

Answers TO YOUR CANNING Questions



FROM OUR MODERN RESEARCH KITCHEN

CAPS AND LIDS

1. **Are KERR Mason Caps affected by vinegar or any food acids?**

The gold lacquer on KERR Mason Caps is subjected to a baking process and the cap is not affected by vinegar or food acids. It is safe to use in canning *all* foods.

2. **Can KERR Mason Lids be used a second time? Why not?**

No. Because to open a jar sealed with a KERR Mason Lid the lid should be punctured. If it is otherwise removed it should not be used a second time because the composition will be damaged by the first use.

3. **Will KERR Mason Caps fit other makes of jars? KERR Mason Caps fit ALL MASON Jars.**

4. **Is it necessary to purchase new Economy Clamps if, after years of use, clamps fit loosely and will not effect a seal?**

If Economy Clamps fit loosely, this can be corrected by bending the clamp in the middle so it will exert a good pressure on the cap.

5. **Should the Screw Bands on KERR Mason and KERR Wide Mouth Mason Jars, "Self-Sealing" Brand, be tightened after the jars are cold?**

No. The jar is already sealed when cold. We recommend removing screw band when jar is cold.

6. **Will products canned in KERR Jars and sealed with KERR Mason Caps keep if the Screw Bands are removed?**

Yes, if screw bands are removed after jars are cold and sealed. Remove screw bands after 24 hours as bands are unnecessary once jars are sealed. Use screw bands over and over, purchasing only the inexpensive lids. If left on, juices that are on the threads of the screw bands will cause the bands to stick to the jars.

7. **Will the flavor, color or keeping quality of canned products be in any way affected by the lacquer on KERR Mason Caps?**

KERR Mason Caps are clean, pure, and sanitary and in no way affect the flavor, color or the keeping quality of any canned food. The

fact that practically all commercially packed products in glass use gold lacquered caps is an additional endorsement as to their safety.

8. **Is it necessary to sterilize jars and lids before canning?**

For open kettle canning, jars should be sterilized. When the food is processed in the jar the jar does not require sterilizing but all jars should be thoroughly cleansed. Economy Caps and KERR Mason Lids should always be scalded by placing in a pan and pouring boiling water over them. Screw bands need not be scalded but should be clean and in good condition.

9. **Will it injure the composition on the Economy Caps and KERR Mason Lids when scalding to let stand in hot water?**

No.

10. **Should Screw Bands on KERR Mason Caps be screwed tight BEFORE being placed in the water bath, or pressure cooker to process?**

The bands on KERR Mason Caps should always be screwed tight BEFORE processing.

11. **How can KERR Mason Lids be separated if stuck together?**

By submerging them in boiling water for a few minutes.

12. **Why do some Screw Bands stick to the jars?**

This is caused by food juices on jar threads. Juices holding screw bands to the jar can be dissolved in warm water, or adhesions can be broken by tapping screw band lightly with knife handle. This can be completely avoided with KERR Mason Caps by removing screw bands from jars the day after products are canned. Once jars are sealed, bands are unnecessary.

13. **Why is it safe to tighten KERR Mason Caps BEFORE processing?**

KERR Mason Caps seal by the cooling of the contents of the jar and not through pressure of screw band on the lid. Therefore, although screw band is tight the jar is not sealed until it

has cooled, and during processing the flexible KERR Lid permits the jar to exhaust.

- 14. Will it break the seal to again tighten KERR Mason Caps as soon as jars are removed from the canner after processing?**

It is unnecessary to again tighten KERR Mason Caps when jars are removed from canner if cap was tightened before jars were processed. However, it will not break the seal because the KERR Mason Cap does not seal during processing but seals after processing by a vacuum which is created as the contents of the jar cool.

- 15. How should the KERR Mason Cap be handled when cold foods, such as pickles and sauerkraut, are packed into the jar and are not cooked or processed? Can the screw band be removed before storing?**

When pickled products are packed cold and the contents of the jar do not receive any application of heat, the KERR Mason Lid is placed on the jar of pickled foods with the sealing composition next to the glass and the band screwed tight. The cap will not form a vacuum seal but when handled in this manner will offer the necessary protection to jars of pickled foods. Do not remove the screw band from the jar before storing as the band is necessary to hold the lid in place.

