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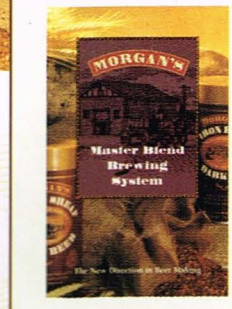
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BRING HOME THE GOLD

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World's Best Beer

Funny thing about Old Man, the bock known to me and a select few others as The Best Beer I Ever Brewed. It didn't really taste that great when we first opened it.

I mean, it was okay. Balanced, nice sweetness, a bit of a wallop. But it didn't knock you over dead or make you padlock the refrigerator so no one would steal it. It was a nice beer, but by no means great.

Better was the pilsner I brewed a short time later that a friend dubbed Marilyn Monroe—great body, long legs, a little spicy. In fact although Marilyn came along later, it went down a lot faster. While I love bock, so many occasions suddenly seemed more appropriate for lager.

Right around this time, we were planning a trip to Yosemite National Park. The goal was to climb Half Dome, the famous table-top peak at the end of Yosemite Valley. We weren't going to climb the sheer face, the kind of thing expert mountain climbers do with ropes and pitons. We were heading up the back side, like the mere mortals do.

It's an all-day hike, 17 miles round trip. Five thousand feet straight up, and 5,000 feet down again. We knew we'd be tired at the end, but it would be worth the view from the top: Green valley surrounded by towering cliffs. Mountains that seem to go on forever. There's even a ledge where you can crawl out on your stomach and look straight down the face. Sometimes you look into the eyes of the mountain climbers coming up the hard way.

While we were packing, I threw in the last four bottles of Marilyn to celebrate our arrival back down on the valley floor. There would be three of us making the trip: my wife Heidi, my 22-year-old nephew Paul, and me. We started out at 8 a.m. Our goal was to return by 6 p.m.

There are two trails at the bottom that converge halfway up the mountain. The first is longer and easier with a lot of switchbacks. The second is shorter and more strenuous, with dozens of rock stairs to climb. We were feeling good, so we chose the short way.

The first sign of trouble came early. Heidi and I would climb several steps, then rest a second to catch our breath. Paul, meanwhile, was literally bounding up the steps. Sometimes he would actually run. We warned him that it was a long climb, and he would soon tire. He continued to bound.

After a couple of hours we reached the spot where the two trails come together. We stopped, rested, and ate. Then we hit a long trail that climbed, with lots of switchbacks, most of the rest of the way. Paul just couldn't go slow enough to stay with us. He'd zoom ahead, tailgating other hikers on the narrow path until he passed them. Then he'd stop, smoke a cigarette, and wait for us.

The final climb to the top is a grueling set of stone steps followed by a fairly sheer cliff where you pull yourself along with cables. We were exhausted when we reached the summit. I fell asleep. Paul walked around, took in the view, and chatted with fellow hikers.

The way down was easier, thanks to the force of gravity, but eventually the miles took their toll. Paul sped ahead and beat us down the mountain by more than an hour.

Afterward we pulled out the bottles of Marilyn for the celebration we deserved.

Problem was, I had picked up the wrong bottles. What I had brought was Old Man, which until that moment had been called Mudslide. We opened one up, poured it, and drank it down. And we all agreed, best beer we had ever tasted. No doubt about it.

Craig Bystrynski

BrewYour Own
THE HOW-TO HOMEBREW BEER MAGAZINE

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David Allison
Redwood City, CA

It seems to me that I get invited to a lot more parties since I built my portable beer server. I'm sure everyone is interested in my sparkling personality and not just my American and English pale ales. Right? Right?

The beer service is a homemade jockey box paired with Cornelius kegs. To make the box I used a spigot (a Christmas gift from my wife) that is drilled into a small ice chest. Inside the chest is a cold plate constructed of stainless steel tubing embedded in aluminum block. The beer is pushed through the cold plate and out the spigot using a five-pound CO_2 tank with the regulator set at 15 psi. This makes for an excellent portable serving system that pours beer with a near-perfect head.

I brew 10-gallon batches in a gravity-fed all-grain system, using a single infusion mash. I pitch yeast slurries from Burlingame Station, a local brewpub, and use natural carbonation in Cornelius kegs.

For the system's hot liquor tank I converted a Sanke keg with a stainless steel nipple and 1/2-inch ball valve and added a side-mounted thermometer. It sits on an adjustable 170,000-BTU propane burner.

The mash/lauter tun is a 10-gallon Gott cooler with a bulkhead fitting and a 3/8-inch ball valve that uses a slotted copper manifold for separation of sweet wort from spent grains.

I used another converted Sanke keg and propane burner for the kettle and heat. An immersion wort chiller sits in the kettle through a fitted kettle lid.

The primary fermentation takes place in two 6 1/2-gallon glass carboys. I use disposable oxygen bottles with stainless steel air stones for cold wort aeration. I have a chest freezer that has been converted to a cool box that uses a Hunter Airstat (air conditioning controller) for temperature regulation.

The secondary fermentation takes place in two Cornelius kegs with dip tubes shortened by one inch. I use natural carbonation and dry-hopping at this stage.

Beer conditioning takes place in a dedicated beer refrigerator that holds four kegs, just enough for a pretty good party.

I've had great success with this system, even winning some awards for my ales. But then again, practice does make perfect. I brew any time I can get a few free hours. Now that my term as President/Dictator of my local homebrew club, the San Andreas Malts, is almost over, I should be able to brew more often. I guess that means my kegs will take me along to more parties...





Were his three kegs of American pale ale the real reason David Allison's mother invited him to her birthday party? Only she knows for sure...

Penny Wise?...

This debate about beer bucks, brewers and bucks, and just bucks in general, raged recently on the Internet:

> Okay, I know I'm going to hear it for this posting, but here goes: 90 percent of the homebrewers I run into are cheap, cheap, cheap! I know, I work in a liquor store and run the micro section. They go to great lengths to tell me how great their homebrews are, but when they are between batches, they buy Stroh's, Keystone, Busch, etc., even when I tell them they could buy a six of Sam Adams Scotch Ale for only $1.75 more. It drives me nuts! —Bruguru

> So what if brewers drink cheap beer? What, once you cook Tandoori chicken you should be ashamed if you ever decide to set foot in a McDonald's again? —Mark

> They probably get the cheapest stuff they can buy, take it home, flush it down the toilet, and use the bottles for their homebrew! —Lance

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"Can it really be any good?" a young woman whispered. "Heavens no," Thomas exclaimed. "He's never brewed a drop in his life."



They Laughed When I Told Them I Was Serving My Own Home Brewed Beer, But When They Tasted My Pale Ale! —THE LIBERTY MALT CATALOG

Thomas brought a gift of his latest micro-brew discovery that he wanted everyone to try. I decided that this would be a dramatic moment for me to make my debut. To the amazement of all of my friends, I strode confidently over to my Alephenalia Micro Brewery-Home Brew Kit and began to pull out the professional looking bottles that I had placed there.

"Chuck is up to his old tricks," somebody chuckled. The crowd laughed. They were all certain that I couldn't brew any more than I could make potatoes au gratin.

"Can he really brew?" I heard Thomas' partner whisper. "Heavens, no!" Thomas exclaimed. "He's never brewed a drop in his life. But just you watch him. This is going to be good."

I decided to make the most of the situation. Holding up the wing capper, I explained that I had bottled it just for this occasion. With mock dignity, I drew out a bottle and cradled it in my arms like a great wine. "Is this another of those disappearing ink trips," called a voice from the rear. The crowd rocked with laughter.

Then I began to pour.

Instantly a tense silence fell on the guests. The laughter died on their lips as if by magic. I poured a glass for everyone, even those who exclaimed "I don't like beer." I heard a gasp of amazement. My friends sat breathless, spellbound.

I sampled it myself and for a brief moment I forgot the people around me. I forgot the hour, the place, my fellow imbibers. The little world I lived in seemed to fade—seemed to grow dim—unreal. Only the ale was real. Only the ale and the visions it brought me. Visions as beautiful and as changing as an autumn sunset, with its amber hues, just like my homebrew.

A real Triumph!

As everyone finished tasting, the room resounded with accolades. I found myself surrounded by excited faces. How my friends carried on! Men shook my hand—wildly congratulating me—pounding me on the back in their enthusiasm! Everybody was exclaiming with delight, plying me with rapid questions. Chuck! Why didn't you tell us you could brew like that? Where did you learn? How long have you been brewing?

"I simply followed the complete instructions included with the Alephenalia Homebrew kit," I replied. "And just a short while ago, I didn't know hops from malt.

"Quit your kidding," laughed Thomas, a real beer enthusiast. "You've been brewing for years. I can tell."

"Only since Rosie gave me an Alephenalia Microbrewery for my birthday, less than three weeks ago. I decided to keep it a secret so that I could surprise all you folks." Then I told them the whole story. "Ever heard of **Liberty Malt Supply Company**?" A few of my friends nodded. "That's a home brew shop and mail order catalog!" One of the oldest in the entire country!

"Exactly," I replied. "They have a great program for learning how to brew beers like a professional, the Liberty Way."

How I learned to brew without a teacher.

And then I explained how for years I had longed to brew my own beer. I shared that dream with Rosie and when she saw the Alephenalia Microbrewery in the Liberty catalog, she knew it was the perfect gift for me.

A Complete Catalog!

Pointing to the colorful Alephenalia Micro-brewery carton, I explained, "It contains brewing equipment that can be used over and over to brew beers like the professionals." I told them how pleased I was with Brewer's Companion, a real home brewers bible. The Liberty Pack included with the microbrewery contained enough pre-measured, concisely labeled ingredients to brew five gallons of the Pale Ale. I explained that each of the Liberty packs used the highest quality ingredients, exclusive to Liberty Malt and that packs for each of the classic brewing styles are available.

I proudly told them that I have already begun brewing Weekend Weiss, a Bavarian style wheat beer and Liberator Dopplebock, both promptly received by simply dialing Liberty Malt's own toll free number, 1-800-990-MALT (6258).

Favorite brewing styles

"Lets order Liberty's Pals Pils Pack!" Thomas pleaded after seeing the Liberty catalog. He took another sip and said, "Which weekend is that Weiss going to be ready?"

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Does She or Doesn't She?

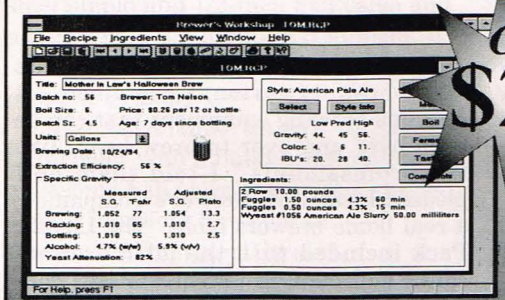
The London tabloids haven't picked up on it yet, but Princess Margaret was spotted at a Suffolk trade show recently escorted by Munton & Fison's Alan Ridealgh. In this exclusive BYO photo, the princess checks out the latest M&F malts while reportedly discussing the intricacies of the brewing process with her escort. No word on whether Her Royal Highness homebrews, but she was said to be particularly interested in the India pale ales.



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More Cover Ups, Downs

Dear Brew Your Own,

After perusing the September issue of BYO, there is one question I have to ask: Is that an upright bottle in your bathtub, or is that duck just happy to be on the cover?

Looks like the National Endowment for the Arts won't be sending you any grants next year.

Brian Buchanan
Duarte, Calif.

Dear BYO,

I must not have received the September issue. I am quite sure I did not misplace it as I am sure I would have remembered the cover as described on page 10 in the October issue. How could anyone forget a cover with a fat boy in a tub full of bottles?

And by the way, *real* brewers don't get offended at what was really a humorous oversight on the part of the photo editor. Besides, some folks do get excited at the thought of really well crafted home brew. What can I say? Maybe you should use a 20-ounce bottle next time.

Warren Churchill
Santa Fe, N.M.

Dear BYO,

Who is Steve Rank, and what's he doing in the unemployment line?

As an artist for an advertising agency, as well as a homebrewer, I wanted to express my support for your (former?) marketing director and his bottle problem.

I once designed an ad for a major beverage company (which shall remain nameless) that featured a close-up of a bottle next to a pool, with a party going on in the background. It was only at the final proof that we noticed that the bottle, with a significant stretch of the imagination, appeared to be in a compromising position with one of the party-goers. This ad never made it into print, but if it had I might be standing next to Mr. Rank in the unemployment line.

Shouldn't you reconsider?

Robert Edwards
New York, N.Y.

Dear BYO,

As a charter subscriber, I've been stewing over your September cover for over a month now. Since my concerns have not subsided, I am going to tell you why I'm irked about it.

In the past 2 1/2 years I've been homebrewing—starting friends in the hobby, sharing homebrew—I've made a conscious effort to promote the hobby as a fun, responsible, and even upscale sort of thing to do.

Then I received your September issue, and it single-handedly promotes the worst of the stereotypes of the hobby. That is:

1. Homebrew is something that tastes like it was brewed in the bathtub.

2. Most homebrewers are pot-bellied slobs.

I would be embarrassed if my non-homebrewing friends saw this issue laying about.

Maybe your intent was for humor and maybe some subscribers have no problem with the image you use to portray homebrewers. But after thinking about it for over a month, I still feel it is a tasteless, degrading image of the hobby and I wouldn't want to be associated much longer with a magazine that can't raise its standards to promote a "class" hobby.

Stan Fleener

Dear BYO,

Well, I can't exactly say I was sorry to see the news that you had fired the person responsible for the bathtub cover. I am assuming that this paragon of pulchritude thinks obesity is funny rather than a serious condition. May he spend the rest of his days working for Richard Simmons.

Nancy Ellski
Rockville, Md.

Further Reading

Dear BYO,

I found your article on hops, "Bitterness and Beyond, Get the Full Effect From Your Hops" (August BYO), to be informative and helpful. Could you please supply a short bibliography regarding hops? As I am also a gardener, I would most like to see ones that include varieties, uses, photos, and brewing techniques.



Tom Jenkins
South Norwalk, Conn.

Most books on homebrewing include a section on hops. Here are two books that focus on the crop exclusively:

- Hops, *by R. A. Neve, published by Chapman and Hall, London.*
- Using Hops, the Complete Guide to Hops for the Craft Brewer, *by Mark Garetz, published by HopTech, Danville, Calif.*

To Air is Human

Dear Brew Your Own,

In your August issue two articles, "Get the Full Effect From Your Hops" and "Build a Mash Tun," cautioned against splashing or aerating the pre-fermented wort lest the seeds of oxidation be sown. In the same issue there is an advertisement from Liquid Bread Inc. for an Oxygenator and in your column "Help Me, Mr. Wizard," the process of oxygenation is discussed at length.

Why the contradiction? This appears to be an editorial oversight and should be easily dealt with to avoid confusion among the neophytes who look to you for guidance.

J.E. Baker
Greece, N.Y.

There is no straight story on oxygen. Oxygenation during mashing plants the seeds of oxidation in finished beer. Oxygenation during boiling darkens wort. For yeast growth you must oxygenate wort immediately after cooling and immediately preceding the addition of yeast. After this point any oxygen added to the beer leads to oxidized flavors.

Brewing the Bud

Dear BYO,

I have brewed all kinds of ways and all kinds of beer. I have learned to enjoy the "real beer" taste. But my friends still like the Bud Light taste. This may sound like a stupid question, but I have not found a kit that has the Bud Light taste. The closest I have found is John Bull American Light. Do you know of any?

Lynn Sniff
Hasty, Colo.

You should be able to convert any of the standard American Lager kits to a "light" beer—a beer with fewer calories and a lower alcohol content. Brew as usual but hop it with about 50 percent more aroma hops than called for by the recipe. If the kit is pre-hopped, add an additional 1/2 ounce of aroma hops. Before bottling, add two gallons of boiled and cooled water for every five gallons of beer. A similar process can be used to make lower-alcohol content beers with more body as well.

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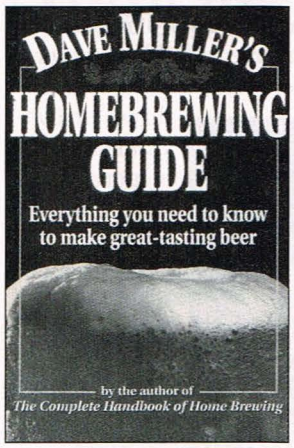
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A Book for Brewers of All Levels



Well-known homebrew author Dave Miller hits the store shelves again with his latest how-to manual, *Dave Miller's Homebrewing Guide—Everything you need to know to make great-tasting beer.*

The 368-page roadmap into the world of brewing gives an overview for brewers of all levels, offering useful step-by-step instruction for beginners and advanced brewers alike.

The book includes tables, charts, a glossary, illustrations, and 33 recipes.

It's published by Storey Publishing. The suggested retail price is $14.95. To order call 1-800-441-5700.

Miller is also the author of *The Complete Handbook of Homebrewing*, and *Brewing the World's Great Beers.*

What Stylish Kegs are Wearing

If you just can't take your homebrew anywhere, perhaps it's a wardrobe problem. Now your keg or carboy can apply for the best-dressed list. Forty Below Keg and Carboy Parkas aren't just fashion statements. In combination with ice packs, the insulated covers are designed to keep your brew cool for several hours, according to the Graham, Wash., company.



The Parkas are made of nylon-covered Neoprene foam, similar to wetsuit material. They fit trimly to the sides of the kegs or carboys. The Keg Parka comes in several colors and sizes to fit Cornelius kegs up to standard 15-gallon units. If you slip one over a cold keg, the Parka should keep it cool for several hours.

The Carboy Parka's primary function is to keep the fermenting or aging temperature of the carboy stable. The Parka also has web-strap handles to help you carry the carboy from brewing to storing area. These come in handy, since a full 6.5-gallon carboy weighs almost 60 pounds. A side zipper lets you inspect the brew's progress.

Retail prices for the Keg Parka start at $24.95; the Carboy Parka starts at $29.95. For more information, catalog, and to order, contact Forty Below, (206) 846-2081.

Eating Your Homebrew

If you need something to do while your wort cools, there is a new cookbook that encourages you to eat while you work. *Drink Your Beer and Eat It Too! A Beer Lover's Cookbook* by Joanie Steckart has recipes for anyone who believes that there is more than one use for good brew.

Learn to make Beer Burgers, German Beer Bread, and many other recipes that will both compliment and include your favorite ale, bock, or pilsner. There are also numerous tips on other, less commonly known beer uses—as shampoo, pesticide, and a sleep inducer (used by doctors rather than by accident). The book also includes 100 beer facts that will astound your friends or send them screaming from the room—the risk is yours.

Price is $15.95. Order from the Amherst Press at 1-800-333-8122.

Kit and Caboodle

Edme has launched two new kits for the homebrewer, Premium India Pale Ale and London Porter.

For the IPA Edme brewers tried to recreate the taste of this traditional, hoppy, strong brew that was originally designed to quench the thirst of the British troops in India. The kit is effective for aroma hopping with generous quantities of English Goldings hops (or equivalent). The finished brew makes 48 pints of ale with a powerful, hoppy aroma complemented by distinct bitterness and heavy mouth feel.

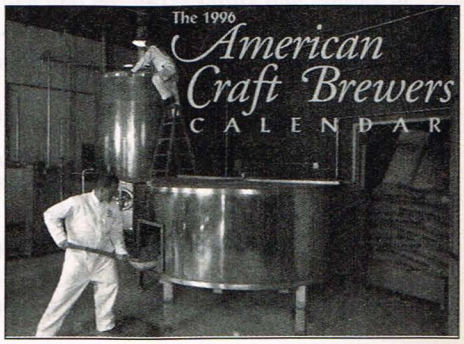
For the London Porter Edme attempted to emulate the qualities of many commercially brewed porters while maintaining the historic integrity of the style. The resulting blend of malt and hop extracts contains a generous helping of roasted barley. The kit produces 36 pints of traditional dark beer that is similar to Irish stout in appearance.

A Pub a Month

As the new year draws near, it's time to think about your 1996 calendar. This is an important decision—the calendar you chose will be with you for the next 12 months.

Copper Kettle Concepts has introduced the American Craft Brewers Calendar, perfect for homebrewers. Each month includes a photograph of a different micro or brewpub, a homebrew recipe, and a feature relevant to the beer renaissance. In addition to the standard holidays (like someone doesn't know what day Christmas is), days important to brewing are clearly marked. Historic references include November 30, when brewpubs became legal in Minnesota in 1987.

This first edition is dedicated to homebrewers for their contribution to the growth of craft brewing, according to calendar publisher Doug Eddy.



The full-color 1996 American Craft Brewers Calendar costs $10.95. It is available in homebrew shops, selected bookstores, and direct from the publisher. For more information or to order, call 1-800-880-0978.

Get Your *Beer Here*

Whether you travel in search of excellent beer or search during other trips, *Beer Here, A Traveler's Guide to American Brewpubs and Microbreweries* by Stuart Kallen is a tome to take along. From tiny mom-and-pops to mega-brewing giants, this book will tell you where to go no matter where you are. Not only does it guide you to American Breweries, it also contains beer history, beer ingredients, and a short course in homebrewing.



It is available at most bookstores or by calling 1-800-447-BOOK.

