Back: Yellow Champion juicing machine, cherry-pitting machine, pH meter, buffer solutions, and ridgelimeter. Front: M.C.P. Jelly-Making Set, one-half red prickly pear, and two glass jelmeters for testing the concentration of pectin in juice.

Chapter 1

Processing Methods and Troubleshooting

There are several ways to hermetically seal a glass jar, but for the purposes of this book, the **rolling water bath or RWB** is the only type recommended for a shelf-stable product. Wax sealing or jar inversion is used for a couple of recipes for which the RWB method would cause the berries to bleed within the jar. For these products, inversion or wax sealing, combined with refrigeration, is recommended. Other methods, such as sealing by steam, sealing in a pressure cooker, sealing in the oven, sealing in the dishwasher, and jar inversion without refrigeration, are left out of this book on purpose, as they are not necessary or recommended for any recipes in this book.

There are pros and cons for all the different sealing methods, but the Jamlady and the USDA recommend the RWB for the type of recipes found in this book. Jamlady knows that some canners seal jam jars by inverting them after hot-filling the jars. While this will sometimes work, or seal the jar, it is not a recommended process for a shelf-stable product. The reason the inversion method is not recommended is that a jar can become unsealed with temperature fluctuations, because the vacuum in the jar is probably lower than it should be. Any inversion-sealed jar may become unsealed in a very warm location. **The inversion-sealed jar will usually unseal at a lower temperature more often than a RWB-sealed jar will. There are four primary factors that contribute to a proper vacuum seal on a jar. These are headspace, product-sealing temperature, air in the product, and capper vacuum efficiency.** Generally speaking, the headspace should not be less than 5 percent of the container volume at the sealing temperature. Insufficient headspace means not enough steam is trapped in the headspace area to form a sufficient vacuum and not enough space to allow for product expansion when processing in a RWB. Theoretically, **the higher the product temperature at the time of sealing, the higher the final package vacuum.** The air in the product and the processing temperature together also affect the resulting vacuum. **Vacuum is less where air trapped in the product is greater.** Capper vacuum efficiency is an indication of the ability of the top or cap to produce a proper seal and can be measured by a vacuum gauge.

Commercially, jars and cans are sealed in a variety of ways. Much of the time, they are sealed in a retort. Retorts vary in type. There are **still retorts, agitating retorts,** and **hydrostatic retorts.** A **retort** is a closed vessel used for thermal processing of foods. A **still retort,** a pressure vessel, accepts racks, crates, cars, baskets,

or trays of jars to be sealed and is stationary or nonagitating. The pressure inside a still retort is great. The processing takes place at around 250 degrees F (121 degrees C) with fifteen pounds/square-inch pressure, or about ten tons of force. **A retort is a very big pressure cooker.**

A **hydrostatic retort** operates at a constant process temperature, and the product to be sealed is transported through the retort on a conveyor system, allowing for a constant flow of containers. Hydrostatic retorts are often built as high towers, with the conveyor belt carrying product up and down the tower's height several times in a continuous flow of product. **Agitating or rotary retorts** provide continuous container handling and additionally agitate the product intermittently. Agitating or rotary retorts are useful when processing thick products, as it allows for better heat distribution and even processing.

ROLLING WATER BATH (RWB)

Most recipes in this book can be sealed by a process called a rolling water bath or RWB. Any pot with a rack will work, but Jamlady recommends you outfit a tall cylindrical stockpot with a round perforated disc rack to serve as an elevation between the jars and the bottom of the pan. Jamlady is highly critical of the traditional canning pot, which is too short, in Jamlady's opinion, to cook quarts. When the tops of the jars are covered with water, as they should be, the water boils all over the stove because the pot is too short. Even with a taller pot, there will be some water finding its way to the stovetop. A taller pot is definitely recommended for quarts. For some of the modern home ranges, the short stocky canner is also too large in diameter, as many ranges have insufficient BTUs that do not properly heat up the pot. With a low BTU burner, it takes forever to bring a large and wide pot up to boil.

