it is canned. In hot weather, it is best to plunge corn into a tub of cold water as it is picked. This helps to prevent flat sour.

A large amount of corn should not be canned at one time because flat sour sometimes develops in the first jars prepared while the last ones are being finished. It is safest to can corn only in pint jars.

Whole Kernel.—Blanch only a small quantity of corn at one time (enough for 2 or 3 jars). Blanch on the cob from 2 to 5 minutes, or until the milk does not ooze from the grains when they are pricked with a fork. Cut kernels close to the cob without scraping, giving a product of nearly whole kernels. If preferred, the outer end of the grain may be cut off first and the remainder scraped. This gives a fine product without a hull, which is particularly good for soup.

Cream Style.—Cut and scrape corn from cob. Add water just to cover and heat to boiling.

With either style, a space of 1 inch should be allowed in filling the jars to provide for expansion in heating; care should be taken not to pack too tightly. When jars are filled with whole-kernel-style corn, add boiling water to fill jars. Add $\frac{1}{2}$ teaspoon salt to each pint jar of corn. If desired, sugar may be added, 1 teaspoon to each pint. Place in the canner as soon as possible. Process at 10 pounds pressure, pints for 65 minutes, quarts for 75 minutes.*

Greens

Many leafy plants, both wild and cultivated, are used for greens. Chard, beet tops, turnip greens, dandelions, and spinach are often canned, though some fresh greens are available in Virginia all winter. Can only young, fresh greens. Wash thoroughly in several changes of water. Place in cheesecloth bag and blanch for 4 minutes. Pack greens into containers, being careful to prevent

* Boiling water bath takes 3 times as long as pressure canning at 10 pounds; is not as safe for non-acid vegetables.

overpacking. Approximately 2 pounds of fresh prepared greens may be packed into a pint jar. After packing, cut across from top to bottom of container leaving a thin space through which a reasonably free circulation of liquid may take place. This circulation is necessary to thorough heating. Add $\frac{1}{2}$ teaspoon of salt to each pint and process 60 minutes at 10 pounds (greens are safer if canned in pints only).*

One of the most attractive greens is the tender beet one, obtained by thinning beets and pulling when they are about $\frac{1}{2}$ inch diameter. The beets are so young and tender they require no special preparation other than washing. The entire plant is blanched as for the greens.

Mushrooms

Not all mushrooms are edible. If the wild or uncultivated varieties are picked for table use and canning, be sure that they belong to an edible variety. Wash thoroughly, skin if necessary (spotted or dirty). Boil for 3 minutes in boiling water or in a steamer. Pack whole or sliced into hot jars, being careful not to crush; add 1 teaspoon salt to each quart, fill with cooking water and process at 10 pounds for 60 minutes.*

Okra

Select young, tender okra pods. Wash, and cut them in short lengths or can them whole. Blanch for 6 minutes in boiling water and pack in jars, adding $\frac{1}{2}$ teaspoon of salt to each pint. Fill the jars with boiling water; adjust the caps; and process at 10 pounds for 40 minutes.*

Peas

Special care should be given to the handling of peas since they are one of the most difficult vegetables to can successfully. The peas should be young and fresh. The early morning is the best time to gather them, and they should be canned as soon as possible. Keep the shelled peas in shallow pans or in cold water until ready to blanch. If they are heaped in deep pans and allowed to stand in a hot kitchen, they become "steamy" and flat sour is likely to develop.

Precook peas in a small amount of boiling water for 3 to 5 minutes, add salt, and fill the jars to within 1 inch of the top. If crowded into a close pack, some of the peas may burst during the cooking and give the liquid a cloudy appearance. One teaspoon of sugar may be added to each pint jar for flavor if desired.

Carrots and peas are often canned together, and may be served together with cream or butter, or used as a salad.

Pimentos

Can peppers as soon as possible after they are removed from the plant. Cover them with boiling water for 10 minutes or heat in a hot oven for 10 minutes. Let them drain and slip off the skins. Carefully remove the stem, all seeds, and the core. Pack the peppers in glass jars, and process for 40 minutes at 10 pounds pressure.*

*Boiling water bath takes 3 times as long as pressure canning at 10 pounds; is not as safe for non-acid vegetables.

Sauerkraut

Select hard, sound heads of cabbage. Trim off outside leaves. Quarter the heads and remove the core. Shred cabbage fine and pack at once into clean water-tight container (earthenware crocks are most commonly used). Add layers of salt along with the cabbage using 2 ounces ($\frac{1}{4}$ cup) salt to 5 pounds cabbage or 1 pound salt to 40 pounds cabbage. Leave a 2-inch space at the top. Cover with a clean cloth and wooden cover and weigh cover down so brine will rise to the top as the salt extracts the juice. Set aside until fermentation is complete and bubbles cease to rise (about 10 days). Remove skum. Can it or pour on melted paraffin to exclude air. Store in a cool place. For a small family, several small containers will be better than one large one, so only that which is used within about 2 weeks may be opened at a time.

After sauerkraut is well fermented it may be canned. Heat the sauerkraut to simmering (about 180° Fahrenheit), but avoid boiling. Fill while hot into hot containers and pack closely. Cover with the sauerkraut juice, leaving $\frac{1}{8}$ - to $\frac{1}{4}$ -inch head space. Process immediately in boiling water for 25 minutes.

Sauerkraut may be made by mixing 1 scant tablespoon of salt with 1 quart of shredded cabbage and packing directly into clean jars. Do not seal jars. Remove skum as it forms. When cured, process pints 25 minutes, quarts 30 minutes, in hot water bath; then complete seal.

Soup Mixture

Clean and sort any variety of vegetables suitable for soup (tomato, carrot, onion, celery, peas, green pepper, etc.). Use $\frac{1}{3}$ tomato for soups. Heat mixture together and pack hot, adding 1 teaspoon of salt for each quart. Fill jars with vegetable juice or tomato juice. Process pints 60 minutes, quarts 70 minutes at 10 pounds pressure, or the longest time required by any vegetable used.*

Squash

Wash, cut summer squash into slices and blanch in a small amount of water until tender (5-10 minutes). For winter squash, cut into pieces, steam and remove from shell. Pack loosely while hot. Add 1 teaspoon of salt for each quart. Process pints 85 minutes, quarts 105 minutes, at 10 pounds pressure.*

Succotash

Cut corn from cob and boil for 5 minutes. Mix the corn and an equal quantity of young, tender butter beans, or lima beans, which have been boiled for 5 minutes. Pack quickly and loosely into hot jars, add 1 teaspoon of salt to each quart, fill jar with cooking water and seal. Process pints 65 minutes, quarts 75 minutes, at 10 pounds pressure.*

Sweet Potatoes

Canning of sweet potatoes may be done successfully and is recommended if satisfactory storage is not available. Select perfectly sound potatoes. Boil or steam them until the surface is tender, or until the skin will slip off easily. Peel as soon as the potatoes are cool enough to handle. Cut in half and pack into

* Boiling water bath takes 3 times as long as pressure canning at 10 pounds; is not as safe for non-acid vegetables.

hot jars as soon as possible to prevent discoloring. Fill in spaces with smaller pieces. Make a syrup by boiling equal parts of sugar and water for 5 minutes. Fill jars with the syrup. Process pints 100 minutes, quarts 110 minutes, at 10 pounds pressure.* (Potatoes canned this way need only to be heated in butter before serving.) If dry potatoes are preferred, omit the syrup and pack the potatoes with no liquid. Potatoes may also be mashed through a colander and canned as above for pies.

Tomatoes

Select tomatoes that are ripe but not overripe, free from blemishes and of medium size, if possible. They should be red to the stem end, since green parts produce poor flavor and color. Imperfect tomatoes may be used for ketchup or puree, or made into juice for filling the spaces left in a jar after it is packed with whole tomatoes.

Scald a few tomatoes at a time in boiling water for from $\frac{1}{2}$ minute to 2 minutes, using a wire basket or thin cloth. Dip quickly into cold water, cut out stem core; then with a quick turn of the wrist, twist the skins from the tomatoes without removing the pulp. If the pulp adheres to the skin, and the tomatoes are still firm, they have not been scalded long enough. As they are skinned, lay them in shallow pans.

Pack into jars, pressing them down gently with a wooden spoon, so that jars will be full of juice. Add 1 teaspoon of salt for each quart (and 1 teaspoon of sugar, if desired). Process in hot water bath for 30 minutes. Be cautious about attempting to can too many tomatoes at a time. In hot weather they may be spoiled by flat sour if they stand too long at any stage of the process.

If the hot pack method is used, add no water, because the tomatoes will make their own juice as they become heated. Bring to the boiling point; ladle the boiling tomatoes into the hot sterilized jars and process at once in boiling water for 10 minutes.

Tomato Juice

Many people prefer making juice from tomatoes as needed, and recent investigation indicates that this way retains more of the vitamin C. For convenience, some may prefer to can juice as such.