- 16. When the KERR Mason Cap is tested for seal and the sound is not a clear ringing note must jar of food be reprocessed with new lids?**

Many times the sound will not be clear if the food is touching the under side of the lid. Observe the concave appearance of the lid to determine if jar is sealed. If sealed, the lid should not be removed or food reprocessed. If not sealed, the food should be used or reprocessed, see question number 39.

- 17. After scalding the KERR Lid should it be dried before placing on jar?**

No. The scalding is used to cleanse the lid and it should be placed on the jar without coming in contact with a cloth or other articles which are unsterile.

- 18. Will KERR Mason Lids purchased one year be safe to use in the next year's canning?**

The sealing composition in the lid does not deteriorate rapidly and if the lids are stored in a cool, dry place they will keep in good condition.

GENERAL

- 19. When using the pressure cooker for processing, is it necessary to have the cooker filled with jars?**

It is economy to process at one time as many jars as the cooker will hold, for it saves time and fuel, but if you do not have sufficient jars to fill the cooker, one or more may be successfully processed.

- 20. If liquid is lost from a jar during processing, should the jar be opened when processing is complete to add more liquid?**

No, this should never be done. The loss of liquid will not interfere with keeping qualities

and to open the jar at the end of the processing will result in later spoilage of the food.

- 21. Does soil affect the keeping qualities of food?**

Since most bacteria found on products come from the soil, and during some seasons there are occasional outbreaks where fields are infested with an unusual type or a larger number of bacteria than ordinarily exists, it is inevitable that more bacteria would be present on the product than in normal seasons and would make the product harder to sterilize.

- 22. What is the effect of heat and cold on keeping qualities of canned foods?**

Excessive heat may destroy the seal of the jars through causing expansion of the contents. Warm storage encourages rapid growth of micro-organisms causing spoilage. Freezing and thawing injures the flavor and texture of canned products, but does not make them unsafe to eat unless seal is broken which may let bacteria in and spoil the food.

- 23. Will jars boiled in water before canning be tougher?**

No. KERR Jars are fully tempered when made and boiling will not increase the temper.

- 24. Why do jars, after being tested and sealed for six months or more, open and contents spoil?**

This is very rare but when it appears it is usually caused by bacteria which were not entirely destroyed by processing and which have become active thus causing the seal to release. This is especially true if the storage temperature has increased. It may also be caused by small particles of food on the sealing edge of the jar where they come in contact with the sealing composition, and disintegrate, which action permits air to enter the jar.

- 25. What causes liquid to boil out of jars during processing?**

- Packing jars too solidly with food when processing in the pressure cooker.
- Having jars too full. If using water, fill to within $\frac{1}{2}$ inch of top of jar; if using syrup, fill to within $1\frac{1}{2}$ inches of top of jar; or $\frac{1}{2}$ inch of top of jar for hot pack fruits.
- Too high a pressure. Variation or sudden lowering of temperature in using a pressure cooker. Petcock should not be opened and cover removed until hand on gauge goes back to zero.

- 26. Are the keeping qualities of food affected when liquid has boiled out during processing?**

No.

- 27. In Hot or Cold Pack canning when should one start to figure time of processing?**

Pressure Cooker: From minute the hand on pressure gauge reaches required pressure.

Water Bath: From the minute water surrounding jars starts to boil.

- 28. After processing should KERR Jars be turned upside down to test for leaks? Are keeping qualities affected by such a test? How should KERR Jars be tested?**

- KERR Jars should not be turned upside down while cooling.

