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University of Arizona

COLLEGE OF AGRICULTURE

AGRICULTURAL EXTENSION SERVICE

ARIZONA
BOYS' AND GIRLS' 4-H CLUB WORK
FOURTH YEAR CANNING CLUB



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CLUB EMBLEM

The four-leaf clover with an H on each leaflet is the national Boys' and Girls' 4-H Club emblem. The four H's represent the fourfold development of head, heart, hands, and health.

CLUB PLEDGE

As a true club member I pledge my head to clearer thinking, my heart to greater loyalty, my hands to larger service, and my health to better living for my club, my community, and my country.

CLUB MOTTO

Make the best better

CLUB CREED

The Arizona 4-H Club creed is: I believe in boys' and girls' club work because of the opportunity it gives me to become a useful citizen.

I believe in the training of my head because of the power it will give me to think, to plan, and to reason.

I believe in the training of my hands because it will make me helpful, skillful, and useful.

I believe in the training for health because of the strength it will give me to enjoy life, to resist disease, and to become efficient.

I believe in the great trinity of club work; the school, the home, and achievement.

I believe in my country, in the state of Arizona, and in my responsibility for their development.

To the fulfillment of all these things I am willing to dedicate my service.

4-H CANNING CLUBS

The five years of 4-H club work in canning are designed to give club girls a practical working knowledge of the general field of food preservation, and if possible should be taken in order.

It is highly desirable that all canning club girls should take the first year's work before taking the work of the following years, because the first year's work covers the simpler processes in food preservation. But where it is not possible to obtain fruit and tomatoes, and the girls desiring to form a canning club are of the age required for second-year work, it would be permissible to take the second year before the first. The remaining years should be taken in the order specified. The third year's work is not absolutely essential but is necessary in order that club girls may receive general instructions that are very important and without which their knowledge of the entire field mapped out for them would be decidedly lacking.

The fifth year's work is not necessary in order to complete the field of canning but it does make a splendid program in canning for older girls who have had the previous work.

More than one year's canning may be carried on during any one year, particularly if the first year's work is the one taken with some other year. The requirements for each year's work are as follows:

REQUIREMENTS FOR FIRST YEAR 4-H CANNING CLUBS

1. Each member will can at least 3 quarts of tomatoes or 3 pints of ripe pimientos.

2. Each member will can 9 quarts of fruit, 3 quarts each of any three varieties.

Exhibits:

1. Three jars of tomatoes or ripe pimientos.

2. One jar each of three varieties of fruit.

REQUIREMENTS FOR SECOND YEAR 4-H CANNING CLUBS

1. Each member will can 9 quarts of vegetables, 3 quarts each of any three varieties.

2. Each member will make 9 pints of vegetable or fruit preserves, 3 pints each of any three varieties.

Exhibits:

1. Three jars of vegetables, three varieties.

2. Three jars of preserves, three varieties.

REQUIREMENTS FOR THIRD YEAR 4-H CANNING CLUBS

1. Each member will can 9 quarts of pickles or relishes, 3 quarts each of any three varieties.

2. Each member will make 9 pints of jams, butters, conserves, or marmalades, 3 pints each of any three varieties.

Exhibits:

1. Three jars pickles or relishes, three varieties.

2. Three jars jams, butters, conserves or marmalades, three varieties.

REQUIREMENTS FOR FOURTH YEAR 4-H CANNING CLUBS

1. Each member will can 9 pints of meat, 1 pint each of any three varieties.
2. Each member will make 9 pints of jelly, having at least three varieties.

Exhibits:

1. Three jars canned meat, three varieties.
2. Three jars jelly, three varieties.

REQUIREMENTS FOR FIFTH YEAR 4-H CANNING CLUBS

Each member will can:

1. Three varieties of fruit.
2. Three varieties of vegetables, including tomatoes and greens.
3. Three varieties of pickles or relishes.
4. Three varieties of preserves, including jams, butters, and marmalades.
5. Three varieties of jelly.
6. Three varieties of meats.

Exhibits: (The budget needed for a single individual for one week)

1. Three jars of vegetables, including tomatoes and greens.
2. Three jars of canned fruit, three varieties.
3. Three jars of canned meat, three varieties.
4. One jar of preserves (jams, butters, marmalades, or jelly).
5. One jar of pickles or relish.
6. One jar of tomato, fruit, or kraut juice.

ARIZONA BOYS' AND GIRLS' 4-H CLUB WORK

FOURTH YEAR CANNING CLUB

By

FRANCES L. BROWN AND OLIVE G. PICARD

REQUIREMENTS FOR FOURTH YEAR 4-H CANNING CLUBS

1. Prepare a club program of work.
2. Finish with 60 per cent of the enrollment.
3. All work completed with stories and reports in by November 15.

REQUIREMENTS FOR MEMBERS

1. Girls for this work must be at least thirteen years of age.
2. Girls for this work must have completed the first, second, and third years' work or its equivalent.
3. Each member shall can 9 pints of meat.
4. Each member shall also make 9 pints of jelly.
5. At least two thirds of this work should be done at home, as home work.
6. Each member shall also make an effort to exhibit at local, county, and state fairs.
7. Each member shall attend at least six club meetings.
8. Each member shall keep records of all work.
9. Each member shall write a story of work and make a final report.

DIRECTIONS FOR WORK

Each member shall can at least 9 pints of meat—at least 1 pint each of any three varieties of the following meats:

Roast beef	Fried pork chops	Roast fowl
Roast beef heart	Fried pork steak	Roast turkey
Broiled beef steak	Fried pork sausage	Fried squabs
Braised beef	Pickled pigs feet	Fried fish
Broiled hamburgers	Pickled pigs tongues	Fried rabbit
Baked veal loaf	Baked spare ribs	Baked pigeons
Fried calves liver	Fried spring chicken	Roast leg of lamb
Calves sweetbreads	Broiled young chicken	Breast of lamb
Roast pork	Baked hen	Broiled lamb patties
Head cheese	Boiled old chicken	Lamb for stew
Scrapple	Chicken giblets	Lamb cutlets
	Chicken hash	

Each member shall also make at least 9 pints of jelly, having at least three varieties selected from the following:

Grape jelly	Blackberry jelly	Elderberry jelly
Plum jelly	Strawberry jelly	Cherry jelly
Apple jelly	Raspberry jelly	Currant jelly
Crab apple jelly	Gooseberry jelly	Orange jelly
Quince jelly	Huckleberry jelly	Grapefruit jelly
	Loganberry jelly	

EXHIBITS

Each member shall also make an effort to exhibit at local, county, and state fairs 3 pints of canned meats, 1 pint each of three varieties, and 3 pints of jelly, 1 pint each of three varieties. Meats and jellies may be exhibited in any standard glass jars. If member cannot make a complete exhibit, she should exhibit as many varieties as she has put up.