Wash the tomatoes and trim off all greenish spots. Crush a few to secure enough free juice to start the cooking. Cover the kettle and heat until the tomatoes are soft. **Avoid boiling.** Run through a fine sieve or colander. Return to the kettle and bring rapidly to simmering. **Avoid boiling.** To each quart of concentrated pulp add 1 teaspoon of salt. Fill the hot pulp into hot, sterile jars, and process in boiling water bath for 5 minutes.

One bushel of good tomatoes will yield about 30 pints of juice. This may be used plain for the baby; or it may be seasoned to suit the individual taste with salt, lemon, celery, onion, or cloves, and used as a basis for beverages, cocktails, soups, and sauces.

Tomatoes and Okra

A combination of $\frac{1}{2}$ tomato and $\frac{1}{2}$ okra makes an excellent soup, which can be served directly from the jar or used as a base for the much renowned southern gumbo. Cut the okra into thin slices and cook gently with the tomatoes until tender. Pack immediately into clean, hot jars; add 1 level teaspoon

of salt to each quart; and seal. Process pints 25 minutes, quarts 35 minutes, at 10 pounds pressure.*

Vegetable Salad

One pint diced carrots, 1 cup celery cut in 1/2-inch slices, 1 cup lima or golden wax beans, 1 cup pickling onions, 2 large green peppers, 1 large red pepper. Mix the vegetables. Cover with water and bring to boiling. Pack into clean pint jars. To each jar add 1 teaspoon of salt and 2 tablespoons of vinegar. Process 40 minutes at 10 pounds pressure or 2 hours in boiling water bath. This is safe because of large amount of acid used.

Time Table for Processing Vegetables at 10 Pounds Pressure

Vegetable	Minutes for pint jars	Minutes for quart jars
Asparagus	35	40
Beans, Lima	45	55
Beans, Snap	30	40
Beans, Soy (green)	60	70
Beets	40	45
Carrots	40	45
Corn	65	75
Greens	95	105
Okra	35	40
Okra, with Tomatoes	25	35
Okra, with Corn and Tomatoes	75	95
Peas	45	not advised
Pumpkin	85	105
Squash	85	105
Sweet Potato	100	110
Vegetable Soup Mixture (with some tomato)	60	70

Fruit

General Directions

Select well grown, ripe, but not overripe, fruit. Can it the same day it is picked. Wash, pare, or otherwise prepare the fruit, removing all bruised or decayed spots. Sort according to size so that the fruit in each jar will be uniform.

Blanch in boiling water, if it is necessary to remove the skins, doing a small quantity at a time, and leaving fruit in the water just until the skins will slip off. Dip the fruit in cold water to cool it enough for comfortable handling. Pack firmly in clean, tested jars, filling them to within 1/2 inch of the top with boiling water or hot syrup, as desired. (Proportions for syrup are given below.)

If using zinc or glass lid, adjust rubber and partly seal. For self-sealing cap, place lid with composition next to glass and screw firmly tight. Boil for the required length of time. The water should cover the jars to a depth of at

* Boiling water bath takes 3 times as long as pressure canning at 10 pounds; is not as safe for non-acid vegetables.

least 1 inch. Do not begin to count the time until the water actually boils over the jars.

Cold-packed fruit will float to the top of the jars. Partially cooking fruit in the syrup before packing into jars will prevent floating.

Remove from the canner, and complete seal on rubber ring jars. Self-sealing caps require no further tightening. Cool, wash, label, and store.

Syrups for Canning Fruit

Fruits canned in the thin or light syrups have a firmer texture and more natural flavor and are less likely to shrivel than those canned in heavy syrups. Too much sugar makes the fruit shrink and float to the top of the jar. It also tends to toughen the fruit and cover up its flavor.

The proportion of sugar to water for a syrup depends upon the kind of fruit for which it is intended and upon the richness of the product desired.

Percentage	Amount	Use
20% (thin)	1 cup sugar to 4 cups water	For such fruits as apples, pears, raspberries, and other sweet berries where a rich product is not desired.
30% (medium)	1 cup sugar to 2½ cups water	For sweet plums, blackberries, and sweet cherries.
50% (thick)	1 cup sugar to 1 cup water	For peaches, sour cherries, pineapple, etc.
60% (very thick)	1½ cups sugar to 1 cup water	For rhubarb, gooseberries, currants, and very sour fruit.

Boil sugar and water together for five minutes.

When Sugar Is Scarce

Fruits keep perfectly with no sugar added, but they take more sugar to sweeten after they are canned than while they are being canned and the color and flavor are better if some sugar is used. To stretch sugar, it is wise to use juice from sweet fruits in canning sour ones, for instance, rhubarb canned with strawberry juice would need much less sugar. Part of sweet fruits, like peaches, may be crushed and a small amount of sugar and water added. Heat the peaches in this syrup before packing into the jars; then pour this juice over.

Corn or maple syrup or honey may be substituted for one-half the sugar without harming the flavor. Molasses or sorghum has too strong a flavor for a good product.

In step with the ration.—To keep within the 1 pound for 4 quarts, use thin syrup for sweet fruits and moderate syrup for the more sour ones. Allow ¾ cup syrup to each quart jar.

A pinch of salt in each jar increases sweetness. Do not use saccharin as it becomes bitter when heated.

Apples

Virginia ranks second in the United States in apple production. The most common varieties are the Albemarle Pippin, Grimes Golden, Stark's Delicious, Staymen, Transparent, and Winesaps.

Any tart cooking apple, especially the fall and winter varieties, may be canned. Summer apples as a rule are soft and juicy, and are best canned in the form of sauce. Pare, core, and slice apples and place in weak brine (1 tablespoon of salt to 1 quart of water) until fruit is all prepared (prevents fruit from darkening). Cook pieces in 20% syrup for 5 minutes. Pack into jars. Cover with the syrup and process 15 minutes in hot water bath.

Apple Sauce

Wash and cut up apples, removing only the blossom end. Add $\frac{1}{2}$ cup of sugar and $\frac{1}{4}$ cup of water to each pound of apples. Cook slowly in closely covered pan for 8 minutes. Remove cover and cook until no free liquid is noticeable, stirring occasionally to prevent scorching. If froth is present, cool and stir until clear; then strain. Fill containers with hot sauce and process 10 minutes in hot water bath. (One pound of fruit yields approximately 1 pint of sauce.)

Baked Apples

Wash and core good, sound, tart baking apples. Fill the cavities with sugar. Bake the apples until tender in a pan containing a little water. Pack the baked apples into hot, clean jars. Fill the jars completely with a 50% syrup, boiled for 2 minutes. Process 15 minutes in hot water bath.

Blackberries, Dewberries or Raspberries

Wash, drain, and pack berries, shaking to obtain a full pack. Boil a 30% syrup until it spins a thread. Allow about $\frac{1}{2}$ cup of syrup to each quart of berries. Pour boiling syrup over berries. **Completely seal** jars, place in a receptacle containing sufficient boiling water to cover jars at least 1 inch, and cover receptacle tightly. Remove from fire, and allow jars to remain in water until water has become cold. Store in a cool place. (**Caution**—the water must be boiling hot when the jars first go in.) This method makes a much firmer berry and it retains more nearly the original flavor than when processed in boiling water. If precooked berries are preferred, heat and process 15 minutes in boiling water.

Blueberries or Huckleberries

These may be canned in syrup, in water, or without anything added. For this last method, pick over fruit, blanch by wrapping in cheesecloth and lowering into boiling water. Remove when a few spots of color on cloth show a losing of juice (about $\frac{1}{2}$ minute). Place at once in cold water, drain, and pack into jar (about $\frac{3}{4}$ quart of fruit will pack 1 pint jar). If sweetness is desired, cover with 30% syrup. Process 20 minutes in hot water bath.

Cherries

Cherries may be canned either with or without the pits. The fruit keeps its shape better if unpitted and with some varieties the flavor of the pit is desirable. Cherries hold their color, flavor, and shape better if they are canned with sugar than if canned without it, although they will keep perfectly with no sugar. Even so small an amount of sugar as $\frac{1}{6}$ the measure of fruit usually gives better results than no sugar at all. When canned whole, cherries sometimes burst. In order to prevent this, dip them in hot water and then place in hot

(not boiling) 30% syrup, simmer for 10 minutes, and seal at once in hot jars. For sour cherries use 50% syrup. Pack pitted cherries tightly in jars and cover with 30% syrup for sweet, and 50% syrup for sour, cherries. Adjust cap and process 15 minutes in hot water bath. It requires about $\frac{3}{4}$ quart fresh cherries for 1 pint jar of pitted ones. A paper clip is handy to use in pitting cherries.

Fruit Salad

Any combination of firm fruits, as pears, peaches, apples, and cherries, may be canned together in a salad mixture. Peel, halve and core pears and apples; skin and seed peaches. Cherries may be pitted or not (red ones give best color). If red apples are used, the skin often is left on, and they are cut up in pieces. Pack into jars, cover with a thin syrup (30%) and process 20 minutes in hot water bath.