- (b) Since the seal on the KERR Mason Cap is not completed until jars are cold, jars with this type of cap should not be turned upside down while cooling and sealing. To do so is working against the KERR Principle of Sealing and may prevent a seal.
- (c) To test KERR Mason Caps for seal: When jars are cold, take a spoon and gently tap the lids. If properly sealed, they will give a clear, ringing note, and be slightly concave (curved inwardly), caused by the vacuum inside. If not properly sealed, the sound will be dull and low in key, in which case you have an opportunity to re-can contents and thus save your food. If food touches lid the sound will be dull but not hollow and empty like unsealed jar.
- 29. When processing in the water bath, should water completely cover the jars?**
Yes. Water should cover jars at least one inch over top. If water boils down add enough boiling water to keep at required height.
- 30. What allowance should be made from time tables for differences in altitude?**
See note under time table, page 9.
- 31. Should chemicals or preserving powders be used in canning?**
Artificial preservatives should not be used.
- 32. Can KERR Jars equipped with KERR Mason Caps be successfully used for all methods of canning?**
KERR Jars and KERR Mason Caps in all styles have been tested and proved highly successful for canning all fruits, vegetables, meats, poultry, game, fish, pickles, etc., by all methods.
- 33. Where should hot jars be set when removed from canner?**
Set hot jars on a folded cloth or board. DO NOT set hot jars in a draft as this may cause them to burst.
- 34. What products should be packed loosely and what products should be packed firmly? Why?**
Such products as corn, peas, lima beans, greens and meats should be packed loosely because heat penetration in these products is difficult. Fruits, berries and tomatoes should be firmly and solidly packed because of shrinkage which takes place during processing and their texture does not retard heat penetration. A solid but not a tight pack should be made of all other products.
- 35. In the Cold Pack method is it necessary to heat the syrup before it is poured on the fruit?**
Hot syrup is preferable, as it speeds up the heating of the foods.
- 36. How long should jars be boiled to sterilize?**
We recommend washing jars in hot suds. Rinse jars thoroughly, place in pan of clear water, with folded cloth in bottom of pan, set on stove and *boil* for at least 15 minutes.
- 37. Should bubbles appear in the jar after it is taken out of the cooker to cool?**
Bubbles often appear in the jar after it is removed from cooker because food is still boiling in jar. Ordinarily bubbles do not appear once the product has been allowed to thoroughly cool, unless the jar is shaken. A very tight pack of food may show air bubbles.
- 38. Do completely filled jars become contaminated by food coming in contact with KERR Mason Lid?**
No. Food coming in contact with the KERR Mason Lid does not become contaminated. However, jars should be filled with food to not more than $\frac{1}{2}$ inch of top of jar. When water is used over food, fill only to within $\frac{1}{2}$ inch of top of jar with water, or $1\frac{1}{2}$ inches of top of jar if syrup is used on fruits packed cold or $\frac{1}{2}$ inch of top of jar for fruits packed hot, so that when the lid is placed it will not force food out on sealing edge of jar and prevent a seal. Food touching lid also interferes with the test for seal. (See Questions and Answers numbers 56, 57, 73 and 83 for height products should be packed.)
- 39. If a jar does not seal and must be reprocessed does it have to be reprocessed the original length of time?**
Just what shall be done with the unsealed jar will depend upon the cause. If cap or lid is at fault and product is a fruit, simply replace cap or lid with new one and process in water bath until product reaches boiling point. If it is a vegetable or meat it should be reprocessed at least one-third the regular processing period. If jar is defective any product would require repacking. It is doubtful if this will be profitable since the reprocessing would need to be approximately the same as the first processing given that particular food. Few foods will stand up under such treatment.
- 40. Why is a shorter period of processing used when canning in a pressure cooker?**
Because a higher degree of temperature is obtained under pressure.
- 41. In the boiling water bath method of processing is it all right to allow jars to cool in the water?**
No. The product will be overcooked and certain types of spoilage may develop due to slow cooling.
- 42. Is it possible to process two layers of jars in canner at one time?**
Yes. Place small wire rack between the layers so water or steam will circulate freely around each jar.
- 43. Does the black deposit sometimes found on the underside of the lid indicate spoilage or make food unwholesome?**
No, if the jar is sealed, and if this deposit is caused by tannins in the food or hydrogen sulphide which is liberated from the food by the heat of processing. This does not make the food unwholesome.

44. How long will home canned foods keep?

Foods that are properly canned and properly processed will keep for an indefinite period of time when the containers in which they are packed are air-tight.

45. For canning, what foods are considered acid? Which low-acid?

The acid foods are fruits, tomatoes, ripe pimientos, rhubarb and pickled beets or other vegetable pickles. All other vegetables, all meats, poultry and other foods are considered low-acid.

46. Can jars of home canned foods sealed with the KERR Mason Cap be moved or transported for several miles?

Yes. The handling or shaking of the jars during transportation will not cause the seal on the KERR Mason Cap to release even though the screw bands have been removed.

