



# Basic Homebrewing

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**Jim Wearne**

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# Why Brew Beer at Home

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Home brewing can be very satisfying and rewarding. Like most worthwhile occupations, it involves the investment of your time and resources. What makes it worthwhile?

If I may, I'd like to start with a little philosophy.

I feel that it is good for the spirit to master what I call a primitive skill. By "mastering a primitive skill," I mean to become proficient in an art, a craft, or other endeavor that was done in pre-technological times, and was essential for the survival or enrichment of humanity.

There are many such primitive skills. Baking bread from natural ingredients. Sailing. Organic gardening. Weaving. Needlework. Log cabin building. Wilderness camping. Mountain climbing. Skiing. Bow hunting. Orienteering. Knitting. Candle making. The list goes on and on. These ancient disciplines can provide a sense of balance for out otherwise busy, technology-filled dats.

As a science fiction fan, I might put it like this:

*When the pioneers land on planet Q the leaders of the mission will call on the others, one at a time, to state what special skill or gift they can bring to the tribe.*

*I could look them in the eye and say: "I am a brewer," and be confident of a respected place in the society.*

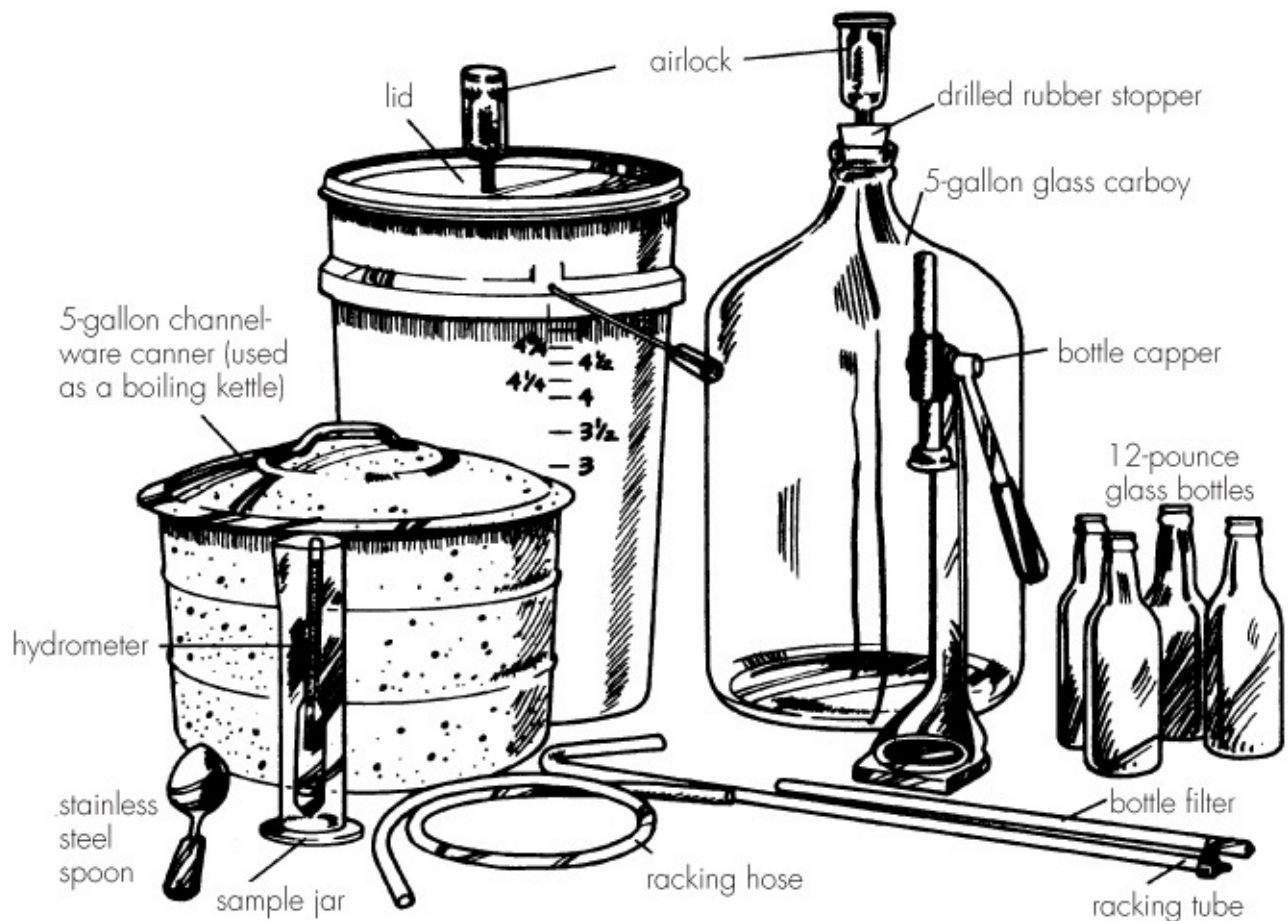
As a brewer you enter a guild that goes back beyond the ancient Egyptians into pre-history. You enter the domain of shamans and priests, a realm that is awe-inspiring and mystical, that is touched by magic and powered by life itself; brewing is a part of what it means to be civilized humans.

Welcome to the guild.

# An Overview of the Process

This book is not intended to be the ultimate or only resource you will ever want for home brewing. By following the steps outlined in this section and detailed in the following sections, you should be able to produce your first two cases of beer. The equipment you purchase in the process may be all the gear you will ever need. This section is intended to give a general understanding of what is involved in brewing beer at home. Please read it thoroughly before moving on to the recipe and procedures.

Many books and magazine articles have been written with beer recipes and alternative techniques for brewing. I hope that you experiment with many of these. You may eventually settle down to one or two favorite recipes, as I have. But there are endless opportunities for experimentation, which can be very rewarding and tasty.