If the directions given on the following pages are read carefully, and the recipes followed accurately, success should result.

MEAT CANNING

The canning of meats in the home is an industry that is growing very rapidly. While cured meats will always be desirable on account of their flavors, it is possible to can those portions of a carcass that cannot be readily cured and thus render them ready for immediate use at any time. Any meat can be canned that is fit to eat at the time of canning and if directions are carefully followed can be kept indefinitely in the can. If properly canned, upon opening the can the contents will be found attractive, appetizing, and digestible. In view of the fact that several of the organisms that cause spoilage in protein foods are decidedly harmful to humankind, it is essential that the greatest care be used in the entire process of meat canning, *and that all meat should be processed in a pressure cooker*: that is by steam under pressure with a temperature of not less than 240 degrees F.

SCORE CARD FOR CANNED MEAT

	Per cent
Pack—full, attractive, practical.....	20
Liquid—if any, clean, clear, jellied.....	10
Color—natural, characteristic of the product.....	20
Quality of product—distinct, uniform portions, well prepared, keeping original shape.....	40
Appearance of container—clean, suitable container, clear glass, neat label.....	10
Total.....	100

EQUIPMENT FOR MEAT CANNING

Meats should be canned with a pressure cooker. The temperature required for sterilization (240 to 250 degrees) cannot be obtained inside the can or jar by means of any other canning equipment. The process of canning in a steam-pressure cooker is described in Farmers' Bulletin No. 1471, a copy of which should

be obtained and used to supplement these directions. (From circular by Bureau of Home Economics, United States Department of Agriculture, Washington D. C.)

Meat may be canned either in tin cans or in glass jars, and for this purpose any standard glass jar that is perfect of its kind will do. It is assumed that 4-H club girls will use glass jars.

Either pint or quart jars may be used, according to the use to be made of the product, but attention is called to the fact that quart jars require a longer period of sterilization than pints.

See that the jars selected are perfect—no flaws, cracks, or rough edges.

It is important that the lids make a perfect fit.

Where rubbers are used, be sure they are new and fresh, have elasticity, and that they fit the jars tightly.

Be sure that all equipment is clean and ready for use.

Since meat for 4-H club girls is to be precooked before packing into the jar, have the necessary utensils ready—a skillet for frying or pan broiling, sauce pans, kettles or pots for boiling, stewing or braising, and pans for baking and roasting. It is convenient to have a long-handled frying fork and stirring spoon, and a long, sharp butcher knife, as well as a sharp paring knife or two.

Clean towels or clean old rags will be needed in handling the jars or in other ways about the work. Clean holders will be needed also.

NOTES ON PREPARATION FOR CANNING MEATS

1. Heating material to kill the bacteria or other germs that might be contained therein is called processing. Be sure to study the timetable carefully and process each article at the temperature and for the time indicated in the table.

2. Since all meats are to be processed in the pressure cooker, it will not be necessary to have the jars and covers sterilized before they are filled. They should, however, be cleaned and ready for use. It is well, if the jars have been stored away for some time, at least to rinse them in hot water. Lids and rubbers, if the type of jar is used calling for rubbers, should also be rinsed off preparatory to use. If the type of lid is used having the composition in the lid instead of a separate rubber, then these lids may be placed in a shallow pan or bowl, and boiling water poured over them. The pan should be kept warm during the canning process and the lids taken out of the warm water as needed.

3. When the jar is filled, wipe off the top carefully, and if using rubbers, place the rubber band in position, adjust the lid according to instructions for that particular type of jar. If using the spring-type jar, adjust the lid, put the clamp in place by leaving the spring up. If using the screw-top jar, adjust the lid and turn the screw as tight as possible, using the thumb and small finger only. If using the type of jar with the composition in the lid, take the lid out of the water, place on the jar with the sealing composition next to the glass, and screw the band firmly tight.

4. *All meats should be kept hot after the first heating.* Therefore, the cooker should be placed on the fire ready for use in time for the first jar as it is filled with precooked meat to be placed in it. To get the cooker ready, be sure it is clean and all parts in good working order. Then place it on the fire or over the flames, put in the rack and put in enough water to come about $\frac{1}{2}$ inch above the rack. This will allow a little extra water for the escaping steam. Place the lid loosely on the cooker and allow it to heat so that when the first jar is placed in it the cooker will be already hot to receive the hot jar.

5. Leave the lid loose upon the cooker until the last full jar has been placed in it; then put the lid on carefully, fasten it tightly as directed, and follow other directions for the operation of pressure cookers.

6. When the processing time has been completed, if glass jars are used, remove the cooker from the fire and allow the temperature to fall until the arrow in the gauge points to zero before opening the cooker. Open the cooker and remove the jars, being careful that no direct draft strikes them while they are hot. If using the type of jar calling for a rubber, complete the seal by screwing the screw cap tight or by snapping the spring into place. If using the type of jar having the composition in the lid, the seal is already complete and nothing should be done to it further except to see to it that the lid is not disturbed while hot lest the seal be broken.