47. May canned fruits or vegetables which have just begun to spoil be saved by re-canning?

No. Do not attempt to re-can or use any food which has begun to spoil. The spoiled food contains more bacteria than the fresh product. Re-canning to stop the spoilage would be difficult and consumption of the food would be risky.

48. When foods are canned in pint jars may the processing time be reduced?

Yes, on some foods. Refer to the time tables, pages 8 and 9.

FRUITS

49. What effect do some methods of canning have on the flavor of canned fruits?

The open kettle method causes (with a consequent loss of flavor), the boiling away of some of the food values which are retained in the hot or cold pack method.

50. May fruit be canned successfully without sugar?

Yes, by using fruit juice or water in place of syrup.

51. How does one lye-peel peaches?

Use an agateware or iron vessel and only firm peaches. To a gallon of water, add two tablespoons of lye, and bring to boiling point. Place peaches in wire basket or cheesecloth bag and lower into boiling solution for about one minute. Remove and rinse in cold water using a crash towel to rub off peeling. This method may also be used with apricots, if they are firm.

52. What causes peaches and pears to turn dark brown after they have been canned? How can this be prevented?

(a) Discoloration of fruits in the top of the jar is often due to enzyme activity or oxidation which means that the heat of cooking or processing was not applied long enough, or the temperature used was not high enough to render the enzyme inactive or expel the air from the jar. The remedy is an increase of 5 to 15 minutes in the processing time.

(b) Ascorbic acid (vitamin C) added to the light colored fruits will prevent discoloration. Put $2\frac{1}{2}$ tablets of 50 milligrams in bottom of each pint jar before packing fruit; or add $\frac{1}{2}$ teaspoon of ascorbic acid to each quart of the syrup before pouring over fruit in jars.

(c) Fruit exposed to air too long after being peeled and before being canned. This can be overcome by dropping peeled fruit into slightly salted or plain water until ready to put in jars.

(d) Pears canned by cold pack method will retain original color better if a tablespoon of lemon juice is added to each quart jar.

(e) Canned fruits not sufficiently processed, after being opened and exposed to air, sometimes turn brown just as fresh fruit does when exposed to air.

53. How may strawberries be canned to prevent floating?

By precooking for five minutes in syrup, then allowing the berries to stand in the syrup for a few hours before packing in jars and processing. (See recipe for "Strawberries—Will Not Float"—Page 13.)

54. Why do berries, other fruits and tomatoes float from bottom of jar?

This may be caused by using foods that are overripe. Processing too long or using too high temperature for processing, or using too heavy syrup or making too loose pack. Fruits and tomatoes shrink when heated and should be packed firmly.

55. Why should fruits be graded according to size and ripeness?

(a) Fruits should be uniform in size and firmness so that heat penetration will be equal, which would not be the case if large and small fruits were all canned in one jar.

(b) Partly ripe and fully ripe fruits should never be canned in the same jar. All partly ripe fruits should be canned together and all fully ripe fruits should be canned together.

(c) Overripe fruits should never be used for canning unless used in jams or butters.

56. How high should fruit be packed in jar when canned by the Open Kettle method?

Jars should be filled to within $\frac{1}{2}$ inch of top with boiling hot fruit and liquid.

57. How high should fruit be packed in jar for Hot or Cold Pack canning?

Jars should be filled within $\frac{1}{2}$ inch of top of jar with fruit and $1\frac{1}{2}$ inches of top of jar with syrup when fruit is packed cold, or $\frac{1}{2}$ inch of top of jar with syrup when fruit is packed hot.

58. How much salt and vinegar should be added to the water in which peeled fruit is placed to prevent discoloration before canning?

Two tablespoons each of salt and vinegar to each gallon of water is sufficient.

JELLIES

59. How can fruit juices be tested for pectin content?

1. To one teaspoon of cooked juice, add one teaspoon of grain alcohol and stir slowly. Wood or denatured alcohol may be used but **DO NOT TASTE** as the latter two are **POISON**.
 - (a) Juices rich in pectin will form a large amount of bulky gelatinous material.
 - (b) Juices moderately rich in pectin will form a few pieces of gelatinous material.
 - (c) Juices poor in pectin will form small flaky pieces of sediment.
2. Or mix 2 teaspoons sugar, 1 tablespoon Epsom salts, 2 tablespoons cooked fruit juice. Stir well and let stand for 20 minutes. If mixture forms into a semi-solid mass the juice contains sufficient pectin.