Look for at least 10,000 BTUs in a range burner; 12,000 or higher is better. If you have a 6,000 or 8,000 BTU burner, it will take too long to bring the jar of product up to temperature, and the contents will cook too long. This imprecision in the process time will not hurt most jellies or jams, but it will make a huge difference in pickles, which need to be cooked just enough to seal them safely. Many a mushy pickle can be traced to a low BTU burner.

Many home canners will find that some range salesmen have little information on the BTUs of the ranges they sell, and Jamlady cautions buyers to be informed by checking all of a model's specifications with consumer magazines and with the manufacturer directly. Many of the sheets distributed on a specific model do not even list this vital information. When buying a new range for a canning practitioner, consider that there will be water coming out of the pot and on to the top of the range. A sealed-burner gas range, with recesses to hold the water so it does not go all over the range (or range top and counter), is very desirable. Look to Magic Chef and Maytag, as well as other companies that might have new designs such as Jamlady describes. Special-order a range with hotter burners, if possible.

Commercial ranges have high BTUs, but many have trays to catch the water, and this means sticky water gets all over the range grates, in places that are not easily cleaned. A sealed-burner range can be sprayed with oven cleaner and wiped clean in five minutes. Take your time and ask the right questions when purchasing a new range. If you're stuck with a low BTU range, then can in smaller jars in a smaller canner.

Jamlady is frustrated to see all the ranges that cannot properly heat up a canner. If you don't have two, high-BTU burners next to one another, such that a huge canner can sit over the two burners, you may have a problem in making jardinieres in quarts, for example, unless you opt for a smaller pot, holding less jars but tall enough to take quarts. Since many home canners are canning unique products and are not production orientated, it may not be necessary to process

twelve jars at a time. You can do two successive batches of six or use two canners on two burners, with six in each and using a taller stock pot with a rack and smaller diameter.

There are many books out there with illustrative pictures of how to use a **rolling-water-bath canner,** but Jamlady sees this as so much fuss over nothing. If you have ever made spaghetti in a spaghetti boiler or steamed a fish in a fish steamer, you can seal a jar using the RWB method. Take your spaghetti boiler or fish steamer (short jars only) with the rack inside. Place your filled 4-, 8-, or 16-ounce jars in the bottom. Fill the pan with water of the **same temperature** as the product to be processed, so that the jar tops are covered by at least 1" of water. Put the pot on the range. Heat the pot until the water starts to really boil. This does not just mean that bubbles are rising to the top of the pan, but that an actual rolling of the water is taking place on the surface. The process time is counted from the time the water starts to roll from boiling. When that time is up, remove the jars with canning tongs or lift the spaghetti rack out of the pan and set it on some pot holders to cool. You have just canned a jar of product. Make yourself a cup of tea and sit near the jars for the final proof positive. As you sit in the area of the jars, you will eventually hear a pop, a noise like the clicking of your tongue on the roof of your mouth. A little voice inside Jamlady usually shouts, "Success," and you will hear this voice too. This click or pop means your jar is vacuum sealed. Look at the top of the lid. You will see, hopefully, that it is sunken in. Push on it with your index finger. If it is down and does not timber up and down, it is properly sealed.

When cool enough, hold the supposedly sealed jar at eye level. You will see a depression in the lid if it is properly sealed. If it is not sealed, then put the jar in the refrigerator for immediate use or use a new lid and process again.

Caution: **Do not assume if a jar of product previously unsealed at room temperature seals in the refrigerator that you can take it out of the refrigerator again. More than likely, it will unseal with room temperature and reseal again when it cools. So, just keep that product in the refrigerator until you use it.** Some products fail to seal on the first attempt. Jams can be reprocessed. Other products, such as pickles, will be ruined by being cooked for a second time.