No-Stop Shopping

BrewHoppers by Mail wants you to brew. They will send you a recipe, packages, labels, and pre-measured ingredients for a different kind of beer each month. Monthly kits, which make five-gallon batches, cost $21 with dry yeast or $25.50 with liquid yeast (shipping and applicable tax are extra). There is no membership fee to join. Kits can arrive monthly or semi-monthly.

For more information call BrewHoppers at 1-800-817-0495.

A Cool Chiller

Hey keggers! Are you tired of running to the basement to drink your brew? Are you sick of having three glasses of warm brew before the first cold one? Well, you may be a candidate for The Figalator.

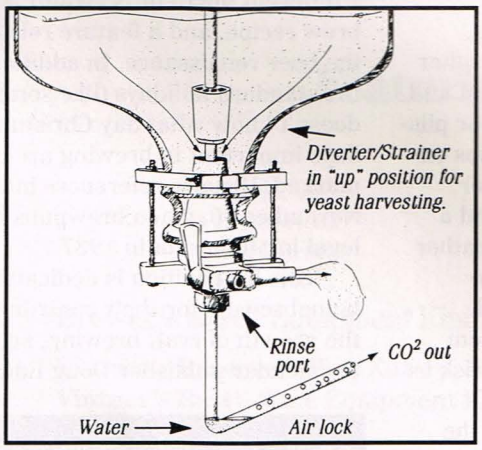
The Figalator is a self-contained, mechanically refrigerated keg cooler for use with Cornelius and Firestone three- or five-gallon kegs. It is more efficient than a standard fridge, which makes for lower operating costs.



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CIRCLE 46 ON READER SERVICE CARD

Hints for a Weizen-heimer



Mr. Wizard

While stationed in Germany, I absolutely fell in love with hefe-weizen. I have tried to reproduce it a couple of times with no success. Can you point me to someone or some place that could help me? I am interested in extract brewing only. Also, with the many yeast types out there, which is best for this type of beer? Where do I get it?

Casey Humphries
Little Rock, Ark.

I can understand falling in love with hefe-weizen; it's one of my favorite styles as well. I'm also a big fan of dunkel weizens.

Hefe-weizen brewing is relatively straightforward. The malts used are wheat malt and barley malt in similar proportions. If using extracts, you can use unhopped wheat malt extract and unhopped barley malt extract. It's important not to over-hop your weizen. Most are between 10 and 15 bitterness units and are bittered with Hallertauer hops; no aroma hops are added.

The real trick is finding the right yeast. Lucky for weizen fans, this yeast is easy to find in homebrew shops. Many yeast suppliers are now selling Bavarian weizen yeast. Most strains advertised as such will produce the characteristic banana-clove-spice aromas associated with weizen. As long as you pitch enough yeast and ferment between 65° and 70° F, all should go well. After fermentation, it is best to let the beer sit cold for at least three days to let the yeast settle out. Even though hefe-weizen has yeast in it, you don't want too much.

Carbonation of hefe-weizen can be tricky. In Germany they prime with fresh wort and bottle condition. In some breweries the beer is filtered, re-yeasted with lager yeast, and primed with wort. It works well to use your weizen strain for all purposes at home. If you don't want to prime with wort, corn sugar will suffice. Since weizen is highly carbonated, use 1 to 1 1/2 cups per five gallons.

Hopefully this bit of advice will help you in your quest for home-brewed weizen. For more detailed reading check out Eric Warner's book in the Classic Beer Styles series on weizen. This book is available through the Association of Brewers in Boulder, Colo. and at many homebrew stores around the nation.

Prosit!

Mr. Wizard

I have some questions regarding Jim Lynes' question on beechwood aging (September BYO). First, you said that you really don't want wood flavor in the beer. Why is that? Second, you said that the beechwood aids in aging. How does it do this?

Mark F. Lewis
Hong Kong

Ahh, more interest about the chips. I'm becoming more convinced that funky marketing does lead to inquisitiveness.

The reason I stated that you don't want wood flavor when aging with beechwood chips is because it is not consistent with their use at Anheuser-Busch, which is the brewery discussed in that article. They use beechwood to aid in aging, not to add woody flavors.

I'm sure very good beer could be made if the beechwood chips had a fresh flavor, but that's not how they are used. This is also true of wooden fermenters. Many breweries used wood for fermentation vats in the old days, but they first coated them with pitch, the goo that is cooked out of pine when it smolders. A pitch-lined wooden fermenter doesn't add special flavor to beer. It just happens to be made of wood, like a beechwood chip.

The reason that chips aid in aging is that they increase the surface area of yeast exposed to beer in the aging tank. Since yeast take up compounds found in young beer and alter them, a greater exposure of these compounds to yeast speeds up aging times. In theory you could use nylon, glass, or metal chips to get the same effect as beechwood chips. I say in theory because "nylon aged" doesn't have the same ring as beechwood aged!

Mr. Wizard

I just started all-grain brewing and have also completed Greg Noonan's book *Brewing Lager Beer*. Noonan states: "Not even the most thorough infusion mash can eke out the quantity and quality of extract that is obtained by decoction mashing." His reason is that in infusion and step mashing none of the mash is boiled and when you boil part of the mash, it makes the whole mash make music.

What do you think about infusion, step, and decoction mashing? Which is best?

Pat Sexton
Yakima, Wash.

First, I want to say that none of these methods is "the best." The best mashing method depends on what raw materials you plan to use, the type of beer you want to make, and what equipment you have available. If I were stranded on a desert island and only could use decoctions to make beer, then it would be the best method. All methods are capable of producing exceptional beer.

Now to touch on the specifics of your question. I agree that the decoction method will yield more extract than other methods. This is because you boil part of the mash, and boiling is a great method of extracting stuff.

As far as decoctions producing the highest quality wort, I tend to disagree. Decoctions were traditionally used to deal with poor quality, undermodified malt. They were very effective in dealing with this malt and produced high-quality worts from it. However, infusion mashing was developed around high-quality, well-modified malt and was and still is used to produce high-quality beer from these materials. Step or temperature profile mashing is a modern method that doesn't boil the mash, as in infusion mashing, but like decoction mashing uses several temperature rests. Temperature profile mashing offers a lot of control without the boiling step. All of the methods can produce quality wort.

So speaking of this boil step, does it make music? I don't know what kind of music Greg is referring to. If it's the kind of music that turns a lousy mash into a symphony, I would have to say no. However, if it adds another riff to a hip solo, then sure, a decoction makes the whole mash make music.

Some brewers feel that decoctions do absolutely nothing more for flavor than step mashing. Other brewers, even some very respected brewers I have spoken to from Germany, confess that decoctions make the beer more astringent—a claim that many decoction enthusiasts vehemently deny. Still others argue that decoctions add a wonderful malty character to beer, especially dark lagers. All of these brewers base their opinions on experimentation. It seems to me the verdict remains out on this issue.

As far as I am concerned, I don't believe all the fuss over mashing style is called for in this country. At the University of California, Davis, the brewing lab students looked at this question. They would brew using three different mashing styles. Using domestic malt, these beers always had the same basic color and malt and hop characters. They were different, but not much.

I have never able to attribute any absolute characteristic to the different mash styles. In my early brewing days I wanted to believe that infusion mashing was inferior to other methods because it is the easiest and we all know the best beer is always the one that was hardest to brew. Well, I was unable to convince myself of this, even though I tried. For that reason I like infusion mashing. I can make almost any beer with it. I do use step mashing for some special purposes—pilsners for example—and double mashing for those hot days when rice beer sounds appetizing. However, I rarely have found the need for a decoction mash when using American malts.

Mr. Wizard

I have been brewing all-grain for a couple of years, and it seems to me that one of the most creative aspects of brewing is the mash sequence. I understand the need sometimes for the protein rest, and that beta-amylase works between 140° and 149° F, and that alpha-amylase works between 155° and 165° F. But what about the temperatures in between?

The alpha-amylase gives a more dextrinous body, so does mashing at higher temperatures need less crystal malt in the grist? Can one eliminate crystal malt with higher mash temperatures? Why do lager mashes seem to require higher mash saccharification (155° F) while ale mashes require lower temperatures (150° F)? How does the temperature sequence affect beer flavor and style? Can I mash-in an ale at 140° F and raise the mash temperature to 155° F? What about time: Is there any advantage to maintaining a rest beyond a negative iodine test? I see so many recipes that call for a 60 - to 90-minute rest.

Any help in grasping the design concepts of mashing would be appreciated.

Walt Swan
Lynnwood, Wash.

The idea that mashing sequence is one of the most creative aspects of brewing perplexes me. I've brewed a lot of beer both at home and professionally and have never considered mashing to be very creative. If I want to introduce a new flavor into a beer or alter an existing one, mash sequence is not the first thing that jumps to mind.

The most striking flavors in beer come from malt and hops. If you take Guinness and remove the black barley and reduce its bitterness you would have a beer that is not too different from a light beer, since Guinness is low in alcohol to begin with. In our own market the enormous variety in microbrewed beer primarily comes from malt and hops selection. Beyond these two key ingredients, yeast and fermentation play a profound role in beer flavor—not only the yeast strain itself, but the pitching rate and temperature of fermentation. Beyond fermentation, aging times and temperature are also key. Take Redhook ESB for example. It has a pronounced diacetyl or butterscotch aroma that comes from the way it is treated in fermentation. If it had a longer rest between the end of fermentation and aging, the diacetyl would disappear.

Mashing, on the other hand, is used for more pragmatic reasons. Brewers mash so that starch can be converted to fermentable sugars. We use amylases to break the starch down into these fermentables.

In an infusion mash, a temperature is chosen that allows for both beta-amylase and alpha-amylase to work. That's why 150° F is frequently used in an infusion. In multi-temperature mashing we can hit as many different temperatures as we want. In most commercial breweries 140° to 145° F is targeted for beta-amylase action, 155° to 158° F for alpha-amylase action and then the temperature is increased to 168° to 170° F for "mash-off." The main reason a mash-off is used is to decrease wort viscosity during lautering. Since lagers are usually made

with multi-temperature, it makes sense to choose rests that optimize the activity of the various mash enzymes. That's why hotter saccharification temperatures are used. These same mash sequences can be used to make ales, and many breweries do. The difference between ale and lager is yeast, not mash sequence.

If you go on brewery tours and ask about mashing times and temperatures, you will have little problem getting detailed answers. However, if you ask questions about grist weights, hop varieties, hop weights, when hops are added to the kettle, yeast strains, and finishing practices, the answers are a bit more vague. That's because most brewers consider mashing to be important, very important, but not the primary contributor to their beer's ultimate flavor.

Now concerning your questions. Mash temperature can't replace crystal malt. Crystal malt has a color and flavor that come from special production methods. No matter what you do in the mash, you can't reproduce a rich, caramel flavor and orange-red hue by altering mash temperature. Not even a long decoction boil will turn a pilsner wort into Märzen.

If you use a multi-temperature mash, then acknowledging the temperatures between your rest temperatures is important. Since both beta- and alpha-amylase are active between 145° and 150° F, changing the rate of heating alters the wort. If you wish to make a dry beer, for example, a gradual temperature change between 140° F and 155° F will help. If you want to limit the fermentability of the wort and have high-residual extract, then bypassing the beta-amylase rest all together will do the trick. To do this, mashing-in hot (158° to 162° F) and thin is your best bet.

I agree with your comments about the iodine test. Once you have a negative iodine test, it's okay to move on. After all, that's what it is used for. If it is positive, brewers extend the mash. So if it's negative, go ahead and start collecting the wort.

The next time you're flipping through recipes, keep in mind that there are four types of mashing: infusion, decoction, temperature program (step infusion), and double mashing. Although some brewers use slightly different temperature rests, they're all about the same for a given mash type.

Play with malts, wort original gravity, boil time, hop variety, time of hop addition, the amount of hops added, and yeast. With yeast you can use different strains, mix strains, play with fermentation temperatures or, if you're feeling adventurous, toss in some bacteria to make a lambic. In the global spectrum of beer and brewing, raw materials are most responsible for variety in flavor.

Mr. Wizard

I've been homebrewing for eight months and would like the facts on chilling homebrew before drinking. Most of the information I have found says to chill the

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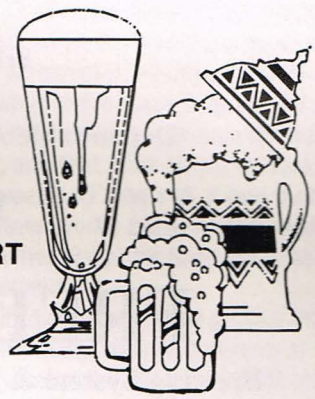
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CIRCLE 66 ON READER SERVICE CARD

Mr. Wizard

day you plan to drink, but I have found that chilling beer three or four days does not affect the taste. What's the real story?

David Friend
Shelby, N.C.

Homebrew lore never ceases to amaze me. I must confess, I've never heard this before.

If you bottle condition your beer, then you need to hold it at room temperature for at least seven days to allow for carbonation. If you chill it early, especially when using ale yeast, you are likely to end up with flat beer. Many people like to store high-alcohol ales at "cellar temperature," or 55° F, to allow them to age. For all other beers cooling them after carbonation is preferred. This helps to maintain freshness since beer is perishable.

Commercial breweries spend oodles of dollars to keep their beers cold. If chilling the day of consumption was preferred, they would not waste so much money on refrigeration.

In addition to maintaining freshness, storing unfiltered beer cold helps to clarify it. If you leave it undisturbed in the fridge and carefully decant it into your serving glass, an unfiltered homebrew will be quite brilliant.

The last and most practical reason for storing beer cold is that you don't run out of cold beer! Don't you hate when you throw a couple in the fridge and a friend comes over? After each having a beer, you have to run out to buy a cold six-pack or wait awhile for your warm homebrew to chill!

So David, your observation makes sense. It's fine to store homebrew cold. ■

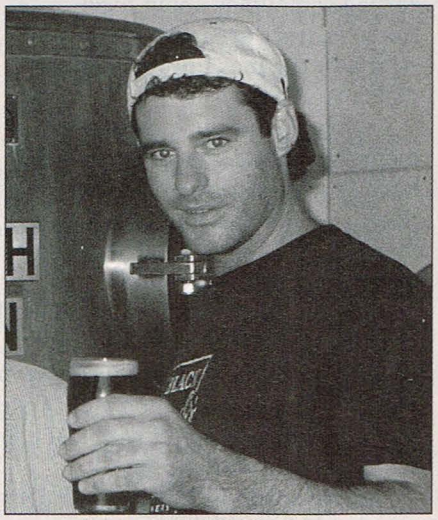
Mr. Wizard's Address

Do you have a question for Mr. Wizard? Write to Mr. Wizard, c/o Brew Your Own, 216 F St., Suite 160, Davis, CA 95616. You can also reach him by e-mail at wiz@byo.com.

By day a mild-mannered typewriter repairman, Mr. Wizard at night dons his sky-blue cape and moon-and-stars cap. He roams the streets solving bitterness equations, calculating malt additions, and formulating grist bills for brewers in need.

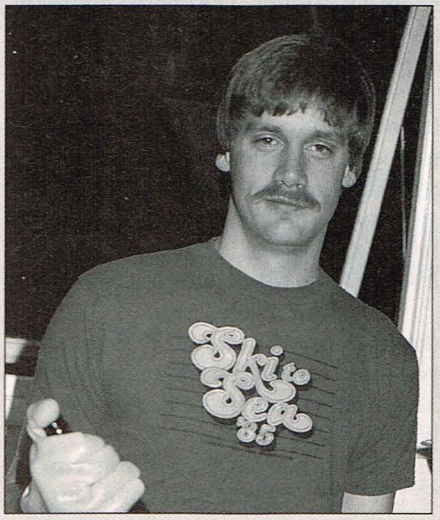
Advice from the Mash Tun

by Gailen Jacobs



Jay Misson
Mountain Valley Brewery

"When doing a single step mash, brewers should try to get their hands on sour malts...that will lower the pH of your water."



Geoffrey Larson
Alaskan Brewing and Bottling

"Temperature program is good for any style of beer. It can be a little more difficult and tedious, but I think the effort that's involved is rewarded in the end."

David Grinnell
Boston Beer Co.

"The type of mash you choose really depends on what your objectives are. We believe there is a flavor impact from taking part of the mash to the cooker and boiling it."

Brewer: Jay Misson
Brewery: Mountain Valley Brewery
Years of experience: 8
Education: Apprenticed one year at a German Brewery. American Brewers Guild course.

We do single step (infusion) mashing. Soon we'll have a system that is capable of decoction and temperature program mashing. At times I will use that decoction capability. The type of mash I do will really depend on the brew style and the malt. For the most part I'm using malts that don't require decoction.

When doing a single step mash, brewers should try to get their hands on sour malts. Sour malts have a lot of lactobacillus delbrueckii bacteria that will lower the pH of your water. If you can get the pH down between 5.2 to 5.4, that will bring out a lot of the malt's character that you might not otherwise achieve.

Sour malt helps the enzymes break down the starches. It also helps the break during the boil, and it will help the fermentation.

The pH of the water that you're beginning with does matter. If you have really soft water with a low pH to begin with, using sour malts may not be necessary. Where I brew, we have fairly hard water to begin with. The sour malts bring the pH down in the right range—5.2 to 5.4.

The only trick to using sour malts is that you might have to mill them a little finer than regular malts because they tend to be soft.

You can use the sour malt with any mash technique but not with any beer style. I like to use it with the lighter

styles, like a pilsner or paler ale. Usually you have a lower pH with dark malts anyway because the roasting process lowers the malts' pH.

For homebrewers who are just starting with a full-grain approach, a single-step infusion would be the obvious starting point. Once they decide how they like that, they can go further into the more complicated mash styles.

The homebrewers' goal should just be to be happy with what they are doing.

Brewer: Geoffrey Larson
Brewery: Alaskan Brewing and Bottling
Years of experience: 10
Education: Siebel Institute classes and a degree in chemical engineering.

We do a temperature program mash. We chose this style because it gave us the most flexibility. We can get the most out of our malt and, at the same time, create a really malty beer without a cloying, sweet aftertaste. We brew a variety of styles ranging from alt to porter using upward infusion (temperature program) mashing and ale yeast.

Temperature program is good for any style of beer. I think it can be a little more difficult and tedious than other mash styles, but I think the effort that's involved is definitely rewarded in the end.

Comparing temperature program mashing to other mash styles, a single step infusion is simpler because you don't have to sit there and raise the temperatures. As far as difficulty goes, if you can do decoction mashing, you can do temperature program.

One of the most important things about temperature program mashing is to be careful about scorching. It is really easy to burn the bottom of the mash. To avoid scorching stir the mash regularly or try to get indirect heat through diffusers.

When you start heating the mash, make sure the grain is very well wetted and well stirred. If you have any dry grains, they will go down to the bottom. Then it can burn almost instantly. If you're going to start at a low temperature and raise it up, don't put the pot on the heat right away; don't have the water on the heat when you add the grains.

Although recipes will call for specific amounts of water, as a rule of thumb try to maintain not too much more than three pounds of grain per gallon of water.

Raise your temperature about a degree a minute. That helps maintain a slow enough heat transfer so you don't scorch the wort.

It's easier to scorch the wort at lower temperatures than at higher temperatures because you don't have as much liquid in the grain/water mix. As you go up in temperature, the mix becomes less stiff. Therefore, it's less likely to sit on the bottom of the pot.

Raise the heat as high 171° F. You don't want to go over 172° F, because you'll get tannins coming into the wort. The tannins can give a really dry, tea-like character in the beer.

The higher the temperature up to 171° F, the easier it is to get a better runoff. Once you go through your temperature rises and hit 171° F, go ahead and lauter.

Raise the temperature a degree a minute right when you start heating. You can start with fairly warm water. The most critical temperatures would be the infusion temperatures. Those are a range of temperatures between 150° and 154° F. The lower temperatures, as low as 90° F, are mainly protein rests.

There are a number of different protein rests in the 95° to 130° F range. Protein rests help in clarity and, particularly with wheat beers, help with runoff. Protein rests are probably more important to some of the larger breweries because they are overly concerned sometimes about haze. Homebrewers are more concerned with how the mash process affects their malt flavor.

When you are talking about a degree a minute, many brewers will have specific temperature rest points. I think you will find that a degree a minute gives you a lot of latitude to cover those specific points.

Temperature program is definitely something homebrewers can play around with, but if you're just starting all-grain you have a lot on your plate. I recommend starting off with a single temperature (infusion) mash.

In any mash technique, homebrewers should be well aware of their water quality. Even though sometimes some breweries over-emphasize the importance of their water, there is a lot that goes on in the mashing that depends upon some of those calcium ions and the like in the water. Make sure you use your brewing salts as would be recommended by the specific

The Tips

Jay Misson, infusion mashing

- Get the pH of your mash down to 5.2 to 5.4.
- Use sour malts.
- Start with infusion mashing before exploring more complicated styles.

Geoffrey Larson, temperature program mashing

- Stir the mash regularly or get indirect heat through diffusers.
- Make sure the grain is very well wetted and stirred
- Raise your temperature about a degree a minute.

David Grinnell, decoction mashing

- Buy a good thermometer and use it.
- Mix the boiled mash into the main mash very well.
- For a chewy beer add the heated mash back into the main mash very quickly.

recipe. It makes a big difference in mashing.

Brewer: David Grinnell
Brewery: Boston Beer Co.
Years of experience: 9
Education: Siebel long course.