60. What fruits contain pectin and acid? Which lack pectin? Which lack acid?

Cranberries, quinces, green apples, crab apples, blackberries, grapes, plums, gooseberries, orange or lemon rind and white peel contain pectin and acid.

Peaches, pears, cherries, strawberries, pine-apples and rhubarb contain practically no pectin when ripe.

Pears and sweet apples contain practically no acid.

61. Will fruits which lack acid make jelly?

No. Three ingredients are essential: pectin, acid and sugar, in their proper proportions.

62. What makes jelly (a), soft? (b), tough? (c), crystallize? (d), cloudy?

- (a) Jelly sometimes is syrupy because more sugar has been used than the fruit juice requires; or because boiling (after the addition of sugar) was not continued long enough.
- (b) Jelly is tough or stringy because too small a quantity of sugar was used for pectin present in juice, or because the jelly was boiled too long.
- (c) Crystals appear in jelly because too much sugar was used; or boiling too long before sugar was added to the juice, so that the two were not boiled together long enough; or in boiling, the syrup spatters on the side of the pan, dries and in pouring the jelly these crystals are carried into the glass and the jelly becomes seeded with crystals. Crystals often appear in grape jelly because of tartaric acid in the grapes. This may be overcome by allowing the juice to stand, the tartaric acid will crystallize and settle to the bottom. The juice should be poured off carefully so as not to disturb the sediment.
- (d) Cloudy jelly may be due to having cooked the fruit too long before straining off the juice or to not having used sufficient care in straining the juice. Sometimes it is

noticed in apple and crab apple jelly that, although it is clear when first made, the jelly becomes cloudy after a time. In these cases it is usually due to the use of partly green fruit, the starch in this fruit probably causing the cloudy appearance.

63. In using a jelly thermometer, what is the proper temperature at which fruit juices will jelly?

Pure fruit juices (without the addition of commercial pectin) will jelly at a temperature of 220° to 222° F. at sea level altitudes if the juices contain the proper proportion of pectin, acid and sugar.

64. What is pectin?

A natural substance found in most fruits which causes the fruit juice to congeal when used in jelly making.

65. Should jelly be boiled slowly or rapidly?

Jelly should be boiled rapidly. Long, slow boiling will destroy the pectin in the fruit juice.

66. Should jelly be made with cane or beet sugar?

The test on cane and beet sugar shows them to be chemically the same. Either may be successfully used.

67. How much juice should be made into jelly at one time?

Not more than 6 to 8 cups. If a larger quantity of juice is used, it will be necessary to boil it longer thus causing loss of flavor and darkening the jelly.

VEGETABLES

68. What causes corn to turn brown during processing?

This most often occurs when too high a temperature is used. The high temperature causes a caramelization of the sugar in the corn. It may also be caused by some chemical, such as iron, in the water used in canning. Some varieties turn brown more readily than others.

69. Why do beets turn white?

The loss of color from beets is usually due to the variety of beets used or to canning beets that are too old or that have been gathered too long. Some varieties are more susceptible to loss of color than others. If possible get the very dark red variety and make sure they are young, tender and as freshly gathered as possible. Precook beets with 2 inches of the stems and all of the root left on, as this helps to retain the juices.

70. Should salt be used to season jars of vegetables before canning or added when served?

Salt may be added at the time of canning or omitted entirely and if desired added when served.

71. Must canned vegetables be boiled before tasting or using?

Yes, they must be boiled, or otherwise heated at boiling temperature, ten to fifteen minutes in an open vessel to destroy toxins that may have formed on vegetables in the jar.

72. What causes cloudiness in canned peas? How can it be prevented?

This is frequently caused by canning peas that are too old or have been gathered too long. It also may be caused by minerals in hard water. Use of fresh, tender peas, soft water, proper precooking and rapid handling ordinarily eliminate cloudiness. It may also indicate flat sour.

73. How high should vegetables be packed in jar? Pack vegetables to not more than 1/2 inch from top of jar. (Exceptions: corn, peas and lima beans should be packed only to within one inch of top.) For all packs, add water to within 1/2 inch of the top of jar.