7. Do not turn jar upside down as it is removed from the cooker.

OPERATION OF STEAM-PRESSURE COOKERS

To secure the best results in the operation of steam-pressure cookers in canning the following precautions should be observed:

1. Do not leave the cooker dry when over a flame or fire.
2. Have the water come at least to the rack or a little above it.
3. When the cooker has been filled, put lid in place with arrow on lid over arrow on cooker, fasten the opposite clamps moderately tight; then tighten each pair of clamps fully, or put band in place around the cooker and tighten it securely.
4. Allow the petcock to remain open until live steam escapes from it for seven minutes.
5. Close the petcock completely. Close the safety valve also.
6. Force the pressure to the required point before counting time. In order that the same temperature may be secured at high elevations as when cooking at sea level the gauge pressure should be increased by approximately $\frac{1}{2}$ pound for every 1,000 feet increase in elevation. (Example—At 1,000 feet altitude the gauge should register $10\frac{1}{2}$ pounds where 10 pounds is called for or $15\frac{1}{2}$ pounds where 15 is called for—H. C. Schwalen.)
7. The cooker should be absolutely steamtight.
8. Maintain a uniform pressure during the processing period. This may be done by turning down gas or oil flame or moving cooker back on the stove. Liquid will be lost from jars during the sterilizing period if steam leaks at the joint or around the fit-

tings; if the pressure is allowed to run up and down; or if steam is allowed to blow from the petcock during or at the close of the processing period; before the gauge is at zero.

9. When the processing time is up, allow the cooker to cool until the steam gauge registers zero before opening the petcock.

10. Remove cover from cooker, tilting lid away from the face of the operator to avoid being burned by escaping steam.

PREPARATION FOR CANNING

Meat should be canned as soon as life heat is out of the animal, and the sooner it is cooled the better.

Meat to be canned should be wiped off with a damp cloth and kept covered with cheesecloth or a clean dish towel to keep out dust and flies until it is canned.

Meat to be canned should be preheated, either in the can or out of it. The Bureau of Home Economics says, "Preheating may be done in several ways, the aim in all of which, however, is to heat the meat thoroughly until no red color shows. It is not necessary nor desirable to preheat until the meat is cooked to doneness, since a subsequent canning process will then overcook the meat."

It may be preheated in any one of the following methods:

1. By frying in fat until half done—that is until the juice has lost the red color and is yellowish, and the product is brown on the outside. But when meat is to be fried for exhibit purposes, it should not be rolled in flour, meal, or crumbs, as in the processing this gives a pasty appearance to the finished product, and frequently forms a sediment in bottom of the jar.

2. By roasting or baking in the oven until the juice runs yellow—that is half done or heated all through.

3. By boiling in water or broth until half done—that is until juice runs yellow.

4. By packing raw into jars or cans, but filling only three fourths full and placing cans or jars in water bath or pressure cooker, and heating all through with lids left off till juice runs yellow.

5. By steaming in a steamer until juice runs yellow.

To prepare the meat for canning, the bone should be removed from beef or pork, or any large animal, and it may be removed even from fowls. Usually, with fowls, however, only the breast bone is removed, though sometimes not all the bony pieces are packed.

Remove all excess fat, as it is difficult for heat to penetrate fat. Leave only the amount of fat that would be used for flavor if the meat were to be used without being canned.

Cut up the meat so that when shrunk by precooking the pieces will fit nicely into the jar or can to be filled, but do not crowd or cram them in. Fill the can as full as it will hold easily.

Preheat or precook the meat according to taste. If fried chicken or steak is desired, use method 1; if a roast is to be the finished product, use method 2, and so on.

Important! Have everything ready before beginning to precook the meat to be canned no matter what kind of meat it is, and then *keep the meat hot after the first heating until processing is completed.* Do not allow it to cool between precooking and processing.

After processing, cool as quickly as possible. Put tin cans into cold or running cold water and glass jars in a cool place but not in a draft. When the meat is packed in the jar, pour in enough broth to fill the jar about one fourth to one third full or put water into remaining fat in the skillet or pan and let it boil up, and then use this instead of broth. It is not necessary to put any water, broth, or gravy into the jar of meat but if it is desired to make gravy to serve with the meat when the jar is opened then it should be put in before the jar is processed.

Follow directions in the recipe accurately in order to be sure that the finished product will be safe as well as palatable. Be sure to watch the times and temperatures.

In processing products be sure to consult the timetable given on page 17.

The following recipes may be used or other recipes not on these pages may be substituted, using the same time and temperature.

Chicken

Prepare the chickens as for cooking. Pick, singe, remove pin feathers, wash, and cut into the usual pieces for serving. Clean thoroughly, taking care not to break the gall bladder, which would make the meat unfit for use. The lungs, kidneys, eggs, and liver should not be used for canning, but the gizzard and heart may be, if desired. Trim off any large pieces of fat, so that they will not interfere with the penetration of heat. Cut the white meat in large pieces from the breast bone and shoulders, but leave the meat on the bones in other pieces. Cut the neck off close to the body. Use the very bony pieces, such as back, neck, and perhaps the feet, after they have been skinned, for making broth to fill up the containers. Make the broth by covering the bony pieces with lightly salted cold water, bring to the simmering point, and simmer until the meat becomes tender.

Place the meat in boiling water to cover or, in the case of chicken, in a small quantity of water, lower the heat, and simmer. After thoroughly heating, pack in tin cans, or glass jars, bring the broth to boiling, and pour over the meat to within $\frac{1}{2}$ inch from the top of the container. Add salt, $\frac{1}{2}$ to 1 teaspoon per pint. If it is desired, a small quantity of gelatin, 1 tablespoon per pint softened in cold liquid, may be added to the broth. Fully seal tin cans or partially seal glass jars, and place each as prepared in the hot cooker so the meat will not be cooled.

Fried Chicken

Dress chicken, skin the feet, and place feet, neck, and bony pieces in water and boil for broth. Cut up chicken and fry in hot fat until half done or until blood does not run red, but do not roll in flour or meal. Pack in jars or can while hot. Pour broth into

fat in skillet and pour this boiling hot over chicken in jar until one fourth to one third full. Add salt and seasoning, place lids, process, and seal.

Roast Fowl

Dress, season, roast until blood runs yellowish or about half done and skin slips, cut up, pack in jars or cans while hot. Pour over liquor from roasting pan and a little water in it, put in about one third full, seal and process.

Swiss Steak

Beef round, salt, pepper, tomato sauce. Cut the round into steaks at least 2 inches thick. Then divide into pieces of a size that will just about fit a jar. Sear steaks brown. Pack into the can. Fill spaces in can with boiling hot tomato sauce and process. (From National School of Pressure Cooking.)

