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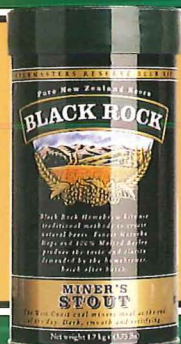
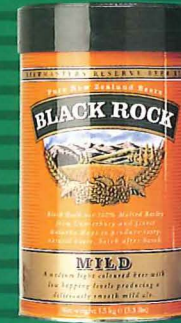
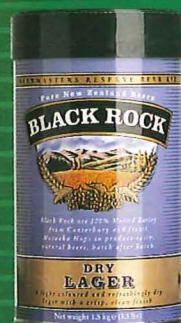
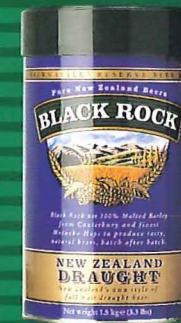
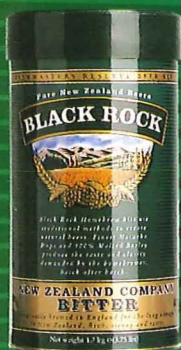
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## What to Do

### BOILING

1. Soak the two cans of malt extract syrup in hot water for at least 20 minutes. This makes the syrup easier to pour. While they soak, bring 1 1/2 gallon of water to a boil in your brewkettle.
2. Remove the kettle from heat, add the malt extract to the water, stir until it's all dissolved and return the kettle to the burner.
3. Boil the mixture, called wort, for at least 30 minutes (watch for boilovers!). Stir occasionally if you want. Five or 10 minutes before you are finished, add the hop pellets. These hops will give your brew a nice hop aroma.

### SANITIZING

1. While you are boiling, sanitize your primary fermenter using a solution of 1 ounce of bleach to 1 gallon of water. Sponge all the surfaces of the fermenter with the sanitizing solution and rinse well with hot water. From now on, everything that comes in contact with your beer must be sanitized either with a clean sponge or by soaking in a bleach solution. This is very important. In fact, it's one of the secrets to making good beer.
2. Fill your fermenter with 3 gallons of fresh, cold water and cover with the sanitized lid.

### COOLING AND PITCHING

1. When you are finished boiling, carefully pour all the wort into your water-filled fermenter. It's boiling hot, so be careful. Put the lid on tightly.
2. When the wort has cooled to near room temperature, open the lid and sprinkle the two packets of yeast over the wort. (This is called pitching yeast.) Work quickly, so that the wort is exposed to air as briefly as possible. There is no need to stir. Cover again and attach your fermentation lock. Add water to half-fill the airlock.

### FERMENTING

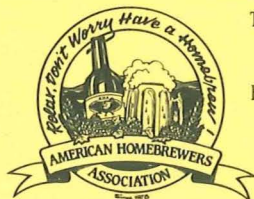
1. Fermentation should start within 24 hours, but it could take longer. A sure sign of fermentation is the bubbling of carbon dioxide through the fermentation lock. The bubbling should be rapid and vigorous for a couple of days and then gradually slow down. Keep the beer at room temperature, protected from light and in a place where children or animals can't disturb it. Fourteen days after fermentation has begun, you're ready to bottle.

### BOTTLING

1. Sanitize your bottles by soaking them in a solution of 1 to 2 ounces of bleach to 5 gallons of water. Or, you can fill each bottle with the same solution and let them soak for at least 45 minutes. Rinse each bottle with hot tap water. Make sure the bottles don't have any gunk in them.
2. Sanitize your bottling bucket, siphon, racking cane, bottle filler and anything else that's going to come in to contact with your beer using a bleach solution like the one used to sanitize your fermenter. Sanitize your bottle caps with either vodka or a very dilute bleach solution.
3. Dissolve 3/4 cup of corn sugar (4 ounces dry weight) in a cup of water. Boil for 10 minutes.
4. Put your fermenter of beer on the counter and your bottling bucket on the floor. Pour the sugar solution into the bottling bucket. Siphon the beer from the fermenter into the bottling bucket. Do this carefully, without splashing or agitating the beer and leave the sediment in the bottom of the fermenter behind. (This is called racking.) Don't expose your beer to the outside air any more than you have to and make sure all surfaces the beer contacts are sanitized.
5. Put the bottling bucket on the counter, hook up your racking cane, siphon and bottle filler, then begin filling your bottles. Bottling can be messy, so have some paper towels or rags handy. Newspaper or a shallow baking pan can be used to catch spills. Cap each bottle.

### AGING AND TASTING

1. You're done! Store your bottles in a cool, dark place. Wait at least two weeks (if you can), uncap a bottle and pour into a nice, clean glass. The sediment in the bottle. The sediment won't harm you, but it can change the flavor and appearance of the beer.
2. Taste the fruits of your hobby. Congratulations! You're a homebrewer! We hope you learn to love this hobby as much as we do!



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# THE BEER BASICS



THE SIMPLEST WAY TO BREW FIVE GALLONS OF BEER

## Ingredients

(You can get all of these items at a homebrew supply shop. Some shops even handle mail orders.)

### MALT EXTRACT SYRUP

Malt extract syrup is made from barley and has a lot of natural sugar in it. Brewing yeast eats the sugar, and produces alcohol and carbon dioxide. The extract normally comes in 1.5-kilogram (3.3-pound) cans. You'll need two cans of lightly hopped, light-colored extract for your first batch.

### HOPS

are flowers with a bitter flavor. The bitterness balances the sweet flavor of the malt. Hops are usually in the form of compressed pellets. You'll need about 1 ounce of the pellets.

### ALE YEAST

Dehydrated yeast is sold in small paper packages. You should use two packages of ale yeast for your batch of beer. That's what you'll be brewing — ale.

### WATER

Tap or bottled water is fine.

### CORN SUGAR

You need only 3/4 cup (4 ounces dry weight) for your first batch. This is used to prime your bottled beer, giving it carbonation.

## Equipment

(Homebrew supply shops sell these items, but check around the house first — you probably already have some of this stuff.)

### BREW KETTLE

enamel-coated or stainless-steel pot that holds at least 3 gallons. It's for boiling the malt. Hops are usually in the form of compressed pellets. You'll need about 1 ounce of the pellets. Don't use aluminum.

### PRIMARY FERMENTER

Food-grade container, usually a white plastic bucket with a lid, that holds at least 6 gallons will do.

### BOTTLING BUCKET

Should hold at least 5 gallons. It can be the same type of container as your primary fermenter.

### SIPHON HOSE

Clear, food-grade plastic tubing. You will need about 6 feet of tubing for transferring your beer from one container to another.

### RACKING CANE

Plastic tubing about 2 feet long, often with a curve on one end. It's used with your siphon hose and is used when transferring your beer from one container to another. It makes siphoning easy and efficient.

### FERMENTATION LOCK

It's also called an airlock and it keeps your beer from being exposed to outside air while letting carbon dioxide escape from your fermenter. It should fit in a hole in the lid of your primary fermenter.

### BOTTLES

These should be made of brown glass. Don't use the twist-off variety. You'll need about 50 12-ounce bottles or the same volume in whatever size bottles you use.

### BOTTLE CAPPER

Numerous styles of this device are available, any one will work for capping your bottles of homebrew.

### BOTTLE CAPS

These must be new. You'll need about 50.

### BOTTLE FILLER

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### LONG-HANDLED SPOON

You probably already have one that will work. It's for stirring, of course.

### UNSCENTED HOUSEHOLD BLEACH

You will use a dilute bleach solution to sanitize your brewing equipment. Preventing common bacteria and wild yeast from getting into your beer is very important. While they won't harm you, they can cause unpleasant flavors in your beer.

OVER 

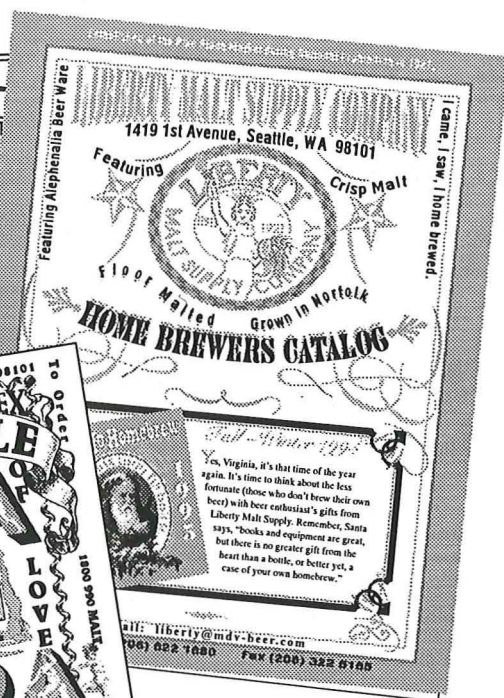


"Can it really be  
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young woman  
whispered.  
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Thomas  
exclaimed.  
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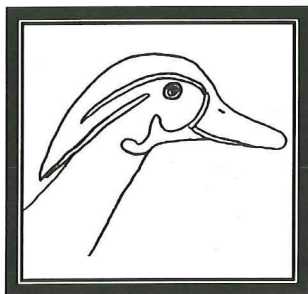
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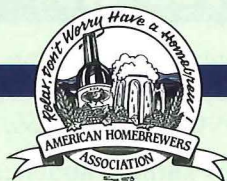
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SPRING  
96

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*Zymurgy \zī'mər jē\ n:  
the art and science of fermentation, as in brewing.*



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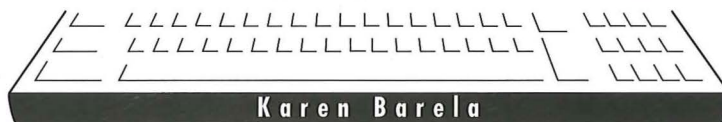
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**CLUB-ONLY COMPETITION**



# EDITORIAL



## Why Evaluate Beer?

**M**y local newspaper, *The Daily Camera*, recently devoted its eight-page food section to America's cup — coffee. I couldn't help but notice the similarities to craft-brewed beers and how wonderful it is to see the general public becoming more and more educated about flavors, tastes and terminology as it applies to specific beverages.

Following are some of the terms used in analyzing coffee flavor, according to *The Daily Camera*, Boulder, Colo. I like these because they are easy to understand, are not intimidating, and most importantly, are useful for evaluating coffee.

**Acidity:** Pleasant tartness, not to be confused with "sour."

**Body:** Sense of heaviness, richness and thickness as you swish the coffee around in your mouth.

**Bitter:** Sensed mostly at the back of the tongue. Dark roasts are intentionally bitter. Also caused by overroasting.

**Bland:** Pale flavor, often in Robusta or low-grown coffee. Underextracted coffee is also bland.

**Earthy:** Unclean smell or taste.

**Mellow:** Well-balanced, low to medium acidity.

**Mild:** Lacks any overriding quality.

**Tangy:** Darting, fruitlike sourness, occurring often in coffees from high-grown Costa Rican regions.

**Wild:** Coffee with extreme flavor characteristics.

**Winy:** Desirable flavor reminiscent of fine red wine. Kenyan is an example.

The article also gave some interesting statistics. Between 1978 and 1993, the share of



Americans who drank instant coffee plummeted from 28 percent to 12 percent, according to the New York City-based National Coffee Association. At the same time, the proportion of Americans who drank regular coffee rose from 24 percent to 42 percent. Coffee shops have become increasingly popular. The Specialty Coffee Association says about 10,000 coffee shops will be opened in the United States by the end of the century. In 1979, there were 25 such cafés.