74. What vegetables expand instead of shrink during processing?

Corn, peas and lima beans.

75. Can any vegetables or vegetable and meat mixtures be canned safely by the Open Kettle method?

No, all vegetables except tomatoes must be canned by the hot or cold pack method (processed in the jar). All meats, or combinations of meats and vegetables, must be processed in the jar.

76. Should all vegetables be blanched before canning?

All vegetables should be blanched or precooked according to recipe.

77. Does it injure vegetables to overprocess them?

It is better to overprocess than to underprocess, as overprocessing will do little harm, but underprocessing may result in spoilage.

78. How long should vegetables stand after gathering before being canned?

No longer than is necessary to prepare them for canning. The slogan of 2 hours from the garden to jar is a very good one.

79. Why is it more difficult to can vegetables than it is to can fruit?

Because vegetables are low-acid products, in which heat resisting bacteria are difficult to kill.

80. Why must some vegetables be processed longer than is necessary to make them tender?

The processing time for most vegetables is longer than the time needed to prepare the vegetable for immediate table use. This processing time is necessary to destroy the bacteria on the food. If bacteria is not destroyed the food will later spoil.

81. When boiling home canned vegetables 10 to 15 minutes in an open vessel before serving them, must additional water be added to them?

No. Place the vegetable and the liquid in which it was canned into the open vessel and boil both the vegetable and liquid for 10 to 15 minutes.

MEAT AND FISH

82. Is it necessary to precook any meats before canning?

Meats may be precooked or packed raw, but if packed raw add no liquid.

83. How high should meat be packed in jar?

Jars should be packed loosely and filled to not more than one inch from top with meat. For precooked meats add three or four tablespoons

of liquid to each quart, or fill jars not more than 3/4 full of liquid. Meats packed raw do not require the addition of liquid.

84. Must the liquid on canned meats be jellied? No. The liquid on canned meats will not congeal unless it contains a good amount of gelatin from cartilage or connective tissue.

85. What causes congealed liquid in canned meat to liquefy when it is not or does not seem spoiled? Meat stock congeals at a comparatively low temperature, and liquefaction in a jar is caused by a rise in temperature of the storage room. If jar is put into a refrigerator or some other cool place, the stock will soon solidify. This does not affect keeping qualities of the meat.

86. In baked chicken or roast meats how much liquid can be added to jar to have a sufficient quantity to make a large amount of gravy when jar is opened for serving?

Fill jar not more than 3/4 full of liquid from pan in which meat was precooked. If jar is filled full of liquid the meat will not retain the precooked flavor and grease reaching the sealing medium of the cap may prevent a seal.

87. Should canned meats be heated before tasting or using?

Yes, heated at boiling temperature ten to fifteen minutes in an open vessel to destroy toxin that may have formed on meats in the jar. This re-heating may be done by frying, baking or boiling, but the temperature applied must be as hot as boiling water.

88. What is the best way to harden fish meat for canning?

Only firm, fresh meat should be selected. Fish flesh can be hardened if desired by soaking one hour in cold brine made in proportions of 1/2 pound of salt to 1 gallon of water.

89. Should bones be removed from poultry and game birds before canning?

Poultry and game birds can be canned either with or without the bones.

90. Is it necessary to process meat and poultry longer when bones are not removed?

No.

91. Should giblets and liver of fowl be canned in same jar with rest of chicken?

No. The flavor of the liver or giblets will permeate other pieces of chicken in the jar.

92. How should meat be processed to prevent liquid from boiling out of jar, adhering to sealing composition and preventing a seal?

By following directions for filling and processing as given in recipes, care being taken that jars are never too full or packed too solidly, and are not processed at a higher temperature than called for in recipes.

93. What is generally conceded the proper time for animal heat to leave the body of the animal or fowl?

Six to 24 hours, provided it is hanging in the open. Meat, poultry and game should not be canned until all animal heat is gone.

94. Should meat be soaked in water before packing?

No. Because it makes it stringy and tough, but it should be wiped with a clean, damp cloth.

95. Should steak, chicken, or other meats be rolled in flour for canning?

No. Flour retards heat penetration, flakes off in bottom of jar and gives the meat or chicken a slightly warmed-over taste.