*Basic Homebrewing Equipment*

The first thing to do is to obtain the necessary supplies and equipment. Some pieces of equipment are standard cooking utensils; some are specialized brewing gear. Look for brewing equipment and ingredients at specialty homebrewing suppliers. Thanks to an increasing interest in homebrewing, such suppliers exist in all parts of the country. My main supplier is primarily a shop for people who make their own wine. They have added brewers' supplies and are an excellent source. You can also try restaurant supply houses, hardware stores, natural food shops, mail order, or any of the reference books listed in the back of this bulletin.

Once you have everything you need, look at the calendar.

Homebrewing usually takes three sessions, separated by several days or weeks. The first session is spent cooking and starting the first fermentation. This can take several hours start-to-finish. Your equipment for this stage will include a large cooking pot, a large stainless steel

spoon, and the primary fermenter. Your principal supplies will be water, malt concentrate, hops, yeast, and water-conditioning minerals. You will cook the hops, malt concentrate, and 1 gallon of water in the pot. This mixture will be gently poured into the primary fermenter — a special kind of plastic bucket — into which you have already poured 4 gallons of water. You will add to this the prepared yeast and seal the fermenter. The mixture at this point is referred to as “wort.” A fermentation period of a day or two follows, during which you do almost nothing at all.

Following the first fermentation, a second fermentation is started, which involves siphoning. If you don’t know how to siphon, learn and practice a bit with water rather than wort. During the first fermentation, the yeast has eaten most of the sugar in the wort and produced alcohol and carbon dioxide. The carbon dioxide has been allowed to escape. The alcohol is now part of the wort. At this point, the wort is transferred from the primary fermenter to the secondary fermenter. The best vessel for this second fermentation is called a “carboy” and is essentially a huge bottle.

You will siphon the wort from the primary fermenter into the carboy, being careful to leave behind the sediment that has built up in the primary fermenter. This sediment is a natural by-product of fermentation, and is tasteless and harmless. Its presence, however, will make the beer appear cloudy, so the less of it you have, the better. Once the wort is in the carboy, the secondary fermentation has begun.

The second fermentation may take several weeks. During this time, once again, you do nothing at all. In fact, it is important at this point to leave well enough alone and let the yeast finish its work. When bubbles have just about stopped rising to the top of the carboy, you will siphon the wort back into the cleaned primary fermenter and begin bottling.

The third session is for bottling. Bottling is definitely the most work, and can get a bit tedious. A helper or at least a radio to listen to will help. You will siphon the beer, with the addition of a small amount of sugar to help with the carbonation, into prepared bottles. Cap the bottles immediately. **Do not use twist-off cap bottles.**

After the beer is bottled, let it be for a while. In the bottle, the remaining yeast will use the small amount of sugar added during bottling to create more carbon dioxide. Since this gas cannot escape, it remains in solution until the bottle cap is removed. This, of course, is what makes the beer bubble. After six weeks in the bottle, it’s time to taste. The taste and character will improve even more after several additional weeks, but the first tasting will let you know how well you have brewed.

Now, that you have an overview, let’s get started!

# Equipment and Supplies

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This section will specify and describe the hardware and ingredients you will need to get started. The equipment will last through many batches of beer, and very little will ever have to be replaced, given care and proper cleaning. The supplies (the ingredients, bottle caps, etc.) are specified in quantities that should last through your first batch of two cases.

Get all of your equipment, supplies and ingredients together before starting. Once the process gets rolling, it takes on a schedule of its own and can't be put on pause while a missing ingredient is found or piece of equipment is ordered.

## ***Kitchen Equipment***

Likely you already have most of the items described below.

**Stockpot.** A 12- to 20-quart stockpot. This should not be made of aluminum. Stainless steel is recommended.

**Spoon.** A large stainless steel spoon with a handle at least a foot long.

**Funnel.** A kitchen funnel. The nozzle should fit inside the neck of a beer bottle.

**Measuring Equipment.** A 1-cup measure and standard teaspoon and tablespoon measuring spoons.

**Mason Jar.** A 1-quart mason jar.

**Saucepan.** A small saucepan.

## ***Brewing Equipment***

These items will be found at a brewing equipment supplier.

**Primary Fermenter.** This is essentially a large plastic bucket. It holds about 7½ gallons, and is made of a special food-grade plastic. The lid will snap completely over the rim to seal it. The lid has a small (about ½ inch in diameter) hole in the top to accommodate the fermentation lock.

**Fermentation Lock.** This is a plastic device that will allow the carbon dioxide to escape during fermentation, but will not let any other air into the fermenter. This is accomplished by filling the lock about half-way with water, inserting the tube coming out of the bottom of the lock into a rubber cork with a hole through it, and putting the cork and lock firmly into the hole in the fermenter lid. The carbon dioxide then bubbles out through the water, which prevents any air from getting back into the fermenter. The bubbling sound this makes will serve as a reassurance — once fermentation has begun — that all is proceeding normally.

**Carboy.** This item is essentially a 5-gallon bottle. The important thing is that it comes up to a neck at the top. During the second fermentation, it is important to minimize the surface area of the wort.

**A Second Fermentation Lock.** This must have a rubber cork that will fit the mouth of the carboy.

**A Siphoning Tube.** Used to transfer liquid from one container to another, this thin, clear plastic hose which is about 6 feet long, connects to a rigid plastic tube about 2 feet long. Attached to the hose is a clamp that squeezes the hose to stop the flow of the siphon. At the end of the tube is a cap that allows fluid to flow into the tube, but causes that flow to begin about ¼ to ½ inch from the end of the tube, so as to leave sediments behind when siphoning out of the fermenters. (It will make sense when you see it.)