Sound familiar? In 1980, the AHA had 685 members and about 25,000 by the end of 1995. And, according to the Institute for Brewing Studies, the first brewpub opened in 1982 but today there are more than 533 brewpubs plus an additional 280 microbreweries.

Have Americans changed the way they consume beverages? Is being better educated part of the change?

The parallels to the craft-beer movement are undeniable and, I think, a good sign for all of us who enjoy fine, handcrafted products, not the least of which are our own homebrewed beers. Seeing flavor terminology written up in my local paper for an easy-to-drink, common

yet complex-flavored beverage such as coffee is a good sign that general consumers are interested in becoming better educated about flavors and tastes.

Tasting is a learned skill and the educated homebrewer and beer consumer is a more careful homebrewer and consumer — one who is able to evaluate flavor components, alcoholic strength, etc., then brew and/or choose the right beer for the right occasion. Possessing this ability is by no means frivolous, as the wide range of beer styles available means that as homebrewers and beer enthusiasts we have the opportunity to select beers to suit particular occasions, moods, foods or even seasons.

Be willing to learn and train yourself to understand where your sensory strengths and weaknesses lie. Education is the key to understanding the terminology and being able to apply it correctly. It's also the key to keeping things simple and nonintimidating.

It's important that we each determine what level of understanding we feel comfortable with, and accept and acknowledge all of our taste preferences and differences — from taste thresholds to flavor and aroma sensitivities to simply, do I like this?

What the AHA is striving for is to provide beer drinkers a greater understanding of beer, especially homebrew, in all of its various forms, styles and flavors. We seek to educate and provide tools for you to become not only better beer brewers, but also better beer tasters. Stay tuned as we continue to build our international beer evaluation program. But in the meantime, have fun evaluating your homebrews, and give a little extra thought to all of the beverages you drink.



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# DEAR

## Z Y M U R G Y

### Our Readers



### Zymurgy Pride

Dear **Zymurgy**,

Here is the photo of my license plate. If you think it's worthy for the magazine, please print it. I think it would be fun to see it in some upcoming issue.

Yours in brewing,  
Jeff Handley, Partner  
Homebrewer Outpost  
Flagstaff, Arizona

### Bitter Beer Face

Dear **Zymurgy**,

I really enjoy your magazine but someone's putting one over on you. I'm referring to the recipe for Hoppy-Hoppy-Joy-Joy in the "Winners Circle," **Zymurgy** Fall 1995, (Vol. 18 No. 3). This beer was the winner in the American pale ale category. I know this is a style that emphasizes hops, but I calculate the bitterness of this one at roughly 250 IBUs. This is five to six times the bitterness of Sierra Nevada Pale Ale or Anchor

Liberty, the supposed exemplars of this category. Not even the most taste-deaf hop-head could possibly drink this stuff. The judges note repeatedly that the beer has excellent "balance and complexity." Balance between what? Cascade and Chinook hops? Also using 13 pounds of highly extractable malt and a two-hour and two-minute mash we only get 1.060 OG? It's obvious that Jack Hagens, the brewer of the winning beer, did not want to part with his recipe. He submitted the recipe that you published and is now laughing into his beer that you actually did publish it. Anyway, it might be a good idea to read the recipes before you print them.

Hoppily yours,  
Peter A'Hearn  
San Diego, California

Dear Peter,

*I am pleased to inform you that the folks at **Zymurgy** indeed review the data they receive from brewers. If I recall correctly there were at least four phone calls between my home and Boulder trying to convince them. I finally made a photocopy of my brewing journal entry hoping it would clear this up.*

*I have to confess that I brewed a batch of beer with poor extract ratio from my malt and lousy hop utilization. The beer was good though, honest!*

*A subsequent batch brewed with the same recipe yielded a 1.078 SG. This was brewed four days after the first and when I was selecting which one to enter with my club for Hail to Ale, I chose what would end up to be "Hoppy-Hoppy-Joy-Joy" because it was a better beer.*

*If I could recommend how to replicate this recipe without the problems I had, I would*

*drop back on the Maris Otter malt by at least two pounds. Hop head that I am though, I will go on the record stating "You can never over-hop an IPA (or American pale ale, in this case)."*

Truthfully yours,  
Jack Hagens  
Brews Brother  
North Bend, Washington

### Are We Having Fun?

Dear **Zymurgy**,

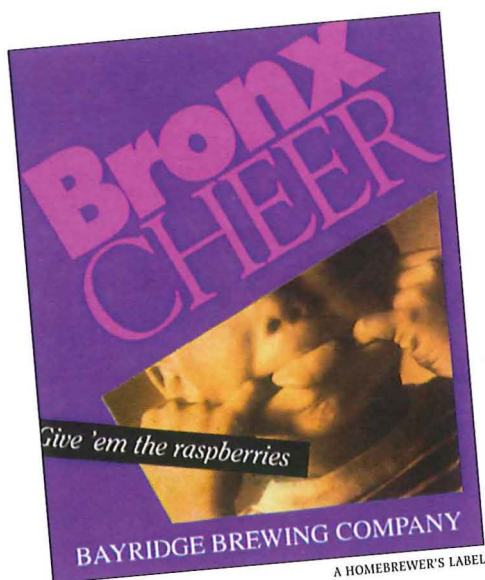
I'm glad to read that you will be sending out a reader survey. I have found a lot of useful information in your publication, but many of the articles seem too technically oriented. Isn't homebrewing supposed to be fun? In my opinion, when you get that serious you lose sight of what homebrewing is all about (relax, don't worry ...). After 30 batches, my methods have progressed to the point where I'm ready to go all grain, but I sometimes feel like I need a Ph.D. when reading **Zymurgy**.

I'm looking forward to participating in your reader survey. How about setting up an on-line survey via e-mail or the Internet?

Thanks for your time,  
Bill Gerhart  
via Internet

*Our membership survey will not be on-line this year. Maybe in the future. Don't forget you can always send your comments, questions or suggestions to [aha@aob.org](mailto:aha@aob.org) or to a specific staff member by typing their first name followed by [@aob.org](mailto:@aob.org). -Ed.*





## Counterpressure Configuration

Dear *Zymurgy*,

I found your article in *Zymurgy* Fall 1995 (Vol. 18, No. 3), "The Counterpressure Connection," very interesting. I own one of the Beverage People's counterpressure fillers, and although I have had excellent results, I have encountered the same problem of not being able to get the beer to flow. What I have found is that if the bottom of the Cornelius keg is placed above the level of the bottle (I do this by placing the keg on an ice chest) once the fill tube is full then the system can be used the way it is described in the instruction sheet. Although this runs very slowly, it fills the bottles with no foaming.

Stan Babb  
Norman, Oklahoma

## Obstruction of Justice

Dear *Zymurgy*,

I am the proud owner of a Beverage People counterpressure bottle filler and am very disappointed with your analysis of its performance. I have used several different bottle fillers in the past and find the gravity-feed method and the Beverage People bottle filler to be by far the easiest to set up and use.

Except for one small mistake in my initial setup I found the instructions very easy to follow. The first time I used this filler I

had a one-way gas valve in the gas line. This valve would not allow the gas to flow from the bottle back to the keg and therefore no beer would flow down the line into the bottle. Once I realized this was the problem I removed the valve and proceeded to effortlessly fill bottles.

I suspect the problem with your test was that there was an obstruction of some sort in the gas line. Some gas line Ys have on-off valves for each branch. They may also contain one-way valves to prevent back flow of gas or liquid through the Y. A simple way to test for this valve is to blow through both sides of the valve backwards. If no air flows then something is wrong. I use a T with no valves and it works every time.

Gary Gutowski  
Eglin AFB, Florida  
via Internet

## Tips and Warnings

Dear *Zymurgy*,

In reference to "Tips and Gadgets" in *Zymurgy* Fall 1995 (Vol. 18, No. 3), "Carbonating in PET Bottles," there is a subtle but important point that should be known by those who use the valve stem method. Automotive valve stems are not made of food-grade rubber. It is possible that undesirable chemicals from the valve stem material will leach into beverages — especially if the material has been in contact with the CO<sub>2</sub> and beverage for some time (as is suggested by the article).

It also is important for users of PET bottles to realize that they should not be pressurized to greater than 35 PSI. An exploding PET bottle releases a tremendous amount of energy and can seriously injure anyone in close proximity.

There are inexpensive devices manufactured specifically for the purpose of carbonating and dispensing from PET bottles. The manufacturers of these devices ensure the food-grade nature of the materials used and generally send safety information with a purchase, hence these devices cost just a little more (but not much more) than a valve stem.

One such device, the Tap-Cap, costs just \$4 (manufacturer's suggested retail price)

and should be available from your local homebrew store or by contacting Great Lakes Brew Supply at (607) 785-4-BEER. The Tap-Cap can be used to dispense beer through a picnic faucet as well.

Homebrewing is a great hobby. Let's exercise safe and responsible practices to keep it fun!

Lee Knox, Owner,  
Great Lakes Brew Supply  
Endicott, New York

## The Extract Niche

Dear *Zymurgy*,

I am an extract brewer for the most part, using some specialty grains. My brother is an all-grainer and I have done one all-grain ale at his home. I found it to be a very educational experience and got a nice batch of beer out of it to boot.

The other 10 batches I have brewed have been extract based and, for the most part, very drinkable. My brother's beers are wonderful too, but not so much tastier that I think it is necessary to switch to all grain. In my opinion, all-grain brewers do not universally brew better beer than extract brewers. Rather than an issue of quality, I believe it's an issue of resources and what level of involvement one enjoys. My resources are such that extract brewing is a better fit for me.

Someday I hope to "graduate" to all-grain brewing, but I'm not going to wait for that day to brew great beer. In the meantime, extract recipes, articles about extract-based brews (other than the "Best From Kits" feature), and acknowledgment that extract brewers form a serious segment of the hobby by all would be welcome.

Thanks for a great magazine, by the way. Y'all do a great job.

Larry Johnson  
Athens, Georgia

Dear *Zymurgy*,

Almost all of the articles in *Zymurgy* contain formulas and calculations on every aspect of the brewing process. It's getting ridiculous. If most brewers use extracts, then



the formulas are unnecessary information and wasted space. Most extract brewers could care less about all those exacting calculations. They brew with extracts for simplicity.

In *Zymurgy* Winter 1994 (Vol. 17, No. 5) you said you would focus more on extracts. You did, but you couldn't resist turning the article into a scientific paper. Instead of useful information like "This extract uses sugar and that extract uses caramel coloring," the author drowned the article in formulas.

I have been brewing for four years and have experimented with many beer styles. I currently brew an ale that's somewhere between an amber and a brown ale. I do not know the starting or finishing gravity, the alcohol percentage or the carbonation level down to the nearest 10th of a psi (among other anal retentive calculations), but it is still a great ale. Perhaps *Zymurgy* should rename itself "The Brewing Science Journal."