Tomato Sauce for Swiss Steak

One onion, 2 tablespoons butter, 1 quart canned tomatoes, one bay leaf, six cloves, parsley, salt to taste. Cook onion until yellow and soft in the butter. Add the rest of the ingredients and cook until reduced to half. Put the mixture through a sieve. Pour this tomato puree while hot over the seared meat. Process and seal. See timetable. (From National School of Pressure Cooking.)

Roast Beef

Cut the loin, rump, and the round into pieces just a trifle larger than will go into the container. Keep these pieces as nearly whole as possible. There is no objection to the presence of some little bone. Insert three or four metal skewers into roasts or wrap clean cord around roasts and tie securely to fit in the jar. Heat lard in a large kettle until hot. Sear to a golden brown. Remove skewers or cords. Pack roasts while hot into the jars (glass). Add 1 teaspoon of salt, process, and seal. (See timetable.)

Hamburger

Five pounds ground beef, 3 tablespoons salt, one half small red pepper chopped fine, one half onion chopped fine. Combine all the ingredients, mixing thoroughly. Shape into smooth cakes 1 inch thick and a little larger in diameter than the jars. Lay cakes on a slightly greased flat pan and place in an oven to sear until slightly browned on both sides. Use a pancake lifter for turning. When seared, the cakes should just fit into the jars snugly. Pour boiling water into pan and pour this boiling hot liquid over the meat in the jar. Process at once and seal. (See timetable.)

Chili Con Carne Con Frijoles

Fifteen pounds beef from shoulder cut into small cubes or ground coarsely, or chicken, pork, veal, or mutton, 1¾ cups lard or suet, 2½ teaspoons paprika, twenty dried sweet peppers, 3¾ quarts kid-

ney beans, 2 quarts tomato puree, 3 quarts water, salt to taste. Brown the meat lightly in the hot fat. Add the paprika, peppers, tomato, and water, and cook fifteen minutes. Soak the beans in cold water over night and cook for half an hour. Combine the meat mixture and the drained beans, add the salt, and pack boiling hot into the cans. (From National School of Pressure Cooking.) (See timetable for beef.) Process at once and seal.

Meat Loaf

Fifteen pounds fresh ground beef, 7 pounds ground veal or lean pork, 1 pound suet, three pound-loaves stale bread broken into small pieces, 5 tablespoons salt, twenty eggs, celery salt to taste, 2 cups tomato paste or catsup. Run both meat and suet through sausage grinder. Combine meat, bread crumbs soaked in cold water and squeezed dry, salt, well-beaten eggs, seasoning, and tomato. Mix well and form into smooth even-sized loaves, shaping as nearly like the cylindrical jar as possible and a trifle larger. Do not put any flour on the surface of the loaf. Insert three or four skewers in the loaves. Place in a moderate oven (375 degrees) on a flat pan. Sear on all sides to a light brown, turning it over with a pancake turner. This requires twenty or twenty-five minutes. Remove skewers and slip the loaves into the jars, add 4 or 5 tablespoons of liquid from searing pan, seal at once, and process for one hour at 15 pounds pressure. Yield: eleven loaves. (From National School of Pressure Cooking.) (U. S. Bureau of Home Economics recommends eighty-five minutes at 15 pounds pressure.)

Boiled Tongue

Tongue may be cleaned, salted, and lightly smoked, then boiled, skin removed, and packed in cans with a little soup stock or meat jelly added. It may also be cleaned thoroughly, rubbed heavily with salt, and left standing with salt sprinkled over it for eight or ten hours. Then boil until done, remove the skin and pack in cans hot with a little of the liquid with which it was boiled (thinned with some boiling water to reduce the saltiness). Seal and process. (From the *Modern Way of Canning and Cooking*, Burpee Can Sealer Company.) See timetable for beef.

Roast Pork

Season as for beef. If ham is used and skin is left on, cut with point of knife just through skin, so as to dice skin, and trim with cloves and little tufts of parsley (if desired). Add two small turnips to roasting pan. Leave skin side up (do not turn), baste frequently, and cook until skin is nicely browned and crisp and juice runs yellow. Cut up and pack in jars. Pour in boiling hot liquid and process. (From the *Modern Way of Canning and Cooking*, Burpee Can Sealer Company.) See timetable for pork.

Roast Ham

Where skin and fat are removed before roasting, lard with narrow strips of larding pork, alternating with rows of little tufts of parsley. Add one small turnip and one small root of celeriac, a few cloves, and five or six whole peppercorns to roasting pan. Meat may be rubbed with clove of garlic if desired. Season. Baste frequently and cook until the juice runs yellow. Cut up meat and fill jars, pour in boiling hot pan gravy, process and seal. (From the *Modern Way of Canning and Cooking*, Burpee Can Sealer Company.) See timetable for pork.

Chops—Pork, Mutton, or Lamb

Remove the bone. Then sear both sides of the chops quickly in hot grease, seasoning to taste. Pack nicely browned pieces into cans and add brown gravy made by putting water in the pan grease. Seal while hot and process as per timetable. (From the *Modern Way of Canning and Cooking*, Burpee Can Sealer Company.) See timetable.

Fried Brains

Brains are considered a great delicacy by epicures. Soak the brains in several changes of cold water to draw out the blood and remove the membranes. Fry the brains in hot grease, sprinkle with salt and pepper. Pack in jars, adding pan gravy to cover. Seal and process as per timetable. (From the *Modern Way of Canning and Cooking*, Burpee Can Sealer Company.) See timetable for kind of meat.

Beefsteak

The sirloin of beef or other steak is skinned and cut into suitable pieces for steak. Some grease is heated in a frying pan. The sliced steak is put in the hot grease and quickly seared on both sides. It is then sprinkled with salt and pepper to suit taste and nicely browned, then packed in jars. (If desired, sliced onions, nicely browned, or small boiled and browned Irish potatoes may be packed with the meat.) The jars are then filled with hot gravy made from the pan grease with water added. Seal and process as per timetable. (From the *Modern Way of Canning and Cooking*, Burpee Can Sealer Company.) (It is not necessary to fill jar with gravy.)