**A Heat-Resistant Mesh Bag.** Used to add certain malt flavorings to the wort as it cooks, this is commonly referred to as the grain bag.

**Two Cases (48 or more) of Beer Bottles.** These need not be brand-new bottles, as long as they are whole, without chipped rims, and are cleaned and prepared properly. They can be either brown or green, long neck or short neck. They must **not** be twist-off cap bottles. Twist-offs will not work properly with the caps and capper you will use.

**50 New Crown Bottle Caps (at least).**

**Capper.** You have a choice of a bench-style or a hand-held capper. I recommend the bench-style; it provides better leverage for the pressure needed to properly seal the caps onto the bottles. It looks somewhat like a small drill-press.

**Two brushes.** One to clean the bottles, and one to clean the carboy. These are essentially normal bottle brushes, but the carboy brush has a much longer handle.

**Solution of Chlorine Sterilizer.** Most brewing equipment supply stores sell a powdered concentrate. However, you can use household bleach in a solution of ½ teaspoon bleach to 5 gallons of water. In either case, after an item is sterilized in the solution, it should be rinsed three times thoroughly in clear water. All items coming into contact with the wort must be clean and sterilized. **Plastic items must not be soaked with the sterilizing solution.**

**Optional Items.** Labels, a bottle washing device, an automatic bottle filler, and a carboy handle, are useful, but not essential.

## ***Brewing Ingredients***

The ingredients needed are quite simple:

**Water.** You will need 5 gallons of water. For best results, do not use tap water. In some areas, the tap water, if not softened, has the right sort of mineral content to make good beer, but it takes a lot of testing to determine if this is so. I recommend using Hinkley and Schmidt drinking water or a low-lime equivalent to which you have added a mineral mixture called Burton Water Salts.

**Malt Concentrate.** You will use 2 cans (3.3 to 4 pounds each) of malt concentrate. I suggest an amber concentrate for your first batch. Dark and light are also available.

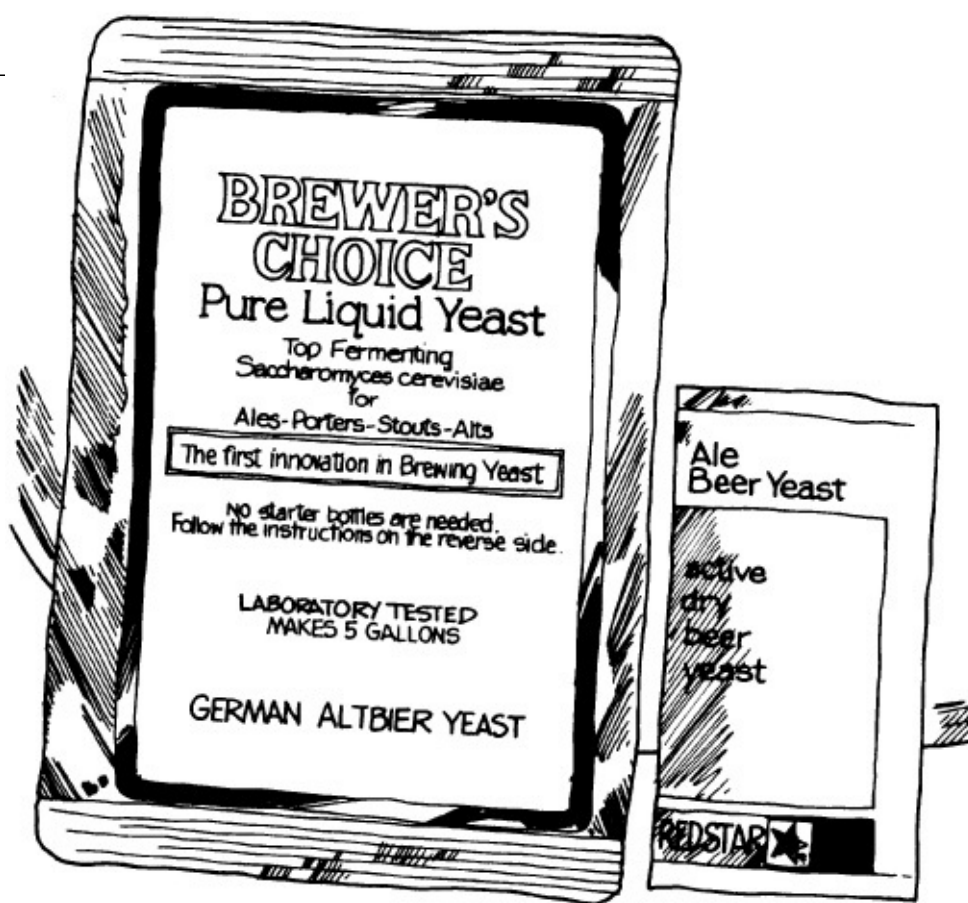
Malt concentrate is a molasses-like syrup that is made by dissolving the sugar from malted barley and removing much of the water. All of the natural sugar you need for the primary and secondary fermentation is contained in this malt concentrate.

**Hops.** You will add 1½ to 3 ounces of hop pellets to the wort during cooking. The amount depends on how bitter you like your beer. Hops is an herb, and serves the purpose of flavoring the beer. Without it, the beer would be bland and sweet.

**Yeast.** The brewer's yeast you will use usually comes in packets that are the right amount for one batch. You will be instructed later how to prepare the yeast for addition to the wort in the primary fermenter.

**Crystal Malt.** This is barley that has been malted and dried or toasted and packed as whole grain. During cooking, you will put about ½ pound of this into the heat-resistant mesh bag, tie it shut, and leave it in the cooking wort. This imparts a mellow flavor to the beer. Crystal malt is available in several varieties — the darker the stronger.