You might wonder how sealing works. Basic science 101 teaches us that **hot things expand and cool things contract.** A hermetically sealed jar of jam is a perfect example of this principle. When you heat the jar, the contents expand and drive out the steam. When the jars are quickly taken out of the hot water, they cool quickly, and the contents contract, pulling the lid down and making a vacuum seal.

FILLING THE JAR

There are steps to follow in filling your jar of product that will be processed.

1. Inspect each jar, new or old, to make sure there are no cracks in the jar or nicks in the lip of the jar.
2. Make sure your jars are squeaky clean and sterilized. You can run your jars through the dishwasher or boil them in water to sterilize them. If you are hand-washing the jars, a little capful of household bleach in the wash water is recommended.
3. Make sure you have not overfilled the jars. The glass jar has a fill line on it, but basically fill to ¾ or ½" from the top. Jellies can be filled higher than pickles.
4. Check the rubber seals on the rings for imperfections. Use no bent or rusted lids or rings.
5. Place the rubber seal down on top of the jar rim. Make sure the jar rim is clean after filling the jar to the appropriate fill level. Do not overfill the jars. You cannot get a good vacuum seal with an overfilled jar.
6. Place the metal ring over the jar, with the lid

and screw on the ring. Do not screw it on tightly, but adjust to the first bit of resistance. Your jar is now ready for the RWB.

PROCESSING TIMES

Processing times vary according to the size of the jar and the thickness of the product. The typical bread-and-butter pickle would be processed 10 minutes for a quart and 5 minutes for a pint. A chutney or preserves could be processed 10-20 minutes, depending on the size of the jar, which could be a 4-, 8-, 12-, 16-, 22-, 24-, or 32-ounce jar. There are some 64-ounce jars out there, but Jamlady hardly believes anyone would use that much chutney at one time, but you never know. Maybe some of Jamlady's readers own restaurants. In any event, Jamlady would not recommend canning chutney or any other very dense and thick product in huge jars, as it is difficult for the heat to penetrate evenly into the center. The home canner has no agitating retort. Generally speaking, Jamlady would not can chutney in a jar larger than 24 ounces and usually seals chutney in a jar 16 ounces or smaller.

If the processing time is insufficient, a proper vacuum will not form to seal the jar. This can be disastrous for a jar of pickles. The best you can do is refrigerate the pickles immediately. Happily, many of the jars do seal when placed in the refrigerator and do not have to be consumed immediately. If the jar is sealed in the refrigerator, leave it there and use when you wish to open it. **Do not, Jamlady repeats, do not take the jar out of the refrigerator, believing it will stay sealed!** More than likely, the jar will become unsealed in a warm location, and it will reseal in a cooler environment. Needless to say, this is a potentially dangerous situation and one that you might not be aware of at the time. The jar may be sealed when you look at it on a cooler evening and may be unsealed during the hotter part of a day while you are not around.

Likewise, a rolling-water-bath-sealed jar,

intended to be stored at room temperature, should not be subjected to higher temperatures like the front seat of a car on a hot, sunny day. On a hot day, the seal could pop and, when cooled again, seal again, and you would have no idea anything had occurred. With jams, this situation probably won't affect much and probably should not stop you from refrigerating the product and perhaps eating it, assuming the time in the car was only a very short time, but for other products without high sugar, this could be a major problem. **Just don't carry canned products in the car in the summer or dead of winter without keeping them at room temperature.** Freezing will also break a seal and ruin your product. Be smart! In the summer, transport your jams in a cooler or keep the car's air conditioning running at all times. In winter, keep canned products from freezing.

ALTITUDE CONVERSION

Unless you live on a mountain or in an airplane, you do not usually have to worry about altitude conversion. **Water-bath canner time does need to be increased as altitude increases.** This chart is for processing times of less than twenty minutes. ***Note:*** **If using a pressure canner, increase the pounds of pressure for processing as the altitude increases. Processing at ten pounds at sea level would need to be at thirteen pounds of pressure at 5,000 to 6,000 feet.**

For a RWB, it is sufficient to increase the processing times.