We are currently making 14 different beers here, and we have different mash techniques for different beers. For our flagship brand, Boston Lager, we use a decoction mash.

Part of the reason we use a particular mash for a particular beer is tradition. Part of it is equipment related. In the case of the Boston Lager, we had a historical recipe that we wanted to do our best to faithfully interpret, so it required that kind of mashing program.

The type of mash you choose really depends on what your objectives are. If we are going to do a decoction mash, it's going to mean we want certain things in the finished beer. We believe that there is a flavor impact from taking part of the mash to the cooker and boiling it. That is a kind of handling that the main mash does not see. Also, if you are going to drop a boiling mash from a cooker into the mash mixer, you're going to get a very rapid gain in the temperature when those two mashes are blended. That's going to result in a certain kind of final beer. What it's going to do is give you a high final attenuation. It's going to really put body in your beer. That's one of the techniques to making the beer kind of chewy. Boston Lager is a beer that requires a pretty decent final gravity to carry all the flavor we put in it.

Our choice of mashing technique is built around what we want to achieve. If we were going to make a traditional kind of ale, there would be no need to go with decoction. We would go with a single temperature infusion mash. We would just mash in at our conversion temperature and rest for some suitable period of time. We'd get our malt wet at 149° or 150° F, read the paper and have a dozen donuts, and come back and run it off.

If you're going to do a decoction mash on your stove, you need to have some kind of confidence about the temperature of both mashes (the cooker mash and the main mash). You need to know you are at a boil or at some specific temperature in your cooker mash. Then you are going to drop that into your main mash, so you should know pretty precisely what temperature that is. When you blend those two mashes, you are going to get a third temperature. In order to get repeatability—the ability to make that brew week after week—you have to know and record your temperatures.

Another key to decoction mashing is to have good agitation, good mixing into the main mash, when you are adding the cooker mash to the main mash. You don't want pockets of very hot mash.

It sounds like a two-person job. One person holds whatever vessel you use as the cooker and slowly adds the hot mash to the main mash. The other

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person stirs the main mash to make sure there is even distribution.

In the brewhouse you are really laying the ground work for the base beer. Depending on how fast you go through the conversion temperature and how much time you spend there, you're going to determine what your final degree of fermentability is going to be and how much alcohol your beer's going to have.

Those are variables that you can manipulate in the mash to make different beer styles. If you want a really chewy beer with a lot of mouth feel, then you would want to execute that cooker drop (adding the heated mash back into the main mash) very quickly. In that case you should put on some face shields and drop it in real quick. Stir it really quickly, and don't spend much time at all in conversion.

The other thing you need to do if you're going to do a very aggressive drop like this is check for conversion once the cooker is empty. Do your iodine test. If you have conversion, proceed to your mash-off temperature, which in most cases is 168° to 170° F.

If you go back 100 years, (doing the decoction at a fast pace) is what all brewers had to do. The thing that has happened in the past 100-plus years is a lot of breeding on the malt side. Now we have malts that have good enzyme levels that are easily converted and are highly modified coming right from the maltster. It used to be that you had to cook the hell out of this stuff to get some results. You would have triple decoctions, taking material out of the main mash not once but twice and boiling it and returning it to achieve different temperature levels.

My last tip for homebrewers is to keep good notes. From my perspective, we enjoy being production brewers. We enjoy being consistent with our final product. We find that even though we do the same thing the same way day after day in order to give our customers the same familiar taste in each of our brands, there are enough variables in brewing to keep things exciting.

There are issues on the sanitation side. Two of your main ingredients are agricultural, so there's some variability there. In terms of mashing we just try to be as consistent as possible. If you come across a batch of your beer that you consider to be perfect or right on, get as much information as to how you did that as possible. Detailed notes can be whether you stirred with your right hand rather than your left hand, or if you go to a production brewery, then you ran the agitator for five minutes at medium speed.

Have a couple of good thermometers you trust. Have a way of stirring your mash that is effective, that can really get the whole mash up and mixed well with the cooker mash. Be careful—you are boiling a liquid, and you can have some burn problems. All in all, decoction mashing is not something that anyone should be shy about. ■



CIRCLE 22 ON READER SERVICE CARD

Porter: The Great Beer Resurrection

by Jeff Frane

For a beer that was declared dead 20 years ago, porter is faring remarkably well. Although porter was the first truly successful commercial beer style, by the 1970s it seemed as if it had been laid to rest.

Guinness, which had gained its first great fame by brewing porters, ceased production in 1974, long after other great porter brewers had dropped the line or disappeared from view.

It's difficult to imagine today that porter was once the emblem of British brewing, with a fame that spread across Europe. Difficult to imagine, too, that a beer once so popular could disappear altogether. True, the name never entirely died. Beers known as "porter" were being brewed in obscure corners of the world and one, Yuengling porter, continues to be produced at America's oldest brewery, in Pennsylvania (where old beers apparently never really die). But unlike what I would tentatively call "true" porter, these are usually darker and slightly more robust versions of the breweries' standard lagers, and lack much of the defining characteristics of the style.



Porter first appeared in London in the 1720s. Brewers of time apparently had trouble meeting the tastes of the public, and blending of beers at the bar was common. According to the 19th century beer writer John Bickerdyke, the most discerning drinkers demanded: "a pot of three threads...one-third of ale [brown ale?], one-third of beer [strong ale], and one-third of two-penny [small beer]. The drawer would therefore have to go to three different casks, and through three distinct operations, before he could draw a pint of liquor." Brewer Ralph Harwood is credited with developing the first commercial "Entire" (or "Entire Butts"), which required no blending by the publican but was ready to pour from one cask, and successfully combined the desirable characteristics of all three beers.



Whether "Entire" became known as "porter" because it was popular among the laborers of Harwood's neighborhood or because they called out their trade as they hauled his beer to London's pubs is not clear, but the beer itself seems to have taken beer drinkers by storm.

Why the beer so readily caught the drinkers' fancy is likewise a mystery. While Harwood did it first, others seem to have gotten the knack quickly and porter was soon being brewed throughout London—and eventually in other cities, particularly Dublin. The beer appeared just as England's commercial and industrial boom began and spread throughout the world as British influence did.

It may well be that porters were the first commercial brewing success not only because of their timely introduction but because it was a beer eminently suited to the available brewing water, the deep bore wells of London. All of the world's great beer styles emerged because of providential convergence of malt, hops, and particularly water.

Just as the mineral-rich waters of Burton would later produce the first great pale ales (amid another surge of popularity), so the carbonate waters of London and Dublin were the perfect source for the maltiness of porter. The

water did not lend itself, unaltered, to producing pale, bright, hoppy beers. That is scarcely a problem with porters, but it was a real concern when Burton entered the commercial fray with its pale ales.

Because there is no one left to report on those early porters, and because the science of brewing was still in its infancy, we are left with only anecdotal descriptions of the beer. We can say that porter was quite dark and toasty (along the general lines of the stouts we know today) from the signature black malt and brown malt, medium-bodied (the later "stout porter" eventually superseding the original), fruity (from the top-fermentation), and imbued with a good bitterness.

It's also apparent that porters were characteristically matured in large vessels for extended periods—several months at minimum. Given the likely low quality of available malts, this may simply have been a matter of necessity—to complete attenuation and allow

Plain Porter (5 Gallon)

Ingredients:

- 6 lbs. amber malt extract
- 1 lb. light dry malt extract
- .5 lbs. British chocolate malt
- .75 lbs. British caramel malt
- 1.5 oz. Northern Brewer hops (for 75 min.)
- .5 oz. aromatic hops (such as Goldings, Mt Hoods) for 15 min.

O.G. = 1.052

Step-By-Step:

Soak crushed chocolate and caramel malt in one gallon of water at 150° F for 60 min. Sparge into kettle with hot water, to 2.5 to three gallons. Add extracts, and boil for 90 minutes, adding hops as noted. Add boiled wort to 2.5 gallons pre-boiled, cold water, aerate *very well,* and pitch good ale yeast. Ferment at about 65° F for one week.

After primary fermentation is complete, rack to secondary and follow normal bottling procedures. Unlike the porters of 1740, this one doesn't require months of conditioning.

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a mellowing of harsh flavors.

Other clues exist. The long maturation would be unlikely to produce very hoppy beers (or at any rate, any hop aroma or flavor of note). In Ireland access to fine hops was prevented by English blockade and tariff laws, which contemporary sources report confined Irish brewers to the production of porter—for which such aromatic hops were presumably unnecessary.

Faced with competition from pale ales in the 19th century, English consumption of porter slowly faded away, disappearing almost entirely in the early half of this century. It wasn't long into the microbrewery revolution, however, before porter revivals began to appear both in England and in the US.

Without any real continuity of production, however, the new porters range far and wide in execution. In general, color and an element of roast in the flavor seem to be the only unifying characteristics. Some are quite sweet, others dry and bitter, still others aggressively burnt.

There may have been almost as much variety among the early competing porters, much as there is among British bitters today. But we can perhaps sketch the perfect, mythical example, something to revive the spirits after a hard day of work. It should likewise not be a stout, although the relationship is obvious; Anchor Brewing Co.'s porter, while a fine beer, is an example of something that would better have been called a "stout porter."

Although the early versions probably had a high original gravity (1.060-1.070 or so), something more moderate (1.050) will suffice. It should have a medium body, creamy head, and a rich, warm color—dark, dark brown with hints of red. A roasted, coffee-ish edge and solid hop bitterness, all balancing a subdued sweetness. And lots of complex fruit.

Michael Jackson describes a few revivalist English porters that sound nearly perfect, but since bottles of Burton Bridge, Pimlico, or Whitbread porters are hard to come by, brewers have to rely on offerings from Sierra Nevada, Deschutes Brewing, or Pyramid out west. Or, of course, on homebrew.

Porter lends itself well to homebrewing, and to simple homebrewing at that. The "Plain Porter" recipe has simple, quality ingredients, simple technology, and produces a very drinkable porter.



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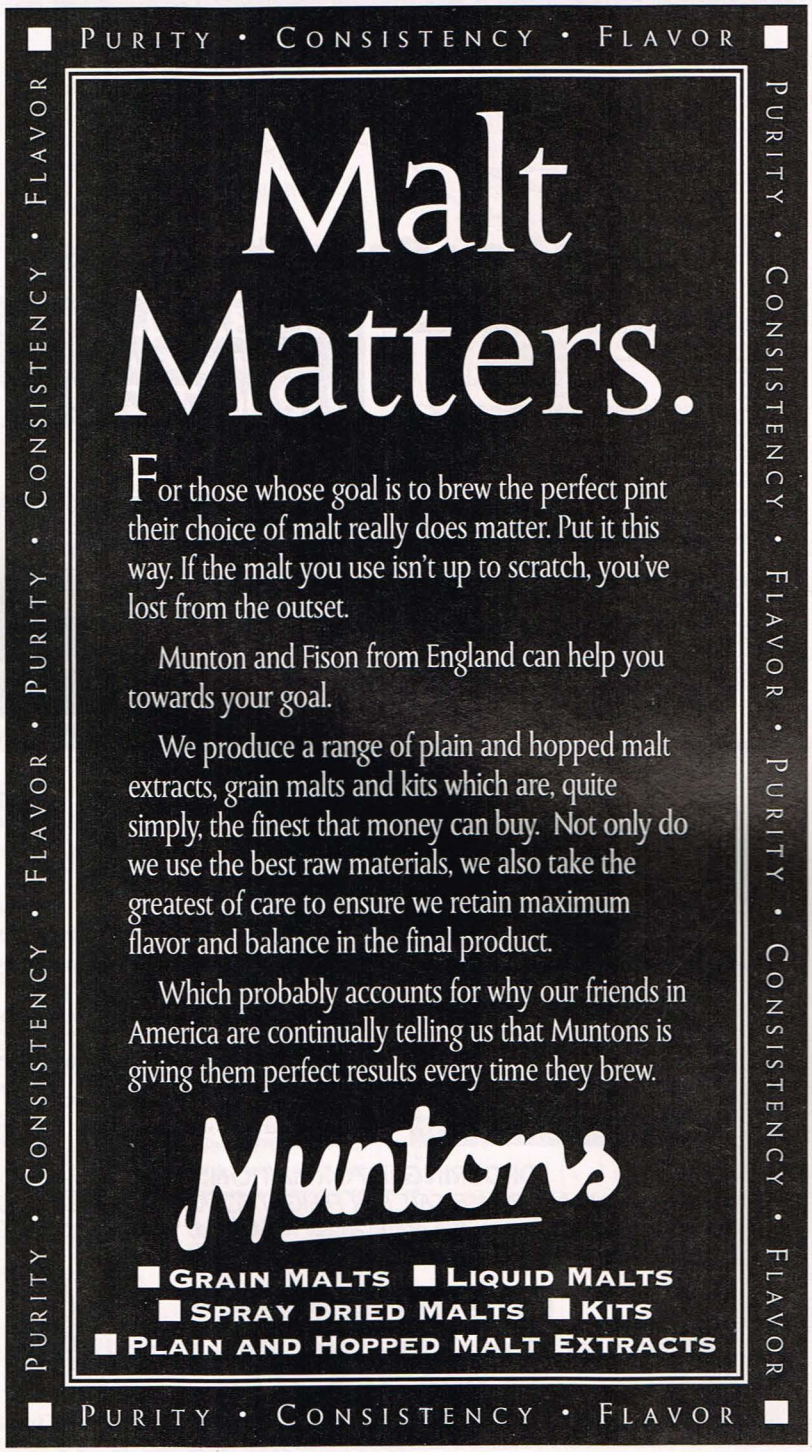
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CIRCLE 59 ON READER SERVICE CARD

Wyeast's W1968, London ESB, ale yeast works well, but a porter is an excellent place to use a very fruity yeast such as Whitbread's. Does it meet the demands of the mythical Perfect Porter? Well, not yet, but perhaps with a little fiddling...

New porters range far and wide in execution. In general, color and an element of roast in the flavor seem to be the only unifying characteristics.

The second recipe was developed by a new brewer from College Place, Wash., David Ashley. It's a bit more complex and has an innovative ingredient: espresso. The coffee isn't overwhelming but provides an added edge to the beer. ■



Jumpin' Java Porter (5 Gallons)

Ingredients:

- 6 lbs. dark dry malt extract
- 1 lb. honey
- 1 lb. caramel malt (40 Lovibond)
- .25 lbs. black patent malt
- .5 lbs. roasted barley
- 1.5 oz. Northern Brewer hops (for 40 min.)
- 2 oz. Hersbrucker hops (for 10 min.)
- 2.5 oz. Cascade hops (end-boil)
- 2-3 cups fresh-brewed espresso
- 2 tsp. gypsum
- 1 tsp. brewer's salts
- .25 tsp. Irish moss (for 20 min.)

Step-By-Step:

Soak the cracked specialty grains for 45 min. at 155° F, sparge into brewpot with one gallon of water at 170° F, add water to four gallons, add malt and bring to boil. Boil for 40 minutes, adding hops as noted. Add honey and espresso with final hop addition, steep for 10 minutes and chill.

Bring volume to five gallons with pre-boiled water, aerate well, add yeast (Edme dry yeast) and ferment at about 65° F. After primary fermentation is complete, rack to secondary. Bottle with .25 cup honey, and allow to condition for at least two months.

— Courtesy David Ashley

Alternative Brewstyles: Go Organic

by Jen Hill

As public awareness of alternative farming methods grows, people in greater numbers are looking for organic products. Organic malt and hops aren't plentiful yet, but with a little shopping you can find the ingredients for your own organic beer.

Whether you do it for the challenge or for the satisfaction of a taste unique to your recipe, one of the benefits of homebrewing is that you control what goes in the mix. A few weeks later you get the reward: compliments from your friends on a great tasting brew with no artificial additives.

No additives, maybe, but there may be other things in there that you'd rather not know about, including residues from pesticides and herbicides piggybacked in on your "pure" ingredients. More and more homebrewers are looking for organic ingredients for their brews. Larry Cantera, a homebrewer from St. Paul, Minn. explains it this way: "I eat organic produce and meats as often as possible. Why not try to drink organically, too?"

While substances used on grains and vegetables are federally regulated to protect the public, Cantera explains his organic choices by saying, "Even if most of the chemicals are harmless, I like to stay as far away as possible from them. You never know."

It couldn't hurt to create the purest product around. Be warned, however: It isn't easy and it certainly isn't cheap.

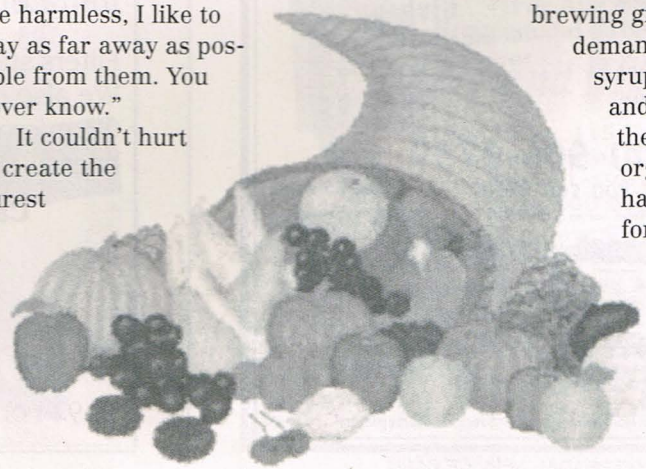
The difficulty lies not in how organic ingredients behave—they'll act the same as standard ingredients—but in locating them. While these ingredients are easier to attain than they were a few years ago thanks to microbreweries that have started to produce organic products, the search requires some patience.

Malts

Organic malts are perhaps the most difficult of homebrew ingredients to find. Some malt companies have them, just in a limited selection.

Briess Malting Co. of Chilton, Wisc., produces organic malts that are relatively easy for homebrewers to get their hands on. According to Mary Anne Gruber, director of brewing services at Briess (pronounced Breece), their production of organic malts for brewing grew out of the demand for organic malt syrups for baked goods and confections. Once they had certified organic sources and had their plant certified for organic processing, the logical step was to produce malts for their brewing customers.

The variety



of Briess' specialty malts is spectacular. Their organic malts, however, are limited to two-row, six-row, cara-pils, caramel 60, and Munich 10. (Sorry, chocolate fans.) The majority of their customer base for organics is made up of commercial breweries with organic products, but their organic malts are available to homebrewers at homebrew supply stores.

Liberty Malt Supply in Seattle also carries two organic malts from Germany, Pinkus pils malt and Pinkus wheat malt.



Hops

The standard in organic hops is Pride of Ringwood. Grown in Tasmania, where growing practices qualify as organic, Pride of Ringwood is the grandfather of organic hops and is widely available in both pellet and leaf varieties at homebrew outlets.

A more recent and welcome addition to the organic hops market is a European grower's cooperative called EVG. EVG hops, distributed in the US by Hopunion USA—also responsible for Pride of Ringwood—come in five varieties. The pellet varieties include Hersbruck, Select, Traditional, and Pure. Two leaf versions are also available: Hersbruck and Perle.

For the homebrewer who has a garden, growing your own hops is also an option. You can use organic methods, such as limiting the use of pesticides and herbacides, on any plants in any soil—your state agricultural department can tell you more. Many homebrew shops stock hop rhizomes in the spring. They are fairly easy to grow as long as they get plenty of heat and plenty of water. If taken care of, your hop plants will return year after year.

Grains

Finding organic cereals is perhaps the easiest part of the quest for an organic homebrew. The groundswell of interest in organic products has developed a market for them even in commercial grocery chains. Check your local market's bulk food section for organic rice, wheat, oatmeal, and more. Your best bet may be a natural foods co-op such as the Greenstar Co-op in Ithaca, N.Y. While members get additional discounts, everyone is welcome to shop there. Also, because the

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If your recipe calls for a special grind or cut of grain, you may need to do additional homework and contact a mill that specializes in organic flours. Peg Junge, plant manager of Community Mill and Bean in Savannah, N.Y., says, "Oats, barley, spelt ... you name it, we deal with it." Millers may be able to help you contact local certified organic farmers, too.

Water

If you haven't already tested your water source for particulate, hardness, or chemical traces, think about doing so. Your local county health office may offer water tests and, if not, will have a list of companies that do. Whether or not you plan to brew organically, testing your water is a good idea. It's important to know what chemicals exist in the water and what effect they have on the brewing process.

The Price

What will it cost you? You do pay a premium for organics. Cindy Kloster of Hopunion USA in Yakima, Wash., admits that organic hops average twice the price of standard hops. "The German crop [in 1994] was incredibly poor...they had a super dry summer last year." Briess organic malts are also twice as expensive as standard malts. Mary Anne Gruber attributes this to the higher costs of raw organic products, the difficulty finding organic barley that has been grown to malting specifications, and the costs involved in getting facilities certified by organizations such as the Organic Crop Improvement Association (OCIA). Organic cereals also demand top prices: organic oats run nearly three times more than the canisters with the jolly Quaker on them.

The difficultly lies not in how organic ingredients behave—they'll act the same as standard ingredients—but in locating them...The search requires some patience.