*A Couple of Common Yeasts*

**Corn Sugar.** A small amount of corn sugar will be needed to add at the time of bottling. This provides just enough food for the remaining yeast to consume after bottling to produce carbonation.

Don't despair if it seems like a lot of complicated hassle to assemble all of this stuff. A friendly person at a brewing supply store or a mail-order catalog will give you all the help you need. Remember that there are a lot more things you can buy for home brewing than are presented here. We're dealing with the essentials. Save the extras for later.

# Basic Recipe

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There are many recipes for homebrew. This basic recipe is intended to produce a lager that will please most palates.

## Recipe Ingredients

5 gallons low-lime drinking water  
2 cans (3.3 to 4 pounds each) unhopped amber malt concentrate  
1½ to 3 ounces hop pellets  
1 packet Burton water salts  
½ to 1 pound crystal malt  
1 packet lager yeast  
½ cup corn sugar

Using this recipe according to the following instructions, you should produce approximately 48 bottles of a medium-body amber beer.

In future batches, you can experiment with other kinds of malt concentrates, different varieties of hops, different yeasts, other varieties of crystal malt, and many variations of the ingredients and techniques. This experimentation is one of the things that gives one a sustaining interest in brewing.

I like to vary the recipe with the seasons. Amber autumn ale. Strong Christmas ale. Golden spring lager. Light summer lager.

Some brewers try alternative flavorings such as berries, herbs or even hot peppers. The possibilities are endless. Have fun with them!

# Preparation

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Thorough preparations is essential to the success of any homebrewing effort — it cannot be overstressed. Preparation includes the cleanliness and sterilization of all your equipment, as well as the procurement of all necessary supplies before beginning. Equally important is the allocation of time for each step.

At this point, you should have all of the items listed in the previous chapters. You should also have a sufficient amount of time scheduled to do the first process — cooking and first fermentation.

The items you will use immediate are:

- Stockpot
- Long-handled spoon
- Grain bag
- Mason jar
- Primary fermenter with fermentation lock
- Ingredients (four of the five gallons of water should be chilled)

Other items such as the bottles and the carboy should be washed and stored in a clean area.

Now you're ready to begin.

1. Prepare the chlorine sterilizing solution according to package instructions. If the solution mix is not available, use a bleach solution as described on pages 8–9.
2. Wash the stockpot and the spoon. These need not be sterilized, as they will be in contact only with the boiling wort.
3. Wash and sterilize the mason jar and a piece of aluminum foil large enough to cover the mouth of the jar. Let the jar drain dry by placing it upside-down on clean paper towels.
4. Wash and sterilize the primary fermenter, its lid, and the fermentation lock. Remember that anything that will come into contact with the wort must be sterilized, and all sterilized items must be rinsed thoroughly in clear tap water three times.



*Rinsing the Carboy*

So, now you have the ingredients handy. The stockpot is on the stove. The spoon is at the ready. ~~The grain bag is nearby. The mason jar is sterilized and sitting upside down on some paper towels on the counter. The fermenter, the lid, and the fermentation lock are sterilized and draining. The carboy, bottles and all other equipment and supplies are present and clean.~~

Put on some music. Make sure you have several hours of uninterrupted time. Take a deep breath. Make some beer.

# Cooking Through First Fermentation

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The first step of the cooking process is quite simple: boil water. Four of the five gallons of brewing water are chilling. Pour the fifth one into the stockpot. But before you turn on the heat, there are a couple of things that you need to do.

1. Double check that you have all of your ingredients and equipment for this step completely ready as described in the previous sections.
2. Next, prepare the yeast. It would be possible to simply sprinkle the powdered yeast onto the top of the wort once it is in the fermenter just prior to sealing, but you get much better results with a little preparation.
3. In a small saucepan, measure  $2\frac{1}{4}$  cups of brewing water. Heat it to steaming. Add 1 tablespoon of malt extract, and one level tablespoon of corn sugar. Stir until these are dissolved, increase the heat and simmer for 10 minutes. Let cool until tepid.
4. Pour this mixture into the sterilized mason jar. Add the powdered yeast and gently swirl the jar to mix. Cover the jar with sterilized aluminum foil and set aside.
5. When the mixture in the jar begins to ferment (i.e. creates a foamy mass), turn on the heat to high under the water in the stockpot.
6. As the water in the stockpot heats, measure the crystal malt into the grain bag, tie off the bag to prevent spillage, and lower the bag into the water in the stockpot. The crystal malt will begin to flavor the water and start to prepare the grain for cooking.
7. When the brewing water is steaming, but not quite boiling, remove the stockpot from the heat, and set the grain bag aside temporarily into a clean container.
8. To the hot water add two cans of malt extract. Stir with the spoon until the extract is dissolved. Add the Burton salts and stir until dissolved.
9. Return the stockpot to high heat. Put the grain bag back into the hot water. Stir frequently, but gently.
10. At this point, pour the four gallons of chilled brewing water into the primary fermenter. Pour them vigorously to aerate the water. Put the cover onto the fermenter.
11. Once the mixture in the stockpot has reheated almost to boiling, remove the pot from heat, and transfer the grain bag from the stockpot to the primary fermenter. This will begin to flavor the water in the fermenter.
12. Stir the grain bag and the water briefly, then replace the lid. Add the hop pellets to the hot water in the stockpot and stir. Return the pot to high heat. Stirring frequently.

## Read This Paragraph Carefully!

At this point, now that all of the ingredients have been added to the stockpot and the grain bag has been removed, you will bring the mixture to a boil.

As the mixture approaches boiling, a froth will form on the surface. When it reaches the boiling point, it will quite vigorously foam to as much as twice its normal volume.

This is the reason for using such a large pot for what seems to be such a relatively small amount of liquid. I cannot overstate the importance of using a large enough pot.