Grapes

For use as sauce or for subsequent processing as juice, jellies, and jam, a satisfactory method is: Remove grapes from cluster, wash well, pack into container using spoon to press down until sufficient juice is set free to practically cover the fruit. Adjust cap. Process 20 minutes in hot water bath. No sugar is necessary in this process. (For grape juice, see next section on Fruit Juices.)

Peaches

Fruit should be ripe but not soft. The soft or broken fruit may be used for marmalades or butters. If possible, peaches should be canned the same day they are picked. They may be canned whole, in halves, or sliced. Halves usually make the most attractive pack. Dip the peaches into boiling water, and then into cold water, and remove the skins. To prevent discoloration, cover them with a salt solution (1 teaspoon of salt to 1 quart of cold water); this should be drained off just before they are packed. Pack in jars with "cups" down. The syrup may vary from 30 to 50%, depending on acidity of fruit. Fill jars with hot syrup and process in hot water bath 20 minutes. For a fuller pack, fruit may be heated in syrup and packed while hot.

Crushed Peaches

Crushed peaches are excellent for ice cream.

Blanch and peel peaches and put through food chopper. To 3 cups of crushed peaches, add 1 cup of sugar; mix well and pack into jars. Process in hot water bath 20 minutes.

Pears

Most varieties of pears are greatly improved if picked when fully grown and allowed to ripen in storage. Large pears are usually canned in halves, and small ones whole. If halves are used, the fruit is peeled, cored, and placed in a weak brine (1 tablespoon of salt per quart of water). Heat the prepared fruit in boiling 30% syrup 3 to 5 minutes, depending on size and hardness of fruit. Pack, "cups" down, as tightly as possible without crushing. Fill jars with syrup and process in hot water bath 20 minutes. If precooked in syrup, pack while hot and process 15 minutes.

Pineapple

When pineapples are in season and low in price, the home canner may well take advantage of this to can a year's supply. Trim fruit, removing base and top, then with a sharp knife remove a thin layer of peel by cutting from top to bottom. This slice removes the outer coat and about $\frac{1}{2}$ the depth of the eyes. Next slice it across the core. Trim these slices, removing all eyes. Pack in jars and cover with 50% syrup. Process in hot water bath 45 minutes for pints and 55 for quarts.

Plums

Select plums in sound condition and of uniform size. Wash the fruit and prick each plum to prevent its bursting. Pack them closely in glass jars, being careful not to crush them. Cover with a 30% syrup and process in hot water bath for 20 minutes, or heat in syrup and process 15 minutes.

Rhubarb

There are many ways of canning rhubarb. It is acid enough to keep by simply covering with cold water and sealing, but more sugar is required if added later. For sauce, either of the following is good:

Cold Pack.—Remove the tops and tips, but do not peel the rhubarb. Wash and cut in pieces 1 inch long. Pack as tightly as possible into jars. Fill jars to overflowing with a hot 60% syrup cooked until it forms a thread when dropped from a spoon. Adjust caps. Boil in hot water bath for 20 minutes. Rhubarb canned in this way makes good sauce or filling for pies.

Hot Pack.—Cut rhubarb in pieces; measure and add $\frac{1}{3}$ as much sugar. Add water to about $\frac{1}{2}$ the depth of rhubarb and bring to boiling. While hot, pack into hot sterilized jars. Process 10 minutes in hot water bath.

Strawberries

Strawberries do not can satisfactorily as they lose so much flavor and color. The following method gives best results:

Wash berries carefully by dipping up and down in water, then cap. Measure, and to each quart of fruit allow $\frac{1}{2}$ cup of sugar. Place berries and sugar in alternate layers in a kettle or jar, reserving enough sugar to cover the top layer thoroughly. Set aside in a cool place for several hours or overnight while the sugar causes the juice to flow from the fruit. Then stir carefully and gently heat to dissolve all of the sugar. Fill jars and process in hot water bath 12 minutes for pints and 16 for quarts.

Crushed Strawberries

(Not successful unless all precautions are followed.)

Strawberries, raspberries, blueberries, and red currants may be prepared this way, but fruit must be ripe and in perfect condition: Prepare and weigh fruit and to each pound allow $1\frac{1}{4}$ pounds of sugar. Put the berries in a bowl, add the sugar, and mash the fruit. It is necessary to crush every berry. Put in a cool place for about 24 hours, stirring occasionally. When all the sugar is dissolved, fill sterilized, cold jars with the berries, seal, and **store in a cool dark place**. The chief points to remember in this process are to have **every berry crushed** and not to seal the mixture until **every particle of sugar has been dissolved**. The finished product tastes much like the fresh berries.

Fruit Juices

The juice of fruits may be obtained by cooking the fruit and pressing out the juice, or the fresh fruit may be crushed or grated and the juice obtained by pressure. These juices may be canned, and are excellent for beverages, sherbets, and other desserts, or for making jelly.

Apple Juice

Remove the stem and blossom end from the apples. Scrub well with a brush to remove all dirt and spray residue. Cut in small pieces but do not remove the core or skin. To 1 pound of apples add 1 pint of water. Cover and cook until the apples lose their shape. Turn the mixture into a jelly bag and drain without pressing the bag. Add 1 pint of water to pulp and boil again for 5 minutes. If juice is not to be used immediately, seal it in clean, hot jars for future use. Since apple juice is a reliable source of pectin in jelly making, it is advisable to extract the juice and can it when apples are plentiful and at their best. This may be used with the juices of such non-jellying fruits as rhubarb, strawberries, cherries, and pineapple when they are in season. Not only does apple juice contribute pectin, but because of its bland flavor, it does not perceptibly alter the flavor of the other fruit.

It is well to make different extractions of apple juice or combinations of juice from different varieties of apples for various kinds of jellies. Mint jelly, which sometimes changes color on standing, is better if made frequently in small quantities, and the less color the apple juice has the better the green tint will be. A Greening apple gives an ideal juice for this purpose. The juice from the Wine-sap, Staymen, and apples having more color add to the appearance of other less colorful juices. To keep, bring juice to the boil and process 5 minutes in boiling water.

Cherry Juice

Cherries that are spotted or not desirable for canning but still in good condition may make good juice for use as a beverage or in pudding sauces and gelatin desserts. Cherry juice makes an excellent jelly when combined with an equal measure of apple juice.

Cover the cherries with sufficient cold water to allow them to float. Simmer until they are soft and have lost their bright color. Strain the juice as in making jelly, heat it, and add $\frac{1}{6}$ its volume of sugar (unless it is to be used for jelly). Boil the juice until the sugar is dissolved; skim it; pour into hot, clean jars or bottles; and seal. Process 5 minutes in boiling water.

Grape Juice

Remove grapes from clusters, wash, drain, and weigh or measure. Add 1 cup of water to each 5 pounds of fruit (about 4 quarts). Be sure to heat over a slow fire, as boiling destroys both color and flavor. Heat until grapes become soft (about 20 minutes). If thermometer is available, heat at 165° Fahrenheit for 12 minutes. Remove and let stand 5 minutes. Strain through cheesecloth. A second, third, and even fourth extraction may be made from the pulp by adding small quantities of water and reheating over water. From each extraction the yield becomes thinner and smaller. These extractions may be combined to make a very good jelly.

Let the juice stand several hours to let crystals and sediment settle. Add sugar to taste, if desired. Strain and bring to boiling. Fill into hot, sterilized bottles or jars. Process in boiling water bath 5 minutes. Seal or dip bottle tops in paraffin. Where a pasteurizing outfit is available, a finer flavor is obtained if juice is pasteurized at 170° Fahrenheit for 40 to 45 minutes instead of processing in boiling water.

Raspberry Juice

Raspberry juice may be used in beverages, ices, sauces, or as a basis for gelatin desserts. It makes an excellent jelly when combined with an equal quantity of currant or apple juice. Small, inferior berries that are not suitable for canning may be used for juice.

Cover the berries with sufficient cold water to allow them to float. Simmer them until they are soft and have begun to lose color. Turn them into a jelly bag and drain off the juice, heat it, and, when it is boiling hot, add $\frac{1}{8}$ of its measure of sugar. Bring the juice again to the boiling point and boil it for about 5 minutes. Skim it, and pour into clean, hot bottles or jars and process 5 minutes.

Rhubarb Juice

Rhubarb juice is particularly valuable for fruit beverages, for combining with other fruit juices to lend tartness to jellies, and for making jellied desserts and pudding sauces. It may be prepared from the stalks that have become too tough to use in other ways.

Cut the rhubarb in small pieces, add just enough water to cover it, and simmer until it is very soft. Strain the juice through a jelly bag. To each quart of juice add 1 cup of sugar and heat until the sugar is dissolved; skin it, and bring it to the boiling point. Pour it into clean, hot glass jars and seal. Process 5 minutes.

Strawberry Juice

Strawberry juice may be used in beverages, ices, sauces, or as the basis of gelatin desserts. It makes an excellent jelly when combined with 3 times its measure of apple juice. Small, inferior berries that are not suitable for canning or preserving may be used for juice.