But as is true of all products, the costs will fall and more organic options will be available as more and more people, both professional and homebrewers, demand them. And as demand increases, so will the numbers of farmers who turn to organic methods. In short, what you brew in your kitchen can have a long-term ecological effect. Your local homebrew store or mail order source can get in touch with distributors for the products mentioned in this article. All you have to do is ask. The result will be a great-tasting brew that really is good for you. And for the environment. ■

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In Search of


PUMPKIN
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a hint of pumpkin flavor
BEER

By John Naleszkiewicz

the Great Pumpkin

A few years ago I decided to experiment with non-traditional ingredients to prepare a distinctive seasonal beer. It was summer, and my first thought was to make a watermelon beer.

Unfortunately, the summer turned out to be so crowded with other activities that I never got around to it. By the time I was ready to make my special beer, summer was over and watermelons were nowhere to be found.

As October drew near my mind started churning, trying to select something that was representative of the season and at the same time would actually taste good. I had read about using maple syrup for flavoring beer, but since maple syrup is a bit on the expensive side, I ruled it out. I like pumpkin pie, so figured I would like a beer made from pumpkins. Pumpkin satisfied my first criteria for being a seasonal ingredient, readily associated with the fall. More important, it satisfied the other criteria of being cheap and readily available.

Whenever I formulate a new beer, I first try to imagine how that beer should taste. Then I try to find a way to achieve that taste. This case was no exception. Since I had decided to use pumpkin for my seasonal beer, I wondered if any other flavorings should also be added. Because pumpkin pie is so tasty, using pumpkin pie





spices in the beer seemed natural.

The next decision related to how much pumpkin should be used. I could use the pumpkin as the main ingredient and perform a mashing of some sort, or I could use it to add some flavor to a standard beer recipe. Since this was my first attempt at using pumpkin in a beer, I decided to use the pumpkin as an additional flavor to a standard beer recipe. I also decided that the flavors from the pumpkin and the spices should be a subtle addition to the beer rather than a strong presence. Using the pumpkin as a source of flavor rather than a source of starches simplified the procedure, since I wouldn't need to put the pumpkin through a mash/sparge cycle. My feeling was that this could get very messy.

Before going out to get a pumpkin, I checked my brewing books for a beer recipe that used pumpkin. A few of them mentioned the use of pumpkins, as well as other vegetables for brewing. I was surprised to find out that the use of pumpkins for brewing beer was very likely done by the pilgrims and early settlers. I guess they couldn't turn all those pumpkins into pies.

With all this history backing me up, I was sure that a pumpkin brew would make the perfect seasonal beer. With the decision made, I drove out to the local farmer's market and bought a small pumpkin (about seven or eight pounds).

Pre-Pumpkin Planning

Since I was going to use the pumpkin as an added flavoring for my beer, the question was what type of beer recipe should be used as the base. My decision was to use a fairly light colored, lightly hopped pale ale. At the time I used a simple ale extract recipe that I formulated, but you can just as easily use a pale ale beer kit or one of your own favorite recipes as the base. The basic pale ale recipe that I used is as follows:

Basic Pale Ale Recipe

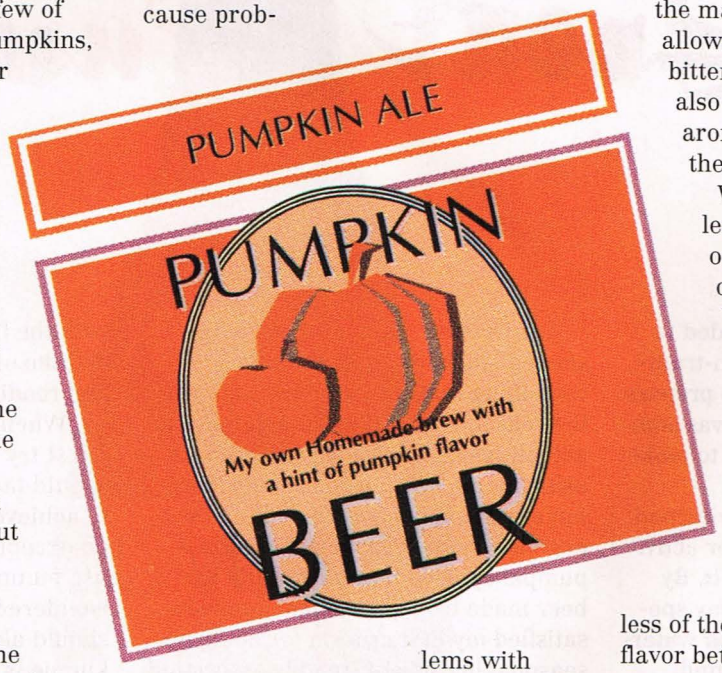
- 2-3 gallons of water
- 6 lbs. pale malt extract
- 1 lb. cara-pils malt (optional)
- 1 oz. Cascade hops (5.5% alpha acid)
- 1 tsp. gypsum
- 1 tsp. Irish moss
- 1 packet ale yeast

The addition of the cara-pils malt is optional. Its use will increase the body of the final beer by increasing the unfermentable sugar content, plus it keeps the brew from becoming too dry.

Add the following ingredients to provide the pumpkin flavoring:

- 5-6 lbs. pumpkin, cut up
- 3/4 tsp. ground cinnamon
- 1/4 tsp. ground cloves
- 1/4 tsp. ground ginger
- 1/4 tsp. ground nutmeg

Use fresh pumpkin. The canned pulp is not suitable and may have preservatives that will cause problems with your yeast. Also, it will be hard to separate it from your wort at the end of the boil.



Picking a good pumpkin is sort of like picking a watermelon. You want one that is firm and doesn't have any soft spots. If you have any questions, you can always ask the people at the store or market to help you select a good one. Buy a pumpkin that weighs seven to eight pounds. This will give you about five to six pounds of usable pumpkin once it has been cut and cleaned.

After you have selected a suitable pumpkin you need to prepare it for brewing. Wash it well to get off any dirt. Next, peel the skin off with a potato peeler. Now cut the pumpkin into quarters. Separate the seeds and the stringy center muck from the firm part of the pumpkin. Finally, cut up the quarters into squares about two to three inches on a side. Your pumpkin is now ready for use. These pieces will be added to the boiling wort and will give your brew its pumpkin flavor.

To make the beer, prepare the basic ale recipe as you normally would. Combine the hops, malt, and gypsum with two to three gallons of water and bring to a boil. You will be boiling the wort for 60 minutes. Be sure that there is enough room in the pot for the pumpkin chunks. These will be added to the wort about halfway through the 60-minute boil. Boiling the malt and hops for 60 minutes allows for maximum extraction of bitterness from the hops. It will also boil off most of the hops' aroma and flavors, leaving just the right amount of bitterness.

When there are 30 minutes left in the boil, add the chunks of pumpkin. Stir the mixture occasionally while it is boiling. With 15 minutes left in the boil, add the spices and the Irish moss to the wort.

I found that the use of the traditional pumpkin pie spices gives the resulting beer a nice subtle flavor. It is better to use ground spices instead of whole spices, because you can use less of them and you can control the flavor better. The down side to using ground spices is that it is hard to keep them from getting into the finished beer.

The use of Irish moss helps keep the beer clear when it is chilled to drinking temperature.

When the 60 minutes are up, scoop out the pumpkin and the hops (I prefer to use whole hops, but you can use pellets in a boiling bag if you prefer). Now you should cool the wort and pre-

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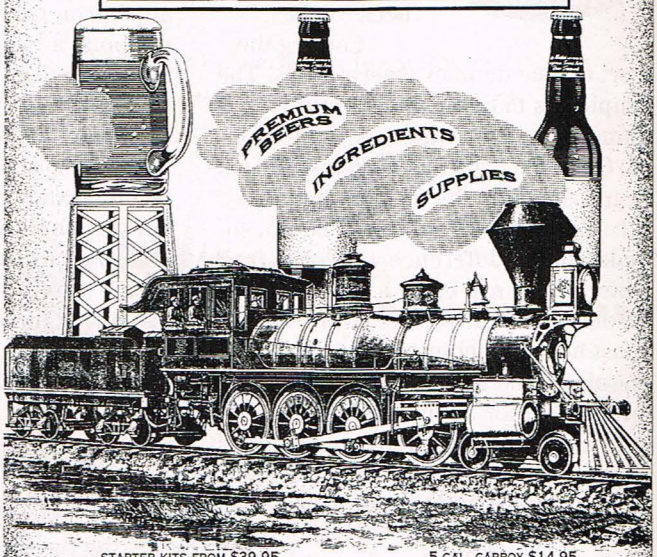
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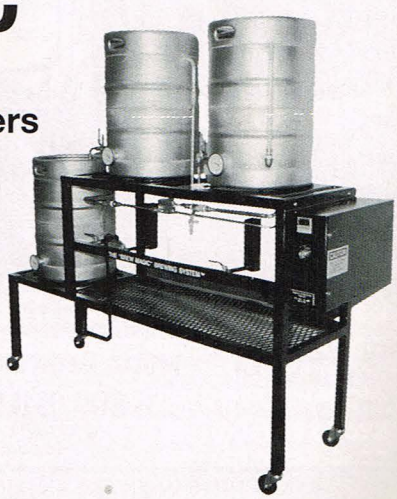
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pare it for pitching the yeast as you would any other batch of beer.

Cooling the wort can be done in several ways. The simplest is to cover the pot and immerse it in ice water for an hour or so. Once the wort has cooled sufficiently, transfer it to the fermentation vessel. You want five gallons of liquid, so make up the difference with cool, fresh water. If you are using a dried yeast, I recommend that you rehydrate the yeast before pitching it. This is done by dissolving the yeast in warm water and letting it sit for about 20 minutes before pitching. Pitch the yeast when it is ready, cover the fermenter, and set the fermentation lock. Fermentation should begin within 12 to 18 hours.

Once the fermentation has completed, let the brew settle an extra day or two to ensure that the spices have settled. If all goes well, the spices should be trapped in the yeast at the bottom of the fermenter. Nonetheless, you should be a bit more careful when racking so as not to siphon too much of the spices out along with the beer. They won't cause any harm, but you don't want to serve someone a beer with specks of spice floating in it.

Finally, prime and bottle the beer as usual. I like to use 2/3 cup of corn sugar dissolved in one or two cups of boiling water for priming. This way I am sure that the sugar is completely dissolved and it can be easily and evenly mixed with the fermented wort.

Isn't it funny that you don't notice some things until you are somehow involved with them? For example I never noticed how many Toyotas there are on the road until I bought one. The same was true with the pumpkin beer.

Since I made my pumpkin beer, I found that there are several commercial pumpkin beers available. Some microbreweries and brewpubs also make it available as a seasonal specialty beer. Some of them are pretty good, others are less than interesting; it all depends on what flavor the brewmaster was trying to achieve.

Some of my friends have told me that my pumpkin beer is the best beer they have ever tasted. Others refuse to even consider trying it. They claim that they like pumpkin pie, but I doubt it. I enjoy my pumpkin beer. The spices are just subtle enough so you might even miss them. Many people who have tried it barely noticed the spices. So if you want a distinctive and delightful seasonal beer, give pumpkin beer a try. Maybe next summer I can finally make that watermelon beer...

Some of my friends have told me that my pumpkin beer is the best beer they have ever tasted. Others refuse to even consider trying it.

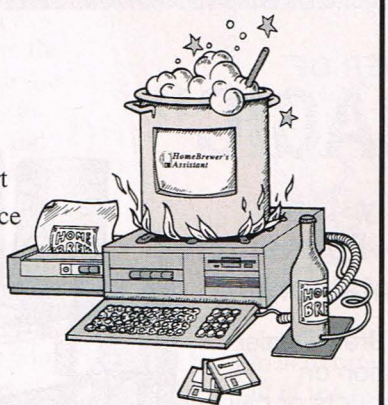
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ALL-GRAIN BREWING

By Sam Wammack

Some homebrewers think of extract brewing and all-grain brewing as two different things. If you're an extract brewer, the idea goes, all-grain brewing is to be tried only after a long period of learning about brewing methods, perfecting techniques, and acquiring expensive equipment. Moving from extract to all-grain is like moving from the minors to the majors.

Some people think that way, but they're wrong. Way wrong!

Test yourself on these questions. Do you suspect you're not ready for all-grain brewing? Do you feel that *real* brewers make only all-grain beers and that malt extract beers are for beginners learning the homebrew hobby? Do you believe that all-grain beers are clearly superior to malt extract beers, and that the tremendous expertise of all-grain homebrewers always comes through in the quality of their brews? Are you intimidated by the technical side of grain brewing?

A lot of homebrewers feel that way about all-grain brewing. About 80 percent of homebrewers stick with malt extract, and they make some awfully good beers. One brewer who has made hundreds of batches of beer and has won many homebrew competitions likes to boast, "I've never mashed anything but cockroaches!"

Your first mash!

There is no need to hold off on all-grain brewing if you want to do it.



Grain brewing is a simple process, it's not that different from extract brewing, and it has both advantages and disadvantages. The advantages are that grain brewing gives you more complete control over your beer, and the ingredients for each batch are a bit cheaper. The disadvantages are that grain brewing takes more time per batch and you need some specialized equipment to sparge, or rinse, the grain properly.

Improved beer quality, especially for ales, is no longer much of an advantage with all-grain brewing over extract. Back when good malt extract was hard to find and a typical homebrew was a hopped-extract-and-sugar recipe, there was a quality difference with grain beers. A good grain beer really stood out from the sugar beers of the time. Now there are many good malt extracts on the market, and almost everyone is making all-malt recipes.

You're in Control

All-grain brewing simply means that you're the one who converts grain to malt extract (wort). The fact is that malted barley will make malt extract when it's crushed, soaked in water, and kept between 145° and 160° F for a half-hour or so.

The lower half of that 15-degree range will make beers that are lower in body and slightly more alcoholic. The upper half of the range will make beers that are higher in body and slightly less alcoholic.

If you like malty beers such as Oktoberfest, porters, and heavy pale ales, aim for a temperature between 155° and 160° F when mashing. If you're making an American light beer, aim for 145° F and increase the mash time to an hour.

In brewing beer from grain, as with anything else, there is a big difference between being able to *do* it and in fully *understanding* it. If you want to delve into the complex organic chemistry that occurs when grain is made into beer, that's fine. There are master's degrees available in brewing science that cover the intricacies of that process.

But you don't necessarily need all that knowledge. A person can drive a car and do simple repairs on one, but that doesn't mean he can build a car. Someone who wants to type an article on a word processor doesn't need to know how to write the word processor program or build the computer it runs on.

In brewing beer from grain, as with anything else, there is a big difference between being able to *do* it and fully *understanding* it.

Brewing is the same. All you need to do to make great beer from grain is:

1. Choose a recipe and crush all the grains together.

2. Mix the crushed grains with warm water.

3. Keep the mixture of crushed grains and water between 145° and 160° F for 30 to 60 minutes.

4. Rinse the grains with hot water to stop the mash and separate the liquid from the husks.

That's all there is to it! Once you have done these four things, you are at the same point in the brewing process as if you had just added malt extract to the water in your brewpot. You have *made* the malt extract, and from there you bring it to a boil, add bittering hops, clarifier, and finishing hops, cool the wort, move it to a fermenter, and pitch yeast—just as in malt extract brewing.

Red Oak Ale

- 4 lbs. 2-row malted barley
- 4 lbs. victory malt
- 2 lbs. British pale ale malt
- 1 lb. special roast
- 4 oz. oak chips (in boil)
- 1 1/2 oz. N. Brewer hops (boil)
- 1 oz. Cascade hops (boiling)
- 1/2 oz. Cascade hops (finish)
- 1/2 tsp. Irish moss
- Ale yeast
- 3/4 cup corn sugar (priming)

Mash temp. 152° F

S.G. 1.060
T.G. 1.017

A heavy pale ale—red with white foam!

Four Easy Steps

1. Choose a recipe and crush all the grains together. That's easy. There are hundreds of published all-grain recipes in dozens of books and magazines. You are always free to make changes in those recipes if you want; that's part of the fun of homebrewing.

Let's say you want to make a recipe that calls for eight pounds malted barley (2-row), one pound Munich malt, 1/2 pound crystal malt, 1/2 pound black patent malt, and 1/2 pound chocolate malt. If you have a stock of these grains at home and a grain mill, just weigh out the amounts and crush them together. If you are buying the ingredients, your homebrew shop should be happy to crush the grains together.

Ozark Mountain Lager

- 5 lbs. 6-row malted barley
- 2 lbs. Munich malt
- 1 lb. victory malt
- 1/2 lb. cara-pils malt
- 1/2 lb. malted wheat
- 1 oz. Hallertauer hops (boiling)
- 1/2 oz. Cascade hops (boiling)
- 1/4 oz. Hallertauer hops (finish)
- 1/2 tsp. Irish moss
- European lager yeast
- 3/4 cup corn sugar (priming)

Mash temp. 150° F
Fermented at 50-55° F
S.G. 1.040
T.G. 1.013

Great continental lager!

2. Mix the crushed grains with warm water. Brewers call this "dough-ing in." If you are doing an infusion mash (more about this later), you will actually be mixing the dry grain with water hot enough to stabilize the mash between 145° and 160° F. Otherwise, you will probably start out with hot water from the tap. If your recipe calls for gypsum, add that to the mash water. Try to make the mash the consistency of runny oatmeal—thick, but liquid enough that you can stir it well with a big spoon.

3. Keep the mixture of crushed grains and water between 145° and 160° F for 30 to 60 minutes. There are many ways to do this, and the conversion will work no matter which way you choose. In that temperature range, enzymes in the grains will convert starch chains into fermentable sugars. Modern brewing grains are very prone to convert, and they will do it quickly and easily if you watch the temperature. The only danger is in getting the mash too hot. The enzymes will be destroyed just a few degrees over 160, but there is no danger at all near the lower end of the scale.

The most common methods to get the grain-water mixture to the desired temperature range are called decoction, infusion, temperature program, and stove-top mashing, a type of temperature program mashing adapted for homebrewing. Decoction is the most involved and not recommended for newcomers to mashing. Decoction was developed hundreds of years ago, before thermometers were available. It consists of periodically removing part of the mash, bringing the portion to a boil, then adding it back to the rest of the mash. This is done several times with carefully measured portions of the total mash. Decoction was an ingenious method for the time. After all, the only constant (without a thermometer) was 212° F, the boiling point of water. Those old-timers figured out how much boiling liquid to add to their total mash to stabilize it within the 145° to 160° F mashing range.

Foggy River Porter

- 6 lbs. 2-row malted barley
- 2 lbs. victory (biscuit) malt
- 1 lb. Munich malt
- 1/2 lb. special roast
- 1/2 lb. chocolate malt
- 1/2 lb. black patent malt
- 1/2 lb. black barley
- 1 1/2 oz. Cascade hops (boiling)
- 3/4 oz. Cluster hops (boiling)
- 1/2 oz. Tettnanger hops (finish)
- 1/2 tsp. Irish moss
- 2 doric ale Yeast
- 3/4 cup corn sugar (priming)

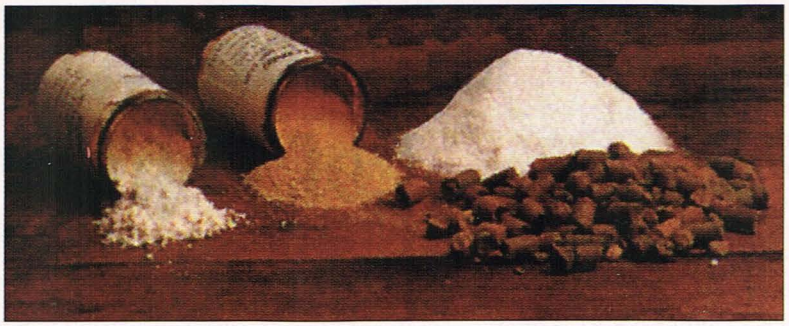
Mash temp. 156° F
S.G. 1.056
T.G. 1.015

Infusion mashing is probably the most popular method among homebrewers. One benefit of infusion mashing is its simplicity. Water is placed in an insulated container, usually a picnic cooler, then grain is added. The water must be hot enough to bring the mash to the desired strike temperature within the mashing range. There is good information on infusion mashing in many homebrewing books.

Generally, one quart of hot water is added for each pound of grain in the recipe. Mixing the water and the grain drops the temperature of the water by about 16° to 18° F. If a recipe has 10 1/2 pounds of grain, you need 10 1/2 quarts of water for your infusion mash. Heat the mash water to 174° F to hit a strike temperature of about 158° F. After pouring grains into the hot water, just stir it in and close the lid on the picnic cooler. Conversion should be complete in about 30 minutes.

Temperature program mashing, sometimes called step mashing, is just a modified type of infusion mash. In temperature program mashing, hot water is first added to the grain to bring it to 122° F, where it is held for 30 minutes. Then, more hot water is added to bring the mash up to the temperature range for conversion.

There is a desirable effect at 122° F called a "protein rest." Resting the mash at that temperature gives the beer more stability, more clarity, and a better balance between dextrins (unfermentable sugars) and fermentables. For these reasons, step mashing is bet-



ter than a simple infusion mash.

Stove-top mashing is relatively uncommon among homebrewers, and it has the disadvantage of requiring constant attention. It does give a lot of control over the mash, however. For a stove-top mash you need a large brewpot. Start with hot water from the tap (as hot as it will run), then add the dry, crushed grain. Add gypsum at this time if needed. Mix in the water until the mash can be easily stirred with a large spoon. At this point the temperature is usually about 104 degrees.