Altitude in Feet	Minutes Added to Processing Time
1,000	1
2,000	2
3,000	3
4,000	4
5,000	5
6,000	6
7,000	7
8,000	8
9,000	9
10,000	10

REACTIVE METALS

Please note that in canning, the canning practitioner is advised to avoid iron, aluminum, brass, copper, or zinc (galvanized) and opt for metals that cannot react chemically with acids and salts. Jamlady uses either enamelware, stainless steel, ceramic, or glass vessels or pots. Check with a good restaurant supply store for a tall pot. Racks from pressure cookers can be used in the bottom of cylindrical stainless-steel stockpots, or a makeshift rack can be made from heavy stainless-steel wire cut to fit the bottom of the pan and wooden slats or spacers attached to the wire. Alternately, very heavy wire mesh can be bent over to make a rack that will prevent jars from touching the bottom of the pot. Cooking pots for jelly making should have a heavy bottom core. Buy the best pots and pans you can afford. You will not be sorry. Again, go first to your local restaurant supply store for a quality pot or pan.

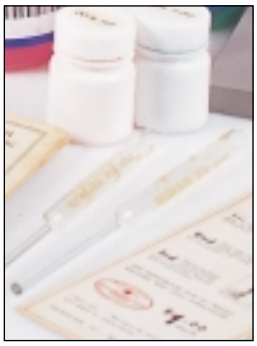
AVOIDING PROBLEMS

The best way to deal with any problem is to avoid it in the first place. Here are some suggestions for canning not only jams and preserves, but also other preserved products.

1. **Do not use homemade vinegar for canning.** Use only vinegar with a confirmed, 5 percent or higher acidity.
2. **Do not use hard water, especially for pickles.**
3. **Do not store canned goods in a warm or light spot.** Select a dark and cool location.
4. **Get the processing times right.** Cook on a range that takes the product to a rolling boil quickly.
5. **Use fresh products without sprays or other chemicals.** This directive includes not using really old spices. Some powdered spices may cause pickles or jellies to be murky, so try to use whole spices or fresh herbs when possible. Don't use hollow cucumbers in pickling. Discard any slimy or slippery pickles.
6. **Don't panic over pink pickled cauliflower or green garlic.** It isn't spoilage, but a chemical change that is okay. Jamlady often pickles cauliflower with beets, which naturally colors the cauliflower a beautiful fuchsia color and the problem is eliminated. Sometimes garlic or shallots turn green or blue in pickling. This too is not harmful. Immature and underdried garlic can turn blue or green in the presence of an acid because of the anthocyanin in the garlic. The green or blue color can also be due to sulfur compounds reacting with trace amounts of copper in the water. If the enzymes in the garlic cloves are not inactivated by heat, blue sulfate can form. Some people say that temperature-controlling the garlic cloves prior to use will eliminate the problem. Don't use immature garlic heads and store your garlic at room temperature for at least three weeks prior to using. Vegetables that turn brown were either overcooked or overripe to begin with, or the cook used iodized salt instead of canning salt.
7. **Don't pack vegetables tightly in a jardiniere or pickle jar, thinking you will get**

more in there. Don't pack a jar with vegetables that block the neck of the jar. A tightly packed jar cannot expand without forcing some of the juice out of the jar. If the jar seals, you can still use the product, but Jamlady always refrigerates these reduced-brine-level jars until opening day by laying them down in the refrigerator and rotating them often so the juice touches all surfaces of the vegetables. Use smaller pieces of vegetables toward the top of the jar so the liquid can freely flow around. Sometimes the liquid will travel out of the jar because of food trapped between the rubber of the seal and the jar's glass rim. Stray food pieces can lodge there due to the force of the steam leaving the jar. This is unavoidable in many cases and probably is not your fault. Just refrigerate the jar and use it up first. Liquid boiling out can often be traced to cracks in the jar rim or caps that were screwed on too tightly during the heating process.