David Weiss  
via Internet

Well, readers, what do you think? Drop us a note to tell us how you feel about the content of *Zymurgy*. We want to meet your needs. —Ed.

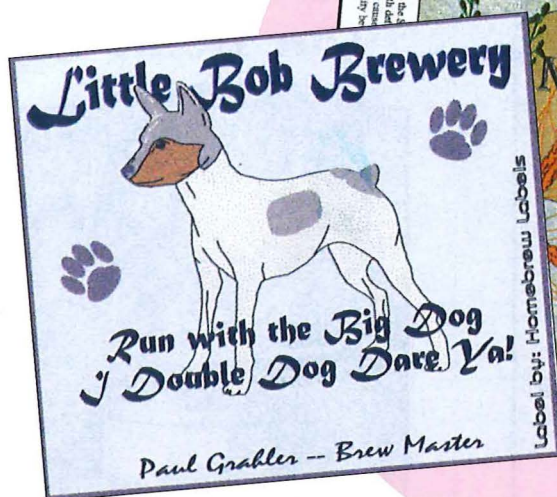
## The Ingredient Hunt

Dear *Zymurgy*,

Concerning the pursuit of juniper berries, there is a better source that does not require a \$10 mail-order charge: Spices Etc., PO Box 5266, Charlottesville, VA 22905; (800) 827-6373

Since you said that sorghum is not available on the commercial level, my curiosity has been aroused all the more. Could you provide readers with a list of breweries in Africa that produce sorghum beer so we can order malted sorghum from them directly? A sorghum extract could be a new product offered by some of the malt-extract producers. Could you please suggest it to them? I would really like to try sorghum beer someday.

James R. Bauernschmidt  
Severna Park, Maryland



The droughts in Africa have caused a shortage, so sorghum currently is not being exported. A sorghum extract? Sounds good. Maybe the malt-extract producers are listening. —Ed.

## Fall Issue Fan

Dear *Zymurgy*,

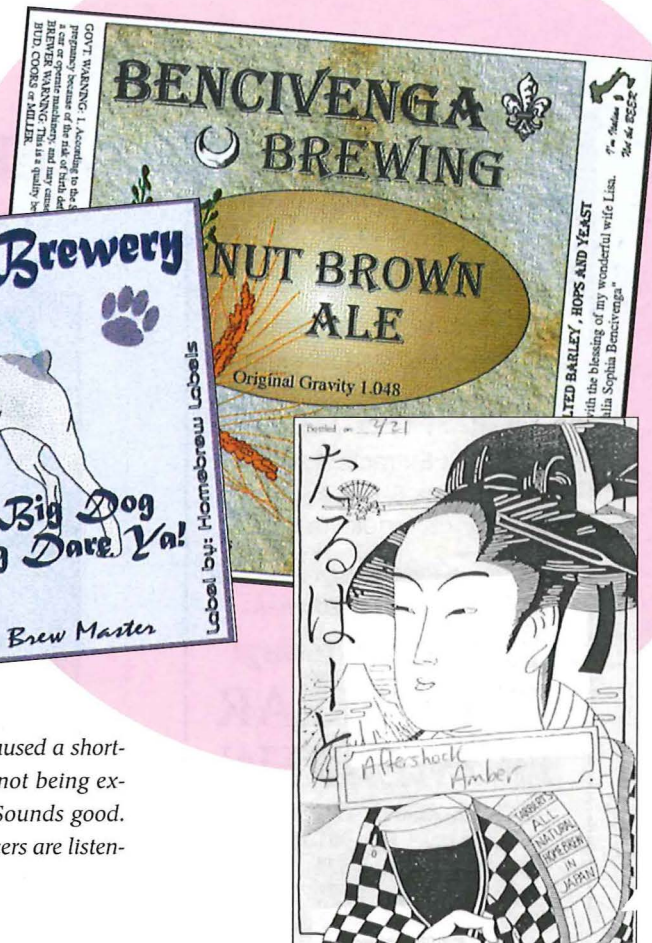
Just some rapid feedback about *Zymurgy* Fall 1995 (Vol. 18, No. 3). Kudos raised to the third power for the article by James Liddil and John Palmer on cleaning and sanitation. Such an article has been needed for a long, long time! Although the information is available, having it compiled into one coherent article is a true service to homebrewers.

The Last Drop, "You Know You're a Homebrewer If ...," is a real hoot! My wife read it and looked at me with a silly grin, then commented, "Well, it fits you to a T, doesn't it?"

The new color format is an improvement. However, the halftones and quarter tone overlays are a little distracting, especially in the case of Brad Kraus' article on Oktoberfests.

Altogether, the Fall issue is very impressive. You and the staff should be quite proud of your efforts!

Sincerely,  
Kurt Schilling  
Anderson, Indiana



## Personal Testimony II

Dear *Zymurgy*,

In "Dear *Zymurgy*," Winter 1995 (Vol. 18, No. 5), Scott Parr chastises me for writing a negative review of Mark Garetz's book *Using Hops* (HopTech, 1994). Mr. Parr claims there were errors in my review, but failed to point any of them out. Mr. Parr is entitled to his opinion regarding this book and there is indeed the possibility that his beer improved since he bought the book as he claims, but I stand by every word I have written. The errors in the book that I point out are not based upon my opinions, but rather the books' own references, tests that I have done at the Siebel Institute of Technology and the knowledge of industry experts such as Dr. Alfred Haunold. I encourage Scott Parr to reread the review and consider that my criticisms are all well-founded.

Al Korzonas  
Palos Hills, Illinois



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# A S S O C I A T I O N NEWS

Karen Barela

## Support Your Right To Homebrew!

**H**omebrewing has been part of household life for centuries. It has even been suggested that civilization began, in part, because of brewing. For more than 5,000 years people have been fermenting grains and enjoying beer as a natural part of life. In the United States, we have a piece of history sporting a weird splotch called Prohibition. For 13 years the manufacture, transportation or sale of alcoholic beverages was forbidden. Fortunately, Prohibition was repealed in 1933 and brewing once again prospers. For unknown reasons, however, homebrewing wasn't made federally legal until 1978.

a fun, interesting and rewarding hobby that is steeped in traditions that began in ancient cultures. What other hobbies can claim such a rich history? There is more beer and brewing activity now than ever before. More and more people are being educated about the varied styles of beer and methods of brewing. The 25,000 current members of the AHA represent just a fraction of the number of people who have homebrewed and who practice the hobby of homebrewing on a regular basis. We estimate that more than 1 1/2 million people have tried homebrewing.

recognized by statute of the U.S. government. The AHA recently conducted research and discovered several states where laws have not yet caught up to the hobby of homebrewing. (The U.S. Constitution gives the states authority to regulate intoxicating liquors.) We believe that now is the time to be pro-active in changing this situation by making homebrewing recognized by statute in all 50 states. It is time to bring the hobby of homebrewing legitimately and legally into the next century.

Homebrewing should be legal and recognized everywhere in the United States. We have the right to brew just as we have a responsibility to uphold the tradition of the art, craft and science of brewing. Homebrewing as a hobby builds respect for beer as an alcohol-containing beverage, for brewing traditions and for the craft-brewing industry as a whole. The federal government

### The Homebrew Hobby

We like to think of homebrewing as the hobby of the 21st century. Homebrewing is

### The Homebrew Revolution

It took a while (45 years after Prohibition ended!) for homebrewing to become





has even acknowledged, for the first time, that consuming some alcohol can be healthful, according to the New York Times News Service.

Homebrewers are responsible members of society across a broad spectrum, including managers, computer programmers, doctors, scientists, teachers, lawyers and parents. We are responsible about our consumption of beer because we are educated about its effects on our bodies and the role beer plays in our own lives and in society.

## Legalize It!

Homebrewers and AHA members in each state have the responsibility to help make homebrewing recognized by all state legislatures. Legislators listen to their voting constituents and, as a group of diverse

people, we have a lot of power to approach our local and state governments. The staff of the AHA, with the support of the AOB, encourages you to get these lagging state laws changed. You are part of this solution.

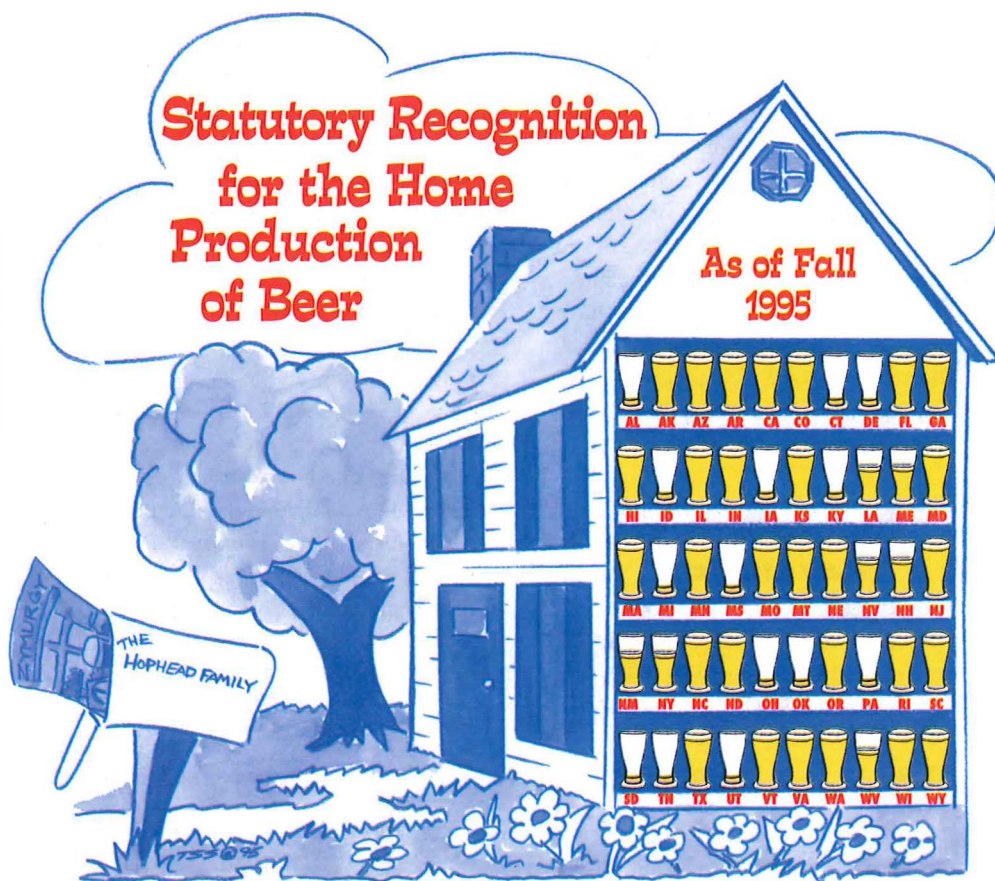
## Grass-roots Lobbying

The AHA has been busy gathering information and formulating a plan to help you get this project moving. As part of a non-profit association, the AHA is strictly governed in the types of lobbying it can do and how much money can be spent on lobbying efforts. We can, however, provide information and resources to help you lobby at the grass-roots level. As you know from reading *Zymurgy*, Georgia and New Jersey changed their laws to allow for homebrewing because

of grass-roots lobbying efforts led by a few key individuals. The process has begun in Alabama and Utah where a few people are working to get the legalization effort rolling. But the legalization effort needs you. The effort to legalize homebrewing depends on hard work and dedication from you, the homebrewers and AHA members who live in the states where statute changes need to be made. (To find out if homebrewing is recognized by statute in your state, refer to the graphic on the bottom of this page. Updates are available from the AHA.)