Cover the berries with sufficient cold water to allow them to float. Simmer (do not boil) until they are soft and have begun to lose color. Turn them into a jelly bag and drain off the juice. Measure juice, heat it, and when boiling hot, add $\frac{1}{8}$ of its measure of sugar. Bring the juice again to the boiling point, skim it, and seal it in clean, hot bottles or jars. Process 5 minutes.

Fruit Pectin

Pectin is the jellifying substance which occurs chiefly in the pulp near the skin, in the cores, and around the seeds. Some fruits do not contain enough of it to make jelly satisfactorily (strawberry, cherry, etc.), but large quantities of it are obtained from apples, and in Virginia where apples are so plentiful, no commercial pectin should be used.

Apple Pectin

To extract pectin, boil the fruit peel and seed until soft, but do this as rapidly as possible. Prolonged cooking destroys the jelling power of pectin. Use your own source of pectin—apples. The apple juice made by the recipe on page 20 may be used with equal quantities of any fruit for a fine jelly.

Orange Pectin

Another rich source of pectin is orange peel, which may be canned when oranges are cheapest, for use at any season.

Select oranges and lemons with thick skins. Grate or cut off the colored part (but save it to season desserts.) Use 2 cups of white orange peel, 12 cups of water and the juice of 2 lemons. Remove any white pulp on inside and put the white peel through a food chopper. Press down well in cup when measuring. Add juice of the lemons and allow to stand for 1 hour. Then add 4 cups of the water, heat to boiling point and boil for 5 minutes. Allow to stand overnight. Then add remaining water (8 cups) and again bring to boiling point and boil for 10 minutes. Strain through a jelly bag and use for making jelly or seal in sterilized jars until ready to use. The orange pectin extraction may be flavored as desired, colored with a vegetable coloring and made into a jelly, following the rules for jelly-making. When combining with fruit juices, add 1 cup of this extraction to 1 cup of fruit juice.

Canned Cider

Pour cider into clean jars and process in hot water bath (not boiling, preferably 175° Fahrenheit) for 25 minutes. Seal.

Time Table for Processing Fruits and Tomatoes in Boiling Water

Product	Minutes for Pints and Quarts	Product	Minutes for Pints and Quarts
Apples	15	Plums	15
Apple sauce, hot pack	10	Rhubarb, hot pack	10
Berries, cold pack	20	Tomatoes, cold pack	30
Berries, hot pack	15	Tomatoes, hot pack	10
Cherries	15	Tomato juice, hot pack	15
Peaches	20	Fruit juice, hot pack	5
Pears	20		

Jellies*

Surplus fruits, those underripe, overripe or not in perfect condition for canning, may often be used for jellies, jams, conserves, preserves, marmalades, and butters. These products may be made at little cost, time, and labor, and the results are pleasing accompaniments to a meal. These are all combinations of fruit juice and sugar, varying largely in the way in which the fruit is prepared.

When sugar is scarce, honey or corn syrup may be used to replace part

* Additional information may be found in U. S. D. A. Farmers' Bulletin 1800, "Home-made Jellies, Jams, and Preserves."

of the sugar for all of these products. One pound of strained honey or corn syrup measures approximately $1\frac{1}{3}$ cups. One pound of granulated sugar measures 2 cups.

First of all keep in mind that delicious butters, conserves, and jams may be made with somewhat less sugar than is needed for preserves and jellies. A general rule is that 1 pound corn syrup may be used *with* each 2 pounds of sugar when making any of the products mentioned above. However, an acceptable product may be made by substituting corn syrup or honey for $\frac{1}{3}$ of the sugar in jelly or for $\frac{1}{2}$ the sugar in the other recipes. Jams, conserves, marmalades, and preserves in which corn syrup or honey is used should be processed 15 minutes in water bath and sealed air-tight to prevent fermentation.

Jelly should be tender, quivering, translucent product and must have a clear color and characteristic flavor of the fruit from which it is made. A good jelly contains a sufficient amount of both pectin and acid. Fruits which lack either of these will yield jelly only when the juice is combined with another which is especially rich in that particular material. Many fruits, such as pineapple and rhubarb, contain too little pectin for the amount of acid and therefore will not jell. On the other hand, blueberries and sweet apples have plenty of pectin but too little acid and must borrow acid from other fruits. Since fruits combine very nicely for jellies, it is well to can fruit juices in season, and have them ready as other fruits ripen. For example, strawberry or rhubarb juice may be canned to use later with apple juice.

A convenient new device, a "jelmeter," helps determine the amount of pectin in any fruit juice and the proportion of sugar needed for making jelly. It is a graduated tube with an opening to measure the relative viscosity of a fruit juice. The rate of flow of the juice through the tube is considered a rough measure of the jelling power of the juice and is an index of the quantity of sugar needed.

Jam is one or more fruits cooked to a shapeless mass in which the fruits are not distinct.



The jelmeter makes jelly making easier and more accurate.

Conserves are always made from two or more fruits which are cut in pieces. Nuts and raisins may be added but are not essential.

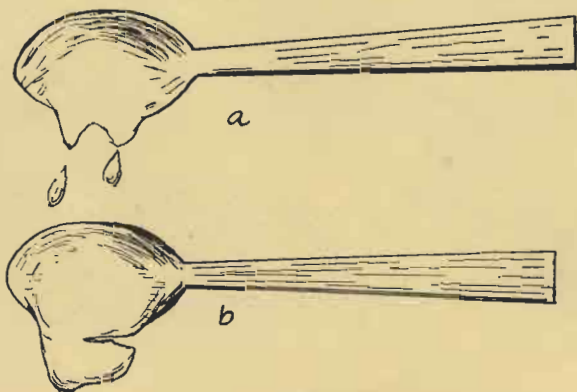
Marmalades are from one or more fruits cut in pieces which, in the finished product, remain distinct throughout the syrup. All should cook rapidly to retain flavor and bright color of the fruit. They are jelly-like but not stiff enough to stand alone.

Making Jelly

There has been much misunderstanding regarding the condition of fruit from which jelly is to be made. Most writers recommend the use of rare-ripe fruit, probably because the pectin and acid content is highest before maturity. Best results in quality and flavor come, however, from fully ripe fruit, so a combination of ripe and underripe fruit gives the best results. Green fruit contains starch, which, being insoluble, gives the jelly a cloudy, foggy appearance. The jelly process consists of two operations, extracting the juice and converting the juice into jelly.

In extracting the juice, the ratio of water to fruit is important. A general rule of 1 cup of water to each pound of hard fruits (apples, plums, etc.), and not over $\frac{1}{2}$ cup of water to each quart of soft fruits (about $1\frac{1}{4}$ lbs.) such as berries and currants, gives best results. Never attempt to make over 4 quarts of juice into jelly at one time. Most fruits may have two extractions of juice, because they will only yield about $\frac{1}{2}$ their jelly making materials in a single cooking. Cook fruit only long enough to break down the tissues so as to set free the materials desired. Soft fruits require 5 to 10 minutes, while hard ones, such as apples, need 15 to 20 minutes. Avoid excessive cooking as it tends to break down the pectin. Cover fruit when preparing juice but never cover jelly. Let colored fruits stand a short while after cooking, as more color is set free while cooling and will give the best appearance to the finished jelly.

It has long been the custom to use the amount of clarified fruit juice as the basis for adding sugar, but a more logical practice is to use the weight of fruit from which juice is made, since the pound of fruit is almost constant in its jelly-making materials, but the amount of juice from this weight of fruit may differ according to the process used by different individuals. The pectin present in a fruit juice is capable of holding only a definite amount of sugar in a jelly consistency and if this amount is exceeded, the pectin breaks down and a syrup results. On the other hand, if too little is used, the product is tough. From $\frac{3}{4}$ to 1 pound of sugar to a pound of fruit usually gives best results (or from



$\frac{1}{2}$ to $\frac{3}{4}$ cup of sugar to 1 cup of juice). Very acid fruits require the highest amount, while mildly acid ones the lowest quantity. Very few fruits ever require over $\frac{3}{4}$ as much sugar as juice.

Since color, flavor, and consistency of jelly are best when the cooking period is short, use a flat-bottom pan to permit rapid evaporation. The regulation spoon test — when the 2 drops flatten out into a sheet and drop together (as illustrated) — is the most satisfactory for the homemaker. A jelly thermometer may help the inexperienced jelly-maker.

No time should be lost after obtaining the jelly test. If jelly is cooked beyond the finish point, the pectin breaks down and a heavy, ropy substance results. No amount of cooking after this stage will make the jelly satisfactory; so continued cooking is unnecessary.

Remove from fire (strain if necessary), and pour into clean dry jars. Let jelly remain undisturbed until set (at least 4 hours). Cover with paraffin, being sure that it completely covers and seals to the edge of the glass.

Tests for Pectin.—In making juices into jelly, a sufficient amount of pectin is necessary. A fairly accurate test for pectin may be made in either of the following ways:

1. Alcohol test. To 1 tablespoon of hot juice add 1 tablespoon of alcohol, any kind. (Do not taste finished product; throw it away to prevent possibility of children eating it by mistake.) If a large amount of pectin is present, a jelly-like mass will form immediately. This mass will be firm enough to be lifted without breaking. If only a small amount of pectin is present, the juice will form into small flaky or flocculent particles. Such juice is not right for proper jelly-making, and will have to have something added to make it "jell."