The first time I made beer, I thought a pot just big enough to hold the liquid was large

enough. When foam-up occurred, my stove top was covered, as if with molten lava, with a terribly hot, sweet, wet foam. Not only was this terribly messy and difficult to clean up, but—potentially dangerous in that sugar can burn.

Fortunately no permanent harm was done, except to my self-esteem. But the hot foam can scald you badly on contact, and if it makes contact with the gas or electric burner, it can ignite. So be sure to use a big enough pot, and be alert during foam-up for any danger of overflow.

After foam-up occurs, the froth will die down, and the liquid will maintain a rolling boil. Stir occasionally during this time. Let it boil about 20 minutes from foam-up.

After 20 minutes of boiling, remove the pot from heat. It is now necessary to let the mixture cool in the pot until the placing the pot into a sink full of cold water, being careful not to let any of the sink water get into the pot. As the mixture is cooling, remove the grain bag from the fermenter and discard the grain. Clean the grain bag immediately in warm water. It can be reused almost indefinitely.

When the mixture in the pot has cooled so that the outside of the pot feels cool, dry off the outside of the pot, remove the cover of the fermenter, and pour the mixture from the pot into the water in the fermenter. The mixture should not be stone cold, but if it is too warm the heat will kill the yeast preparation. Stir the contents (now called the wort) of the fermenter to mix well.

Now return to the mason jar. By this time, the yeast preparation should be well into active fermentation. Swirl the jar gently and carefully pour the yeast mixture into the wort. Cover the fermenter. Put the fermentation lock in place, following its directions for proper use.

### **Air is the Enemy!**

A few words of advice: remember that air is the enemy. Once the wort is in the fermenter, a very delicate process is taking place. Living yeast is consuming sugar and producing alcohol and carbon dioxide. The environment you are creating in the fermenter is the perfect sort of place for this to happen. It is vital to keep aeration of the fermenting wort to a minimum. Whenever you move, siphon, skim, stir or otherwise disturb the process (as you sometimes must) take care to do it in a way that causes the least agitation. Fermenting beer is a living thing. Nurture it.

Place the fermenter in a darkened location (or cover it loosely with a dark trash bag) in a spot that maintains a fairly constant temperature of about 65 to 70°F. After several hours, a greenish brown foam will begin to form on top of the wort. This may be skimmed off once with a sterile spoon to improve the mellowness of the flavor.

The time that the wort will spend in the fermenter in its primary fermentation will depend largely on the ambient temperature and on other conditions such as the initial water temperature, the type of yeast used and such. After as little as two days, or as many as seven (rarely more), the foam head on top of the wort will collapse, and the top of the wort will be quite visible.

Please resist the temptation to lift the lid and examine the wort too often. Any opening of the lid invites the invasion of unwanted microorganisms that can spoil the beer. The bubbling of outgoing carbon dioxide through the fermentation lock will let you know that things are progressing well.

When the foam head is mostly gone, it is time to siphon the wort into the glass carboy.

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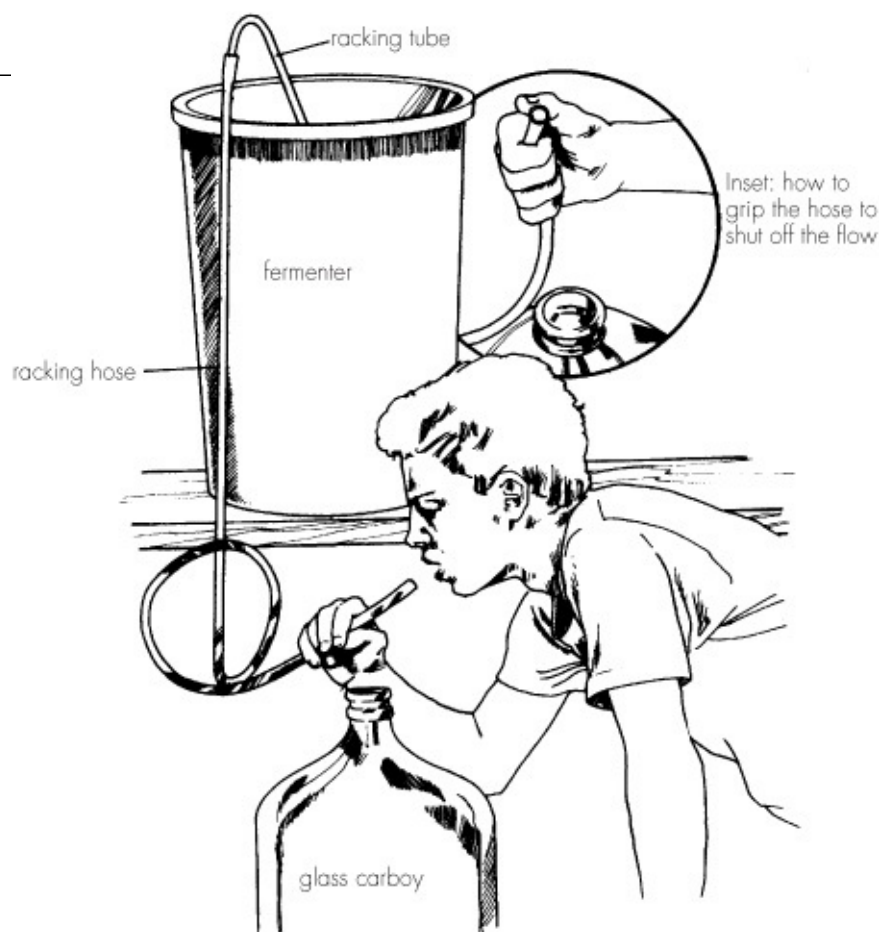
## Second Fermentation

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The second fermentation will take longer than the first, and will complete the principal production of alcohol in the wort. It will also contribute much of the flavor and character to the beer. Even though the steps to accomplish the second fermentation are very simple, care must be taken in that it would be very easy to spoil the wort at this point, and get a less-than-satisfactory end product.