## The Plan of Action

- The AHA will act as information central for all states. We have copies of each state law as well as the wording from states where homebrewing is "statutorily recognized." These statutes can be used as templates and models to re-word the "non-statutorily recognized" state statutes.
- The AHA will provide information and necessary industry facts and figures to give broad support and background information to committees, lobbyists and legislators.
- The AHA can provide data bases for letter-writing campaigns by AHA members, Institute for Brewing Studies members, homebrew shops and homebrew clubs to encourage individuals to contact the state legislature where necessary.
- The AHA will provide, as needed, access to legal counsel to help your efforts to legalize homebrewing.
- The AHA will support mailing, printing and other related costs as needs arise.
- The AHA will provide media support and media contacts.
- The AHA will help coordinate committee activities.
- The AHA will maintain up-to-date progress reports.



Home production of beer permitted in 29 states.



Home production of beer possibly permitted in 7 states.



Home production not permitted in 14 states.



- Committees will be formed on a state-by-state basis. Currently, individuals are needed to head committees, individuals with specific skills (attorneys, employees of alcohol agencies, professional lobbyists, etc.) are needed to help steer committees and volunteers are needed to write letters and contact their legislators. Contact the AHA to volunteer.

## Membership Dollars at Work

The AHA's goal is to make homebrewing recognized by statute in all 50 states. Toward this end we have researched all homebrewing-related statutes on a state-by-state basis and compiled complete files on all 50 states. We've compiled a list of contact people in the state alcohol beverage control agencies of all 50 states. We had a brainstorming meeting in October 1994 to collect advice and perspective from leaders in the homebrewing industry. Those in attendance were Fred Eck-

hardt, AHA board of adviser; Charlie Olchowski, AHA board of adviser and owner of the The Frozen Wort, homebrew supply shop; Susan Graydon of Premier Malt Products Inc.; Seth Schneider of Crosby and Baker; the AHA's legal intern and the AHA staff. We also raised funds from Boston Beer Co. for financial support of the project outlined here.

## Relax, don't worry.

It's important to remember that in most cases state alcohol laws have been designed for the purposes of collecting taxes and controlling distribution. These laws were designed to regulate commercially produced alcohol-containing beverages intended for sale, including beer. Homebrewing, because it is not commercially produced or sold, does not fit within most existing laws. In many cases, homebrewing has simply not been included because there was never a reason to include it. Now is the time, with the increasing popularity

of homebrewing, to give state legislators a reason to recognize homebrewing.

We look forward to working together with you, our members, to accomplish this task. Please contact the AHA if you are willing to help. For a one-page summary of the relevant statutes from your state, send us a self-addressed stamped envelope with the name of the state whose regulation you desire clearly indicated. Or check the 50-state summary posted on our automated e-mail service and website. Address the message to [info@aob.org](mailto:info@aob.org) and include the key word "legal" or: <http://www.aob.org/aob/zymurgy/legal.html> on the World Wide Web. We have installed a homebrew legalization hotline number to keep you up-to-date on our progress: call (303) 447-0126. For information or to volunteer contact Karen Barela, AHA president, PO Box 1679, Boulder, CO 80306-1679, FAX (303) 447-2825. We look forward to hearing from you.

*Note: The information presented here is to the best of our knowledge and should not be used as a substitute for legal advice specific to the laws of your state.*

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# CALENDAR



## 1996

### MARCH

- 2** Knickerbocker Battle of the Brews '96, **AHA SCP**, Troy, N.Y. Entries due Feb. 23. Contact Francois Espourteille at (518) 782-9057.
- 2** America's Finest City Homebrew Competition, **AHA SCP**, San Diego, Calif. Entries due Feb. 21-28. Contact Skip Virgilio at (619) 566-7061.
- 8-9** Bidal Society Homebrew Competition, **AHA SCP**, Kenosha, Wis. Entries due March 2. Contact Carol DeBell at (414) 654-2211.
- 9** Marquis de Suds, **AHA SCP**, Calgary, Alberta, Canada. Entries due March 2. Contact Calvin Cran at (403) 258-1580.
- 9** New York City Homebrewers Guild Annual Competition, **AHA SCP**, New York, N.Y. Entries due March 4-7. Contact Donna Bersani at (212) 557-8111.
- 9** Classic City Brew Fest, Athens, Ga. Call Brewtopia at (800) 540-MALT.
- 9** Second Annual CRAZY Hop into Spring, **AHA SCP**, Cedar Rapids, Iowa. Entries due Feb. 24-March 6. Contact Scott Krueger at (319) 373-0478 or SMKRUEGER@aol.com.
- 10** Third Annual Queen of Beer Women's Only Homebrew Competition, **AHA SCP**, Placerville, Calif. Entries due Feb. 10-March 6. Contact Elizabeth Zangari at (916) 626-7733.
- 16** Winter Carnival Brewers Assay II, **AHA SCP**, Fairbanks, Alaska. Entries due March 15. Contact Roger Penrod at (907) 479-8795.
- 16** Shamrock Open, **AHA SCP**, Raleigh, N.C. Entries due March 14. Contact Bill MacKenzie (919) 846-8329.
- 21-24** Home Beer & Wine Show, Montreal, Quebec, Canada. Call (514) 881-8920.
- 22-23** Sixth Annual March Mashfest, **AHA SCP**, Fort Collins, Colo. Entries due March 9. Contact Brian Walter at (970) 493-2586 or walter@lamar.colostate.edu; <http://www.fortnet.org/~smills/masht.htm>.
- 22-23** Traverse Brewing Academy Spring Educational Forum for Homebrewers, Traverse City, Mich. Contact Matt Sutherland at (616) 933-6042.
- 23** Ultimate Alt Club-Only Competition, **AHA SCP**. Entries due March 18. Contact James Spence at (303) 447-0816 ext. 121 or james@aob.org.
- 23** Palm Beach Draughtsmen Hurricane Blow Off, **AHA SCP**, West Palm Beach, Fla. Entries due March 8. Contact Jeff Miller at (407) 391-1813.
- 23** BOSS Fourth Annual Homebrew Competition, **AHA SCP**, Orland Park, Ill. Entries due March 16. Contact Marty Nachel at (708) 614-MALT.
- 23** Great Arizona Beer Festival, **AHA SCP**, Phoenix, Ariz. Entries due March 17. Contact Rick Drake at (602) 843-3420.
- 24** Fifth Annual New York City Spring Regional Competition, **AHA SCP**, Staten Island, N.Y. Entries due March 21. Contact Frank Salt at (718) 667-4459 or kbjohns@escape.com.
- 24** World Cup of Beer, **AHA SCP**, Oakland, Calif. Entries due March 9. Contact Ray Francisco at (510) 276-4411 or crazyray@hooked.net; <http://www.hooked.net/users/regist/worldcup.htm>.
- 29-30** 10th Annual Bluebonnet Brew-Off, **AHA SCP**, Irving, Texas. Entries prior to March 9 discounted. All entries due before March 16. Contact Rob Stenson at (817) 377-4488 or brewer@fastlane.net.
- 30** Central New England Homebrew Competition, **AHA SCP**, Worcester, Mass. Entries due March 23. Contact Chip Jarry at (508) 892-1683.
- 30-31** Advanced Homebrewers Weekend Series in Atlanta, Ga. Call the American Brewers Guild at (800) 636-1331.
- 30** Trash VI, **AHA SCP**, Pittsburgh, Pa. Entries due March 16. Contact Donald Van Ollefen at (412) 351-6558 or DONVANO@aol.com.
- 30** Hudson Valley Homebrewers' Inc. Sixth Annual Homebrew Competition, **AHA SCP**, Fishkill, N.Y. Entries due March 23. Contact Robert Carter at (914) 565-6036 or Holton@minnie.nic.kingston.IBM.Com.
- APRIL**
- 12** Third Annual Greater Wichita Homebrew Competition, **AHA SCP**, Wichita, Kan. Entries due April 7. Contact Chris Kaufman at (316) 789-0415.
- 13** The Belgian Beer Contest, **AHA SCP**, Brooklyn, N.Y. Entries due April 1. Contact Marie at (718) 821-6022 or warrenb@nycpipeline.com.
- 13** Brewhouse Bock Brewfest, **AHA SCP**, Duluth, Minn. Entries due March 30. Contact Mike Hoops at (218) 726-1392.
- 13** Mead Contest, **AHA SCP**, El Paso, Texas. Entries due April 6. Contact Bill Goslin at (915) 778-3301.
- 13-14** Annual Swedish Homebrewers Competition, Hultsfred, Sweden. Contact Håkan Lundgren at Lundgren@shbf.se.
- 20** Bluff City Brewers Eighth Annual Homebrewers Extravaganza, **AHA SCP**, Memphis, Tenn. Entries due April 15. Contact Jim Kingsbury at (901) 278-1280.
- 20-21** First Round AHA National Homebrew Competition judging in Chicago, Ill., Pensacola, Fla., and Lancaster, Pa. Contact Caroline Duncker at (303) 447-0816 ext. 116 or caroline@aob.org.
- 19-20** Dukes of Ale Spring Thing, **AHA SCP**, Albuquerque, N.M. Entries due on April 13. Contact Guy Ruth at (505) 294-0302.
- 20** U.S. Open Homebrew Competition, **AHA SCP**, Charlotte, N.C. Contact John Mitchell at (704) 864-3450.
- 27-28** First Round AHA National Homebrew Competition judging in Fresno, Calif., Portland, Ore., Denver, Colo., Kansas City, Kan., and Toronto, Ontario, Canada. Contact Caroline Duncker at (303) 447-0816 ext. 116 or caroline@aob.org.
- 26-27** James Page Open, **AHA SCP**, Minneapolis, Minn. Entries due April 8-20. Contact Harvie Holmes at (612) 331-2833 or (800) 347-4042.
- 27** Greater Topeka Hall of Foamers Third Annual Heartland Homebrew Competition, **AHA SCP**, Topeka, Kansas. Entries due April 20. Contact Chris Hedquist at (913) 235-6561.
- 27** Maltose Falcon's Mayfaire, **AHA SCP**, Woodland Hills, Calif. Entries due April 6. Contact Russell Reece at (310) 379-2921; Rusty Reece@aol.com.
- 27-30** The Boston Brew In: Charting the Course, Institute for Brewing Studies 1996 National Craft-Brewers Conference and Trade Show. Hynes Convention Center, Boston, Mass. Call the IBS at (303) 447-0816.
- MAY**
- 4** National Homebrew Day. Call the AHA at (303) 447-0816.
- 4** Gemstate Homebrew Competition, **AHA SCP**, Boise, Idaho. Entries due April 27. Contact Loren Carter at (208) 385-3473 or lcarter@claren.idbsu.edu.
- 4-5** Sunshine Challenge, **AHA SCP**, Orlando, Fla. Entries due April 30. Contact Tom Moench at (407) 888-3533.
- 4-5** AHA National Homebrew Competition Cider site, Boston, Mass. Contact Caroline Duncker at (303) 447-0816 ext. 116 or caroline@aob.org.
- 5** Ninth Evanston First Homebrew Challenge, **AHA SCP**, Evanston, Ill. Entries due April 27. Contact Christopher Nemeth at (708) 869-3621 or nemeth@id.ill.edu.
- 11** 14th Annual Oregon Homebrew Competition, **AHA SCP**, Albany, Ore. Entries due May 10. Contact Lee Smith at (541) 926-2286.