96. Should meats or fish be completely or nearly covered with juices or liquid?

No. For precooked meats use only three or four tablespoons of liquid in each jar (for exceptions, see individual recipes). Meats or fish packed raw do not require the addition of liquid.

97. What care should be exercised in the canning of shell fish?

Shell fish should be heated or cooked only in enamel vessels, as other types of vessels will cause the fish meats to turn dark.

PICKLING

98. What occasionally causes pickles to turn black?

If iron is present in any appreciable amount in the water used it may cause a blackening of the pickle. Hard water (containing lime) may prevent proper curing. The addition of a small amount of vinegar to hard water will help to overcome this.

99. What causes hollow pickles?

This is often due to faulty development of the cucumber or may be caused by allowing too long a time to elapse between gathering and pickling.

100. What causes pickles to become soft?

Using too weak a brine or inferior grades of vinegar or diluting the vinegar too much. Boiling the pickles too long when using recipes which call for cooking.

101. Why do pickles shrivel?

Placing the cucumbers at once in heavy syrup, too strong brine or too strong vinegar solution, or allowing too much time to elapse between gathering and pickling will cause them to shrivel.

102. What is the best vinegar to use in brining or pickling?

Pure apple cider vinegar.

103. Why does scum form on pickled foods?

Scum will not form on pickles if they are perfectly sealed. If stored in open containers, scum forms when liquid comes in contact with bacteria which are found in the air.

104. How can crispness of pickles be assured?

- By using vinegar of at least 40 or 50 grain strength.
- By using water as free from minerals as possible.
- By proper brining.

SPOILAGE

105. What causes flat sour? How can it be prevented?

Flat sour is usually caused by canning over-ripe food or allowing precooked foods to stand in jars too long before processing or slow cooling of jars after processing. It may be prevented by using fresh products and properly processing, cooling and storing.

106. Do all types of spoilage cause the seal on the jar to release?

No. Flat sour is an exception and ordinarily shows no indication of spoilage until the jar is opened.

107. What causes fruit to mold when jars are apparently sealed?

As a rule when molds grow on canned foods, the jars are not sealed, or the seal is low which lets some air remain in the jar. Molds can grow only in the presence of air.

108. What are the reasons for spoilage or jars not sealing?

- Incomplete sterilization. Failure to follow time tables and recipes given in KERR canning literature.
- Failure to wipe sealing edge of jar clean before placing lid on jar.
- Food, seeds or grease lodged between lid and jar.
- If Economy Jar—Clamps not properly adjusted. If the clamps you are using are weak, bend them in the middle so they will exert a good pressure on the cap.
- Jars which are nicked or cracked or have sharp sealing edges.
- If KERR Mason or KERR Wide Mouth Mason—Band screwed down too loosely before processing.
- In Open Kettle Method—Filling a number of jars at one time and allowing to cool before putting on caps. Improper sterilization of jar.
- In Open Kettle Method—Removing kettle from heat and filling jars with result fruit put in last jar is practically cold.

HELPS IN LOCATING CANNING TROUBLES

THE most common cause of failures to seal is lack of pressure from the screw band and the use of jars which are not perfect. If the jars and caps failed to seal at the time the canning was done, check the following to determine the cause:

1. Was the sealing edge of the jar examined for nicks, cracks and sharp edges?

A nick in the jar edge will prevent a seal. Cracks in the jar edge will also permit the slow entrance of air and prevent a seal or cause the seal to release. Sharp edge jars will cut the composition through and prevent a seal. The sharp edge does not have to be sharp enough to cut the finger but if it is a rounded bead of glass that sticks up above the flat sealing edge of the jar, it will cut through or hold the lid up.

2. Were the jars ones in which food of some kind had been purchased?

Only a very small per cent of these commercial jars are usable for home canning and those that are not have many irregularities which can prevent a seal. Check the following very carefully:

- Is the jar slightly wider across the neck than Mason fruit jars with the manufacturer's name blown in the glass?
- Is the sealing edge of the jar very, very narrow?

c. Is the neck of the jar high enough to permit the KERR Mason Screw Band to go down far enough to offer a good pressure on the lid?

3. If commercial jars were used, did you use the KERR Mason Screw Band with the lid or the one-piece cap which came on the jar?