8. **Discolored pickles are often traced to iron utensils, inappropriate cookware, metal-lid corrosion, use of iodized salt (use only pickling salt), too many or poor spices, and hard water.**
9. **Shriveled and tough pickles are often traceable to overcooking, too heavy a syrup, too-strong brine, unfresh fruits or diseased fruits, or fruits that have been cooked too harshly in brine or sugar syrup.**
10. **Cloudy jelly can be caused by insufficiently strained juice, use of overly green fruit, or allowing the jelly to sit for too long prior to being packed into jars.**
11. **Crystals in jelly** can be from using too much sugar, cooking too little and too slowly, or cooking for too long. Crystals in grape jelly can be **tartrate crystals** and can be avoided by letting the extracted juice sit in a cool place overnight. Then strain through two thicknesses of damp cheesecloths to remove the crystals.
12. **Jelly or jam can be too soft because the ratio of sugar to fruits or acid is insufficient.** Doubling and tripling recipes can cause soft jelly, as the measure of the surface area is reduced and the amount of evaporation is significantly reduced. Jellies made with no pectin can be cooked down further to affect a set. Other jellies can be cooked down, or some liquid pectin might be added.
13. **Syrupy jelly indicates too little pectin, acid, or sugar.** Sometimes syrupy jelly indicates way too much sugar.
14. **Weeping jelly often occurs with fluctuating storage temperatures.** Too much acid can cause weeping jelly. Jamlady doesn't worry about weeping jelly. Just stir it all back together.
15. **Stiff jelly is definitely a problem and is caused by too much pectin or by cooking the jam down too much.** To try to make the jam usable, thin it with hot water in a saucepan. Use for basting meats or whatever. A resourceful person might put some stiff jelly in their tea instead of sugar (Russian tea).
16. **Tough jelly indicates a mixture that had to be cooked too long to reach jell point because it had too little sugar**.
17. **Mold on jelly indicates an improper seal.** In the old days, people used to scrape the mold off and eat the jelly anyway. Today, it is suggested the product be discarded because of toxins produced by the molds. Molds can also grow on jars of jam that had no mold when they were opened. Some people, with their unsanitary jelly-dispensing habits, contaminate the jam. Don't expose a knife or spoon to the counter, the bread, and the jar of jam, back and forth. Jamlady suggests you use a clean, large tablespoon to take out what jam will be needed with one



scoop and then close the container. If a second dip is needed, use another, clean spoon or knife.

18. **Faded jelly is caused by improper storage or storage for too long a time.** Store canned products in a cool, dark place.
19. **Floating fruit in jam can indicate underripe fruits or fruits that are not properly crushed or not sufficiently cooked.** Jamlady does not see this as a big problem. Stir the jam after opening. To prevent fruit from floating in the jar, you might try lightly shaking the jars of jam as they cool or turning them upside down and back again as they cool and set. Some books recommend stirring the jam for 5 minutes before putting it in the jars, but Jamlady finds that this method makes it more difficult to load the sticky jam into the jars, and it usually increases the evaporation to the point that the jam could actually set up too hard. Using riper fruits is no answer either, because the pectin is then reduced as well.
20. **Cracks in jars can occur when you put hot jam in a jar and place it in cool water.** Any hot product in a jar needs to be placed in water of the same temperature. Even then, if you hermetically seal jars by canning frequently, you will eventually have a jar crack and destroy/lose all of the product. For this reason, really dear product may be best canned in new, smaller jars. If one breaks, you won't have lost as much of your special creation.
21. **Fermented product usually means there probably is a break or leak in the seal somewhere, even though you may not be able to see it.**

HOW REGULAR PECTIN WORKS

Pectin is a fibrous carbohydrate containing entrapped water molecules. Some fruits have more pectin than others. Ripe apples, blackberries, crab apples, red currants, gooseberries, and cranberries all have a lot of pectin—unripe, even more. Citrus fruit, especially the rinds, contain a lot of pectin, as do raspberries and grapes. When the fruits containing pectin are cooked in the presence of acid, the pectin changes its molecular structure and physical properties so that it is less possessive of its water and more attracted to the other pectin molecules.