**11** Elizabethan Homebrewing Competition, **AHA SCP**, San Bernardino, Calif. Entries due April 22-29. Contact Stacey Harris at (909) 880-6275.

**11** Green Mountain Homebrew Competition, **AHA SCP**, Burlington, Vt. Entries due April 26. Contact Dave Gannon at (802) 879-1304.

**11** First Homebrewers Contest at BlackHorse Brewery, **AHA SCP**, Clarksville, Tenn. Entries due May 4. Contact Ted Pilkons at (800) 295-1506.

**11-12** 10th Annual Big and Huge Homebrew Competition, Madison, Wis. Entries due May 4. Contact Bob Paolino at rpaolino@earth.exccpc.com

**18** Bock is Best Club-Only Competition, **AHA SCP**. Entries due May 13. Contact James Spence at (303) 447-0816 ext. 121 or james@aob.org.

**18** Fifth Annual Moon Madness Competition, **AHA SCP**, Douglassville, Pa. Entries due May 1-12. Contact Randy Martin at (610) 944-0500.

**18** Be Like Mike, **AHA SCP**, Austin, Texas. Entries due April 28. Contact Lynne O'Connor at (512) 832-8552 or stpats@wixer.bga.com.

**18-19** Advanced Homebrewers Weekend Series, American Brewers Guild, Kansas City, Mo. Call (800) 636-1331.

**25** 10th Annual California Festival of Beers, San Luis Obispo, Calif. Call (800) 549-1538.

## JUNE

**5-8** Homebrew Bayou, AHA 1996 National Homebrewers Conference, New Orleans, La. Call the AHA at (303) 447-0816.

**12-16** Beer Mundial '96, Old Port of Montreal, Quebec, Canada. Contact Jeannine Marois at (514) 722-9640 or Marois@login.net.

**14-15** Second Annual Eight Seconds of Froth, **AHA SCP**, Cheyenne, Wyo. Entries due June 11. Contact Richard Mincer at (307) 632-0541.

**15-16** E'Ville Triple Threat, **AHA SCP**, Ellicottville, N.Y. Entries due May 17-31. Contact Vincent D. Oliverio at (716) 699-8385.

**15** Third Annual Wichita Festival of Beers, Wichita, Kan. Contact Beverly Moore at (316) 838-7707.

**30** BUZZ OFF Homebrew Competition, **AHA SCP**, Downingtown, Pa. Entries due June 24. Contact David Houseman at (610) 458-0743 or dlh1@trpo3.tredydev.unisys.com.

## AUGUST

**6-10** 1996 Great British Beer Festival, London, England. Call CAMRA at 01727 867201; FAX 01727 867670; 230 Hatfield Rd., St. Albans, AL1 4LW.

**8** Josephine County Fair Amateur Beers Competition, **AHA SCP**, Grants Pass, Ore. Entries due Aug. 8. Contact Hubert Smith at (503) 597-2142.

**14** Steele County Free Fair Home-made Beer, **AHA SCP**, Owatonna, Minn. Entries due Aug. 11-13. Contact Kirk Groeneweg at (507) 455-3423.

**17** Mead Magic Club-Only Competition, **AHA SCP**. Entries due Aug. 12. Contact James Spence at (303) 447-0816 ext. 121 or james@aob.org.

## SEPTEMBER

**21** Tampa Bay Beers Ultimate Altbier Competition, **AHA SCP**, Tampa, Fla. Entries due Sept. 19. Contact Jeff Gladish at (813) 874-0937.

**26-28** 15th anniversary Great American Beer Festival®, Denver, Colo. Call the GABF hotline (303) 447-0126.

## OCTOBER

**26** Best of Fest Club-Only Competition, **AHA SCP**. Entries due Oct. 21. Contact James Spence at (303) 447-0816 ext. 121 or james@aob.org.

## NOVEMBER

**3-5** International Beer Marketers Symposium, Vancouver, British Columbia, Canada. Call the Association of Brewers at (303) 447-0816.

## DECEMBER

**7** Belgian Blockbuster Club-Only Competition, **AHA SCP**. Entries due Dec. 2. Contact James Spence at (303) 447-0816 ext. 121 or james@aob.org.

**AHA SCP** = American Homebrewers Association Sanctioned Competition Program

To list events, send information to **Zymurgy** Calendar of Events. To be listed in **Zymurgy** Summer 1996, information must be received by March 15, 1996. Competition organizers wishing to apply for AHA Sanctioning must do so at least two months before the event. Contact Caroline Duncker at (303) 447-0816, ext. 116; FAX (303) 447-2825; PO Box 1679, Boulder, CO 80306-1679; or Internet caroline@aob.org.

The calendar of events is updated weekly and available from the Association of Brewers: info@aob.org or <http://www.aob.org/aob>.



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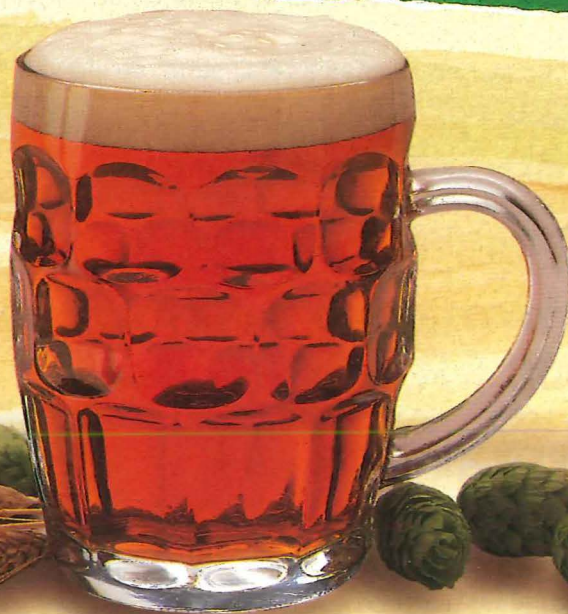
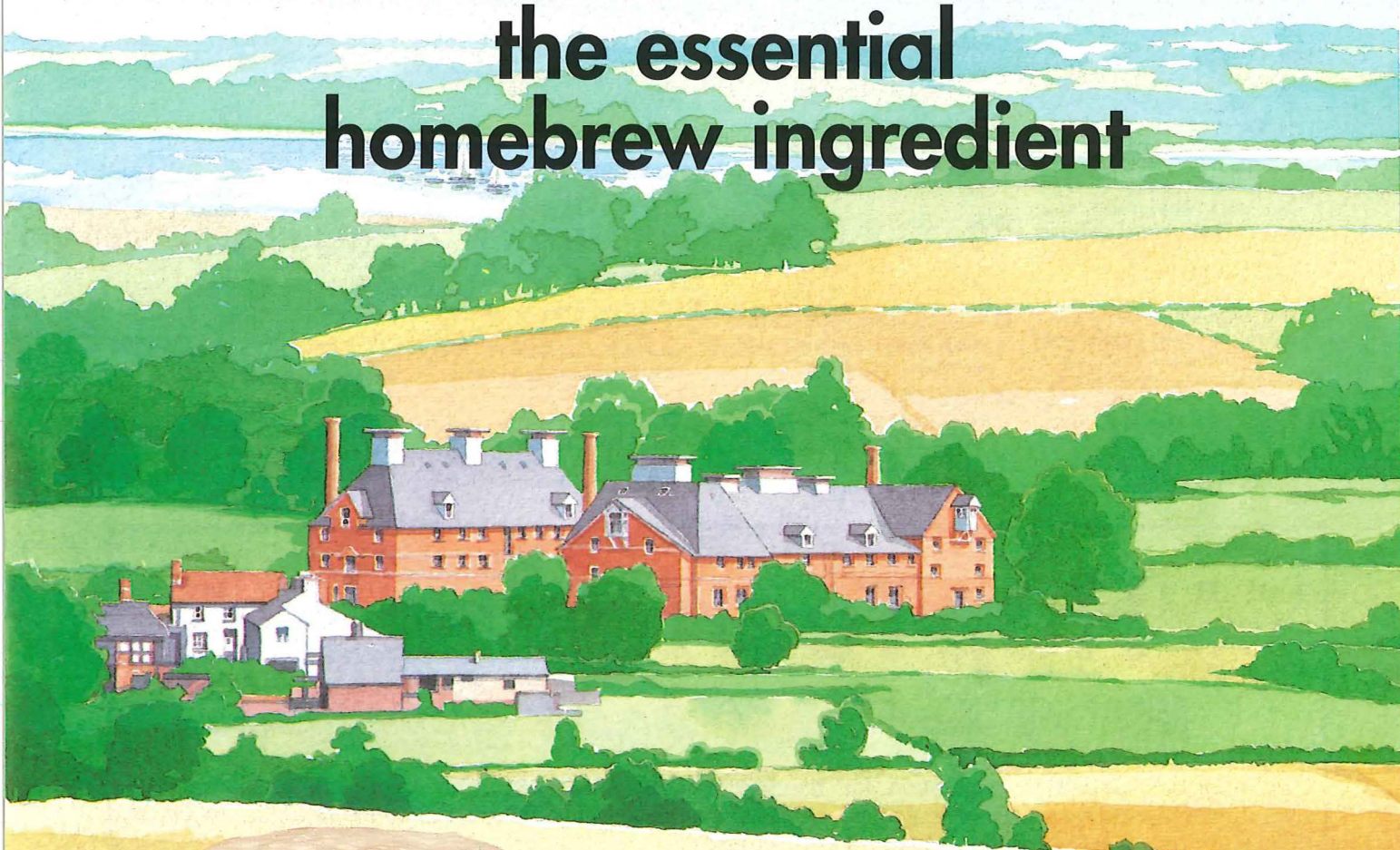


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# BREW NEWS

James Spence

## HEAD LINES

### Belgium's Interbrew Acquires Labatt



After shelling out more than \$3 billion, Belgium's largest brewery conglomerate, Interbrew, acquired John Labatt Ltd., Canada's second largest brewery. The purchase makes Interbrew the fourth largest brewery in the world. Interbrew's brands in Belgium include Stella Artois, Jupiler, Hoegaarden and Leffe. In addition, the sale gives Interbrew 22 percent of Mexico's Femsa Cerveza, which brews 50 percent of the Mexican market's beer. (*Brewing and Beverage Industry International*, March 1995)