The one-piece cap may be too deep and it is not constructed so it puts pressure at the proper place on the lid.

4. How tight were screw bands adjusted?

Our instructions to screw the bands tight mean as tight as the hand can screw the band without using a jar wrench. Use the full force of the hand. If commercial jars which are slightly wider across the neck than KERR Mason Jars, are used, it is especially important to use force in tightening the screw band, because the wide jar neck will ride out on the turned down edge of the lid and this has a tendency to hold the lid up off the sealing edge of the jar.

5. Are the screw bands used in good condition and are they the ones intended to be used with a metal lid?

Rusty screw bands may feel tight when they do not offer a firm pressure on the lid. Screw bands with the top edge which turns down over the lid pried up, will not hold the lid firmly against the jar edge. Screw bands intended for glass lids are too deep to use with the metal lids.

6. If the open kettle method of canning was used, was the food in the kettle kept at a good rolling boil while packing and filling jars?

This is very important. If the food packed into the jar drops several degrees below the boiling point before the caps are placed on the jars, the air will not be expelled from the jar and a vacuum seal will not form.

7. Was the food thoroughly cooked in the open kettle?

If it is under-cooked, spoilage can develop later and food that does not have the air driven from the food cells or is not hot through and through will not properly expel the air from the jar so a vacuum seal can form.

THE only function of any jar and cap is to make an air-tight seal at the time the canning is done. If jars were sealed at time of storing and spoilage of the food discovered some time later, this means that the jars and caps have performed their function and the spoilage is due to causes other than the jar and cap. (Exceptions: cracks in jars which permit slow release of seal.)

Food can spoil in a sealed jar when the processing temperature is too low or processing time too short to destroy the bacteria in the food. Practically all types of spoilage create a gas. This causes the jar cap to release the seal and accounts for the fact that jar caps are usually loose on jars of spoiled food. A check of the following questions may disclose the cause of the spoilage:

1. Was the food used for canning in good condition?

Overripe fruits and tomatoes or overmature vegetables may require a little more processing than foods that are in prime condition.

2. Were the vegetables precooked before packing?

The heat penetration in cold packed vegetables is much slower than those which are precooked and packed hot. This could mean under-processing and later spoilage.

3. If pint jars were used, was the processing time cut in half?

There have been many errors of this nature made. The processing time for both pint and quart jars as given on pages 8 and 9 should be followed carefully.

4. If a pressure cooker was used for processing, was it exhausted properly?

A pressure cooker is exhausted by allowing steam to escape from the steam valve 7 to 10 minutes before closing the valve and bringing the pressure up to the desired number of pounds. If the cooker is not exhausted, the inside temperature will not correspond to the pressure shown on the pressure gauge. This means under-processing. It can be the cause of spoilage of vegetables and is frequently the cause of lids failing to seal on jars of fruit or tomatoes, because the food does not get hot enough during the short processing time used, to expel the air from the jar and create a vacuum seal on the lid.

5. Did the water in the canner cover the jars at least one inch over the top?

When the water does not cover the jars, the internal temperature of the jars is lower unless the canner is equipped with a close fitting cover that will retain thick steam around the tops of the jars. This lower temperature may prevent sterilization of the food.

6. In using the pressure cooker was processing time counted before the hand on the pressure gauge registered the correct temperature? Or in water bath canning was the beginning of processing time counted before the water surrounding the jars reached a good rolling boil?

If the processing time is counted before the correct temperature in either the pressure cooker or water bath is reached, this means under-processing and can be the cause of spoilage or sealing failures.

7. Were the jars of food allowed to cool in the pressure cooker or water bath?

Slow cooling encourages the development of bacteria which may have survived the processing. It is important to remove jars from the pressure cooker as soon as the gauge has returned to zero, and from the water bath as soon as the processing time is complete. Set the jars out of a draft but far enough apart to allow the free circulation of air around them. Do not cover the jars.

8. Were only recommended methods of canning used?

Many homemakers are trying "short-cuts" or easy methods that have been passed along to them by others who have not given the method a thorough trial. A method may work one season but fail the next time it is tried. Many jars of food are spoiled because the method used for canning was not one recommended by canning authorities who have done enough research work to be sure of the correct canning principles.