1. Prepare the secondary fermenter (carboy). Wash it thoroughly, sterilize it with the chlorine solution and rinse it thoroughly with clear water three times. Also wash, sterilize and rinse the carboy's fermentation lock and cork.
2. In this step, you will use the tube to transfer the wort between fermenters. Wash and sterilize the tube inside and out. Rinse three times with water. Make sure the hose clamp is attached to the flexible hose section, and can completely stop the flow through the tube. The clamp should be placed far enough up the hose to allow the end of the hose to reach the bottom of the carboy. At the end of the rigid tube, fit the sterilized and rinsed cap over the mouth. This is the cap that will cause the inflow into the tube to start about  $\frac{1}{2}$  inch above the end of the tube.
3. Place the carboy on a surface lower than the primary fermenter. If you have to move the primary fermenter, handle it gently, avoiding agitating the wort inside. Placing the primary fermenter on a table or counter and the carboy on the floor works well.
4. When the fermenter and carboy are in place, unseal the lid of the primary fermenter. Do not remove it entirely. Shift it only enough so that the rigid tube with the cap on the end will fit down to the bottom of the fermenter, slightly away from the edge. Do not insert the tube yet.
5. Position yourself and the tube so that you can comfortably hold the tube end steady in the primary fermenter with one hand, and hold the hose end in the carboy with the other. You will need to maintain this position for several minutes, so be sure you can do it without strain.
6. Once you are set, very gently inset the rigid tube with the cap in place into the wort in the primary fermenter all the way to the bottom. Place it so that it is not up against the side of the fermenter, but a couple of inches toward the center. Go slowly so as not to disturb the sediment at the bottom of the fermenter.





### *Starting the Siphon*

7. Once the tube is in place, avoid any motion of the tube in the fermenter, as this tends to stir up the sediment, and it will be sucked into the hose. If an assistant is available, it makes it easier if he or she can be employed to hold the tube steady in the fermenter. To do this operation all by yourself requires good coordination. It can be done, however.
8. You will readily see at this point that the purpose of the cap over the tube end is to keep the inflow of the wort into the tube just above the level of the sediment. Remember this sediment is harmless and tasteless, but will make the beer appear cloudy.
9. Begin to siphon the wort out of the fermenter. In the past brewers started the suction orally. I know that this seems to contradict all of my cautions about sterilization, but I have had no bad results from it. There are now some devices on the market that allow you to start the siphon without putting the hose in your mouth and sucking.
10. As soon as the siphon has started, let a little of the wort spill out into a bowl or pan, then clamp the hose off to stop the flow. Once the flow is stopped, sterilize and rinse the end of the hose where your mouth touched. Insert the hose into the carboy, with the end of the tube at the bottom of the carboy. Release the clamp and let the flow resume.
1. It will take several minutes for the wort to flow from the fermenter into the carboy. During this time the tube in the fermenter should be held as steady as possible, and the flow of the wort into the carboy should not produce bubbles or agitation. Channeling the wort against the side of the carboy is one way to minimize bubbles and agitation.
2. As the level of wort in the fermenter reaches the bottom, you will hear sucking noises from the inflow of the tube. At this point, stop the siphon and remove the tube from the fermenter and the carboy.
3. If the level of the wort is not up into the neck of the carboy, add a little brewing water so that the

fluid level rises to present the minimum surface area. The top of the wort should, however, be at least an inch or so below the lip of the carboy, so that the cork does not touch the wort. Insert the cork and fermentation lock into the top of the carboy right away, just as you did with the fermenter.

4. Place the carboy where it will have a steady temperature of 65° to 70°F and minimum light exposure, just as you did with the fermenter. A dark trash bag is handy for this step.
5. It is important at this point to disturb the process as little as possible, so leave well enough alone and simply listen for the bubbles through the fermentation lock. These will be less frequent than during the first fermentation, but they will come.
6. As soon as the fermenter is empty, discard the sediment, and thoroughly wash the fermenter and the hose. These need not be sterilized at this time, but must be kept very clean. They will be used again before you are done.
7. This second fermentation will take longer than the first. The fermentation itself will take anywhere from two to six weeks. It is complete when the rate of bubbles rising to the top of the wort has almost completely stopped, and a 1/8-inch wide ring of bubbles has formed at the surface. You should wait at least one week after this point to let the sediment settle, and you may wait an additional week to suit your convenience.
8. During this time, make sure you have all of your bottling supplies and equipment ready. I recommend that you thoroughly wash the bottles well in advance, so they are ready to be sterilized and rinsed right before bottling.

The next step is to bottle the beer (it is beer now, not wort any longer). Be sure to set enough time aside and, if possible, get an assistant.