2. Epsom salts test. Stir together until dissolved 1 tablespoon of sugar, 1 tablespoon of hot fruit juice, and $\frac{1}{2}$ tablespoon of Epsom salts. Let the mixture stand 20 minutes. If sufficient pectin is present, the mixture will form a gelatinous mass or large jelly-like particles.

Apple Jelly

Tart acid apples are best for making jelly. They should be ripe but firm. Scrub the apples well with a brush to remove all dirt and spray residue. Remove blossom end, stem, and any bad spots. Slice apples **across the core**. Weigh fruit and add equal weight of water (1 pint of water to 1 pound of fruit). Cover and let boil for about 15 minutes. Strain off juice, return pulp to kettle, and add same amount of water as at first. During the second cooking occasional stirring is necessary to prevent scorching. Boil slowly another 15 minutes; then strain as at first. Pulp may be squeezed. Mix the 2 extracts and clarify by straining through 4 layers of cheesecloth or a flannel jelly bag. There should be about 3 cups of clarified juice for each pound of fruit used. The amount of sugar needed will depend on the acidity and pectin content of the fruit—the more acid and pectin, the larger the amount of sugar—from 8 to 16 ounces of sugar to a pound of fruit (or $\frac{1}{2}$ to 1 cup to each cup of fruit juice). Boil rapidly in a flat, shallow, uncovered pan until the sheet test is seen; strain through single layer of cheesecloth. Pour into hot, sterilized glasses and cover with paraffin when cool.

Crab Apple Jelly

Made in the same manner as apple jelly, but because of the high acidity, the larger amount of sugar is sometimes required.

See 1935
Ball Blue Book
pp 30-31

Currant Jelly

Wash ripe, fresh fruit. Add 1 pint of water to a quart of fruit and boil 5 to 8 minutes or until fruit is soft. Strain and take a second extraction. Mix extractions and strain through several layers of cheesecloth or a flannel bag. Measure juice, add 1 pound of sugar to a quart of juice (or pound of fruit), and boil rapidly until the jelly test is observed.

Grape Jelly

Pick over grapes, wash well, and weigh. Add 1 cup of water to a pound of fruit and boil slowly until tender. Strain. Add same amount of water as at first and boil 10 minutes. Remove from fire and let stand 10 minutes. Strain off juice. Combine extracts and measure liquid. Add $\frac{3}{4}$ pound of sugar to each quart of juice (or pound of fruit). If grapes are very acid, 1 pound of sugar may be used. A peculiarity of grape jelly is its tendency to crystallize on standing. One cup of tart apple, diced, added to each quart of grapes while they are cooking may prevent the crystals from forming; or, half as much apple juice may be combined with the grape juice. The flavor of the apple is not apparent and the texture of the jelly is improved.

Another method is to let extracted juice stand overnight and crystals settle to the bottom. Pour juice off, leaving the sediment in the bottom.

A spray of mint may be added to the grape jelly for flavor.

Mint Jelly

Use apple juice (page 20) as a basis for mint jelly. Add $\frac{2}{3}$ of a cup of sugar for each cup of apple juice and boil for 3 minutes. Add mint flavoring (see recipe below), mix it thoroughly with the juice, and boil until the jelly test is observed. Remove and add a small amount of green paste coloring (fades less than liquid color). Pour into hot, sterilized glasses.

Prepare the mint flavoring as follows: Wash fresh mint and chop it fine. To each cup of chopped mint add $\frac{1}{4}$ cup of sugar and $\frac{1}{4}$ cup of water, and let it stand overnight for several hours. Heat to the boiling point. Strain it and to each quart of apple juice add from 1 to 2 tablespoons of extracted mint, according to the flavor desired.

Peach and Apple Jelly

Wash the peaches thoroughly and remove the stones; do not peel the peaches but cut them in pieces. Add a very little water, and cook them until they are soft. Strain the juice through a jelly bag. To the peach juice add $\frac{1}{2}$ as much tart apple juice. Boil the mixture for 2 minutes, add $\frac{2}{3}$ as much sugar, and continue the boiling until the jelly test is observed. The apple juice contributes the needed acid and pectin to the combination, and gives a better texture to the jelly without perceptibly altering the flavor. The pulp left in the bag after straining off the juice can be used for marmalade.

Quince Jelly

Quinces require long cooking to become tender and may be cooked in a steam pressure cooker to save time. In cooking, the quinces acquire a rich, dark red color. The flavor is so strong that a combination of quince with an equal part

or twice as much tart apple gives an improved flavor and texture. Equal parts of cranberry, quince, and apple juice give a jelly of rich red color and a delicious flavor.

Cut the quinces in small pieces and add sufficient water to float them. Cook until tender. Drain off the juice and use it alone or with fruit juice as already suggested. Use $\frac{2}{3}$ as much sugar as combined juice. Proceed according to the directions for making jelly. Japanese quinces make excellent jelly; follow the same directions.

Jams and Preserves

Apple Butter

For each peck or 12 pounds of apples, use 1 gallon of sweet cider, $2\frac{1}{2}$ cups of sugar, 1 tablespoon of cinnamon, and $\frac{1}{2}$ tablespoon of cloves. Wash apples thoroughly, remove the blossom end and any bad spots. Slice apples thin and boil with cider until apples are soft. Run through colander. Then cook this sauce, stirring constantly until thick enough to heap up on a spoon. Add sugar and spices and cook again until it will heap up on the spoon. Seal in clean, hot jars or crocks.

Apricot-Apple Butter

Use 1 pint of apricot pulp, 1 pint of tart apple pulp, 3 cups of sugar. Boil the fruit pulp 5 minutes. Add the sugar and continue boiling rapidly until the mixture sheets from the soon. Seal in clean, hot jars.

Carrot, Apple, and Peach Conserve

Mix 1 pint of diced carrots, 1 pint of diced tart apples, 1 cup of peaches, juice of 1 lemon, 3 cups of sugar and cook until the mixture is clear. Turn it into jelly glasses, and, when cold, cover with hot paraffin.

Carrot and Orange Marmalade

Use 6 medium sized carrots, 3 oranges and 1 lemon. Slice the carrots thin and cook them until they are tender in as little water as possible. Cut oranges and lemon in thin slices and cook in $\frac{1}{2}$ cup of water until tender. Measure the carrot and fruit together and add $\frac{2}{3}$ as much sugar. Cook the mixture until it is clear. If necessary add more water to prevent scorching. Turn into jelly glasses and, when cold, cover with hot paraffin.

Cherry Preserves

Use sour cherries; wash carefully and pit them — a thin hairpin or a paper clip is good for this. If convenient, cherries may soak overnight in just enough water to cover. In the morning add 3 cups of sugar and 1 cup of corn syrup for each quart of cherries. Dissolve sugar; then boil rapidly for 15 minutes. If not soaked overnight, make a syrup of 3 cups of sugar, $\frac{1}{4}$ cup of water, and 1 cup corn syrup for each quart of pitted cherries. Bring to a boil; then add cherries and let simmer about 10 minutes. Remove from fire and let cool. Stir occasionally to dissolve the foam, which helps to stiffen the preserves. Let stand in a shallow pan in a sunny window for a day; then heat slowly to

boiling and boil 3 more minutes. Pour into sterilized jars. If preserves seem too juicy, remove cherries to jars and cook juice down until thick; then pour over cherries. Seal.

Grape Butter

Use 4 pounds of grapes, 1 pound of tart apples, $1\frac{1}{2}$ pounds of sugar. Wash and stem the grapes. Cut the apples in small pieces and cook in a small amount of water until soft. Press the pulp through a strainer, to remove seeds and skins. Add the sugar and cook until thick and clear. Pour into hot, sterilized glasses and seal.

Holiday Conserve

Use 3 cups of cranberries, 1 cup of diced apple, juice and grated rind of 1 lemon, 1 cup of cooked crushed pineapple, $1\frac{1}{2}$ cups of water, 3 cups of sugar. Cook the cranberries and the apple in the water until tender. Add the pineapple, lemon, and sugar. Mix well and cook rapidly until thick and clear. Turn into clean, hot glasses and, when cold, cover with hot paraffin.

Orange Marmalade

Use 1 grapefruit, 2 lemons, 6 oranges, 6 cups of cold water, 7 cups of sugar (makes 15 cups of marmalade). Scrub the fruit and dry it. Scrape the skin with a knife to remove any rust or scale. With a sharp knife cut the fruit in sections lengthwise and slice each section crosswise in very thin slices. Remove seeds and any white core. Cover the sliced fruit with cold water and let it stand overnight. Bring it slowly to the boiling point and cook rapidly until tender. Add the sugar and cook rapidly until the mixture gives the jelly test. Let cool to assure even distribution of solids. Pour into sterilized, hot jars or glasses and cover with hot paraffin.