Then put the pot on a stove—a propane cooker works well—and turn the heat on low. Keep a thermometer in the mash. Heat and stir constantly while checking the thermometer. Stirring is very important to avoid hot spots and scorching on the bottom of the pot. It is important to keep the temperature constant throughout the mash.

Heat, stir, and check the temperature until you get to the desired strike temperature. Near the end of this process, be careful not to overrun the temperature you are shooting for. Keep a glass of cold water on hand to cool the mash quickly if it starts to exceed the desired temperature. When the temperature is reached, turn off the heat and take the pot off the stove. This is important, because the mash may get too hot if it sits on a hot burner. At this point cover the pot and leave it alone for about 30 minutes. Use this time to start heating five gallons of sparge water in a separate pot.

After 30 minutes check the temperature of the mash. It will probably be in the low 140° F range. Put the mash pot back on the stove and resume slowly heating, stirring, and checking the temperature. This time bring the temperature straight up to 170° F. Now transfer the mash to whatever arrangement you have for sparging (rinsing).

Stove-top mashing is good because the mash travels all the way from 104° to 170° F. There is a protein rest, because it has been in the 122° range. Even better, it has traveled through most of the 145° to 160° mashing range. With stove-top mashing, you have very tight control over your mash.

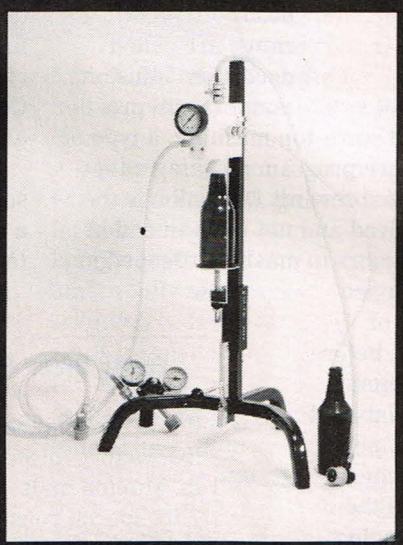
4. Rinse the grains with hot water to stop the mash and separate the liquid from the husks. This step is called "sparging" or "lautering," and it has two purposes. The first is to

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raise the temperature of the mash to 170° F and destroy the enzymes. This temperature also reduces wort viscosity, making lautering easier. The second purpose is simply to rinse the liquid beer "wort" from the grains.

There are many ways to sparge, and every homebrewer will develop his own method. One of the best and most popular ways is to fit a picnic cooler with a grid of slotted copper pipe in the bottom attached to a valve in the cooler's drain. Many homebrew shops sell completed "picnic cooler spargers," and it's possible to build one yourself (see August '95 BYO). Other options, though not so good, are the double-bucket system, with holes drilled in the inner bucket, or rinsing the grain while it's confined in a nylon straining bag. Whichever method you choose to rinse (sparge) the grain, the idea is to raise the temperature and get all the liquid extract back in your brewpot, minus the grain husks.

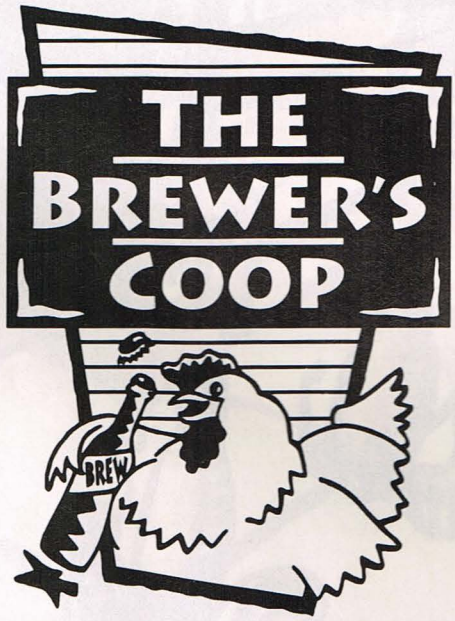
Now you have completed the four steps of all-grain brewing, and you are just where you would be in extract brewing if you had added malt extract to hot water. Is all-grain brewing really worth it? Is it a big improvement over extract brewing? The answer is maybe—but it depends on you!

All-grain brewing is fun. It's easy if you prepare for it in advance and rig up the equipment you need. All-grain brewing gets you closer to the brewer's art, because you are no longer paying someone to make malt extract for you—you are doing it yourself. It can improve your beer because even with high-quality malt extracts, only the best extract beers compare with all-grain beers. There are even some cost savings. The grain in an all-grain beer will cost about half what malt extract would cost to make the same beer. Of course, there is a lot more time involved in making an all-grain beer. Including cleanup, a batch usually takes four or five hours.

Homebrewing isn't a natural progression in which amateurs make extract beers then "graduate" to all-grain as they learn.

Not all brewers switch entirely to grain brewing in time, nor should they. That is, homebrewing isn't a natural progression in which amateurs make extract beers then "graduate" to all-grain as they learn. Many accomplished all-grain brewers use extract frequently. They often don't have the time or inclination to spend four or five hours in the kitchen. Still, it's a great process for any homebrewer to try. There is certainly no reason to be intimidated by grain brewing. It's simple and easy, and it's one of the ways to make what every brewer is looking for—great beer!

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Start Your Own YEAST FARM

By John Huegel

Try these easy techniques for cultivating yeast. You'll thrill your friends, fascinate your neighbors, and make great beer, too.

When homebrew companies advertise, they push malt extracts, they push specialty grains, they push mashing equipment. Rarely, if ever, do they advertise yeast.

But don't overlook the contribution of yeast to the final flavor of a beer. The proper yeast can make an otherwise ordinary beer into a shining example of a particular style and a true joy to consume. It can affect the residual sweetness, clarity, aroma, flavor profile, and alcohol level. The good news is that, with proper care (and proper relaxing, when appropriate), you can capture and cultivate nearly any yeast strain from a variety of sources. Once in your possession, a yeast sample is a great investment for the quality-conscious homebrewer.

Culturing vs. Cultivating

There are two approaches to saving and using yeast: culturing and cultivating. Culturing involves isolating tiny samples of a yeast strain and preserving

them on a culture medium, usually agar and wort. Then small samples of this yeast are grown gradually, in successively larger starter worts, until a pitching volume of yeast is reached. Cultivation involves preserving a yeast sample in a bottle or jar containing sterilized wort or water. A portion of this sample is used to build a starter.

Of the two approaches culturing is the most reliable but also demands the most effort. It requires access to sterilization devices, test tubes and/or petri dishes, and a variety of equipment you might vaguely recognize from your high school chemistry days. Yeast cultivation is a much more relaxed yet reliable method of yeast preservation.

Why Cultivate?

There are a number of reasons you might want to cultivate yeast. Cultivating yeast is both simple and convenient. It allows you to store a number of high-quality yeast samples in a relatively small space. If you are already a liquid yeast user, you can use a single packet or vial of yeast over several batches, much as the big brewers reuse their yeast samples. This method lets you use the same yeast that some of the world's best brewers use. But most of all, it's cool. You will find that your yeast farm will become not only an interesting conversation piece but a valuable resource to you and other homebrewers as well.

Brewers have been reusing yeast for zillions of years (well, almost). Documentation of brewing practices from centuries ago mention reusing the barm or yeast cake from a previous batch. Most contemporary breweries also reuse their yeast. They either directly pitch the yeast from the previous batch, wash the yeast in a water and/or mildly acidic solution, and then repitch it, or they step up a preserved culture or sample to pitching volumes and use it. In all cases the proper handling and storage of yeast samples is vital to the success of reusing yeast.

Successful Farming Methods

1. Add a quality yeast sample to a jar of sterile wort.

2. Proof the sample and store it in the fridge.

3. Feed it with wort once a month and bleed off CO_2 once every week or two. You can keep the sample for six months or more with proper care.

4. To make a starter, swirl to suspend the yeast, then add 1/2 cup of this solution to one quart of sterile wort. Do this 24 to 48 hours before pitching time.

5. Pitch the entire quart of starter, or at least the slurry at the bottom of the starter jar.

6. Aerate your wort to provide oxygen for the yeast starter. Remember to use proper sanitation methods for all containers used in yeast cultivation.

What to Cultivate

With the proper approaches you can capture and preserve nearly any yeast from a variety of sources. Aside from dry yeasts, which sometimes contain wild yeasts or bacteria that could degrade the quality of your sample over time, almost any type of yeast can be captured and cultivated. This includes yeast fresh from the primary or secondary fermenter of a batch, a sample professionally prepared by a yeast manufacturer or serious hobbyist, or a sample taken from a draught or bottle-conditioned beer. (Note that some bottle-conditioned beers use a different yeast for bottling than they use for brewing.)

Some notable commercial examples that are often cultivated include Sierra Nevada Pale Ale, Orval, and Chimay. If a bottle of beer has sediment on the bottom, then it is a likely candidate for yeast cultivation.

You also have a fair amount of latitude when considering the age of a beer or sample from which to obtain your yeast. It's possible to successfully cultivate samples from commercial and homebrewed beers in excess of six months old. Some brewers have even recovered yeast from years-old barleywines.

Once you have captured your sample, you can preserve it for several months with little or no degradation in quality. Under ideal conditions, which include minimum disturbance, excellent sanitation, and regular feeding, your cultivated samples may last up to a year before the quality and viability starts to suffer. As in most other brewing practices, proper sanitation is vital.

What You Need

This approach is simple and serves two purposes. Start by canning some starter wort, which can be used both for cultivating yeast samples and for stepping up the samples to pitching volumes. Pint and quart canning jars are easy to use, reliable, and inexpensive. Note that you do not need to can the wort to use this method. You can just boil up what you need for samples or starters when required, but making a batch of starter in advance can really take the worry out of creating great samples and starters.

Canning equipment is available at most grocery and department stores:

Canning jars. Pint jars are convenient for samples, and quart jars work well for preparing starters. Start with six to 12 pint jars and four one-quart jars. You should be able to scrounge these from somebody's basement or pantry. Maximum cost: $15. If you use jars not designed for canning, you may not get a good seal, and you shouldn't can wort with them.

Canning lids and rings. The dome lids are designed to pop down and show an indentation when a good seal is made; the rings go over the top of the lid and hold it in place while it is sealing ($2). Use the narrow lids and rings on both the pint and quart jars. Manufacturers recommend you don't reuse the lids, but the rings and jars can be used again.

Canning kettle ($25) and **jar lifter** ($3). A three- to five-gallon aluminum or enameled steel pot is best for canning. In most cases your brew pot will do just fine. Spend the three bucks on a jar lifter, which will allow you to handle boiling hot jars without burning your hands to a crisp.

Wort source (dry malt extract is best). This is used to prepare the sample jar and starter jar wort. One pound of dry malt extract ($3) will be ample

and will last a long time. You can also save some wort from your current batch, or you can rinse out your extract can or bag and usually get enough extra extract to make up a jar or two of wort.

Permanent marker. For labeling the lids of the sample jars.

Canning Wort

Once you have your gear assembled, you may proceed to can the wort. Here are the steps:

1. Begin by boiling a low-gravity wort (1.036 to 1.044) in a saucepan or kettle for 10 minutes. Use 1/4 cup of dry malt extract and a few hop pellets for each half-gallon of wort you are preparing.

2. At the same time boil the jars and lids in your big kettle. Remove the jars one at a time, drain, fill with wort, and immediately cap with a lid and ring, loosely turned.

3. Set the jar on a towel and let it cool in a draft-free area. When the lids pop down, you have successfully canned wort!

Discard or quickly use those cans that do not properly seal. Keep an eye on the cans for the first few days after canning—poor canning could lead to exploding jars! Store the good jars in a cool dark area until you need them. Before using, examine them for signs of fermentation and/or decay and discard any suspicious jars.

Capturing a Sample

When capturing a sample, you do not need a large amount of wort in which to store it. Usually a pint or less will do. Here is the procedure:

1. Open the jar of canned wort or boil and cool one pint of wort.

2. Add the yeast sample. If you're using a "smack pack" or vial of liquid yeast, sanitize the outside of the container and carefully pour the contents into the sample jar. If you're starting with bottled beer, carefully pour off all but the last couple of ounces of beer. Then swirl the bottle to suspend the sediment, sterilize the bottle neck with a flame, and pour the contents into the jar. If you are recovering a sample from a previous batch, use less than a tablespoon of sediment, preferably from the primary. If you add too much, your sample will ferment too quickly.

3. Put the lid and ring back on the starter jar and shake it wildly for two minutes to add oxygen to the wort.

Proof the yeast sample for one or two days depending on starter size and viability. Do this by allowing it to sit in a warm, preferably dark place. Bleed off excess pressure by loosening the lid slightly two or three times daily. When you gently shake the jar and then see small bubbles rising, the sample has taken hold.

4. Label the jar lid with the type of yeast and the date made, and place it in the refrigerator.

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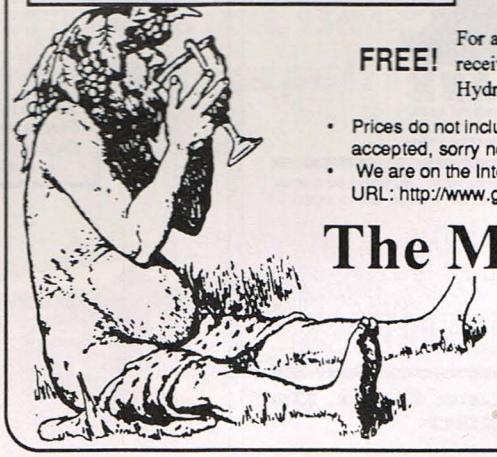
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5. Bleed off pressure once every week or two so you don't develop jar bombs.

6. Feed the sample fresh wort once each month. To do this pour off 1/2 cup of your sample liquid. Then open a pint of canned wort and replace the lost liquid with fresh wort. You can take this opportunity to taste and smell the discarded liquid (it *is* beer). Over time you will be able to judge the type of yeast and its health from that small sample.

Starting with a Cultivated Sample

Once you have your happy yeast farm, you can make up the ideal starters for your beer. Starting a day before you brew (two days for high-gravity worts), follow this simple procedure:

1. Remove the sample jar from the fridge and allow it to warm up to room temperature. This will take one to two hours.

2. Open a quart of canned wort or boil and cool a quart of fresh wort from dried or liquid malt extract.

3. Discard 1/2 cup of the starter wort (or save the 1/2 cup in a sterile container to feed to the sample jar).

4. Swirl the sample jar to suspend the yeast and pour 1/2 cup of the sample liquid into the starter jar. Close the sample jar and the starter jar and tighten the lids or jar rings.

5. Shake the starter jar for two or three minutes to aerate the wort.

If a bottle of beer has sediment on the bottom, then it is a likely candidate for yeast cultivation.

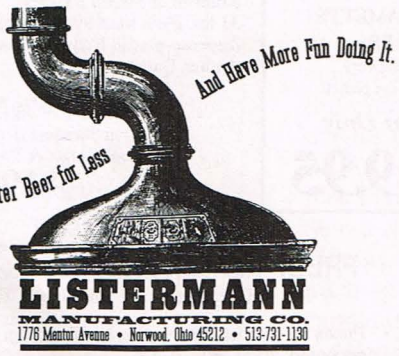
Check the starter every few hours and loosen the lid periodically to relieve excess pressure. You must do this frequently to avoid the bomb problem. An alternative is to drill a hole in the lid and afix an air lock.

You may want to make up two or more one-quart starters in parallel to pitch into high-gravity (especially above 1.080° Plato) recipes.

At pitching time pour the top half of the starter liquid into your primary fermenter, then swirl the starter jar to suspend the remaining yeast. Pour that in as well. Then make sure you aerate your wort. Proper aeration and a strong starter are two of the most important steps in getting your cultivated yeast off to a good clean start.

By following these steps you can collect many world-class yeast samples. You will quickly discover the unique qualities of various yeasts and increase the types of flavors you can produce in your beer. These techniques can also be used for mead, wine, and ciders.

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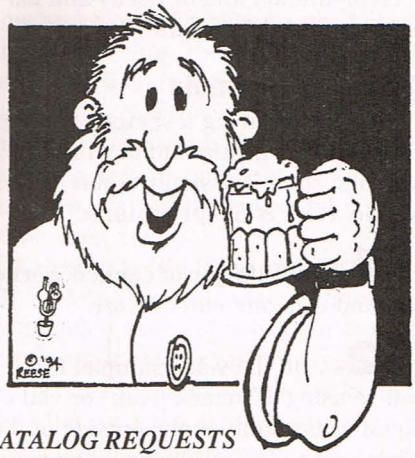
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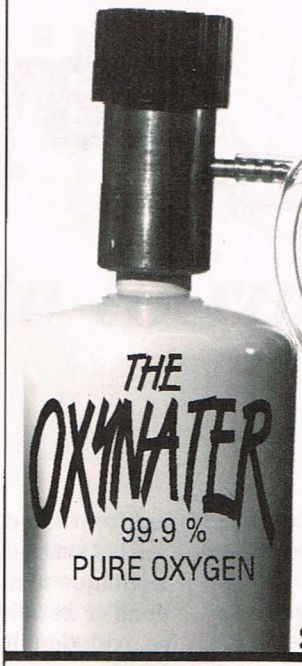
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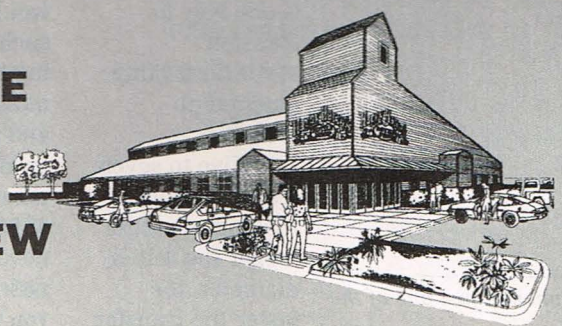
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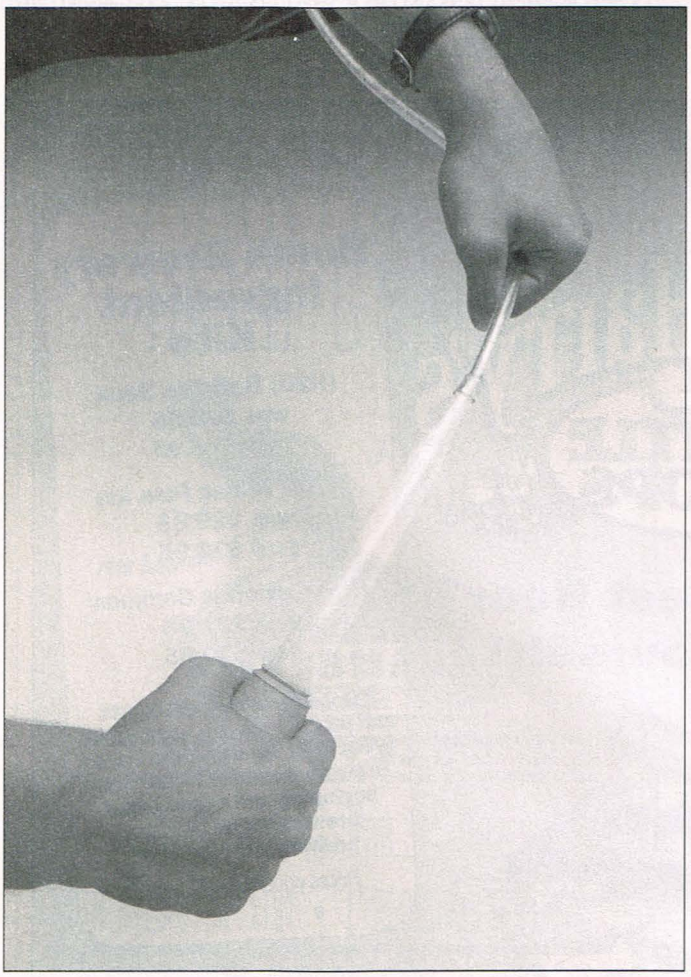
By David Weisberg

Siphoning is the process of moving liquid from one place to another. Nothing more, nothing less.

The main goal of siphoning wort or beer is to remove clear liquid from trub and yeast, the sediment that's left after fermentation, by moving the liquid from one container into another.

It's simple, but it requires the right technique to avoid introducing infections or aerating the wort, which causes oxidation in the final beer.

Aeration, adding oxygen to the liquid, is desired when transferring cooled wort into the fermenter before fermentation. This gives the yeast oxygen for growth. But avoid it after fermentation has begun.



TODD HAMMOND

Using a turkey baster to suction-start a siphon is just one of the tricks of the homebrewing trade.

The trick to successfully moving your wort is to find a clean, easy method that works well.

Before you get started siphoning, take a second to learn the lingo: Homebrewers don't necessarily siphon. They rack. Racking means to transfer; siphoning is one way to transfer.

Basic racking equipment includes:

- Five to seven feet of flexible racking tube (the bigger the tube's diameter, the faster the transfer will be).
- A rigid racking tube, called a racking cane, to attach to the flexible tube (optional but recommended).
- One container full of liquid.
- One empty receiving container (sanitized).

When racking, make sure your receiving vessel is located below the vessel holding the liquid. Place the fermenter on a chair and the receiving bucket on the floor, for instance.

Your racking tube should be long enough to reach down into the bottom of the receiving container. This minimizes aieration during racking. Remember, the *only* time you desire aeration is before fermentation.