### Herbs Inhibit Intoxication

Extracts from thousand-year-old herbal remedies used by Chinese and Japanese

doctors have been shown to limit the absorption of alcohol by laboratory rats. Chemists at Japan's Kyoto Pharmaceutical University separated components of plant extracts to identify the active ingredients that seem to curb alcohol absorption. The active ingredients, triterpene oligoglycosides, are sugar derivatives called saponins. Saponins occur in Japanese angelica trees, soapnut trees, horse chestnut seeds and camellias. Angelica root and bark have been used to treat arthritis and diabetes by traditional Asian doctors. Rats fed solutions of water and alcohol had their blood-alcohol concentrations lowered by one-fifth when treated with the angelica bark extract. The chemists believe the experiments could lead to the development of other intoxication-fighting pharmaceuticals. (*Science News*, Aug. 26, 1995)

### Beer Production Highlights

In 1994, the total world beer output was 1,221,727,000 hL. That's more than 32 billion U.S. gallons, or more than one five-gallon (19-L) batch of homebrew for every person on earth. Leading the pack was the United States (237,114 hL), followed by China (140,000 hL), Germany (118,577 hL), Japan (72,459 hL), Brazil (62,500 hL) and Great Britain (54,771 hL). Last on the list of beer-producing countries? Bangladesh with an estimated 5,000 hL, equal to about 26,420 five-gallon (19-L) batches of homebrew. Overall, world beer production increased about 2.7 percent from 1993 to 1994. (*Brewing and Beverage Industry International*, March 1995)

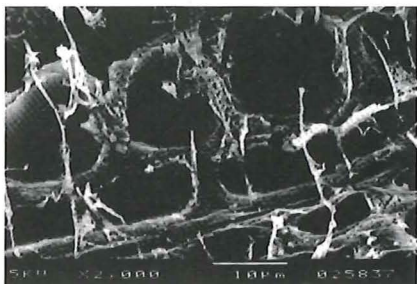
### SharkCruiser Sports Integral Bottle Opener

Specialized Bicycle Components of Morgan Hill, Calif., has introduced the SharkCruiser as part of their 1996 line of bicycles. The retro-styled "cruise machine" is designed with an integral bottle opener as part of the shark-shaped head-tube gusset. The company explains that, "Specialized in no way condones, supports, promotes or inspires irresponsible behavior in connection with our most happening SharkCruiser and any malt beverage that may accidentally come into contact with the shark-head emblem that only coincidentally resembles a bottle opener." (Specialized Bicycle Components marketing)

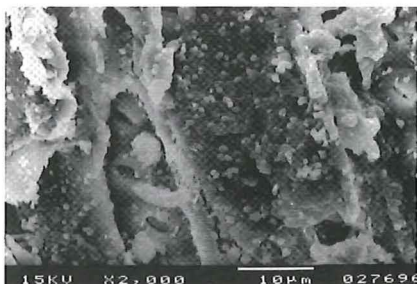




## TECHNOTES



This electron microscope photograph shows the open porous cellular structure of an unused oak storage vat.



Yeast from cider stored in the oak has penetrated 1.25 cm below the surface in four weeks.

### Microbial Life in Wooden Vats

Wooden vats traditionally used as storage and maturation tanks for the alcoholic beverage industry, fruit-based beverages in particular, are steadily being replaced by vats made from more easily handled materials such as stainless steel. A nine-week study of one 10,000-gallon oak vat used for cider maturation, however, showed that the microbial profile of the vat changed as the cider aged, with populations of *Saccharomyces* yeast species, non-*Saccharomyces* yeast species, lactic acid bacteria and acetic acid bacteria changing during the fermentation cycle. The microbial population was still present even after the vat was cleaned and reused, a result of the yeast and bacteria penetrating up to 1.25 centimeters into the pores of the wood. Sensory evaluation studies of the wood-aged ciders indicated a more mellow and full-bodied flavor profile than non-wood-aged products possibly because of the natural microbial populations in wooden vats. (*Journal of the American Society of Brewing Chemists*, Vol. 53, No. 3)

## MICROBREWERIES, BREWPUBS AND CONTRACT BREWERIES

Information provided by the Institute for Brewing Studies, Boulder, Colo. A complete list of breweries and brewpubs is updated quarterly and available from the Association of Brewers for \$5. For more frequent updates, check the Association of Brewers world wide web page <http://www.aob.org/aob>.

### OPENINGS

(As of November 1995)

#### UNITED STATES Microbreweries

**Alaska:** The Borealis Brewery, Anchorage  
**Colorado:** One Keg Brewery, Arvada  
**Florida:** Dunedin Brewery, Dunedin  
**Illinois:** Goose Island Brewing, Chicago  
**Maine:** Sheepscot Valley Brewing Co., Whitefield  
**New York:** Old Hampton Brewers, East Hampton  
**Oregon:** Blue Mountain Brewing Co., La Grande; Yamhill Brewing Co., Portland  
**Pennsylvania:** Ugly Dog Brewing Co., West Chester  
**South Carolina:** Reedy River Brewing Co., Greenville  
**Washington:** Captain City Brewing Co., Coupeville  
**Wyoming:** La Voie Brewing Co., Pinedale

#### Brewpubs

**Alabama:** Alabama Brew Pub, Montgomery  
**Alaska:** Cusacks Brewpub and Roaster, Anchorage  
**Arizona:** Copper Canyon Brewing and Alehouse, Chandler; Coyote Springs Downtown, Phoenix; Hops Bistro and Brewery (No. 5), Glendale; Hops Bistro and Brewery (No. 6), Chandler; McFarlane Brewing Co., Scottsdale  
**California:** Powerhouse Brewing Co., Sebastopol; Seaport Pub and Brewery, Stockton; Snowshoe Brewing Co., Arnold; Yosemite Brewing Co., Oakhurst  
**Colorado:** Ouray Brewing Co., Ouray  
**Connecticut:** Wyndham Mills Pub and Brewery, Willimantic  
**Georgia:** Buckhead Beer Co., Buckhead; John Harvards Brewhouse, Buckhead; U.S. Border Brewery Cantina, Alpharetta  
**Hawaii:** Trade Winds, Wailuka, Maui  
**Idaho:** Pend Oreille, Sandpoint  
**Illinois:** Rock Bottom Brewery, Chicago  
**Kentucky:** Lexington Brewing Co., Lexington  
**Maine:** Stone Coast Brewing Co., Portland  
**Maryland:** Brauhaus Schloss, Ellicott City; DuClaw Brewing Co., Forest Hill

**Massachusetts:** Back Bay Brewing Co., Boston; Brew Moon (No. 2), Saugus; Owen O'Learys, Brockton  
**Nebraska:** Gottberg Brew Pub, Columbus  
**New Jersey:** Harvest Moon Brewery, New Brunswick; Sullivan Brewing Co., New Brunswick  
**New York:** Nacho Mamas Brewpub, New York; The Original Sarasota Springs Brewpub, Sarasota Springs; Westchester Brewing Co., Pound Ridge  
**North Dakota:** Rattlesnake Creek Brewery and Grill, Dickinson  
**Ohio:** The Firehouse Brewery & Restaurant, Cleveland Heights  
**Oklahoma:** Pete's Place, Krebs  
**Oregon:** Cascade Microbrewery and Public Firehouse, Salem  
**South Carolina:** Hunter Gatherer, Columbia  
**Texas:** Blue Star Brewing Co., San Antonio; Yegua Creek Brewing Co. (No. 2), San Antonio  
**Virginia:** Champion Billiards and Cafe, Arlington; Cobblestone Pub and Brewery, Richmond  
**Wisconsin:** Fratello's Italian Cafe, Oshkosh; J.T. Whitney's Brewpub and Eatery, Madison  
**Wyoming:** Bowman's Pub and Brewing, Laramie

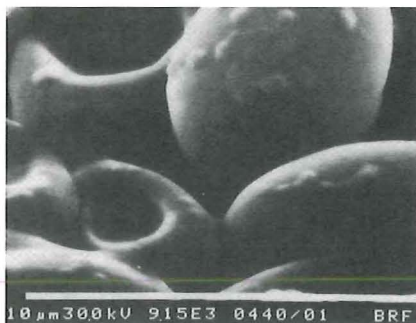
### CANADA Brewpubs

**Alberta:** Bariff Brewery Corp., Calgary; Brews Brothers Brewing Co., Calgary  
**New Brunswick:** Picaroons Brewing Co., Fredericton  
**Ontario:** Addingtons, Ottawa; Amsterdam Brewing Co., Calgary; Europeanbeer, Windsor; Gold Crown Brewing Co., Waterloo; Major's Brew-House, Ottawa  
**Quebec:** Vieux Copenhagen Brasseurs, St-Sauveur des Monts

### CLOSINGS

#### UNITED STATES Microbreweries

**California:** Bay Brewing Co./ Devil Mountain Brewery, Bernicia; Live Soup Brewery and Cafe, Santa Cruz  
**Montana:** Bridger Brewing Co., Great Falls



Electron micrographs show cell wall topography of starved brewing yeast.

### Physiological Stress on Brewing Yeast

Storage of brewers yeast prior to use in fermentation can subject the yeast to different stresses, including nutrient starvation, exposure to ethanol, exposure to low pH and temperature swings. Starved yeast in this study showed reduced flocculation. It is surmised that starved yeast has a reduced cell wall surface charge, which possibly contributes to the



development of reduced flocculation abilities. In addition, it was observed that starved yeast cells exhibit protrusions on the surface of the cell wall. This morphology may be related to the reduced surface charge. It also was discovered that this surface morphology is retained in future generations of the starved yeast, even though future generations are not subjected to the stress of starvation. (*Journal of the American Society of Brewing Chemists*, Vol. 53, No. 1)



### Preserving Hop Pellets in Storage

Oxidation is the primary factor in deterioration of stored hop pellets. Currently, airtight bags made of a laminate of polyamide, aluminum foil and polyethylene are used to protect the hops from oxidation damage during prolonged storage. These laminated bags, however, are non-recyclable because it is impossible to separate the three layers of material, and the bags cannot be manufactured in a way that makes them refillable. In the search for a more environmentally friendly storage mechanism, it was found that good alpha-acid stability was achieved if refillable bags were used and the hops stored at 14 to -4 degrees F (-10 to -20 degrees C). Performance matched that of laminated bags stored at 32 degrees F (0 degrees C) only when the refillable bags were stored at -40 degrees F (-40 degrees C). (*Brauwelt*, 1994, Vol. 134, No. 49)

### Phases of Lambic Wort Fermentation

A typical profile of lambic fermentation involves the development of enterobacteria during and immediately after wort cooling, principally in the form of *Enterobacter cloacae* and *Klebsiella aerogenes*, which last about one month before being killed by a steady lowering of wort pH by about one unit. At this point the main microbial population is *Saccharomyces* yeast strains, including *cerevisiae*, *bayanus*, *uvarum* and *inusitatus*, which produce the main

proportion of ethanol. After about four months these strains succumb to sugar exhaustion and acidification, and lactic acid bacteria strains in the form of *Pediococcus* and *Brettanomyces* take over the fermentation. These bacteria and yeast strains begin to decrease in population after about 10 months of fermentation, while the beer continues to ripen and age. Various yeast strains that produce a thick film in the fermentation casks indicate when the lambic is ready to bottle. After 14 months in the bottle, only lactic acid bacteria are detected. (*Cerevisia*, No. 1, 1995)

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# JACKSON ON BEER

Michael Jackson

## Giving Good Beer the IPA Name

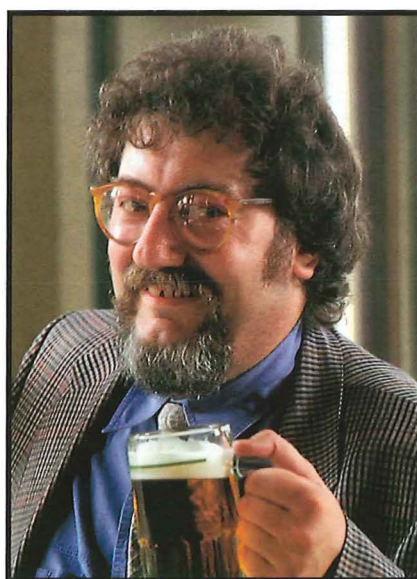
Once all beer was opaque, whether black, brown or cloudy. Beers were black or brown because brewers did not have the techniques to control temperatures and smoke levels during malting. That came only with the use of indirect heat.