Sufficient acid is essential for fruits to gel or thicken. *Putting Food By* (Ruth Hertzberg, Beatrice Vaughan, and Janet Greene [New York: Bantam Books, Inc., 1976], 54-55) recommends a comparative taste test for judging the amount of acid in a substance. The tartness of the fruit is compared to 1 teaspoon lemon juice, 3 tablespoons water, and ½ teaspoon sugar. If your juice is not as tart, you need more acid for a gel to form. Jamlady recommends a pH meter or pH papers with testing ranges for 2.0 to 3.0, 3.0 to 4.0, and 4.0 to 5.0 as opposed to a pH paper that covers the entire range. In short, this will require 3 different sets of pH papers, which are relatively inexpensive. Jamlady believes any serious canner who is creating his or her own recipes should invest in a pH meter and use it.

When sugar is heated in the presence of an acid, it breaks down into simple sugars glucose and fructose. These sugars accept the water molecules from the pectin chains. The pectins then bind to one another, forming a web of pectin and a jell is formed. This jell

web holds the fruits together. The amount of pectin in a fruit juice correlates to the viscosity of the fruit juice. The relative viscosity of a fruit juice can be measured with a viscometer, jelmeter (if you can find one), or homemade viscometer. (See Science-Projects.com for how to make one for seventy-five cents.) LM pectin works differently and does not need added sugar for the chemical reactions or jelling process to take place.

HOW DID THEY SEAL JARS IN 1899?

Before jars were sealed with glass lids, "rubbers," or metal lids with rubber seals, other methods were used.

> "For small families it is advisable to put the fruits into pint jars. If jellies are put into tumblers, fit a round piece of paper dipped in brandy over the jelly, then cut another piece of half an inch larger than the top of the tumbler, dip it in unbeaten white of egg and paste it over the tumbler; this will make it air-tight and will protect the jelly from molding. Another way is to pour melted white wax over the jelly, then put on a tight-fitting cover or paste paper over. The wax may be washed and laid aside when the jelly is served and used again. Still better way is to dissolve one tablespoonful of salicylic acid in half a cup of alcohol, dip round pieces of paper in this and fit it neatly over the jelly, then paste another piece of paper dipped in white of egg over the top. But the best and surest way is to put all jellies and marmalades in pint or half-pint glass jars which are perfectly air-tight, as fruit that is not air-tight will either ferment or mold" (Gesine Lemcke, *Preserving and Pickling* [New York: D. Appleton and Company, 1899], 1).
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> **"Covering for Preserves**. — White paper, cut to a suitable size, dipped in brandy, and put over the preserves when cold, and then a double paper tied over the top. All preserves should stand a night before they are covered. Instead of brandy, the white of eggs may be used to glaze the paper covering; the paper may be pasted round the edge of the pot, instead of tied—it will exclude the air better; and may be pasted and tied too" (Mrs. M. E. Peterson, *Peterson's Preserving, Pickling & Canning—Fruit Manual* [Philadelphia: G. Peterson and Company, 1869], 52).

Lemcke further states:

> **"How to put Fruit into Jars.** — A good way to put hot fruits into jars without cracking is to dip a towel into cold water, wring it out half dry, fold double and lay it on the kitchen table. Have the jars clean and dry, set them on the wet towel, put a new rubber on each one, set the preserving kettle with the hot fruit near the jars and fill them to **overflowing.** As soon as one is filled put on cover (close tightly) and set the jar upside-down till cold. When all are filled wipe them off with a damp towel, examine each one if perfectly air-tight, put them in a cool, dry place; two days later examine again and see if air-tight. Sometimes it is difficult to get the jars tight. One or two extra rubbers put on will in most cases remedy the fault" (Gesine Lemcke, *Preserving and Pickling* [New York: D. Appleton and Company, 1899], 2).