Once you've got everything set up, you're ready to begin racking.

One way to siphon is the method commonly used for gasoline. You place a length of hose down into a gas tank and suck until you get some poisonous liquid in your mouth. Then you spit it out while gagging. As the liquid starts to flow, you lower the hose into another container.

At your home brewery you could use the same technique. Maybe you would gargle with some strong alcohol such as vodka or brandy before sucking to kill some of the bacteria in your mouth. Though it may kill bad breath and even get you a little tipsy (if you swallow), vodka is probably better mixed with tonic and not used as part of your siphoning procedure. You can never be sure if you killed all those nasties in your mouth. And although you wouldn't mind getting a taste of

Suck and Spit



A practical guide to racking

your hoppy IPA, you probably don't want to get a mouthful of piping hot wort!

There's a Better Way

One well-known technique to start a siphon is to fill a flexible racking hose with water to draw out the beer/wort.

Here's how to do it: Submerge the racking hose in a bucket of sanitizer for 15 to 20 minutes. Then, after rinsing your hands with sanitizer, coil the racking hose in one hand while running warm tap water into one end (keep both ends upright). Once the water has flushed out the sanitizer, place one thumb over each open end of the hose, trapping the clean water inside.

Let some of the liquid (maybe 10 percent) flow out of the end in your right hand. While keeping your left thumb in place, put the right end of the hose into your brew bucket or carboy of wort. Lower the left end (with your thumb still in place) near the bottom of a small pot—not your receiving container. Don't touch the bottom of the pot unless you've sanitized it.

Let go of your left thumb until beer/wort starts to flow out. Quickly put your thumb back on to stop the flow. Or better yet, pinch it with a plastic hose clamp. Now you can move that outflow end into your bottling bucket, carboy, or keg, and release your thumb (or hose clamp). You will have a lean, clean, siphon going.

An even better setup for siphoning is to attach a straight, rigid piece of plastic called a racking cane to the inflow end of your flexible racking tube. The rigid end usually has a racking tip to reduce the amount of sediment pickup during transfer.

Racking the Hot Stuff

First of all, you never want to siphon boiling liquid. It's too dangerous and will probably melt your plastic tubing. Let the liquid cool until it reaches a manageable temperature (below 170° F) but is still very hot.

You may need to start a very hot liquid siphon for a counterflow wort chiller (where the wort flows through a length of coiled copper tubing). The best method is to attach a metal (copper) racking cane, about two to three feet long, to the end of the plastic tubing that would normally go directly into the hot wort. Use a worm-type hose clamp over the joint where the metal racking cane goes into the plastic hose to make a tight seal.

Vodka is probably better mixed with tonic and not used as part of your siphoning procedure.

Before you start this hot siphon, sanitize the counterflow wort chiller. Fill the chiller with warm tap water. Siphon sanitizer into the wort chiller like you siphoned beer into the receiving container in the cold liquids method. Let the water flow into a bucket and clamp or plug each end of the chiller to keep the sanitizer inside. Wait 15 to 20 minutes to completely sanitize the inside.

Flush the sanitizer out by siphoning about one gallon of warm water from a sanitized bucket. When the bucket is almost empty, plug the end to keep the water in the chiller.

When the brew is ready to be siphoned, let a cup or so of the water flow out of the chiller into a bucket and stop the outflow with your thumb or clamp the hose tight.

Next, lower the copper racking cane (the inflow end) into the hot wort and release the outflow end of the tube into a bucket. The wort will flush the water through the chiller. Note: The copper racking cane can get hot quickly, so use an oven mitt to hold it in place or just leave it alone once it is in place in your brewpot.

Once you see the water change color at the outflow end of the wort chiller, quickly clamp the flow shut. Now move the outflow tube into your primary fermentation bucket/carboy,

and you are off to the races!

Gadgets to the Rescue

Some people use a new, clean turkey baster (no turkey juice allowed) to help suck start a siphon in a sanitary way. One reason to suck start the siphon instead of drawing it out with water is to avoid contamination if your water supply is less than clean.

Take rubber ball off the end of the turkey baster and sanitize your racking tube and baster with non-rinse sanitizer (such as Iodophor). Insert the baster tip into the outflow end of the siphon set-up. Now your lips never have to touch the sanitized siphon tube. Just remember to pull out the baster when the liquid gets started.

If you don't want to suck start the siphon, leave the rubber ball on the baster and use that to draw out the liquid. Squeeze the baster ball tight, then lower the inflow end (the rigid end) into the wort or beer. As you let go of the baster ball, liquid should start to flow.

The key to getting a good flow started with one squeeze is having a tight seal where the baster tip goes into the tube.

If you don't get the liquid to flow, you need to raise the rigid end out of the liquid and repeat the process. It is important to avoid squeezing the baster while the tube is under the liquid level, because this will oxygenate the wort. If you are siphoning from a just-boiled batch, oxygenation is a good thing (beceause fermentation hasn't started yet). But you still may want to avoid blowing air bubbles into the brewpot, because that may stir up the bottom sediment (trub), which could reduce the clarity in your final brew.

If you were able to get a siphon going, you will now have to quickly pull out the baster (otherwise you'll get a baster full of beer). You can either tightly fold the tube back on itself or use a plastic tubing clamp to temporarily stop the liquid flow. Remove the baster, direct the tube into the container, and start the flow again.

Siphoning Accessories

There are gadgets you can buy to make siphoning easier and quicker. Here are two that are available in homebrew stores:

- The Sucking Thing by Lowenbitter Brewing Supplies, Ukiah, Calif., 1-800-474-7737. The Sucking Thing has a modified baster ball with a plastic body, a one-way in-take air valve, and a hose barb that can be attached to your racking hose. Squeeze the ball end to create a siphon, then just remove it from the racking tube once the liquid starts to flow.
- The Carboy Cap. The Carboy Cap can be attached to a carboy and has two capped holes. In the larger hole, position a racking tube down into the carboy (resting just above the sediment). In the other hole attach a length of tubing from a carbon dioxide tank. After you turn the pressure to five psi (maximum), the liquid will be pushed up the racking tube. Turn off the CO_2 gas when the liquid starts to flow into the receiving container.

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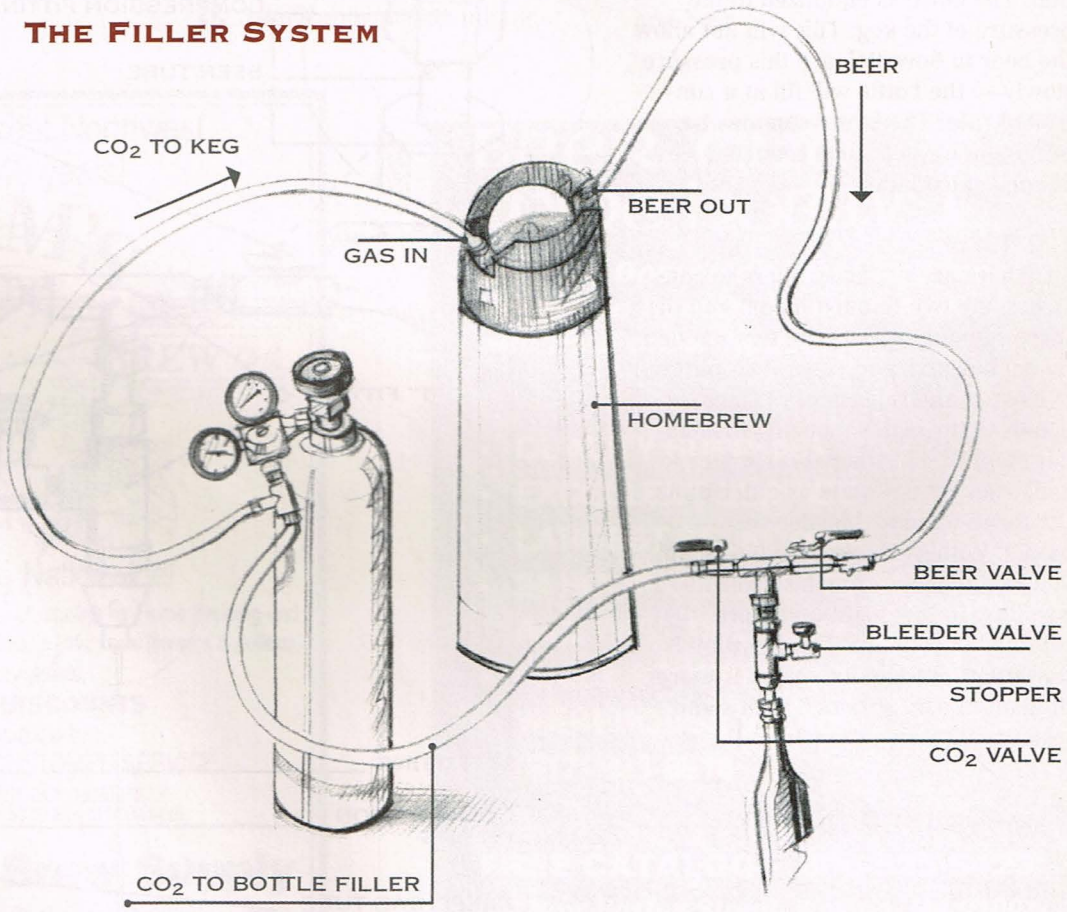
Build your own counterpressure bottle filler and get flavorful, well-carbonated beer in every bottle.

When you started brewing, you bottled your beer. You've undoubtedly realized how painstaking bottling really is. It is time consuming, messy, and frankly a pain in the jitsy, especially when all you really want to do is just drink the stuff. You switched to kegging, investing in the system that shaved a week off of carbonating time. You even feel pretty cool bringing a keg over to your friend's place. Could it *really* be time to switch back to *bottles*?

When you bring a keg to a friend's house, you're bringing a lot of beer. The more beer you bring, the more beer the friends drink. You may never get a full glass for yourself. These are the times that call for bottles.

You can try the tube in the faucet thing to fill a few bottles, but in a few hours it's just not the same beer. The mouth feel is wrong, the head dissipates, and the carbonation is nil. Give it a few days in the bottle and it tastes remarkably like wet cardboard. What you need at this point is (excuse the

THE FILLER SYSTEM



megabrewery language) "draft beer in a bottle."

Using a counterpressure filler, you can achieve a perfect fill with no oxidation (wet cardboard flavor) and little or no loss of carbonation. This is a closed, keg-to-bottle filling system. With either of these two fillers that you can construct, you can eliminate oxidation and retain at least 80 percent of original carbonation.

Many microbreweries use small machines working on the same principle, and some breweries actually use hand-held counterpressure fillers. They really work!

The whole principle

The idea is to fill the bottle while keeping the carbon dioxide in solution. Filling straight from the faucet would cause foaming and result in CO_2 coming out of solution. Under pressure a controlled rate of flow can be achieved to eliminate or cause very little foaming, retaining much of the CO_2 in solution. The bottle is equalized to the pressure of the keg. This will not allow the beer to flow. Release this pressure slowly so the bottle will fill at a controlled rate. The bottle can also be purged of oxygen, thus reducing chance of oxidation.

The fillers

There are two easy fillers to construct, the two-handed model and the three-handed model. The two-handed model has no bleed valve. The purging of oxygen and release of CO_2 are achieved through squeezing the rubber stopper. This model is simpler to construct yet not quite as efficient as the three-handed, bleeder-valve model. With the bleeder-valve model you can achieve a much slower fill resulting in less foam and more CO_2 retained in solution. The downfall is that the three-handed model is more difficult to use, although with some practice it's quite a machine.

Two-Handed Model

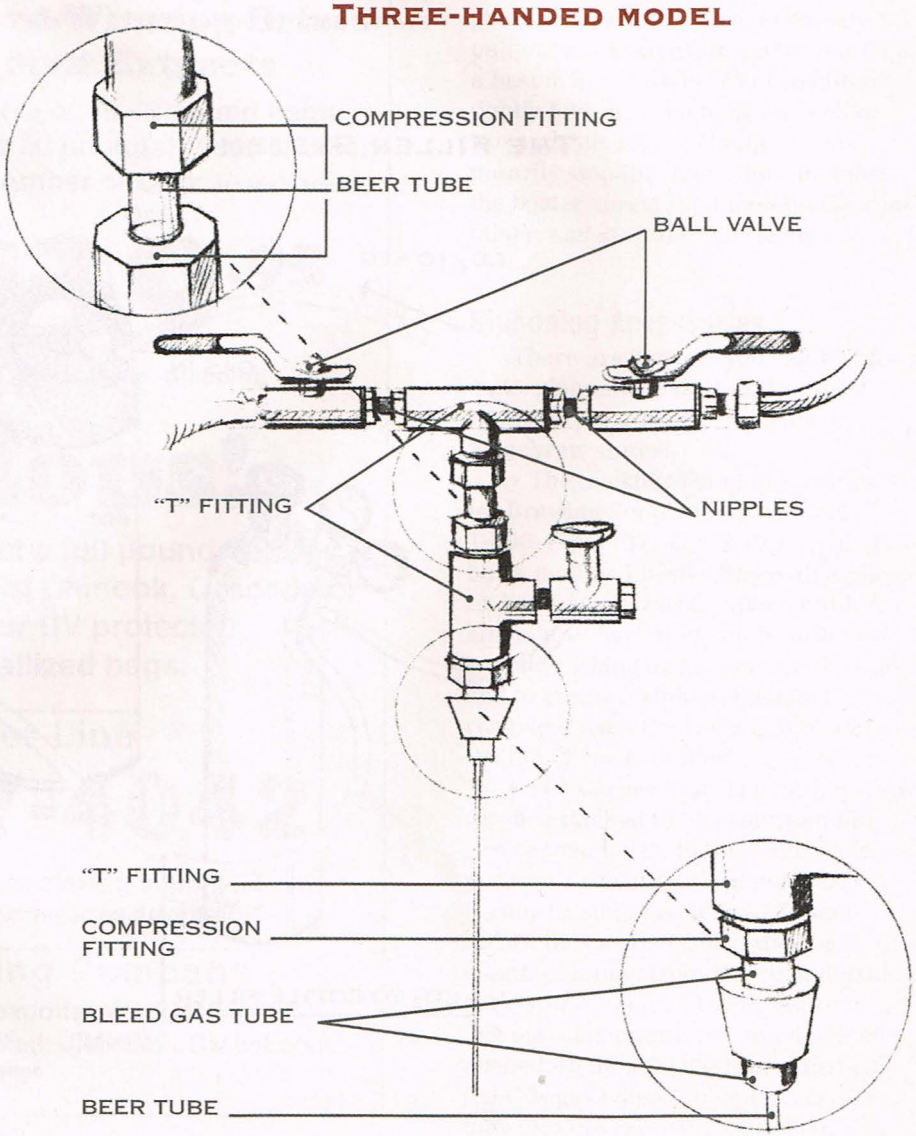
The Parts

- **1/4"** pipe-thread ball valves, 2 at $6 each.
- **1/4"** pipe-thread female T, 1 at $3.
- **1/4"** pipe-thread nipples, 2 at 35 cents each.
- **3/8"** compression fitting w/ 1/4" male pipe thread, 1 at $3.
- **1/4"** male pipe thread hose barbs (barb size to fit your tubing), 2 at 75 cents each.
- **#2** rubber stopper, 1 at 75 cents.
- **3/8"** brass tube (about 16" in length), $1.
- **Small** hose clamps, 2 at 50 cents each.
- **Teflon** plumbers tape

All prices listed vary from store to store and city to city.

Using a counterpressure filler, you can achieve a perfect fill with no oxidation and little or no loss of carbonation.

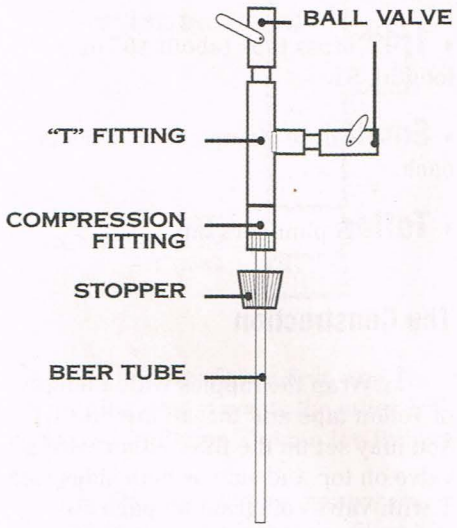
THREE-HANDED MODEL



The Construction

1. Wrap the nipples with a length of Teflon tape and thread into the T. You may set up the filler either with a valve on top and side or both sides (see diagram at right). It works well using the top and side with the top being the beer valve. That way the beer doesn't have to turn corners and this straight line of travel may create less foam.

TWO-HANDED MODEL



2. Thread the hose barbs onto the valve ends and the valves to the nipples, being sure to wrap Teflon tape on all threads.

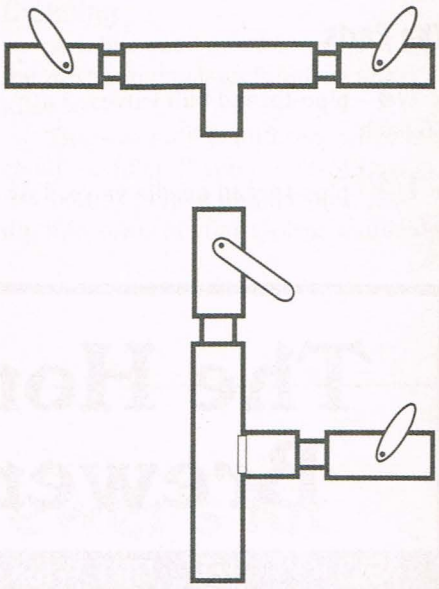
3. Put the brass tubing into the compression fitting and tighten down.

4. Thread the compression fitting into the leftover opening on the T.

5. Slide on the rubber stopper and insert the filler into the largest bottle you plan to fill. For proper fill, the tube should be about 1/4" from the bottom of the bottle. You may need to cut some length from the tubing to get the proper length.

6. Attach your plastic tubing to the hose barbs with the clamps and you're filler is ready for CO_2 hookup and beer.

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Three-Handed Model
(bleeder valve)

The Parts

- **1/4"** pipe-thread ball valves, 2 at $6 each.
- **1/4"** pipe-thread needle valve, 1 at $3.
- **1/4"** pipe-thread female T, 2 at $3.
- **1/4"** pipe-thread nipples, 3 at 35 cents each.
- **3/8"** compression fitting w/ 1/4" male pipe thread, 1 at $3.
- **1/4"** compression fitting w/ 1/4" male pipe thread, 2 at $3 each.
- **1/4"** male pipe thread hose barbs (barb size to fit your tubing), 2 at 75 cents each.
- **#2** rubber stopper, 1 at 75 cents.
- **3/8"** brass tube (about 4" in length), $1.
- **1/4"** brass tube (about 16" in length), $1.
- **Small** hose clamps, 2 at 50 cents each.
- **Teflon** plumbers tape

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CIRCLE 29 ON READER SERVICE CARD

The Construction

1. Wrap the nipples with a length of Teflon tape and thread into the T. You may set up the filler either with a valve on top and side or both sides (see T with Valves diagram on page 53).

2. Thread the valves onto the nipples, being sure to wrap Teflon tape on all nipple threads.

3. Thread the hose barbs onto the valve ends.

4. Put the 1/4" brass tubing into the 1/4" compression fitting and tighten down.

5. Thread the compression fitting into the leftover opening on the T.

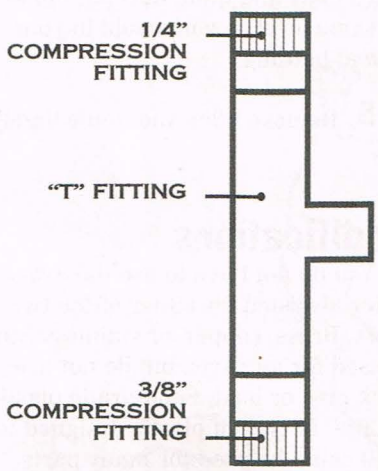
6. Thread the 1/4" compression fitting into one end of the T and the 3/8" fitting into the other end (See the diagram on page 55). The compression fitting should be on opposite ends so you can see through one out the other.

7. Thread the remaining nipple into the remaining opening on the T.

8. Thread the needle valve onto the nipple.

9. Insert the 3/8" tubing into the 3/8" compression fitting and tighten down.

10. Slide this "bleeder assembly,"



1/4" compression fitting first, onto the 1/4" tubing until it meets the other 1/4" compression fitting. Tighten the fitting.

11. Slide the rubber stopper on the 3/8" tubing and insert the filler into the largest bottle you plan to fill. The tube for proper fill should be about 1/4" from the bottom of the bottle. You may need to cut from the tubing to get the proper length. You may also want to cut down the bleeder tube, as it only needs to extend about a 1/4" beyond the stopper.

12. Attach your plastic tubing to the hose barbs with the clamps and your filler is ready for CO_2 hookup and beer.

In the immortal words of Porky Pig....Tthhhhat's all folks!

The Hook-Up

Now that you've got your filler, it's time to use it. The hook up is quite simple, requiring little or no extra parts depending upon your current kegging configuration.