Canned Sausage

Eight pounds ground pork (6 pounds lean, 2 pounds fat), 8 teaspoons salt, 1 teaspoon pepper, 8 teaspoons grated onion, 2 teaspoons nutmeg, $2\frac{1}{4}$ cups cracker crumbs. To the ground pork add all the other ingredients. Mix well. Pack into jars, filling the jars level. Exhaust air by placing jars in water or steam bath until steaming hot. This requires about ten minutes. Mark on the cover with a lead pencil the name of the contents of the jar. Wipe the under side of the cover clean. Place cover on the jar.

Seal immediately. Sterilize seventy minutes at 15 pounds pressure. Bureau of Home Economics recommends 85 minutes at 15 pounds.)

Fried Sausage

Season sausage meat to suit taste, mold into cakes an inch thick and a little larger in diameter than the jar. Cook the sausage cakes in hot fat until the juice runs yellow and the cakes are well browned. Pack into jar. Put in desired amount of pan gravy (made by pouring boiling water into pan after sausage is removed) and process according to timetable for pork.

Fried Pork Tenderloin

Wipe the tenderloin with a damp cloth, cut into inch slices crosswise, sear in hot fat until brown on both sides. Pack into jar—add 1 teaspoon salt per pint and if desired enough pan gravy to fill jar one fourth to one third full. Put on the lid and process according to timetable for pork.

Rabbit

Skin and dress freshly killed rabbits. Wash in salted water. Dry the meat. Cut it up into pieces and fry until nicely browned, but not entirely tender. Pack hot into jars. Seal and process. Some people prefer to cover the meat with gravy made from the pan grease, using this as a base for cream gravy to pour over the meat when serving. (From the *Modern Way of Canning and Cooking*, Burpee Can Sealer Company.) See timetable for chicken.

Fried Fish

Clean and dress the fish. Split along the back and remove the backbone. Place in salt water strong enough to float an Irish potato. Leave in this brine, according to the thickness of the meat, from ten minutes to one hour to draw out the blood and harden the meat. Drain, wipe dry and cut in pieces the length of the jar. Fry in deep fat until nicely browned. Pack in jar. Do not add any liquid. Seal and process as per timetable. (From the *Modern Way of Canning and Cooking*, Burpee Can Sealer Company.) See timetable for fish.

NOTES

1. Do not allow temperature to fluctuate in cooker because every time pressure goes down it forces juice out of glass jars, and may extract juice from the meat.

2. In timetables below, glass jars are not completely sealed before processing but final seal is made when removed from cooker.

3. Test for spoilage before storing away.

4. While any meat can be canned either in glass or tin, it is expected that 4-H club girls will use glass jars.

5. In order to make meats absolutely safe for consumption they should be boiled in the jar before opening for ten minutes before serving. This is done for a double purpose—to render the food safer and to cause the contents of the jar to reabsorb the flavors that would escape into the air if the product were opened cold.

PROCESSING

After preheating, packing, and sealing, the containers of meat should be immediately processed, in the steam pressure cooker as directed below. The time periods given apply to meat which is steaming hot, or about 170 degrees F. when packed or sealed.

For beef, veal, pork, mutton, and lamb:

Pint glass jars, eighty-five minutes at 15 pounds pressure, or 250 degrees F.

Quart glass jars, one hundred twenty minutes at 15 pounds pressure, or 250 degrees F.

For canning chicken:

With bone:

Pint glass jars, sixty-five minutes at 15 pounds pressure, or 250 degrees F.

Quart glass jars, seventy-five minutes at 15 pounds pressure, or 250 degrees F.

Boned chicken:

Pint glass jars, eighty-five minutes at 15 pounds pressure, or 250 degrees F.

Quart glass jars, one hundred twenty minutes at 15 pounds pressure, or 250 degrees F.

For canning fish:

One hundred minutes at 10 pounds pressure, or 240 degrees F.

COOLING

After processing glass jars allow the pressure gauge to reach zero before opening the petcock, then open it gradually so there is no sudden outrush of steam. See that seal is completed on glass jars, and place them in the open air, but protected from drafts, until cooled.

JELLY

Jelly is a form of preserves in which only the juice of the fruit is used. With this juice enough sugar is cooked to prevent spoilage from bacterial action, though it must be protected to keep out yeasts and molds. Because of the high sugar content, jelly is a concentrated food substance and should be eaten only in small quantities and then in combination with other foods like meat or bread and butter.

When properly made, jelly forms a most attractive dish, fragrant, clear, sparkling, quivering in the light, yet keeping its shape as it is turned out of the container, and having the flavor of the fruit from which it is made. Jelly, when it is made right, holds its

shape and yet when cut shows sharp edges, though it must be tender and easily cut. In judging jelly, it is customary to take out a spoonful of the jelly to be judged and cut it with another spoon or knife to see if it keeps an edge.

SCORE CARD FOR JELLY

	Per cent
Pack—full, attractive, practical.....	10
Color—natural, characteristic of fruit used, sparkling, bright, not dull, faded or dark.....	20
Quality of product	
Consistency—should hold shape and quiver, should cut easily.	
Clearness—transparent or translucent, not cloudy or containing crystals, pulp, or fiber.	
Condition—not weeping, moldy, or fermented.	
Tenderness—should cut easily and retain shape.	
Bloom or shine—should be sparkling or glistening.....	40
Flavor—natural, fruity.....	20
Appearance of container—clean, suitable, clear glass, with neat label.	10
Total.....	100

EQUIPMENT FOR JELLY MAKING

1. There should be a large granite or aluminum saucepan or kettle in which to cook the fruit.

2. There should be a wide shallow pan or kettle of granite or aluminum in which to boil the juice.

3. There should be a colander or gauze sieve in which the fruit may be pressed to extract the juice, but a clean flour sack or sugar sack can be used very well for this purpose.

4. A long wooden paddle or spoon is a very handy thing with which to stir the fruit or jelly. A long granite or aluminum stirring spoon may be used.

5. If clear, sparkling jelly is desired, there should be provided a double cheesecloth or shaker flannel through which to strain the juice before cooking.