Quince Honey

In preparing the quinces eliminate the gritty substance around the core, and scrub quinces to remove any heavy fuzz. Peel the quinces and grate them or run them through a food chopper, using the finer cutter. Measure the pulp and use $\frac{3}{4}$ as much sugar as pulp. Make a syrup using as much water as sugar. Add the quince and a tablespoon of lemon juice to each pint of water. Cook until thick and clear. Pour into sterilized hot glasses; when cool, cover with paraffin.

Raspberry Jam

Cook 2 quarts of berries with 1 cup of tart apple juice (or water) until the berries lose their shape. Add $3\frac{1}{2}$ cups of sugar, cook rapidly until the mixture sheets from the spoon, and seal in hot glasses or jars.

Blackberry, black currant, and huckleberry jam may be made in the same way. Water may be substituted for the apple juice, but a better texture and flavor will result from the apple juice.

Strawberry Preserves

Cap and wash strawberries before measuring. Put 8 cups of sugar, 1 cup corn syrup, and $\frac{1}{2}$ cup of water into a large preserving kettle. Stir and boil until syrup is thick. Add 2 quarts of strawberries. Never cook more than 2

quarts at a time. Boil 15 minutes (rolling boil). Do not stir but shake kettle and skim. Pour into flat pans or trays and shake occasionally until cold. The shaking is the secret of success. It causes the berries to absorb the syrup and remain plump and whole. It is best to shake the berries while they are cooking and cooling. Put into sterilized jars when cold and seal.

8-Minute Strawberry Preserves

Scald 2 quarts of berries in boiling water for 2 minutes, drain, add 4 cups of sugar, and boil for 3 minutes. Add 4 more cups and boil for 5 minutes. Stir the fruit to prevent it from sticking to the kettle. Allow it to boil rapidly. Either fill the jars and seal them at once, or, if convenient, let stand overnight to "plump." If there is an excess of syrup, this may be sealed separately and used for ices, sauces, and beverages. If sugar is short, $2\frac{1}{2}$ cups of corn syrup or mild honey may be substituted for 2 of the cups of sugar added first.

Strawberry and Rhubarb Conserve

Use one quart of strawberries, 1 quart of rhubarb, $1\frac{1}{2}$ quarts of sugar. Cut the unpeeled rhubarb in $\frac{1}{2}$ inch pieces. Mix the strawberries, the rhubarb, and the sugar, and cook the mixture rapidly until it is thick and clear. Pour it into hot, clean jelly glasses and cover them with melted paraffin.

Specialties

Apple Paste

Three parts of apples may be combined with 1 part of other fruit, such as pears, plums, berries, cherries, elderberries, or peaches. If berries with many seeds are used, they should be put through a strainer. If peaches are used, the



Canned soup helps to make a nutritious school lunch.

stones should be crushed and the kernels ground and added to the paste; this gives an excellent flavor, resembling that of nuts.

Prepare apple pulp by cooking the apples and putting them through a sieve. Cook the pulp until it is very thick, stirring it to prevent sticking. Measure the pulp and add $\frac{1}{3}$ cup of sugar to each cup of apple pulp. Cook the mixture until it is clear. If desired, divide the mixture and add paste coloring — red, green, or other. Grease a plate slightly with a little oil or any unsalted fat. Turn the paste onto the plate and place in the sun or any airy place to dry. When a film has dried over the top, turn the paste onto a cloth and dry it. When it is sufficiently dry, lay it on a piece of oiled paper and roll it in a small roll. Turn the ends of the roll under, and store the paste in a cool, dry place. This paste is used as a confection, or for garnishes in salads, fruit cups or desserts, or for decorating cakes and cookies.

Preserved Citron

Use 5 citron melons, 2 lemons, 5 cups of sugar, 1 cup of water, ginger root (if available). Peel melons, cut into slices and boil until tender in a syrup made from 5 cups of sugar and 1 cup of water. Add the juice of 2 lemons and grated rind of 1 lemon to the boiling mixture. A little ginger root may be added if desired. Cook for 20 minutes and pack into clean, hot, sterilized jars. Seal immediately. Citron may be crystallized for use in fruit cakes by cooking longer until clear. Remove from syrup; when cool, roll in sugar and let stand until dry. Wrap in wax paper and store in a dry, cool place.

Mint Chips

Mint chips may be made by adding mint flavoring and green coloring matter to plain apple paste. When the paste is dry, cut it in small pieces, roll it in sugar, and dry it for a few hours. Serve as a candy.

Nut Meats

Nuts may be readily canned at home in jars or tins. A vacuum seal is all that is necessary. Pack shelled nuts in cans, adjust covers, seal, and process in water bath for 20 minutes, or in pressure cooker at 5 pounds for 5 minutes. Nuts, so treated, will keep over a year.

Pickles and Relishes

These delightful accessories to the meal add little food value, but their spicy, piquant flavor stimulates the appetite and gives zest to a commonplace meal. Pickles and relishes should, however, be used in moderation by adults and not at all by children.

Varieties

The predominating flavor determines the type of pickle, such as sweet, sour, mustard, spiced, etc.

Sour Pickles are usually made from vegetables, preserved in a vinegar and salt solution or simply in brine.* The amount of brine necessary to cover vegetables is equal to about $\frac{1}{2}$ the volume of the material covered.

* Additional information may be found in U. S. D. A. Farmers' Bulletin 1438, "Making Fermented Pickles."

Sweet Pickles are made from both vegetables and fruit preserved with sugar and vinegar, usually with the addition of spices. Beets, carrots, cucumbers, peppers, string beans, cauliflower, and cabbage — all make good sweet pickles. Fruits which are frequently used for sweet pickles are peaches, apples, crab apples, plums, gooseberries, pears, and cherries.

Mixed Pickles may be either sweet or sour and are often a combination of fruits or a combination of vegetables.

Relishes are made of finely chopped vegetables preserved with salt, sugar, vinegar, and spices.

Ketchups may be made of vegetables or fruits. They are usually strained, resulting in a medium thick, smooth sauce.

Difficulties

Three common difficulties encountered in the preparation of pickles in the home are: (1) shriveled pickles, (2) soft pickles, (3) hollow pickles.

Too much salt or sugar or too strong vinegar will cause the pickles to **shriveled** and become tough. If very sweet or sour pickles are desired, they should be first placed in a weak solution for a few days, after which the strength of the solution may be increased. This step also gives the finished product a better texture. **Soft pickles** may be the result of a brine too weak to prevent the growth of the organisms which cause spoilage. A 10% salt solution of $1\frac{2}{3}$ cups of salt to 1 gallon of water is necessary to keep pickles in good condition.

Hollow pickles are a frequent cause of failure in pickle-making, and may result from using vegetables which were gathered too long before they were placed in the pickling solution. For best results, the cucumbers should be put into the solution as soon after gathering as possible.

Allerton Pickle

Use 3 pints tomato pulp, 1 cup chopped celery, 4 tablespoons chopped red pepper, 4 tablespoons chopped onion, 4 tablespoons salt, 6 tablespoons sugar, 6 tablespoons mustard seed, 1 tablespoon grated nutmeg, 1 teaspoon cinnamon, $\frac{1}{2}$ teaspoon cloves, 2 cups vinegar.

Wipe, peel, and chop tomatoes. Add remaining ingredients and stir until thoroughly blended. Put in a stone jar and cover. Let stand at least 1 week before using. This uncooked mixture will keep 6 months in a cool place. If it is to be kept longer, put in pint jars, and process 10 minutes in boiling water.

Sweet Pickled Beets

Cook small beets until they are tender. Plunge them into cold water and slip off the skins. Cover them with spiced vinegar (see page 37) and simmer for 15 minutes. Seal in clean, hot jars. Golden wax beans, the stems of swiss chard, or very small carrots may be pickled in the same way.

Beet Relish

Use 1 pint cabbage, 1 pint beets (boiled just long enough to peel and chop), $\frac{3}{4}$ cup sugar, $\frac{1}{2}$ cup grated horse-radish, $\frac{1}{2}$ teaspoon salt, 2 pieces celery, and 1 cup vinegar. Heat all ingredients together until the mixture boils well, then pour into sterilized jars and seal at once. Process 30 minutes in boiling water.

Cabbage Relish

Use 1 quart cabbage chopped, 1 quart green tomatoes chopped, 1 cup red pepper, 1 cup green pepper, 1 pint white onion chopped, 1 cup sugar, 1 quart vinegar, 5 tablespoons white mustard seed, 1 tablespoon celery seed, $\frac{1}{2}$ teaspoon turmeric, and 1 teaspoon salt.

Soak the cabbage and tomatoes separately overnight in salt water ($\frac{1}{4}$ cup of salt to 1 quart of water). Drain in the morning and add the other ingredients. Let stand for 2 hours. Cook the mixture until it is clear and seal in clean, hot jars.