Lemcke discusses the rolling-water-bath method, although she does not call it by name.

> **"How to can Fruit and Vegetables.** — The best way for canning fruit and vegetables is to have a canner, and if not handy a boiler will have to answer the purpose,

which is filled half full of water and placed on the side of the stove. Some put two or three layers of paper in the bottom of the kettle and lay something heavy on it to keep it in position; and others put hay or straw in. When the jars have been filled with fruit and sirup, they should be closed tightly, each wrapped separately in a towel, hay or straw, and placed in the kettle; the jars should be at least two inches under the water, and if bottles are boiled the water should reach one inch below the cork. The kettle is then placed over the fire to boil. The time for boiling depends entirely on the fruit. Peaches should boil from 20 to 30 minutes; apricots, 20 minutes; pineapple, 45 minutes; berries of all kinds, 5 minutes; cherries 5 to 10 minutes; and quince about 25 minutes. When the time for boiling is up, the jars should be removed and set upside down till cold. Care should be taken to put the jars when first taken from the water bath on a dry board or towel, and not on a wet table, for the least drop of cold water will crack the jars. In case the jars should not be quite full when taken from the bath, have ready some hot sirup, open the jars one at a time and quickly fill with the sirup, close at once. As soon as the jars are cold wipe them clean, examine each one if air- tight, and set in cool dry place" (Gesine Lemcke, *Preserving and Pickling* [New York: D. Appleton and Company, 1899], 2-3)

Any food historian can readily see that the canning concept is only partly understood by Lemcke, as she recommends the jars be filled to the very top, "overflowing." Through the overfilling of the jars, the rate of nonsealing jars and expiring jars increases. Present-day canning jars have a fill line, indicated by the protruding glass ridge approximately ¾" from the top of the jar, allowing for a proper vacuum to be achieved.

An 1869 citation in *Peterson's Preserving, Pickling & Canning Fruit Manual* suggests sealing-wax for fruit cans.

> **"Sealing-Wax for Fruit Cans** — Take rosin, eight ounces; gum shellac, two ounces; bees'- wax, one-half ounce, and if you desire it colored, English vermilion, one and a half ounce. Melt the rosin, and stir in the vermilion, if used. Then add the shellac slowly, and afterwards the bees'-wax. This will make quite a quantity, and needs only to be melted to be ready at anytime."

Peterson also gives a recipe for cement for jars.

> **"To Make Cement for Jars. Common.** — Take one-third bees'-wax and two-thirds rosin, according to the quantity of cement required. Pound the rosin fine, and put it with the wax to melt in any old vessel fit for the purpose. When it is melted, take it off the fire, and add powdered brick-dust, till it is as thick as melted sealing-wax. Then dip the bottle necks into the cement, and in a few minutes, the mixture will be dry" (Peterson, *Preserving, Pickling & Canning* [1869], 52).

As you can see, the history of canning is only about two hundred years old, yet many of the products canned now were still made prior to 1810. Many pickles, such as mango pickles, were kept in vinegar and lasted up to two years. Heavily salted, spiced, pickled, or dried foods, sugared syrups, or brandied fruits and fermented products were also quite common, as were minced-meat formulations. As the concept of vacuum-sealing and seal integrity was better understood, canning evolved to sealing glass jars with a metal lid and a rubber seal, the process now used in home canning. Likewise, commercial metal cans are traceable to Napoleon's era,

when the cans were sealed with lead, which subsequently caused lead poisoning in some of Napoleon's soldiers.

TWO SNIPPETS OF INFORMATION

Jamlady just had to include the two last snippets on canning techniques. Both are no longer done for one reason or the other, but Jamlady thought some of you younger people would like to know about them . . . just because lots of people get lots of ideas. Always make sure you check out the safety of any processing method you use before proceeding.