6. There should be glasses or jars with lids, and these should be washed, rinsed, and sterilized ready for use by the time the juice is boiled. To sterilize glasses or jars, put them in a pan or kettle having a clean towel or rack in the bottom, add 1 inch of water, cover tightly, and boil the water rapidly for ten or fifteen minutes. Leave kettle covered until glasses or jars are needed, and remove them as needed, being careful not to touch the inside of jar or lid.

7. Although it is not necessary to use paraffin if sterile lids are used and put on as soon as the boiling-hot jelly is poured into the container, it is the usual custom not to put the lids on until the jelly is cool. For this reason it is better to use a thin layer of paraffin over the jelly to keep it and then use the lid merely to keep dust off the paraffin. There should be an old saucepan or can in which to melt the paraffin.

8. Neat labels should be prepared and used as soon as jelly is cold.

To make good jelly, we must have three things:

1. Fruit that has:
 - a. The right kind and amount of acid.
 - b. Sufficient pectin (this is the substance that makes jelly when heated with acid).
2. Sugar (either cane sugar or beet sugar will do).
3. Heat (enough to produce rapid boiling all over the pan or kettle).

If acid is not present or there is not enough of it, then acid must be supplied if jelly is to be made. Acid may be added in any of the following ways:

1. By addition of juice of citrus fruits—lemons, oranges, or grapefruit.
2. By the addition of some fruit juice like the juice of sour apples, green grapes, or plums.
3. By the addition of tartaric acid, but as this is a somewhat difficult matter it is not recommended for 4-H club work.

If pectin is not present or there is not enough of it, it must be supplied and may be done as follows:

1. By soaking white lining of peel of citrus fruit in water overnight, then boiling it a few minutes and using this liquid with which to cook the fruit that is to be used for jelly. (This is not a very practicable method as it is too much trouble.)
2. By using juice from some fruit rich in pectin, like sour apples, crab apples, green grapes, green gooseberries, or red currants. (Very practicable method.)
3. By using commercial pectin.

While good jelly can be made from fruits lacking pectin, by supplying it, it is much more practicable for 4-H club girls to confine their jelly making to those fruits rich in both pectin and acid.

Apples, grapes, and currants are rich in pectin, while peaches and pears have little. There is more pectin in fruits that are unripe than in the ripe fruits, but on account of flavors they do not make such desirable jelly. On this account it is recommended that the fruit be not too ripe or be not all ripe. Small fruits in which a part, up to one fourth, are underripe, make good jelly.

The presence of acid can be easily detected from the taste of the fruit, but it is not possible to tell by such a simple test if pectin is present.

ACID TESTS FOR JELLY MAKING

1. Mix 1 teaspoonful of lemon juice with 9 teaspoonfuls of water in a cup. Compare the taste of this with the juice to be tested. If the fruit juice is as sour as the diluted lemon juice, it will make satisfactory jelly, if it also contains enough pectin. In tasting for acid, it is necessary to disregard fruit flavor and concentrate on sourness.

2. The alcohol test for pectin may be modified for acid. Test the juice for pectin in the usual way. Then add to 1 cup of the juice, $\frac{1}{4}$ teaspoonful of lemon juice, or 5 per cent tartaric acid. Mix well. Repeat the alcohol test on this acidified juice. If this test is better than it was before, the juice needs more acid. In this case, to each pint of the juice used for jelly, add $\frac{1}{2}$ teaspoon of lemon juice or acid. If the test is worse or shows no change, acid will not improve the juice for jelly.

PECTIN TESTS FOR JELLY MAKING

Fruit juice must contain sufficient amount of pectin in order to make jelly with it. If this pectin is absent, no amount of cooking or care will make jelly from the juice. Therefore, the wise club girl will test her fruit juices to see if they contain enough pectin to make jelly before going to all the trouble of making jelly and the expense of adding the sugar.

Test No. 1—Alcohol Test

(Wood alcohol may be used.) When the juice for the jelly is hot, take 1 teaspoonful of the cooked and cooled juice and add to it 1 teaspoonful of alcohol. Let the two run together without stirring. If the juice contains enough pectin to make jelly, a gelatinous substance, similar to the whites of eggs, will form that can be picked up on a tablespoon. If this does not form in the juice, there is not sufficient pectin in the juice to make jelly. In order then to make jelly, pectin would have to be added.

Test No. 2—Epsom Salts Test

Mix together 2 teaspoons hot, cooked fruit juice, 1 teaspoon sugar, and $\frac{1}{2}$ teaspoon Epsom salts. Stir until salts dissolve. Let stand for twenty minutes. If fruit juice contains sufficient pectin to make jelly, the mixture will form into a gelatinous mass or large, flaky particles.

SUGAR TESTS FOR JELLY MAKING

In making pectin tests, watch the amount of solidification in order to know how much sugar to use.

1. When practically all of the juice solidifies or goes into a jelly, like raw egg white, use 1 cup sugar to 1 cup juice.

2. When three fourths of juice solidifies use $\frac{3}{4}$ cup sugar to 1 cup juice.

3. When one half of juice solidifies use $\frac{1}{2}$ cup sugar to 1 cup juice.

4. When less than one half of juice solidifies use added pectin or bottle the juice since it will not make jelly.

STEPS IN JELLY MAKING

1. The first step in jelly making is to pick over the fruit and clean it, washing when possible and putting it on to cook, using as

little water as can be used to prevent scorching.

- a. For berries or soft fruits only the water that adheres to the fruit will be needed when putting it on to cook, but care must be taken to prevent sticking or scorching.
 - b. For hard fruits, like apples or quinces, remove spots but do not peel or core. Cut up into pieces and cover with water when putting it on to cook. Put on lid and bring slowly to boil.
2. The second step is to extract the juice. This may be done by using a colander or sieve, or by running it through a bag that has been wrung out of hot water. If the bag is flannel or part flannel, the juice will not need to be strained again to make it clear.
3. If fruit is rich in pectin and acid, several extractions may be made by addition of more water and following step 1 b.
4. After juice is strained, test for pectin and acid.
5. Measure juice and put it on to cook. Bring to boil quickly and boil rapidly. Boil about ten minutes, skim, and add sugar, and continue to boil all over rapidly until done. Add sugar, boil rapidly in a wide, shallow pan until the syrup jells or "sheets" off. It is better to make juice into jelly in small quantities rather than large. From 4 to 6 cups make an amount satisfactory for handling at one time. The kettle should not be more than half full.
6. When done, pour boiling hot into clean, sterile containers.
7. Use paraffin:
- a. Pour thin layer of hot melted paraffin in on top of hot jelly as soon as it is poured into container.
 - b. Pour thin layer of hot melted paraffin upon jelly as soon as it has solidified in container.
 - c. Cut up cold paraffin in bottom of container and pour boiling jelly in upon it. Hot jelly will melt paraffin, and it will rise to top and form a seal for jelly.