The Parts

- **T** fitting (the type all depends on your current keg/CO_2 setup).
- **Beer**-out quick disconnect (this also depends on your setup)

The Configuration

Basically you need to get that darned beer into the bottle. What you do with these fillers (see the diagram on page 51) is connect the gas-in (if you made a top/side model, gas is the side; side/side model, it's your choice) directly to the CO_2 via the T on your regulator. The beer line goes to the keg-out. The setup is the same for both units.

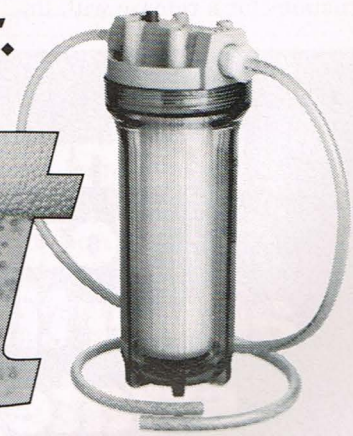
Using the Filler

Cleaning

Just like your other brewing equipment, you must clean it before and after use.

There are a few different ways to clean the filler. If you are just filling a few bottles to take to a friend's, just dip it in some of your typical sanitizing

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solution (iodophore, bleach, etc.). Then do a final water rinse before putting in the beer. The filler should always be stored dry and at least partially disassembled.

If you are filling bottles for a competition or to put up, you want to clean it very thoroughly. The best method is to fill a keg with your sanitizer and hook up the system as you would for filling. Open the beer valve and let it run for your sanitizer's exposure time. After it has been sanitized hook it up to the beer and run about eight to 12 ounces through to rinse the sanitizer out. Use the same method to clean the filler after use, skipping the beer rinse. To rinse you can just open the valves and run water through it.

Filling

You are now clean and hooked up. You have carbonated beer and are ready to fill. The following are filling instructions for the three-handed model. With the two-handed model you would substitute the bleeder valve instructions for a release with the stopper. By squeezing or slightly loosening the stopper, you will allow a release of gas from the bottle.

1. Insert the filler into the bottle and seat the rubber stopper.

2. Purge the air from the bottle. To do this simply open the bleed valve and then open the CO_2 valve. Close the bleed valve first and then the CO_2 valve. This takes about 1/2 a second. Now you have eliminated the oxygen from the bottle and pressurized it with CO_2.

3. Open the beer valve. If all has gone as planned, beer should not flow into the bottle. If beer does flow into the bottle at this juncture, you did one of two things. Either the CO_2 was not on long enough after closing the bleed valve or the rubber stopper S is not making a tight seal. If all goes well, continue. If not, fix it and continue.

4. Open the bleed valve very slowly until beer starts to flow. You want a slow flow to prevent foaming. When the beer gets to about an inch and a half from the top of the bottle, the bleed valve may blow out some foam. That's okay and quite normal. Fill to the same level as you would in your normal bottling.

5. Remove filler and immediately cap.

Modifications

You do not have to use the exact materials listed for either of the two fillers. Brass, copper, or stainless can be used for all parts, but do not use black pipe or lead. Food-grade plastic or CPVC (a type of plastic designed for heat) could be used for many parts also. Any type of valve could be used in place of the ball valves except some gas cocks that are greased on the interior. The needle valve does work best for bleeding.

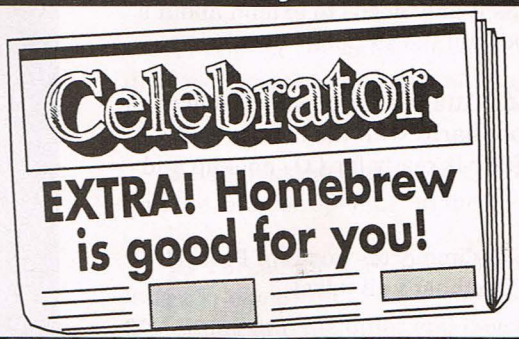
To cut down on the mess, an elbow with a hose barb could be attached to the bleed valve to blow foam into a bucket.

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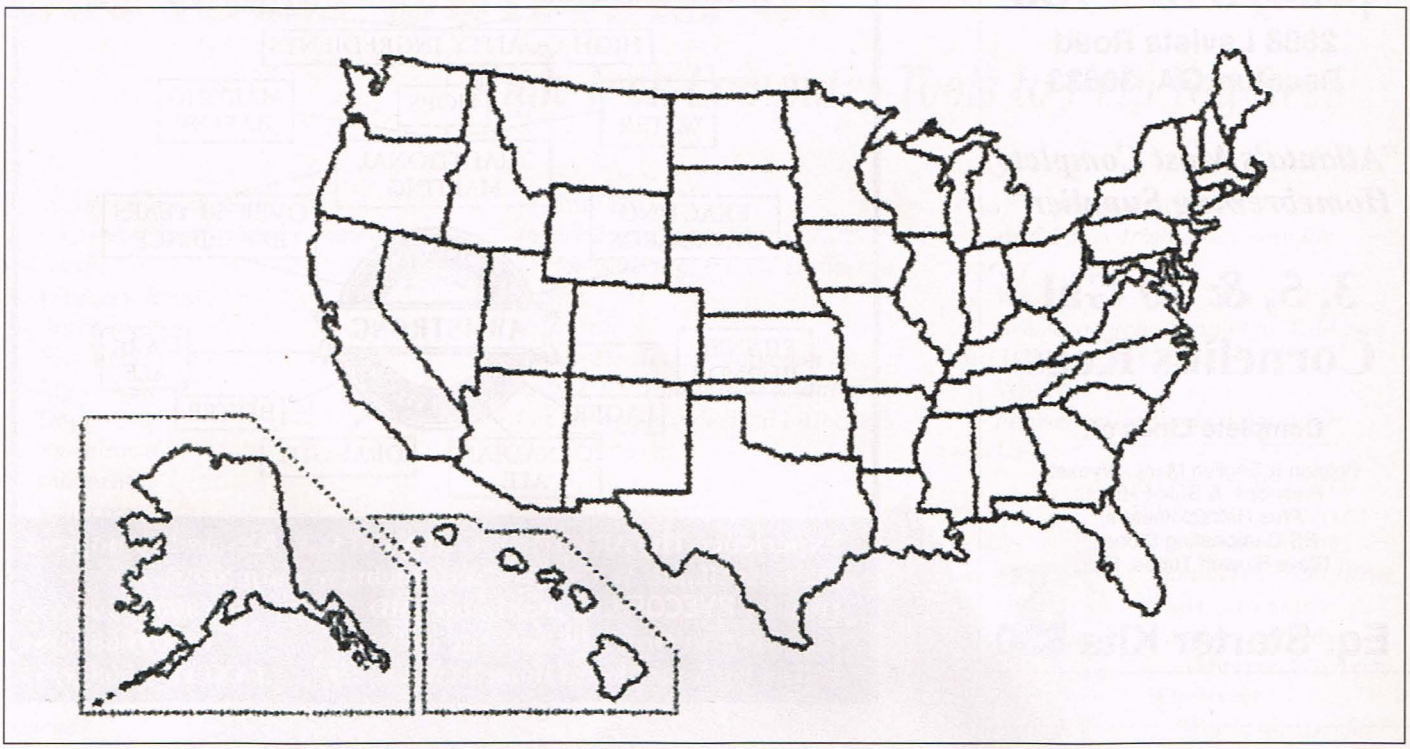
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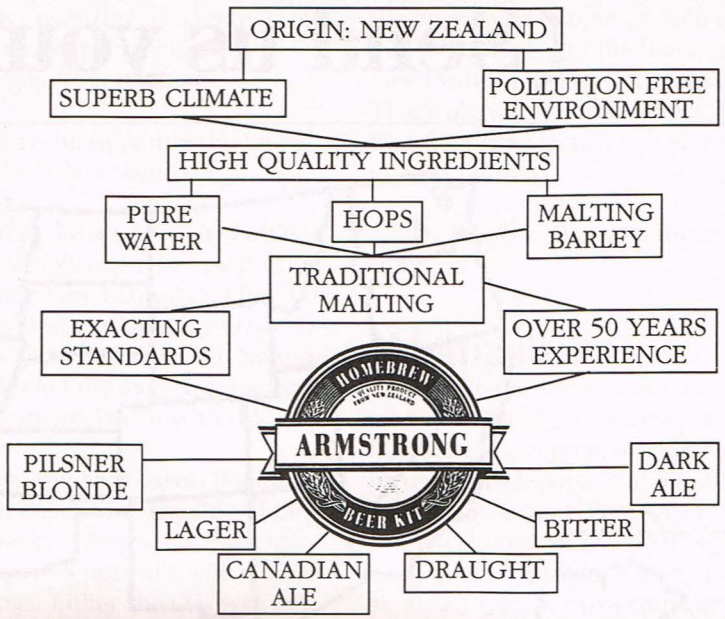
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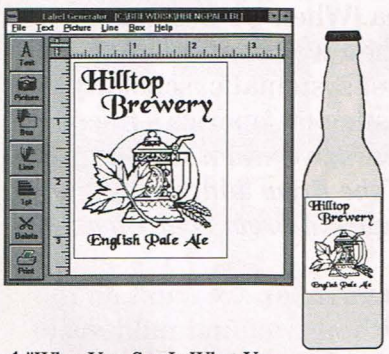


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Computer ready. Insert homebrew boot disk.

Whrrrrr. Beep.

Batch size?

Five gallons.

Style desired?

Doppelbock.

Sweetness?

Moderate.

Whrrrrr.

Insert 10 pounds dry malt extract, three pounds Munich malt.

Processing. 10%...25%...52%... 76%...91%...100%.

Bitterness desired?

Slightly bitter.

Insert 2 oz. Crystal hops, 7.3% alpha, for bittering; 0.5 oz. Hallertau for aroma.

Whrrrrr.

Computer detects hops you added are only 7.1% alpha. Add additional 0.13 oz. to achieve desired bitterness.

Whrrrrr.

Whrrrrr. Whrrrrrrrrrrrr.

Add 2 tsp. Irish moss now for clarity.

Whrrrr.

Brewing cycle completed. Add one cup Wyeast 2308 starter.

Whrrrrr.

Fermentation cycle. Computer working.

Whrrrrrr. Whrrrrrrrr.

Whrrrrrrrr. Whrrrrr.

Fermentation completed. Add three cups corn sugar priming solution.

Whrrrrr. Whrrrrr. Whrrrrrrr.

Would you prefer bottles or kegs?

Bottles.

Snap, click, bang. Snap, click, bang. Snap, click, bang...

Bottling completed. Enjoy your brew!

Isn't it time you started to use your computer for homebrewing?

Okay, the computer hasn't been created yet that will do your homebrewing for you. Heck, there isn't even one that will sanitize bottles. Until



we enter the age of Star Wars, the Jetsons, and Lost in Space, we have to settle for the handful of commercial software packages available through homebrew retailers. And the truth is, that's pretty good.

The packages provide information about every aspect of brewing, provide recipes and help you formulate your own, perform instant calculations that make you lean toward throwing away your slide rule after all, and generally help you make better brew.

Homebrewing software is relatively new; commercial packages have been around for about four years. Before that there were several homemade spreadsheet programs that worked with Lotus 123 or Excel. These were primarily shareware, disseminated for a small fee over computer networks. They were for advanced brewers and they were designed to do one thing: make quick calculations. They helped brewers figure bitterness levels, color percentages, extraction rate, and other numbers important to all-grain brewing.

Some of these spreadsheets are still available. But for $30 to $50 you can get a versatile program designed to meet your needs—whether you're a beginner seeking information about brewing or an advanced all-grain brewer.

You can get a versatile program designed to meet your needs—whether you're a beginner seeking information about brewing or an advanced all-grain brewer.

Among the most common features of these commercial software packages:

Recipe calculator. More sophisticated than shareware spreadsheets, these have alpha acid percentage for hops and color ratings for malt already figured in. Just tell the computer how efficient your brewing system is, point and click on the ingredients you'll be using, and watch it tell you everything from expected specific gravity to Lovibond color rating.

Recipes. Try them out or use them as a starting place for your own concoctions.

Style guidelines. Help, in various forms, for choosing recipe ingredients depending on the type of beer you'd like to make.

Brewing information. Ranges from detailed step-by-step instructions for the brewing method you choose to a basic description of each step in the

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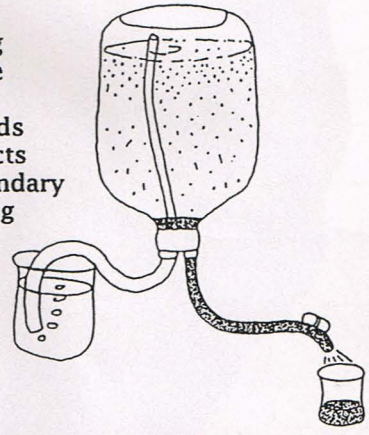
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brewing process.

Label maker. One program even lets you create personalized, computer-generated labels. You can even send a photo to the manufacturer and, for a fee, he'll digitize it and send it back, so you can use it on your labels.

None of these packages is made by Microsoft, Novell, or any other major manufacturer. But that's probably an advantage. They're all pretty slick, relatively easy to use, and get right to the point: homebrewing. None of them are loaded with memory-eating features you'll never use, nor are they choked with a large number of graphics that slow down your machine. The basic system requirements are moderate—they generally require only four megabytes of memory, and the biggest one chews up less than five megs of hard disk space.

So what are you waiting for? Here are four packages that may meet your needs.

Brew Wizard,
Antrom Associates

Gaithersburg, MD
(301) 924-1147
Format: Windows



Brew Wizard is packaged as a reference tool. Subtitled "The Brewer's Encyclopedia," it includes 130 entries on brewing topics from "Brewing Your First Beer" to decoction mashing. Entries often run a page or two and provide a good overview of the topic. The writing is easy to read and unpretentious, and terms are defined.

Brew Wizard is a good package for beginners to learn about the brewing process and for more advanced brewers to learn about new brewing methods as they want to expand their system.

One nice feature is the troubleshooter's guide, which lists many beer faults (celery smell, medicinal taste, skunky odor) and their likely causes. Also defined are bacteria types and their effect on flavor. For example:

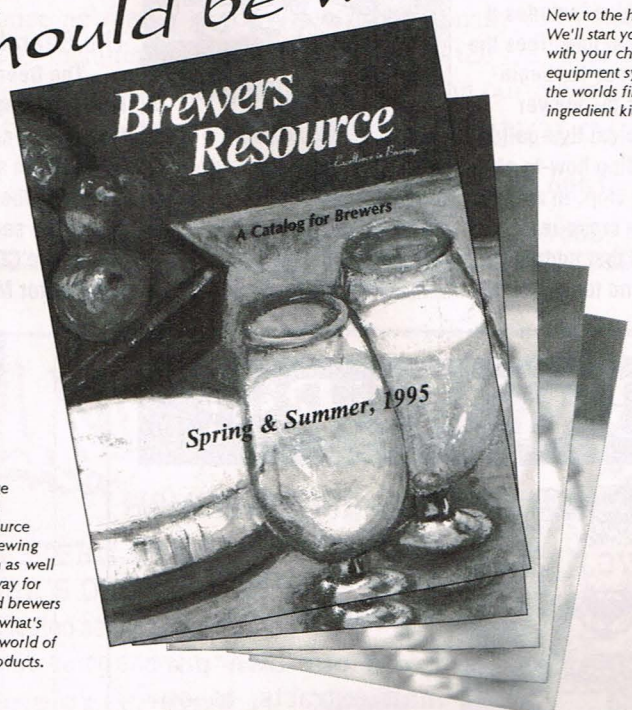
"Hafnia protea: This bacteria causes a sour taste and smells of celery. It most commonly affects yeast cultures and is most active in the early stages of fermentation."

Other features include:

- 52 recipes: 31 extract, 18 all-grain, six partial mash, one mead.
- A style guide that places recipes between the low and high limits of a specific style.
- A recipe formulator that calculates bitterness, color, expected gravity. An ingredient list is included. Alpha acid levels are listed for some but not all hops.
- An inventory list that helps you keep track of what ingredients are on hand. It works like a commercial point-of-sale computer. You tell the computer when you buy something, it tells you when you're running out (assuming you use it for every batch).

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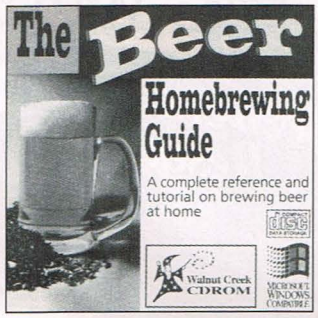
CIRCLE 14 ON READER SERVICE CARD

Brewing Goes Multimedia

If you've made it to the upper echelon of high-tech and have a CD-ROM drive, two programs worth checking out are The Beer Homebrewing Guide and The Beer Hunter.

The Beer Homebrewing Guide is based on the Homebrew Digest, the widely circulated electronic forum that's part newsletter, part brewing chat space. The main attraction is a large database of recipes, including all of the recipes posted on the Digest from 1989 through 1994. There are also recipes from customers of homebrew retailers. The recipes are sorted by style, but this isn't a recipe formulation program or a brewing calculator. It's up to you to decide if the recipes fit your idea of the particular style and your preferred method of brewing.

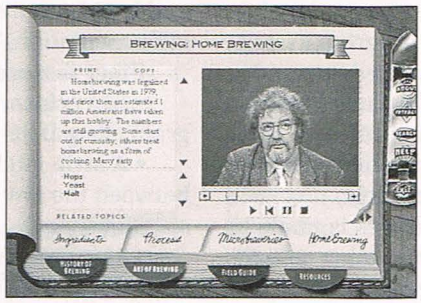
The CD also includes a slide show that describes the brewing process for beginners. It takes the viewer through a typical five-gallon batch, including how-to photos for every step. In addition there's a cross-reference section that addresses equipment and techniques.



Want to know what a triple beam scale looks like? Just pull down the menu, click, and there's a photo.

Other features include an extensive list of homebrew retailers, divided into categories such as equipment, grain, and kegging; a suggested reading list of 23 brewing books; and a cross-referenced compilation of Homebrew Digests from 1989 through 1994.

The Beer Homebrewing Guide is published by Walnut Creek CDROM in Concord, Calif., 1-800-786-9907.



The Search is On

The Beer Hunter isn't a homebrewing tool, but it is a fascinating collection of information about beer. Based on the Discovery Channel's series of the same name, the CD features British beer writer Michael Jackson as a sort of tour guide and beer professor.

Jackson takes us on a journey through the history of beer, with stops in Germany, Belgium, Britain, and even the US to trace the development of beer styles. A separate section describes each style, offers commercial examples, and cross-references the styles by their regions and characteristics.

Other sections include a brief overview of homebrewing and a discussion of the functions of each of beer's main ingredients. Check out Michael Jackson's top-24 list of beers, and follow his guidelines to take tasting notes of your own.

This is a slick, well-produced CD with lots of color, lots of video—and lots of fun information for the novice and expert brewer alike.

The Beer Hunter is published by the Discovery Channel Multimedia, 1-800-762-2189.

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CIRCLE 15 ON READER SERVICE CARD

Brewer's Planner,

The Crafty Fox

Bellvue, Wash.
(206) 641-5535
Format: Macintosh

Brewer's Planner is the only commercial program available for Macintosh. It was designed by well-known homebrewer Darryl Richman, who wrote a book on bock for the Brewers Publications styles series. Richman also developed one of the early shareware spreadsheets, called Brewer's Worksheet, which is still available on the Internet.

Brewer's Planner is a program for practiced brewers that takes the spreadsheet idea several steps further. It sets up each recipe as, essentially, a series of index cards. The main recipe card contains the calculations. Additional cards list water, mash (for malt), boil (for hops), fermentation (for yeast), and tasting. The user selects the raw materials from an extensive database for each card. Color, bitterness, gravity, alcohol content, and other calculations are made automatically.

A "brewer's calculator" feature makes conversions such as liters to gallons or celsius to fahrenheit easy.

The strength of Brewer's Planner is the built-in databases that include long lists of hops with alpha acid percentages and malts with color ratings. The program also offers water calculations to duplicate water from great brewing cities as well as plenty of yeast selections. In addition, each of the databases is easily modified.

This isn't a program for beginners. It comes with a complete instruction manual that's easy to understand, but it doesn't have on-line help or cross-references for brewing terms. It's primarily a tool for all-grain brewers who like to experiment.

Brewer's Workshop,

TKO Software

Arroyo Grande, Calif.
(805) 481-4900
Format: Windows

Brewer's Workshop is a sophisticated, versatile brewing calculator. Detailed descriptions of most malts,

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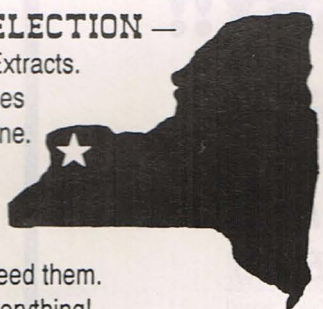
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hops, and yeast are built into the program, and Brewer's Workshop tells you what effect changing each ingredient will have on your brew.

It calculates color, bitterness, original gravity, and projected alcohol content. A "Style Info" button provides information on 64 beer styles, and the recipe formulator tells you where your recipe fits within AHA style guides. Acid percentages are provided for all hops, and the calculator adjusts depending on whether you're using whole hops or pellets. A water feature provides water guidelines based on famous brewing cities.