Cantaloupe Pickle

Select underripe cantaloupes. Cut them into sections, peel, and soak for 3 hours in a salt solution ($\frac{1}{4}$ cup of salt to 1 quart of water). Drain off the brine and add a pickling syrup made from the following ingredients: 4 cups water, 4 cups sugar, 1 cup vinegar, 1 tablespoon cinnamon, 1 tablespoon allspice, 1 tablespoon cloves. Boil rapidly for 10 minutes. Let stand overnight. Drain off the syrup and boil until it coats a spoon. Return the cantaloupe, cook until it is clear (about 1 hour) and seal in clean, hot jars.

Carrot Ketchup

Put through a food chopper 1 quart carrots, 1 cup celery, 1 large red pepper or 1 green pepper, 1 medium sized white onion. Cook the carrot until tender. Combine with the other vegetables and add 1 pint vinegar, $\frac{1}{2}$ cup sugar, 2 teaspoons salt, $\frac{1}{2}$ teaspoon paprika; cook the mixture until it is clear. Seal in clean, hot jars.

Chili Sauce

Use 1 gallon ripe tomatoes peeled and chopped, $\frac{1}{2}$ cup white onions peeled and chopped, $\frac{1}{2}$ cup sweet green peppers chopped, $\frac{1}{2}$ cup sweet red peppers chopped, $\frac{1}{2}$ cup brown sugar, 2 tablespoons ginger, 1 tablespoon mustard, 1 nutmeg grated (or 1 teaspoon), 1 quart vinegar, $\frac{1}{2}$ cup salt, $\frac{1}{2}$ tablespoon red pepper, 1 tablespoon cinnamon.

Boil all the ingredients except the vinegar together for 2 hours or until soft and broken. Add vinegar and simmer for 1 hour. Stir frequently. Put in bottles or jars; seal while hot. Process 15 minutes in hot water bath.

Spiced Celery

Use 1 quart celery cut in 3 inch pieces, 1 small green pepper sliced thin, 1 pint vinegar, $\frac{1}{2}$ teaspoon whole cloves, $\frac{1}{2}$ teaspoon allspice, few pieces of cinnamon, $\frac{3}{4}$ cup sugar. Cook the celery, pepper and salt in a small amount of water until they are tender; drain. Boil the vinegar, sugar, and spices for 3 minutes. Add the vegetables and simmer for 5 minutes. Seal the mixture in clean, hot jars.

Pickled Cherries

Remove the pits from large, sour cherries. Cover the fruit with vinegar and water in equal proportions and let stand overnight. Drain off the liquid. Measure the fruit and use an equal measure of sugar. Pack the cherries and sugar in alternate layers in a stone jar, beginning with a layer of cherries. Allow the fruit to stand until the sugar is dissolved, stirring it carefully each day. Cover the jar with a plate, and tie a paper over it to prevent the entrance

of dust. Sealing is not required. All the cherries need not be prepared on the same day; that is, cherries which have stood overnight in the vinegar solution may be added on the second or third day with an equal measure of sugar. The vinegar solution may be used over and over again. White vinegar is better than cider vinegar. The vinegar which is left over may be heated and sealed for use later with other cherries or in mincemeat or other pickles.

51 **Pickled Crab Apples**

Choose firm crab apples of uniform size. Do not pare them, but remove the blossom ends. Make a syrup of 1 quart vinegar, 2 pounds sugar, 1 tablespoon cinnamon, 1 tablespoon cloves, 1 tablespoon allspice, and 1 tablespoon mace, cooked until it coats a spoon. Add the apples and heat slowly to avoid bursting them. Simmer until tender; pack in clean, hot jars; cover with syrup and seal.

Uncooked Cucumber Ketchup

Peel cucumbers and grate on a fine grater (do not use food chopper or shredder). Remove all liquid by squeezing pulp in a cloth bag. Add vinegar to the pulp until it is the consistency of a thin ketchup. Season with salt, pepper, and grated onion. Pour into clean bottles or jars and cover closely. Do not use metal tops or caps. May be covered with several layers of waxed paper and tied tightly. Especially good with pork.

Fermented or Salt Cucumber Pickle

Clean, grade, and pack pickle cucumbers in jar or keg; cover with 10% brine, ($1\frac{2}{3}$ cup salt to 1 gallon water). Using a lid smaller than the jar, place lid under a weight to submerge pickles. Next day add 1 pound salt (2 cups), to each 10 pounds of cucumbers. At the end of 6 days and on each 7th day thereafter for about 4 weeks, add $\frac{1}{4}$ pound ($\frac{1}{2}$ cup) salt. Skim when neces-



Root vegetables properly stored will keep throughout the winter.

sary. At the end of the fermentation period (when bubbles disappear) the pickles are ready for use. Drain and partially remove brine by soaking the pickles in warm water.

Sour Cucumber Pickle

Sort and clean cucumbers, place in jar, cover with 5% brine (1 cup of salt to 1 gallon of water). Let stand 24 hours. Drain; then cover with a mixture of 1 part water to 2½ parts vinegar and let stand 3 to 4 days. Drain off the vinegar and heat it. Pack cucumber into jars, add boiling vinegar, seal, and store. Spices may be added to the vinegar if desired.

Dill Pickle

Use 3¾ gallons medium-sized cucumbers, 1 quart vinegar, ½ ounce mixed spices, 1 pound salt, 10 quarts water, dill (stem, leaves, and seeds), and grape leaves.

Cucumbers for dill pickles should be about 5 inches long. Wash the cucumbers and wipe them. In the bottom of a 4-gallon crock or jar put a thick layer of grape leaves and cover this with a layer of dill and spices. Pack the cucumbers into the crock to within 3 inches of the top. Mix the salt, vinegar, and water, and pour the mixture over the pickles to fill the jar. Put a layer of dill and then a layer of grape leaves over the cucumbers. Invert a large plate over the top of the pickles and weight it down to keep the pickles under the liquid. Let the pickles cure from 3 to 4 weeks. Remove the plate, wash it, replace it over the pickles with the weight, and seal the crock with hot paraffin, or pack the pickles into glass jars and seal them.

Dixie Relish

Use 1 quart chopped cabbage, 1 pint chopped white onion, 1 pint chopped sweet red pepper, 1 pint chopped sweet green pepper, 4 tablespoons salt, 4 tablespoons mustard seed, 2 tablespoons crushed celery seed, ¼ cup sugar, 1 quart cider vinegar.

Soak the peppers in brine (1 cup of salt to 1 gallon of water) overnight; then freshen in clear, cold water for 1 or 2 hours. Drain well. Mix with other vegetables; add spices, sugar, and vinegar. Let stand overnight covered in a crock or enameled vessel. When ready to pack, drain off the vinegar. Pack the relish in the jars, pressing it carefully; then pour over it the vinegar which was drained off. Process for 15 minutes in boiling water.

Emergency Pickle

Use 1 pint carrots cooked and cut in strips, 1 green pepper, 1 red pepper or 2 pimientos chopped, 3 medium-sized onions sliced; 1 cup cooked string beans, 1 cup vinegar, ½ teaspoon paprika, 1½ teaspoons salt, ¼ teaspoon turmeric, ⅔ cup sugar.

Combine ingredients and cook mixture until clear; seal in clean, hot jars.

Horse-Radish

Carefully scrape horse-radish roots and cover them with cold water to prevent discoloration. Drain and put them through a food chopper. Fill clean, cold pint jars about ⅔ full of the ground horse-radish. Add 1 teaspoon of

salt, fill the jar with white vinegar, and seal. Cider vinegar may be used, but the product will be darker in color.

dry Mustard Pickle

Use 7 quarts sliced cucumbers, 1 pint pickling onions, 1 pint cauliflower cut in pieces, 3 red peppers, 3 green peppers, 1 cup small carrots. String beans and green tomatoes may also be added.

All the vegetables should be tender. Soak all the vegetables in brine (1 cup of salt to 1 gallon of water) overnight. Drain and soak in clear water for 3 hours. Mix a sufficient amount of vinegar and water in equal quantities to cover the vegetables. Pour over and let stand for 1 hour; then scald them in this liquid.

Make a dressing of the following ingredients:

1 $\frac{1}{4}$ cups white sugar, 4 tablespoons flour, 4 tablespoons powdered mustard, $\frac{1}{2}$ tablespoon turmeric, 1 teaspoon celery salt, 3 pints vinegar. Mix all the dry ingredients and add slowly to the hot vinegar, stirring it to make a smooth paste. Cook the mixture over a pan of hot water until the sauce thickens.

Drain the vegetables thoroughly and pour the mustard dressing over them while they are hot, and simmer for 5 minutes. Pack and seal in clean, hot jars.

Pickled Onions

Use 4 quarts small white onions, 3 pints boiling water, 3 tablespoons whole allspice, 3 tablespoons white mustard seed, $\frac{1}{4}$ cup grated horse-radish, 1 cup salt, 1 quart vinegar, 3 tablespoons pepper-corns, $\frac{1}{4}$ cup sugar.

Peel the onions. Add the salt to the water, bring to boil, pour it over the onions, and let stand for 24 hours. Drain, cover with boiling water again, and let stand for 5 minutes. Drain and pack into clean, hot jars. Heat the other ingredients together, and, when boiling hot, pour over the pickles to fill the jars.