TESTS FOR JELLY

1. Put teaspoonful of syrup in small dish and cool quickly. If it jells or "sets" so it can be pushed back on dish it is done.
2. When syrup sheets from the metal spoon, that is when the jelly moves from the spoon in a mass rather than in a single stream.
3. When syrup drops from the edge of metal spoon in two lingering drops at once, side by side.

JELLY FAILURES AND THEIR CAUSES

(From Circular No. 55, "Blackberry Jelly, Blackberry Jam, and Cherry Preserves" by Hazel Cameron, West Virginia University, Morgantown, West Virginia.)

The following is a list of common jelly failures and their causes:

1. Mold or fermentation—
 - a. Containers not sterilized by boiling in water.
 - b. Careless handling of container after sterilization.
 - c. Imperfect seal or container.
 - d. Too little sugar.

2. Color dark, cloudy—
 - a. Juice squeezed rather than allowed to drip.
 - b. Juice not strained through thick cloths.
 - c. Overcooking.
3. Sugar crystals—
 - a. Too much sugar or too little acid or pectin.
 - b. Sugar added too near end of cooking process.
4. Weeping—
 - a. Too much acid in proportion to pectin present.
5. Jelly soft—
 - a. Juice poor in pectin because too ripe or unsuitable for jelly making.
 - b. Too much sugar.
 - c. Insufficient cooking.
6. Jelly stiff—
 - a. Too little sugar.
 - b. Cooked too long.
7. Jelly tough and gummy—
 - a. Overcooked.
 - b. Too little acid.
8. Jelly syrupy—
 - a. Too much sugar.
 - b. Too little pectin (fruit too ripe or unsuitable).
 - c. Long, slow cooking (destroys pectin).

JELLY RECIPES

Apple Jelly

Apple jelly may be made from parings and cores of tart apples used in other canning. Discard all faulty parts. Cover well with water and cook until fruit is quite done. Strain twice. Add $\frac{3}{4}$ cup sugar to 1 cup of boiling juice. When it reaches the jelly stage skim and pour at once into hot jelly glasses or molds.

Apple Mint Jelly

Two pounds apples, one bunch mint ($\frac{1}{2}$ cup, chopped), 3 cups sugar, water. Wash and cut apples in quarters. Barely cover with boiling water, put on cover and let cook until soft throughout. Turn into jelly bag to drain. Measure 1 quart juice, add mint; cook slowly twenty minutes, then strain into clean saucepan. Heat to boiling, add sugar, let boil till syrup jells. Tint with green vegetable coloring. Turn into hot jelly glasses.

Cranberry Jelly

One quart cranberries, 1 cup water, 2 cups sugar. Pick over and wash berries, add water and cook in covered saucepan till soft. Strain through sieve or jelly bag. Add sugar to juice and boil from two to five minutes until two drops will form on edge of spoon and hang side by side. Pour into hot jelly glasses.

Quince Jelly

Quinces have too little acid and too much pectin to make a desirable jelly when the juice alone is used. An equal amount or twice as much tart apple improves the flavor. Equal parts of cranberry, quince, and apple juice give a jelly of rich, red color, and delicious flavor.

Cut the quinces into small pieces, do not pare, but remove bad spots. Add sufficient water to cover and cook until tender. Quinces require long cooking to become tender and to bring out their flavor and deep, rich color. Drain off juice. Use two thirds as much sugar as fruit juice. Follow general directions for making jelly. The pulp, when put through sieve, may be used for making conserve or butter.

Grape Jelly

Wash the bunches thoroughly, remove the fruit from the stems, put the grapes into preserving kettle, add $\frac{1}{2}$ cup water to 2 quarts of grapes. Boil slowly until the grapes burst open and are soft enough to drain. Drain the juice through cheesecloth or shaker flannel bag. Measure the juice, bring to boil, skim, and add 1 cup sugar to each cup juice. Cook the sweetened juice in porcelain kettle rapidly for about ten minutes or until a little of the juice hardens when cooled on a saucer. For green grape jelly the fruit should be gathered as soon as it begins to turn color.

Spiced Grape Jelly

Wash 1 peck wild grapes, remove stems; put in preserving kettle with 1 quart vinegar, $\frac{1}{4}$ cup whole cloves, $\frac{1}{4}$ cup stick cinnamon, and cook till grapes are soft. Strain through double cheesecloth or jelly bag, cook and test for pectin and add sugar according to directions.

Sour Orange Jelly

One pound peeled sour oranges, 2 pints water, 1 pound sugar. After the peel has been removed, weigh the remaining fruit, cut into small pieces, place in a kettle and for each pound of orange taken add 2 pints of water. Boil until it thoroughly disintegrates. Pour into a flannel jelly bag and press until no more juice can be obtained. Strain this juice again through a clean flannel jelly bag without pressing. No peel is used in the jelly. For each pound of fruit taken add to the juice 1 pound of sugar. This is boiled until it reaches the jelling point.

Grapefruit Jelly

One pound peeled grapefruit, 2 pints water, $\frac{3}{4}$ pound sugar. After the peel has been removed, weigh the fruit, cut into small pieces, place in a kettle and for each pound of grapefruit taken, add 2 pints of water. Boil until it thoroughly disintegrates. Pour into a flannel jelly bag and press until no more juice can be obtained. Drain this juice into a kettle, and bring to a boil. Add $\frac{3}{4}$

pound of sugar for each pound of fruit taken. Continue boiling until the jelling point has been reached.

Note: In order to avoid bitter taste grapefruit should be cut in halves and scooped out with a spoon, being careful not to include the white membrane.