Or they were cloudy because, even if the malt was air-dried, the brewer did not know how to make the yeast precipitate. That required an understanding of microbiology and refrigeration.

The initial attraction of paler, clearer brews was their novelty, especially when opaque drinking vessels made of wood, stoneware or pewter gave way to glass.

The great leap forward in malting techniques, yeast handling and glass making were all part of the Industrial Revolution. With these refinements came a change in the scale of brewing. Before, mash tuns had been stirred and wort pumped by hand and a brewery could produce enough, perhaps, for the brewery tap. With steam power came mass production and distribution by canal, steamship and later, rail.

Porters were the first beers of the Industrial Revolution, but they were soon followed



by pale ales in Britain and Pilsener-style lagers in the German-speaking parts of Europe. All three styles were extant at the same time, and the consumer trend from dark to light was gradual.

The first "India ale," made for the colonies by Hodgson's of Bow, London, in at least the 1780s, was "thick and muddy," according to a report quoted in *The British*

*Brewing Industry, 1830 to 1980* (Gourvish and Wilson).

The first pale ale is said to have been made by Allsopp's in Burton in 1822, and the brewery entered the Indian market three or four years later. The first golden lager was produced in Plzeň in 1842.

While porters reached every corner of the British Empire and beyond, pale ales had less time to find a foothold, despite a substantial trade with India, Australia and the Americas. In all of these regions settlers began to establish their own breweries.

Having been the first great industrial nation, Britain already was being challenged in the second half of the 1800s by the German-speaking world. In the same period, a wave of European emigration to the United States was establishing lagers modeled on those of Plzeň and Budweis.

It is easy to imagine that world fashions in beer simply jumped straight from porters to golden lagers, missing pale ales. After all, if you fancy a pale beer, why not go the whole way? Furthermore, much of the New World has a hot climate, and it is argued that golden lagers are the most quenching



1780s - First India Ale brewed for colonies by Hodgson's of Bow, London



1822 - First Pale Ale brewed by Allsopp's in Burton



1830 - Peter Ballantine from Ayr, Scotland, emigrates to the U.S.



1920s - Australian ales become lagers with Danish influence



of beers. When one looks at the breweries worldwide that still produce a stout and a golden lager but no pale ale, this theory becomes even more believable.

Black and gold are the only colors that survive in Sri Lanka, for example, and that was until recently the case in Australia and in the oldest American brewery, Yuengling (founded in 1829) of Pottsville, Pa.

In fact, pale ale was not totally ignored. The book, *The Amber Nectar*, by Keith Dunstan shows an 1888 label for Foster's Empire Pale Ale and an 1890s label for an India pale ale from the same brewery.

In Australia ales began to give way to lagers, made with Danish cultures, in the 1920s. The terms "ale" and "bitter" are still used, but often on brews that turn out to be lagers.

Curiously, the lager Castlemaine XXXX is still described as a bitter on its Australian label.

The best holdout of pale ales was the United States. The first settlers from The Netherlands and the British Isles had established ale brewing in what is now New England and New York City.

The second wave penetrated the country farther and many of the new lager breweries were built in the Midwest.

At the height of the India pale ale trade in 1830 a brewer named Peter Ballantine from Ayr, Scotland, emigrated to the United States (I have found no evidence that he was related to the whisky merchant of the same name).

Ballantine was initially brewed in what was then America's ale capital, Albany, N.Y., where an Anglophile named Bill Newman briefly introduced cask conditioning in the 1980s.

Ballantine's products have since been made in Newark, N.J., Cranston, R.I., Fort Wayne, Ind., and Milwaukee, Wis. Ballantine's golden ale became such an item of Americana that it was the subject of a painted bronze by Jasper Johns.

The various owners of the label have never ceased to produce a copper-colored India pale ale, which in the early 1960s had 60 units of bitterness and still has a hint of hop character. For most of its history the brewers of this beer made a point of its being either fermented or matured in wood.

A couple of decades ago I sampled a 1950s edition of a Christmas beer called Ballantine Burton. It tasted like a very aromatic, hoppy, bitter barley wine. I was served the beer by Fritz Maytag, owner of the Anchor Steam Brewery of San Francisco, Calif. Maytag was clearly fascinated by this product, which he understood to have been dry-hopped. I was later able to confirm the dry-hopping with the splendidly named Jack Daniel, a brewer who had worked for Ballantine's.

Around that time Maytag toured some of the great British breweries, including Young's, Marston's and Timothy Taylor. He was particularly taken with the widespread use of dry-hopping. In 1975 he produced his own dry-hopped brew, Liberty Ale, to mark the 200th anniversary of Paul Revere's ride.

Liberty Ale was later rereleased as a Christmas brew and within a few years had become a regular part of Anchor's range. Anchor Liberty has an original gravity of 1.057, is golden and dry-hopped with the American aroma variety, Cascade, in the tank during maturation.

In my view it was the first of a new generation of American ales, notable for their intense floral hop character. Although it did not wear the sobriquet India pale ale, it signaled the revival of the style in the United States.

In the early 1980s, hop expert Bert Grant applied the designation to a golden ale made at his microbrewery in Yakima, Wash.

His first IPA had a gravity of only 1.048, but a revivalist 60 units of bitterness. Since then, young American brewers have been

vying with one another to produce heavily hopped IPAs and several have matured their beers over oak chips in the belief that the flavor of the original would have been influenced by the cask in which it traveled to India.

What should be the gravity of a true IPA? How hoppy should it be? Should it be aged over wood? These issues were debated at a symposium attended by both American and British brewers, and organized by the British Guild of Beer Writers. The currents continue to ebb and flow.

In my view an IPA should certainly have a higher gravity than the same brewery's pale ale (the beer had to be able to protect itself with a secondary fermentation during the journey to India).

It should also be more heavily hopped, as beers were 150 years ago, especially those that were sent on long journeys.

The hops used in those days were lower in the bittering alpha acids and utilization was less efficient. My guess is that the casks used for shipping were not lined and some wood character may have entered the beer.

In post-Imperial Britain the term IPA has been applied to ever-lighter-tasting beers, many of them wholly unworthy of the designation, but perhaps that trend has now gone into reverse.

Since the symposium, one or two British brewers have launched more assertive examples. Perhaps our American cousins are keeping us honest.

*Adapted with permission from What's Brewing, newspaper of the Campaign for Real Ale.*

Michael Jackson is internationally the best-known writer on beer. His articles, books, documentary videos and CD-ROM introduce beer styles to countless drinkers and brewers outside their native lands. His use of taste descriptions and accounts of his travels introduced a new genre of writing on beer.



**1960s** · Ballantine's copper-colored IPA still produced with 60 IBUs

**1964** · Jasper Johns makes Ballantine's golden ale a permanent piece of Americana with his painted bronze

**1975** · Anchor Liberty Ale signals revival of IPA in U.S.

**1980s** · Grant's IPA begins the bitterness battles among young American microbrewers vying to produce heavily hopped IPAs.



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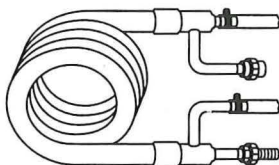
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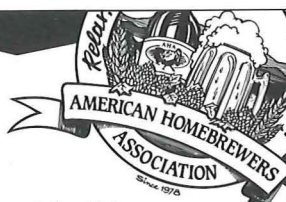
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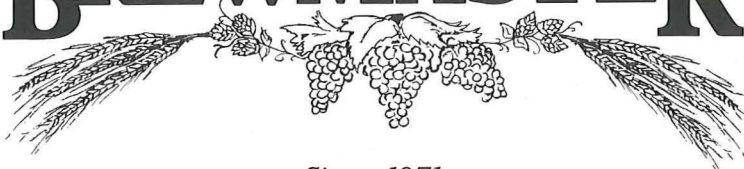
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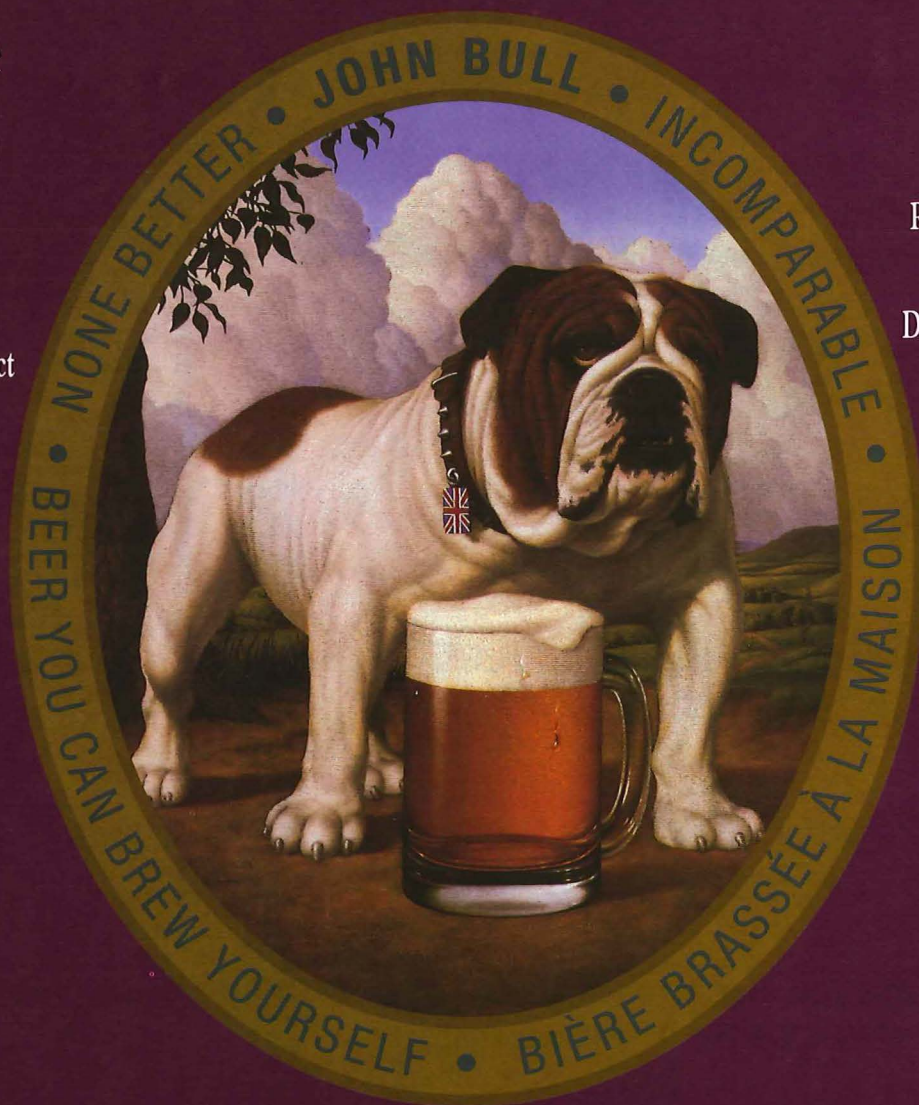
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Candy Schermerhorn

## Scrumptious Spring Supper

**A**t a recent beer dinner I found the culinary conversations as captivating as the fine food and brew. Conversation centered on the superb beer and brew-enhanced courses, but what I found most thought provoking was the large number of vegetarian beer aficionados in attendance that evening.