The first method is that of preserving rhubarb or other high-acid fruits in cold water, using a technique known as **cold-water canning.** Jamlady has never done this and has never seen it performed by someone who knew what they were doing but would really like to talk to someone who has practiced the technique successfully or who may still be practicing the technique. Of course, this method is not recognized as safe by the USDA, and Jamlady is not recommending its use, but it is interesting from a historical aspect. Despite the air left in some of the fruit tissues, this process apparently did work so long as the fruits were kept cool. Only high-acid fruits were being "cold-water canned," and the fruits were not expected to be canned for as long as heat-canned products. Fruits most generally canned in this manner were lemons, cranberries, green gooseberries, and rhubarb.

> **"Rhubarb Canned Cold** — Wash and cut rhubarb in ½" pieces. Pack in cans. Place under cold water faucet and let the water run in and out for 20 minutes, filling the cans. Fasten cover on tight. — Mrs. C. H. Woolsey" (*De Ne Paltz Keuken Boek,* [New Paltz, New York: Committee of the Ladies of the Reformed Church, 1923], 59).
>
> **"Canned Rhubarb** — Pare rhubarb and cut into small pieces. Pack in a jar, put under cold water faucet, and let water run 20 minutes, then screw on cover. Rhubarb canning in this way has often been known to keep a year" (*What to Cook and How to Cook It*—a booklet given out by the Kingston Savings Bank, 273 Wall Street, Kingston, New York, n.d. [value on top: 25 cents]).

The last snippet of information came to Jamlady's attention when a professor, Dr. ZoeAnn Holmes of Oregon State University, showed Jamlady a small 4" x 6" booklet entitled *The Romance of Jelly Making and How to Make Jam without Cooking or Boiling Using M.C.P. Jam and Jelly Pectin.* This booklet shows the **M.C.P. Jelly-Making Set and Process** and cites their patent numbers as 2231273 and 2235028. This kit contained a forked holder for holding a jelly bag, an M.C.P. jelly bag, a metal holder, a sample of a pure cellulose tissue, and the little romance book. What the jam maker was to do was to cook 10 sheets of pure cellulose (ordinary, white, unscented, cleansing tissues) in two quarts of water and to beat them up. After a couple of steps of beating, and cooking it with more water, the pulp was ready to put into the jelly bag with the fruit for extraction. Wild, right? This was the method of fruit-juice extraction. The bag was squeezed with the tool provided, and there was no twelve-hour wait for your extracted juice. The company touted their product as providing more juice per extraction: "The Extra Juice you get

with the M. C. P. Jelly Set, more than pays for the Pectin."

> **"IMPORTANT NOTE**—In preparing fruits, the finer you crush them before adding the cellulose pulp, and the more thoroughly you mix this pulp with the crushed fruit, the easier and more completely you can press out the juice (using the method described on pages 4 and 5)" (*The Romance of Jelly Making and How to Make Jam without Cooking or Boiling Using M.C.P. Jam and Jelly Pectin* [Anaheim, California: Mutual Citrus Products, Co., Inc., 1953], 5-6).

Again, Jamlady would love to talk to someone who has actually done this method. She can only assume that it is no longer practiced because (1) no one liked the idea, (2) the formulation of cellulose tissues changed, or (3) the company went out of business. Jamlady's mother, Doris, never heard of the process. Her first utterance upon hearing of the technique was "Disgusting!" Jamlady's Aunt Grace, upon hearing a description of the technique and being asked if she ever used the method, replied, "Never!" So, Jamlady doesn't think too many women liked the idea. Still, Jamlady is curious. Has anyone out there worked for the Mutual Citrus Products Company, Inc., in Anaheim, California, or used an M.C.P. Jelly-Making Kit? If so, Jamlady would like to talk to you.