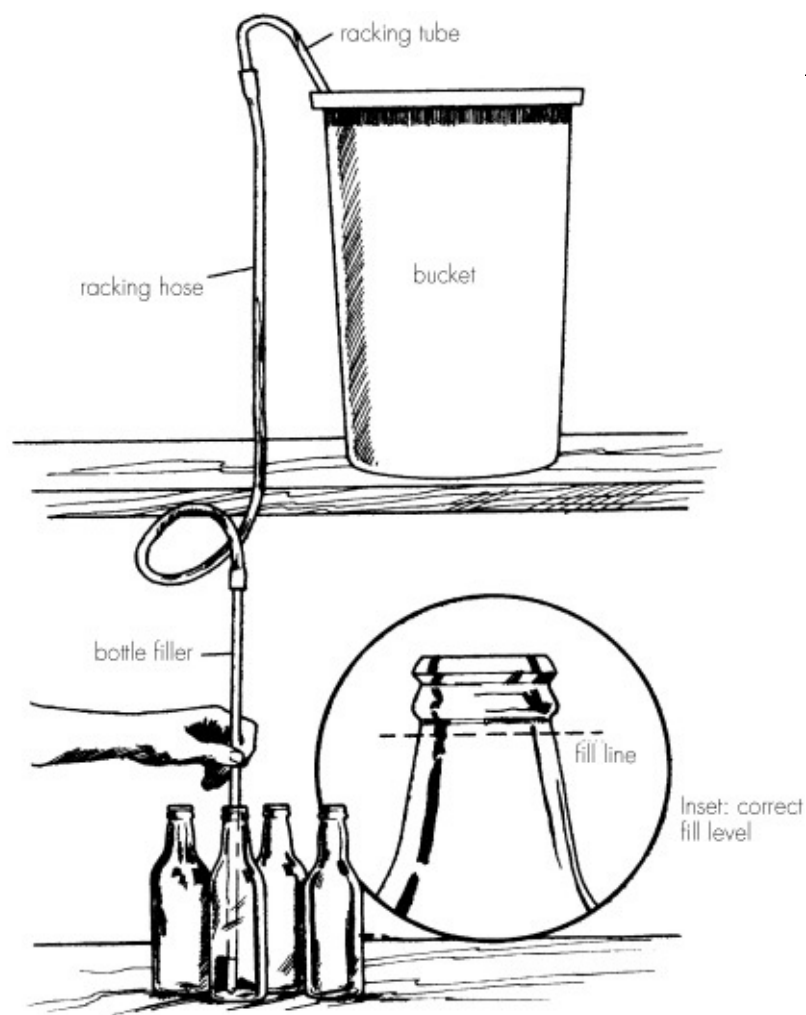
# Bottling and Storage

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I won't kid you. Bottling your beer is boring and tedious. There's very little that can be done about it, however. The beer has to get into the bottles somehow, and you've got to do it. **Be sure to read this section through entirely before starting any of the following procedures.**

The beer in the carboy has finished fermenting. The remaining live yeast have no more sugar to process. It's time to bottle.

1. If you haven't already, thoroughly wash the bottles, and make sure that the other supplies and ingredients are ready. Have the corn sugar at hand, the primary fermenter clean, the bottle caps ready, and the siphon, hose and clamp clean. Also, make sure the bottle capper has been adjusted to the proper setting to get the caps properly crimped onto the bottles (practice on some empties).
2. Now, sterilize and rinse three times everything that will come into contact with the beer: the primary fermenter, the siphon hose, the stainless steel spoon, the bottle caps, and don't forget the bottles.
3. Once the bottles are sterilized place them upside-down into the case crates that they came in, first lining the bottom of the crate with several layers of paper towel. This allows the bottles to drain, and prevents anything from getting into them.
4. In a small saucepan, heat 1 cup of water. When it is steaming, add  $\frac{1}{2}$  cup of corn sugar. Dissolve and bring the mixture to a boil, stirring frequently. At boiling, remove from heat, cover the pan, and let it cool.
5. Using the siphoning techniques described in the previous section, siphon the beer out of the carboy back into the primary fermenter. You will again use the cap on the end of the rigid tube which goes into the carboy, allowing the beer to be sucked out while leaving the sediment behind. Try to allow as little aeration of the beer as possible.
6. When siphoning is complete, gently pour the cool sugar solution into the beer. Slowly and without agitation stir to mix thoroughly.
7. Place the fermenter full of beer on a surface above where the bottles will rest as they fill. The process of bottling will involve some spillage, so choose your location carefully. The surface on which the bottles will be filled should be very thoroughly cleaned.



*Filling the Bottles with Primed Beer*

**8. Think through steps 9–13 and plan how to most efficiently and quickly accomplish them given your work area.**

9. Remove the cap from the end of the tube and place the end of the tube into the beer. You are no longer concerned about leaving sediment behind, and want to suck up every possible drop.

10. Start the siphon and clamp off the hose. Wipe off the end of the hose.

11. Put a bottle into position and place the end of the hose down to the bottom of the bottle. Release the clamp and let the beer run into the bottle until it reaches the mouth of the bottle. Clamp off the hose and remove it from the bottle. When you remove the hose, the level of the beer in the bottle will drop down to the appropriate height.

12. Place a bottle cap over the mouth of the bottle and position it in the capper as you practiced. Press down on the handle of the capper until the cap is firmly sealed on the bottle. Set the full bottle aside.

13. Repeat 47 times! Forty-eight times if you're following instructions properly, and you read this section before you actually started bottling.

I would suggest practicing the whole bottling procedure with water in the fermenter before you actually attempt to bottle beer. It can be a bit tricky, and it would be a great shame to mess up at this point. You *can* do it right. Just remember, keep it very clean, allow enough time, get help if possible — and put on some music.

14. Immediately after the bottles are full, thoroughly wash all of the equipment you have used, and store it in a clean, dry place. You will get years of use out of most of the gear if properly

maintained.

5. Once the beer is bottled, it should be stored for six weeks before tasting.

When the full bottles are dry, place them upright into the case crates. Put the crates in a cool, dark place.

6. After about a week in the bottle, the beer should be twisted. By this I mean that you should open the crates, grasp the cap of each bottle, lift it slightly and thump it gently but firmly against the bottom of the crate while giving the bottle a half twist. The thump will dislodge any sediments that have formed on the sides of the bottle, and the twist will make them fall to the bottom of the bottle. After you have twisted all of the bottles, put the beer away again. It is not ready for tasting yet.