Pickled Peaches

Use 4 quarts ($\frac{1}{2}$ peck) peaches, ² pounds sugar, 2 cups vinegar, $\frac{1}{2}$ ounce stick cinnamon, $\frac{1}{4}$ ounce whole cloves.

Dip the peaches quickly in hot water and remove the skins. Boil the sugar, vinegar, and cinnamon for 20 minutes. Place a few of the peaches at a time in the syrup and cook until tender, then pack into hot, sterilized jars. Fill each jar to within $\frac{1}{2}$ inch of top with the hot syrup. Adjust covers and seal immediately.

(use small peaches)
Pears may be pickled in the same way.

Pepper Relish

Chop 12 red peppers, 12 green peppers, and 12 onions; cover with boiling water, and let stand for 5 minutes. Drain off the liquid. Add 1 pint vinegar, 2 cups sugar, 3 tablespoons salt, and boil the mixture for 5 minutes. Pour into scalded jars and seal.

Relish Sandwich Spread

Grind through food chopper 18 green and red peppers, 6 green tomatoes, 6 onions, and 6 cucumbers. Mix and cook for 15 minutes in 2 cups of vinegar, 2 cups of brown sugar, and 3 tablespoons of salt. Add a paste made of 6 table-

spoons of flour, 3 tablespoons of ground mustard, and $\frac{1}{2}$ cup of vinegar to the vegetables; and cook 15 minutes. While hot, add a pint of mayonnaise or $\frac{3}{4}$ pound of butter. Seal in hot, sterilized jars.

Thousand Island Pickle

Use 1 quart cucumbers sliced, 1 large onion sliced, 1 large green pepper sliced, 1 large red pepper sliced, 1 cup celery sliced, $\frac{1}{4}$ cup salt, 1 pint vinegar, 1 tablespoon white mustard seed, $\frac{1}{2}$ teaspoon turmeric, 1 cup sugar, 3 pints water. Slice the cucumbers and onion, add the salt, cover with water and let stand for 2 hours; then drain. Heat the vinegar, mustard seed, and sugar to the boiling point. Add the vegetables and turmeric. Simmer for 3 minutes. Seal in clean, hot jars. This makes a crisp pickle.

Tomato Ketchup

Use 10 pounds ripe tomatoes, 3 medium-sized onions, 2 sweet red peppers, 1 cup vinegar, $\frac{3}{4}$ cup sugar, 2 teaspoons ground mustard, 1 teaspoon celery seed, 1 tablespoon salt, 1 teaspoon whole allspice, 6 inches stick cinnamon.

Peel tomatoes and cook rapidly until soft. Strain. Let stand overnight. Pour off the thin liquid at the top and can this or use it fresh. Cook the onions and peppers until soft, strain them, combine with tomato, and boil rapidly until thick (30 minutes). Add vinegar, sugar, and spices (whole spices are less likely to darken the product). Boil until thick, stirring frequently. Fill hot sterilized bottles. Seal well with tight fitting corks. Dip tops in hot paraffin to seal.

Green Tomato Pickle

Use 1 gallon ($7\frac{1}{2}$ pounds) green tomatoes, $\frac{1}{2}$ dozen large onions, 3 cups brown sugar, $\frac{1}{2}$ lemon, 3 red peppers, 3 cups vinegar, 1 tablespoon whole cloves, 1 tablespoon whole allspice, 1 tablespoon crushed celery seed, 1 tablespoon mustard seed, 1 tablespoon ground mustard, 1 tablespoon whole black pepper.

Slice the tomatoes and onions thin, sprinkle over them $\frac{1}{2}$ cup of salt, and let stand overnight in a crock or enameled vessel. Tie the black pepper, cloves, allspice, and celery seed in a cheesecloth bag. Slice the lemon and chop the peppers and add to the vinegar; then add the spice bag, tomatoes, and onions. Cook for $\frac{1}{2}$ hour, stirring gently at intervals to prevent burning. Remove spice bag to prevent darkening the product. Pour into hot, sterilized jars. Process for 15 minutes in hot water bath.

Spiced Green Tomatoes

Use 5 pounds small green tomatoes or larger tomatoes sliced medium thick, 3 pounds white sugar, 1 pint vinegar, 1 tablespoon stick cinnamon, 1 tablespoon white mustard seed, 1 teaspoon whole allspice, 1 teaspoon whole cloves.

The green plum, pear, or peach tomatoes are good for this pickle, but the large green tomatoes may be sliced and used. Wash the tomatoes but do not peel them. If small tomatoes are used, prick them slightly. Combine the sugar, vinegar, and spices; bring to the boiling point and pour over the tomatoes. Let stand for several hours or overnight. Drain off the liquid and cook it until it coats a spoon. Add the tomatoes and cook until they are clear. Seal in hot, sterilized jars.

Spiced Vinegar

Combine 1 quart vinegar, 1 pint sugar, 1 tablespoon cinnamon, 1 teaspoon allspice, 1 tablespoon white mustard seed, 1 teaspoon cloves, 1 teaspoon salt, and boil 3 minutes. This is useful in sweet-pickling fruits or vegetables.


Tomato and Apple Relish

Use 2 quarts ripe tomatoes peeled and chopped, 1 cup white onion chopped, 2 medium-sized green peppers chopped, $1\frac{1}{2}$ cups vinegar, 2 tablespoons white mustard seed, 1 tablespoon whole cinnamon, 1 cup celery sliced, 1 pint tart apple diced, 2 medium-sized red peppers, $2\frac{3}{4}$ cups sugar, $\frac{1}{2}$ tablespoon whole cloves, 1 tablespoon salt. Combine all ingredients and cook rapidly until mixture is thick and clear. Seal in clean, hot jars.

Pickled Watermelon Rind

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Peel off the skin and cut the rind into desired sizes. Soak 2 pounds of rind overnight in salt water to cover ($\frac{1}{4}$ cup of salt to 1 quart of water). Drain off the brine. Cook the rind in clear water until it is tender. Add the rind to the hot pickling solution made of the following ingredients: 2 pounds sugar, 1 pint vinegar, 1 pint water, 1 lemon sliced thin, 1 tablespoon cinnamon, 1 teaspoon cloves, 1 teaspoon all-spice. Boil rapidly until rind is clear; then seal it in clean, hot jars.

Add 1 can bottle of mason's white vinegar & a little juice of preserved lemons, & add a few fresh new bottles before covering

If citron is used and rind is very thick split it and cook outside  pieces separate from inside. Cover when cooking in H₂O - but do not overcook. (about 10 min)
Soaking in lime water will make a firmer pickle
make syrup - boil 5 min. Pour over rind & let stand overnight.
Heat in syrup & boil about 10 min. Pack in jars with 1 piece of cinnamon. Cover with syrup, Seal. Process in boiling H₂O 5 min. (Cider vinegar gives a better flavor)

Rind can be stored in plastic bag in refriger until enough is collected for one recipe. (See USDA Home Garden Bul 92 Making Pickles & Relishes Oct 1948)

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Blueberries	17	Apple	22
Cherries	17	Cider	22
Dewberries	17	Orange	22
Fruit Salad	18	Tests for Pectin	25
Grapes	18	Pickles	30
Huckleberries	17	Allerton	31
Peaches	18	Beet, sweet	31
Peaches, Crushed	18	Canteloupe	32
Pears	18	Cherry	32
Pineapple	19	Crab Apple	33
Plums	19	Cucumber, fermented	33
Raspberries	17	Cucumber, sour	34
Rhubarb	19	Difficulties	31
Strawberries	19	Dill	34
Strawberries, Crushed	19	Emergency	34
Syrups for Fruits	16	Horse-Radish	34
Time Table	22	Mustard	35
Fruit Juices	20	Onions	35
Apple	20	Peaches	35
Cherry	20	Spiced Celery	32
Grape Juice	20	Spiced Green Tomato	36
Raspberry	21	Thousand Island	36
Rhubarb	21	Tomato, green	36
Strawberry	21	Varieties	30
Honey		Watermelon Rind	37
Quince	28		

Preserves	27	Asparagus Puree	10
Cherry	27	Beans, String or Snap	10
Strawberry	28	Beans, Lima or Butter	10
Strawberry, 8-minute	29	Beets	10
Relishes	31	Blanching	9
Beet	31	Carrots	11
Cabbage	32	Cauliflower	11
Chili Sauce	32	Corn	11
Dixie	34	Greens	11
Pepper	35	Mushrooms	12
Sandwich Spread	35	Okra	12
Tomato and Apple	37	Peas	12
Specialties		Pimentos	12
Apple Paste	29	Potatoes, Sweet	13
Preserved Citron	30	Sauerkraut	13
Mint Chips	30	Soup Mixture	13
Nut Meats	30	Squash	13
Spoilage	5	Succotash	13
Botulinus	6	Time Table	15
Flat Sour	5	Tomatoes	14
Mold	5	Tomato Juice	14
Vegetables	9	Tomatoes and Okra	14
Asparagus	10	Vegetable Salad	15
		Vinegar	
		Spiced	37