Other features include:

- An inventory control function that also figures cost per bottle of your beer.
- A boil calculator that figures final volume based on gravity or vice versa.
- Extensive and easy-to-use help menu.
- 50 recipes, most of them all-grain.
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- Free demonstration copies offered by the manufacturer.

HomeBrewer's Assistant,

Homebrewer's Software

Charlotte, N.C.
(704) 544-0137
Format: Windows



Homebrewer's Assistant essentially guides you through the brewing process. It includes lots of reference information, and a step-by-step brewing guide, sort of a reminder list, pops up with each recipe. The steps change depending on whether you're using extract, adjunct grains, infusion mashing, etc. In addition you can change the instructions, add to them, or delete steps depending on your personal needs or brewing style.

The recipe calculator is technically sound, and many ingredients are listed and can be included by pointing and clicking. The reference section includes helpful photos.

An updated version, 2.0, is due out this month.

Other features:

- A nifty label designer. It includes clip art, a selection of scalable fonts, and a basic click-and-drag program that allows you to set up the design any way you want it. The label maker even supports color if you have a color printer. Another fun feature: You can send any photo to HomeBrewer's Software. They'll put it on a disk so you can use it on your labels. The price is $12 for the first photo, $4 for additional photos. The updated version of the software, according to the manufacturer, will also let you rotate text.
- A recipe sharing tool that allows you to copy individual recipes onto a disk and give them to other people using HomeBrewer's Assistant.
- A reference guide that includes many articles about brewing.
- A listing of homebrew clubs.

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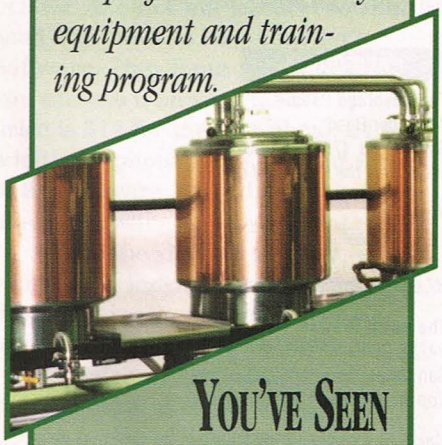
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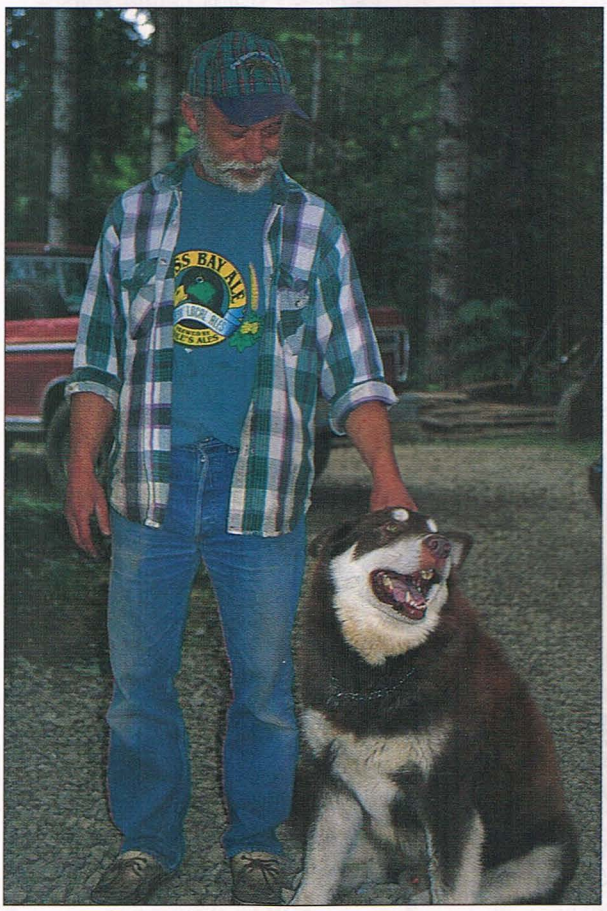
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Red Dawg Turns a Profit

by Steve Johnson

The world of business can be dog eat dawg at times and David and Susan Moorehead know about that first hand. In September 1994 they were brewing away in their little six-barrel brewery in the woods of Washington State when they were contacted by a law firm representing a subsidiary of the Miller Brewing Co.

About a year and a half before, the Mooreheads had released Red Dawg Ale, named after the family pet, Kodiak. Meanwhile, an advertising agency cooked up a similar name for Miller. Miller was on the verge of a national rollout of Red Dog Beer when the company discovered the Mooreheads had already received federal approval for Red Dawg Ale.



STEVE JOHNSON

David Moorehead walks the red dog. He's part malamute, part wolf, and all pussycat.

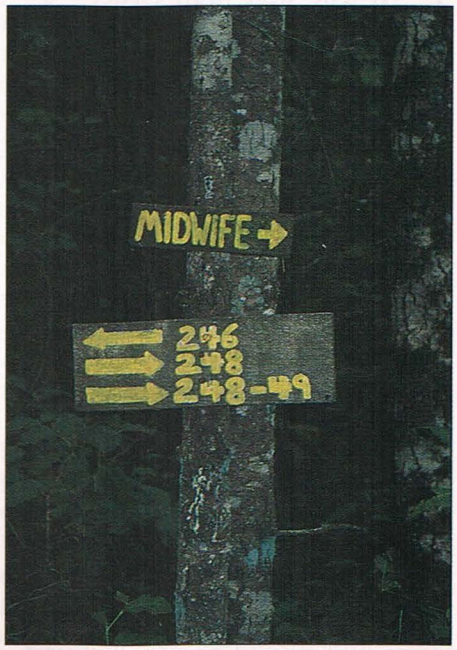
The law firm wanted to pay the Mooreheads a small sum of money for the right to use the Red Dog name. David Moorehead is a soft-spoken, easy-going man who didn't want to get in the way of Miller's success with Red Dog Beer. He was willing to cooperate.

But it wasn't quite that simple. Anheuser-Busch got wind of the Red Dog snafu and made their own offer for rights to the name. Moorehead basically sat back and watched the fur fly. Anheuser-Busch ended up the high bidder, so then Miller had to go, money in hand, to A-B to buy the rights to Red Dog. When I asked David what the final settlement was, he said, "It was six digits...it could have been $100,000 or it could have been $999,999. I'm not getting any more specific than that."

This tale provides a nice contrast to the usual story of the older, bigger business stepping on a newer, undercapitalized one over the use of a name (Roaring Rock and Rolling Rock, and Boston Beer Co. and Boston Beer Works are two examples that come to mind).

To make it even better, the big payoff has not spoiled the Mooreheads. They have not moved into a big, showy house, nor do they drive shiny sports cars. They are still living in their house in the woods and David is still making beer with his homemade brewhouse. Susan has kept her profession as a midwife. David has bought a few doodads for the brewery, but it's still the basic set-up he had before the deal with A-B.

Onalaska Brewing is a family business. David makes the beer, Susan helps on bottling day, and daughter Jessica designs the logos. David says, "It was just a hobby that got out of control."



STEVE JOHNSON

To locate the brewery, follow the "midwife" sign when you reach the fork in the road. The midwife helps on bottling days.

The roots of Onalaska Brewing go back to 1975, when David began making beer at home. He gave it up for a while and then began brewing in earnest in 1983. The next year Tom Baune, another homebrewer, opened the Hart Brewing Co. in nearby Kalama. At the time David worked for a railroad company in Portland, Ore., and drove past Kalama on his way to work. He took every opportunity to stop by Kalama, snoop around the brewery, and learn as much as he could from Baune. His visits became so frequent and he asked so many questions, Moorehead says, "I made a real pest out of myself."

When he wasn't working on the railroad or pestering the people at Hart Brewing, David began piecing together his brewery. David's discovery of his first piece of equipment, the

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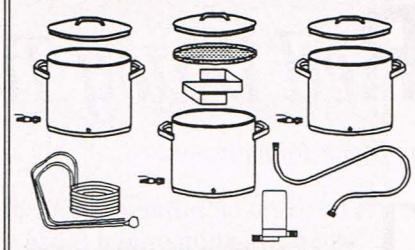
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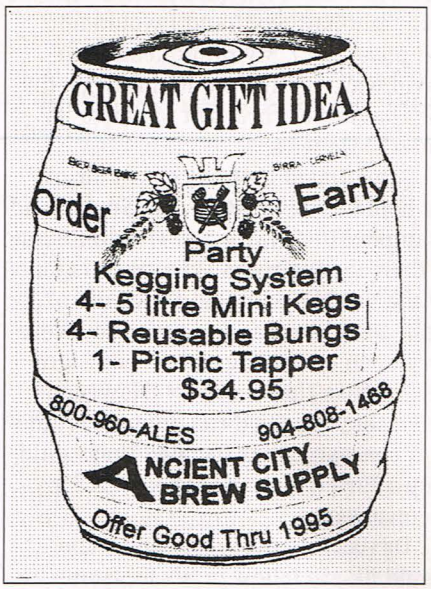
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mash tun, was a stroke of luck.

"The mash tun is a 100-gallon kettle I found in a farmer's field," he says. "The farmer was watering cattle with it. Turns out, it was the old steam cooker from the local reform school. It was double-walled stainless with a steam jacket. When you do something like this, you develop an eye for stainless. I saw it glinting at me through the trees. The outside of it was pretty bad—chipped and dented and scratched. I just put oak plywood around it to make it look pretty. It's quite functional."

The kettle was the original whirlpool tank at Hart Brewing. David says, "It used to be a 100-gallon tank. I cut the bottom out, welded in a stainless sleeve, and then put the bottom back onto it, doubling its capacity." The kettle is propane fired.

The other major components of the brewery include some tanks purchased from Hart and several second-hand Grundys. He can make five-and-a-half-barrel batches with the system. David calculates that when the brewery went into production in the fall of 1991, his original investment was about $25,000. Since then, he has added a Meheen bottler.

The original brand was Onalaska Ale, a beer David calls a "transition beer"—better than the national brands but not a very adventurous brew. Red Dawg was the brewery's second beer and has been the best seller. Part of the deal with A-B was that David maintained lifetime use of the brand name.

David makes Red Dawg from a base of Great Western two-row pale malt, to which he adds 30 Lovibond carastan, Munich, and a small amount of black malt. He uses Chinook hops for bittering, Cascade for flavoring, and Cascade and Hallertauer for aroma.

Howlin' Stout was the brewery's next release and is a beer worth howlin' about. To the pale and Munich malts he adds 25 pounds of wheat malt, 27 pounds of chocolate, and about 30 pounds of 60 Lovibond crystal.

Recently, Onalaska released Spruce-n-weiz, made with spruce needles from trees near the brewery. It is the first spruce beer made in America since Anchor Brewing released one batch in the early '90s.

In 1994 production reached 227 bar-



rels, about 60 percent in bottles and 40 percent in kegs. At the time I visited the brewery, David had just finished his 179th batch. Onalaska beers are distributed in Washington, Oregon, and Idaho.

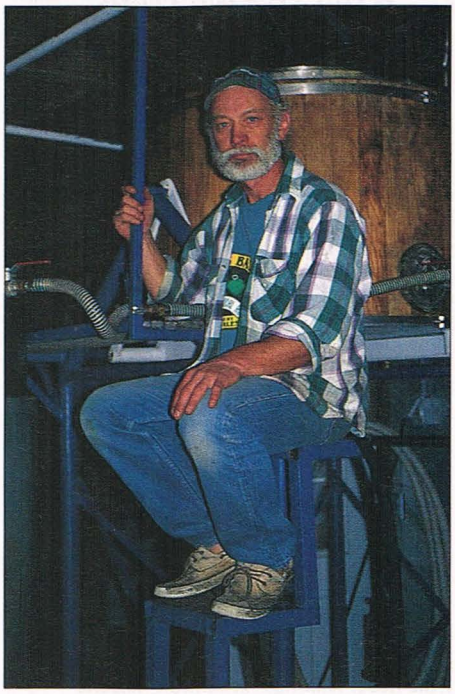
Onalaska Brewing is not the easiest place to find. It is located in an out building behind the Mooreheads' house, about a mile south of the town of Onalaska. As I drove up the long driveway through dense evergreen woods, I came to the fork in the road. The only clue as to which way to turn was a small sign nailed to one of the trees with the word "midwife" and an arrow pointing to the right.

As I approached the brewery I was greeted by a red and cream colored dog, who was lying in the driveway between the Mooreheads' house and the brewery building. An exceedingly shy and gentle dog, he didn't let out a woof nor snarl but quickly hid behind a tree. David said he was half malamute and half wolf (and I would add "all pussycat"). My first question to David was, "Is this *the* Red Dawg—the one that almost brought Miller to its knees?" He was.

After David took me on a tour of his homemade brewery, he, Susan, and I sampled Red Dawg and Howlin' Stout in their tasting room. The room is lit by the world's only Red Dawg neon light. David said at one time they were very keen on buying some neon signs to advertise their product. However, when they received the quote from the sign company, they decided they could only afford one, and they kept it for themselves.

David has advice for those who would like to follow in his footsteps. He says it is still possible to start a brewery on a shoe string as he did, but it is increasingly hard to keep any market identity. Since he began brewing, it has become much more competitive. In addition he says the romance of owning and operating your own brewery eventually wears off and it becomes "just a job."

The Onalaska Brewing Co. is located near the town of Onalaska, Wash. From I-5, take exit 71 to Route 508. The town of Onalaska is about eight miles east of the interstate. David is happy to conduct tours, as long as you call in advance. Be sure and ask for directions. The number is (206) 978-4253. ■



STEVE JOHNSON

David Moorehead put oak plywood around his dented, double-walled stainless mash tun "to make it look pretty."

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In Praise of Lost Lambic

by Gunther Jensen

As many residents of California's San Fernando Valley will recall, we were rudely awakened at 4:51 a.m. on that January 17, 1994 by the Northridge earthquake. What I remember was a short roll, followed by violent shaking that never seemed to end. As my wife, then eight months pregnant, and I huddled on the bed, furniture crashed all around us. The walls shook with such force that I was certain we soon would meet our maker. When the shaking finally ended, a chorus of car alarms rang out, breaking the silence. The only light was the orange glow from a fire at the trailer park just north of us illuminating the foothills.

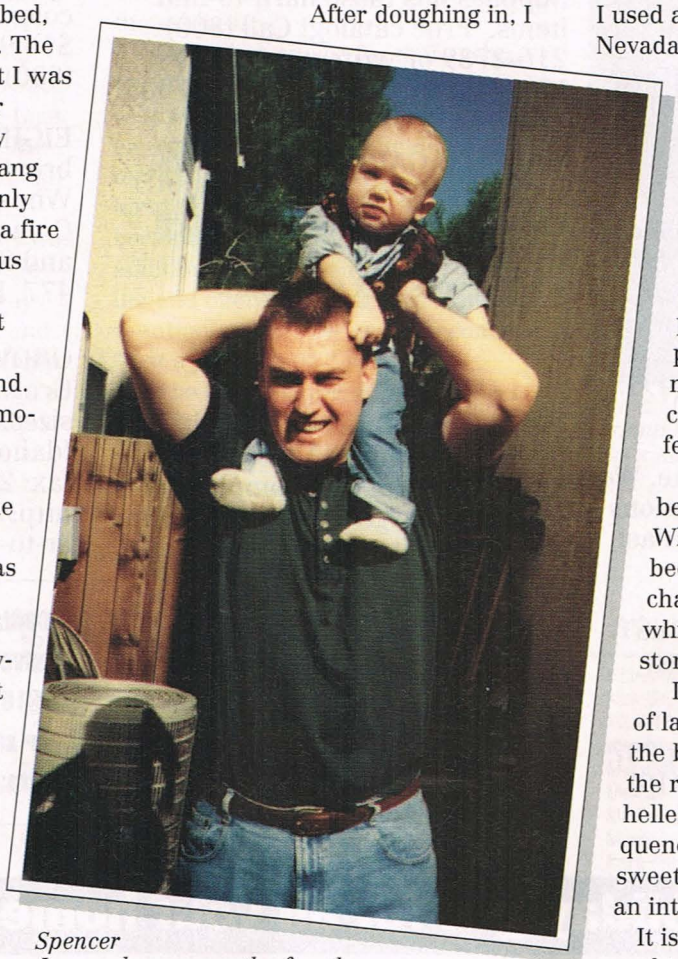
As daylight finally arrived, it was time to survey the damage. Structurally, the house was sound. The things that were lost had emotional value—wedding presents and a beautiful three-liter San Miguel stein I had won in a raffle during college fraternity days—items whose collective worth was not measured in dollars.

As I made my way into the garage, also serving as my brewery, I saw a tremendous amount of broken glass. Carboys, beakers, and beer mugs were strewn all over the floor in a random pattern. It seemed that some of the glassware had just fallen, while others had been launched 15 feet across the floor.

The remains of a plastic primary fermentation bucket, one week into existence, drained amidst this collage of glass. Eight and a half pounds of Willamette raspberries, three yeast strains, and a sour mashed lambic poured into the driveway. This was my first attempt using a sour-mash technique to build up the lactic acid bite in my beer. As I scooped up the raspberries, I reminisced fondly about the beer and its inception.

The brew was to incorporate a 24-hour lactic acid rest. That would help in lowering the pH for the style. I mashed together seven pounds of Belgian ale malt, three and a quarter pounds of malted wheat, and a half-pound of Scottish cara-stan.

After doughing in, I raised the temperature to 125° F. Then I sprinkled a half-pound of the crushed Belgian malt on the surface to induce lactobacillus delbrrueckii (bacteria), covered the surface with plastic wrap, and held the temperature at 95° to 120° F for 24 hours. What resulted was a putrid-smelling mess. The lactobacillus had done the trick, lowering the pH to 4.03.



Spencer Jensen, born a month after the earthquake, gives the author a hand on brew day.

I sparged and then added two grams each of Galena, Bullion, and Fuggle hop pellets to the wort and boiled for two hours. I steeped the raspberries in 160° F water for 15 minutes, combined them with the wort, and cooled it before pitching the yeast. I used a one-liter yeast starter of Sierra Nevada and Bavarian Wheat cultures. After five days I added a 500 milliliter starter of Belgian Brettanomyces culture.

That was Sunday the 16th. With every brew there is a sadness upon tapping the last glass of beer from a keg. Remembrances of the style, problems that arose during the process, and the flavor development as the beer matured all come flowing back as the last few ounces are sipped.

As I look at my empty keg, I begin to understand my loss. What would have become of this beer? How would its profile change over the seasons? And, whimsically, would it be as good as store bought?

In appreciating the intricacies of lambic, one does not hold out for the blast of hops as in a pilsner, or the rich malt profile of a Munich helles. A flavored lambic offers the quenching tartness of its low pH, the sweetness of the summer fruit, and an intricate yeast/bacteria profile.

It is not just the loss of materials used to create this potion that was being mourned. Those are easily replaced. It was the emptiness that would be felt during future summer evenings, when we should be sipping a fine glass of raspberry lambic and savoring the memory and reflection of a job well done. ■

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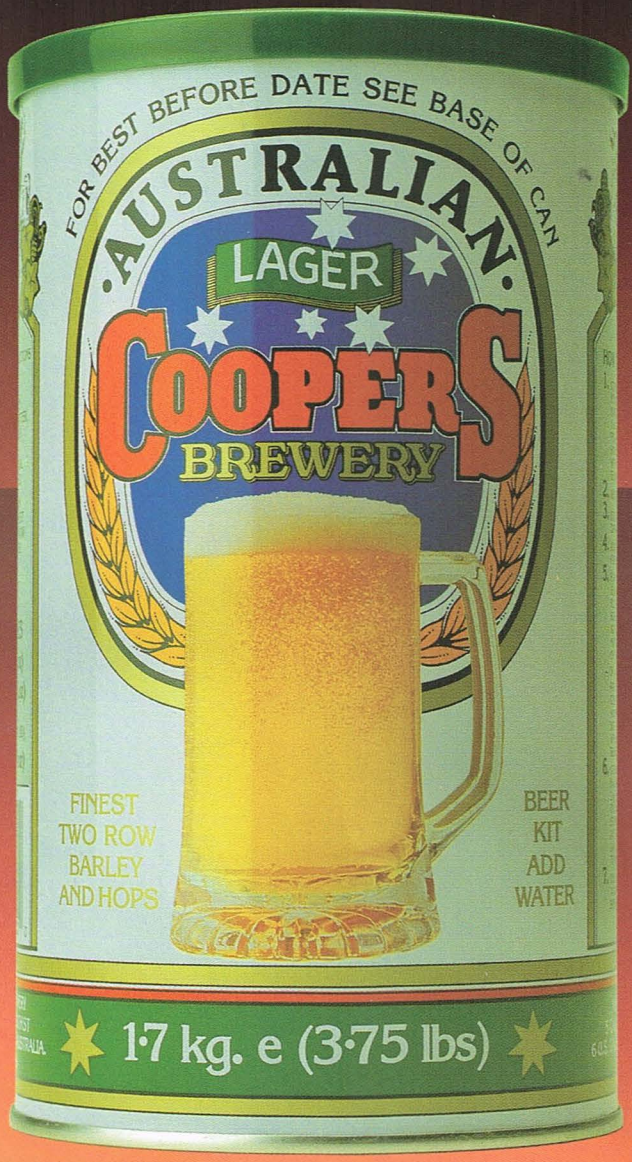
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