7. During this storage period, the little remaining yeast is processing the corn sugar you added at bottling and producing a little more alcohol and carbon dioxide. The purpose, of course, is to carbonate the beer so that it will bubble when you open it. The carbon dioxide produced at this stage, having nowhere to go, stays in solution in the beer until the cap is life, and the pressure is released. Then it foams.

It may happen that, after a couple of weeks of storage, a bottle or two breaks. This may indicate a faulty bottle that couldn't stand the pressure, or it's possible that too much fermentation (carbonation) is happening inside the bottle.

After six weeks, the beer is ready to taste. It will improve even more over time, but it is ready for a first taste now. The next section will tell you how to pour and serve your beer.

### **Too Many Bubbles?**

There are many reasons for a high rate of carbonation: the fermentation temperature may have been too low; there may not have been enough fermentation time; or there may have been too much corn sugar in the bottling process, among other reasons. Mostly what it means to you is that the beer will have too much foam. This usually means that you have to wait a little longer for the foam to die down in the glass before you drink. The beer isn't ruined.

# Serving

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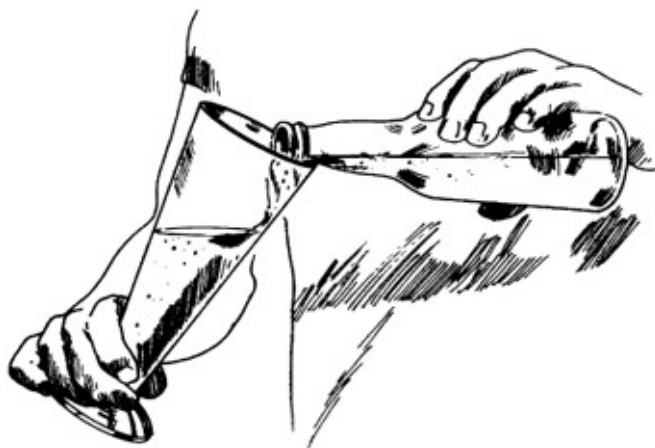
To have the best experience of your home-brewed beer, especially when serving it for the first time, you will want to follow a couple of guidelines. First, I recommend not chilling your beer too much. If you intend your beer to resemble bottled beer of a German or other European sort, naturally you will refrigerate it. Just don't make it too icy cold, or you won't taste it properly.

If you have an English ale flavor in mind, you may not want to refrigerate it at all. If you can store your ale at "cellar temperature," about 55–60°F, you will find that the lack of chill enhances the ale taste. While the stories about the British drinking their beer warm are a vile slander, certainly an English ale should never be iced.

So, you've got a bottle of your homebrew at the proper temperature, and you're ready to drink it. Get yourself a large, clear (uncolored) beer glass or mug. It should be cool (not frosty) and free from any detergent residue, which impedes the head and mars the taste. Open the bottle. You will hear a release of pressure, and may see "steam" rising out of the bottle.

During the time the beer has been in the bottle, it has continued to ferment, which accounts for the head. It also accounts for a small amount of sediment at the bottom of the bottle. Again, this sediment is harmless and tasteless. The only reason to avoid it is that it will make the beer appear cloudy.

To avoid cloudiness in the glass, pour like this: Hold the glass in your left hand if right-handed. (Southpaws, being generally smarter than right-handers, can figure out how to adapt.) Lift the bottle with your right hand. Tilt the glass slightly, and pour the beer gently down the side. ***Pour in one smooth, continuous motion without stopping.*** Continue to pour until you see sediment start to approach the mouth of the bottle. When you see this, stop. You will have about  $\frac{1}{8}$  inch of beer in the bottom of the bottle. Rinse the bottle immediately.



*Tilt Glass and Pour in One Continuous Motion*

If you stop while pouring, and then start pouring again, the sediment will be stirred up and get into the glass, marring the appearance of the beer.

Now you have a glass of home-brewed beer. Before tasting, look at it. Put it in front of a strong, white light to enjoy the clear, amber color, and watch the bubbles rising. I find it a very satisfying bonus to have created something of such visual beauty. The head should be foamy, but not too high. When the head has gone down a bit, taste your beer. It will not taste like store-bought beer. It will be much more robust, complex and satisfying.

If this tasting is the first taste of a 6-week-old beer, the richer, fuller complexities of the hops will not yet have matured. After the first bottle, put the rest away for a couple of months. You'll

be pleased at how much it improves.

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# Here's to You!

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I sincerely hope this book helps you in brewing beer at home. I think you will find it rewarding to continue to brew, experiment, and develop your skills. You may want to find (or perhaps even start) a brewer's club in your area to share recipes and resources.

As you go on, you will discover many more rewards in home-brewing, not the least of which is the awed look on peoples' faces when you tell them, "I brew my own beer."

Cheers!

## Wassail Song

Old English (About 1500)

1. Bring us in no brown bread, for that is made of bran, Nor bring us in no white bread, for therein is no gain: But bring us in good ale, and bring us in good ale: For our blessed Lady's sake, bring us in good ale.
2. Bring us in no beef, for there is many bones, But bring us in good ale, for that go'th down at once: And bring us in good ale, and bring us in good ale: For our blessed Lady's sake, bring us in good ale.
3. Bring us in no bacon, for that is passing fat, But bring us in good ale, and give us enough of that: And bring us in good ale, and bring us in good ale: For our blessed Lady's sake, bring us in good ale.
4. Bring us in no mutton, for that is often lean, Nor bring us in no tripes, for they be seldom clean: But bring us in good ale, and bring us in good ale: For our blessed Lady's sake, bring us in good ale.
5. Bring us in no eggs, for there are many shells, But bring us in good ale, and give us nothing else: And bring us in good ale, and bring us in good ale: For our blessed Lady's sake, bring us in good ale.



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