CLASSIFICATION OF FRUITS ACCORDING TO SUITABILITY FOR JELLY MAKING

(From California Circular No. 2, "Home Preparation of Jelly and Marmalade," by W. V. Cruess and J. H. Irish)

Fruits rich in acid and pectin	Fruits rich in pectin but deficient in acid	Fruits rich in acid but deficient in pectin	Fruits deficient in both acid and pectin
Sour apples, including crab apples	Figs (unripe)	Pomegranate	Raspberries (ripe)
Sour blackberries	Bananas (unripe)	Strawberries	Peaches
Cranberries	Apples, varieties of low acid	Rhubarb*	Figs (ripe)
Currants (red)	Unripe pears	Vinefera (European grapes)	Overripe fruits
Gooseberries	Ripe quinces (some varieties)	Apricots (ripe)	
Quinces	Pie melon		
Eastern grapes	Sweet prunes		
Unripe grapes			
Sour varieties of guavas			
Grapefruit†			
Lemons			
Loganberries			
Sour oranges			
Plums (most varieties)			
Sour prunes			
Raspberries (if underripe)			

* Not a fruit but suitable for jelly making if pectin is supplied.

† Too bitter if used alone, should be mixed with other fruit.

Good jellies can be easily made from the following fruits:

Apples (green)	Grapes (eastern)
Apples (sour)	Grapes (some unripe)
Crab apples	Quinces
Blackberries (sour)	Huckleberries
Blackberries (some underripe)	Loganberries
Prunes (sour)	Loquats
Currants	Oranges (sour)
Cranberries	Plums
Grapes (green)	Raspberries (some unripe)

Good jellies can be made from these combinations. Use equal weights of fruits or use equal measures of:

Mulberries and apples or apple pectin	Strawberry and apple or apple pectin
Elderberries and apples or apple pectin	Peach and apple or apple pectin
Cranberry and apples or apple pectin	Fruit juice and apple pectin

APPLE PECTIN

For use in making jellies from such fruits as peaches, strawberries, cherries, etc., or those fruits that are lacking in pectin. One pound apple pulp (or skins and cores), 4 pounds or 4 pints water, juice one lemon, boil for forty minutes. Press the juice through a cloth bag, then strain this juice through a flannel bag without pressure. Boil this juice fifteen minutes. Can in glass jars and use for jelly making.

These recipes furnish samples but other recipes may be used.

Caution: Jelly made from a combination of fruits or from fruit and pectin should always be so *labeled*.

TABLE SHOWING THE CHANGES NECESSARY FOR GAUGE PRESSURES AT DIFFERENT ALTITUDES IN ARIZONA

Place	Elevation	Pounds necessary for gauge pressure at given elevations	
		10 lb. pressure	15 lb. pressure
Ajo	1,770	10.88	15.88
Alpine	8,500	14.25	19.25
Ashfork	5,160	12.6	17.6
Benson	3,523	11.76	16.76
Bisbee	5,425	12.7	17.7
Bouse	1,100	10.55	15.55
Bowie	3,756	11.88	16.88
Buckeye	980	10.49	15.49
Camel Back	1,249	10.62	15.62
Canille	5,255	12.62	17.62
Casa Grande	1,400	10.7	15.7
Chandler	1,213	10.6	15.6
Clemenceau	3,460	11.7	16.7
Clifton	3,465	11.7	16.7
Cochise Stronghold	4,950	12.47	17.47
Douglas	3,930	11.96	16.96
Fairbank	3,862	11.93	16.93
Flagstaff	6,907	13.45	18.45
Florence	1,500	10.75	15.75
Ft. Apache	5,300	12.65	17.65
Ft. Defiance	6,950	13.47	18.47
Ganado	6,840	13.42	18.42
Gila Bend	737	10.37	15.37
Globe	3,440	11.72	16.72
Grand Canyon	6,866	13.43	18.43
Holbrook	5,069	12.53	17.53
Jerome	5,250	12.62	17.62
Kingman	3,266	11.63	16.63
Litchfield Park	1,180	10.59	15.59
Maricopa	1,186	10.59	15.59
Marinette	1,150	10.57	15.57
McNary	7,251	13.62	18.62
Mesa	1,245	10.62	15.62
Miami	3,603	11.80	16.80
Mohawk	538	10.27	15.27

TABLE SHOWING THE CHANGES NECESSARY FOR GAUGE PRESSURES AT DIFFERENT ALTITUDES IN ARIZONA—*Continued*

Place	Elevation	Pounds necessary for gauge pressure at given elevations	
		10 lb. pressure	15 lb. pressure
Morman Lake	7,000	13.5	18.5
Nogales	3,839	11.92	16.92
Oracle	4,522	12.26	17.26
Parker	350	10.17	15.17
Payson	4,906	12.45	17.45
Phoenix	1,108	10.55	15.55
Pinedale	6,500	13.25	18.25
Prescott	5,389	12.69	17.69
Quartzsite	871	10.43	15.43
Redrock	1,856	10.93	15.93
Roll	257	10.13	15.13
Roosevelt (Gila)	2,275	11.14	16.14
Rucker Canyon	5,634	12.82	17.82
Sacaton	1,280	10.64	15.64
St. Johns	5,650	12.82	17.82
Salome	1,775	10.89	15.89
Seligman	5,219	12.61	17.61
Snowflake	5,644	12.82	17.82
San Simon	3,609	11.80	16.80
Springerville	6,822	13.41	18.41
Superior	3,000	11.50	16.50
Tempe	1,159	10.58	15.58
Thatcher	2,800	11.40	16.40
Tombstone	4,580	12.29	17.29
Tuba City	4,500	12.25	17.25
Tucson	2,423	11.21	16.21
Vail	3,241	11.62	16.62
Wellton	225	10.11	15.11
Wickenburg	2,072	11.04	16.04
Willcox	4,200	12.10	17.10
Williams	6,750	13.37	18.37
Winslow	4,848	12.42	17.42
Yuma Valley	110	10.05	15.05

Note: For other communities not listed here, add $\frac{1}{2}$ pound pressure for every 1,000 feet increase in elevation above sea level.