Since barley is a favorite of brewers and vegetarians alike, I thought it appropriate to create a hearty Barley Pilaf. This comforting entrée boasts the addition of Scottish ale, roasted garlic and earthy mushrooms. Known for its impact of barley malt flavor, Scottish ale is an excellent choice to replace meat-based broths. This pilaf is sublime served with a simple, crisp salad and a mug of Dunkel.

It came as no surprise that everyone at the table had a favorite hearty bread. As

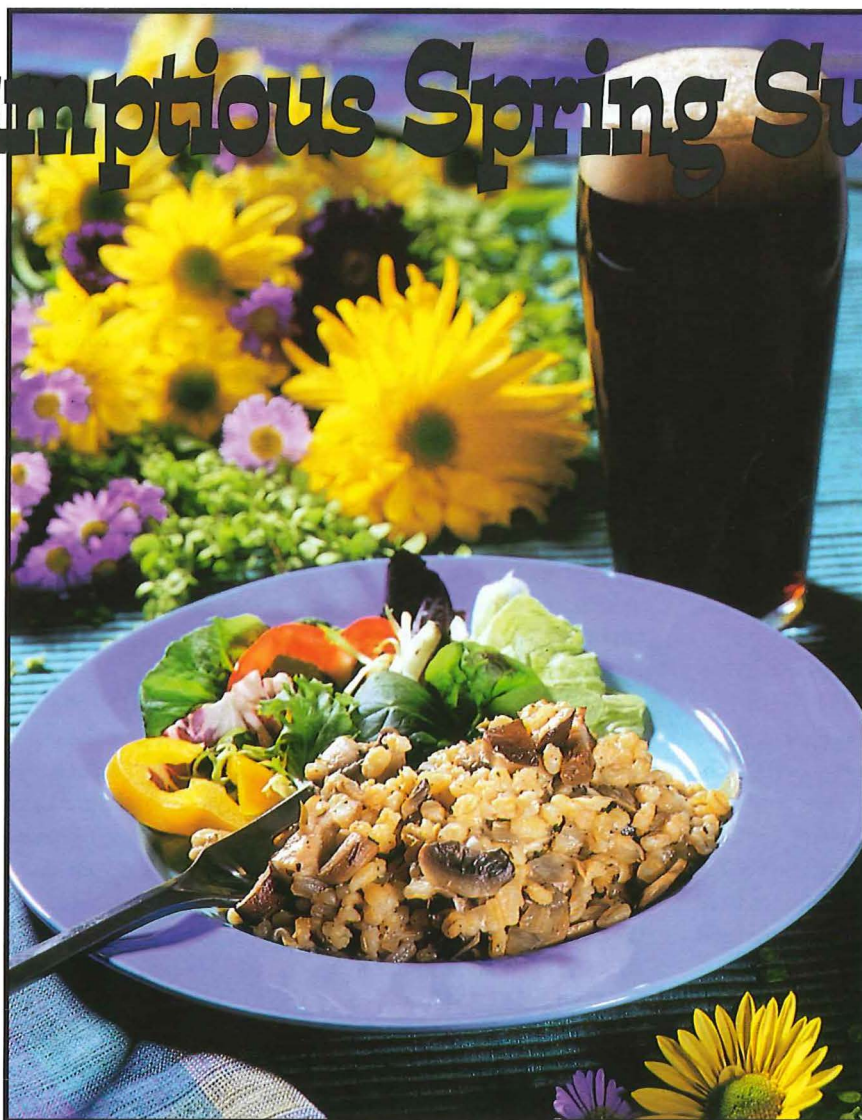
we sipped a satisfying brown ale I suggested baking yeasty loaves studded with toasted pecans and oats cooked in brown ale, and a recipe was conceived.

When it came to the exotic, the cuisines of East India provided a hotbed of discussion. Talk ranged from simple curried

vegetable soups to zesty stews of potatoes and lentils or spicy chutneys all simmered with beer.

Inspired, I had soon created a scrumptious Curried Carrot Soup recipe combining the natural sweetness of carrots with the full flavor of bock beer. Curries traditionally are made with an intricate blending of freshly ground spices. To simplify this soup a ready-made curry powder is used that can be purchased from a reputable Indian foods store, restaurant or spice house.

I left that evening convinced that beer, true "liquid bread," was a fitting focal point for this culinary lifestyle because it is based on the mainstay of all vegetarian diets — grain. After all, beer has an affinity for so many grain- and legume-based dishes, contributing its own rich, appealing taste.





## Barley Pilaf

Serves 8

- 6 dried shitake mushrooms
- 1/2 cup dried ceps or porcini mushrooms (118 mL)
- 2 tbsp olive oil (30 mL)
- 1 large onion, coarsely chopped
- 2 level tsp dried basil or thyme (10 mL)
- 1 lb fresh button mushrooms, washed, sliced and tossed with lemon juice (0.45 kg)
- 1 whole head garlic, roasted at 250 degrees F (121 degrees C) until softened, about one hour
- 1 3/4 cups barley (414 mL)
- 2 1/2 cups water (591 mL) plus the 2 cups liquid retained from rehydrating the mushrooms (473 mL)
- 1 1/2 cups Scottish ale (355 mL) salt and pepper to taste

(1) Soak dried mushrooms in two cups (473 mL) warm water. When soft, strain, reserving the liquid. Chop mushrooms coarsely.

(2) Heat a heavy skillet over medium heat. Add olive oil and sauté onion and basil until wilted. Raise heat to medium high, stirring. When onions begin to brown, add fresh mushrooms.

(3) Sauté until they begin to wilt and release their liquid. Remove from heat.

(4) Cool roasted garlic then pop the cloves out of their skins by squeezing gently, mash and set aside.

(5) In a heavy Dutch oven, combine chopped rehydrated mushrooms, cooked onions and sautéed mushrooms, roasted garlic, barley, water, mushroom liquid and Scottish ale.

(6) Bring to a low simmer, cover and cook slowly for one hour. Season with salt and pepper to taste, cover and let stand 10 minutes before serving. This reheats beautifully and leftovers are excellent when added to vegetable soups.

## Heavenly Oat Bread

Makes 2 large loaves

- 1 cup old-fashioned rolled oats (237 mL)
- 1 cup water (237 mL)
- 1 1/4 cups English brown ale (296 mL)
- 1/2 cup honey (118 mL)
- 2 tbsp dry bread yeast (30 mL)
- 1 cup warm water (110 degrees F or 43 degrees C)
- 1/4 cup vegetable oil (59 mL)
- 1/4 cup malt extract or molasses (59 mL)
- 1 tsp salt (5 mL)
- 2/3 cup toasted pecans, lightly crushed (79 mL)
- 6-7 cups bread flour (1419 to 1656 mL)

(1) Cover and simmer oats with water and ale for 10 minutes. Remove from heat, stir in honey and cool.

(2) While oatmeal is cooling, place 1/2 cup (118 mL) bread flour in a large bowl. Stir in dry yeast and pour in warm water, whisking thoroughly. Cover and let rest in a warm place 15 to 20 minutes.

(3) Stir cooled oatmeal, oil, malt extract, salt and pecans into the yeast mixture. Stir in flour one cup (237 mL) at a time, using your hands when dough becomes too stiff for a spatula.

(4) Continue adding flour until dough begins to pull away from bowl. Vigorously knead dough on a lightly floured surface (or right in the bowl) for about 10 minutes.

(5) When dough becomes smooth and elastic, place in a bowl rubbed with one-half tablespoon (7.4 mL) of vegetable oil. Turn dough, lightly coating entire surface with oil. Cover and allow to rise in a warm 85- to 90-degree-F (29- to 33-degree-C) place.

(6) When doubled, after about an hour, punch dough down and let rest five minutes, covered. Form into two loaves, placing each in a bread pan greased with vegetable oil or shortening. Cover and allow to rise in a warm place until doubled, about an hour.

(7) Bake on the lower shelf of a preheated 350-degree-F (177-degree-C) oven for 30 to 35 minutes or until the tops are golden and bottoms are lightly browned.

## Curried Carrot Soup

Serves 8

- 2 tbsp corn oil (59 mL)
- 1/2 tsp black mustard seeds (2.5 mL)
- 2 small onions, finely chopped
- 1 scant tsp each of cumin and paprika (5 mL)
- 1/2 tsp finely ground red pepper flakes (optional — for heat) (2.5 mL)
- 2 tsp freshly grated ginger root (10 mL)
- 2 tbsp flour (29.6 mL)
- 2-3 tbsp curry powder (or to taste, this will vary with the blend) (30 to 44 mL)
- 8-10 carrots, peeled and cut into 1/2-inch pieces
- 1 cup each bock beer (or cider) and water, heated to simmering hot (237 mL)
- 3 cups almond milk (710 mL) toasted sesame seeds and freshly slivered cilantro leaves for garnish

*Note:* If you don't have a local source for fresh curry powders, The Spice House, located at 1030 N. Old World Third St., Milwaukee, WI 53203, carries many fine curry blends (and great spices for brewing). Call (414) 272-0977 for a catalog.

(1) Heat oil in a small Dutch oven over medium heat until hot. Add the mustard seeds, onions, cumin, paprika, pepper flakes and ginger, cooking until wilted and fragrant, about four minutes.

(2) Sprinkle in flour, curry powder and carrots, tossing to coat. Cook for two minutes, stirring. Pour in hot ale and water and cook, stirring frequently, until slightly thickened, four to five minutes. Cover and simmer over low heat until tender.

(3) Transfer mixture to blender or food processor and purée. Return soup to pot and add almond milk. Add salt to taste. Serve soup hot garnished with slivered cilantro and toasted sesame seeds.

**Candy Schermerhoun** is a culinary consultant and televised cooking personality in the Phoenix, Ariz., area. She is the author of the award-winning *Great American Beer Cookbook* (Brewers Publications, 1993).



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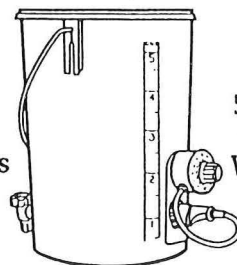
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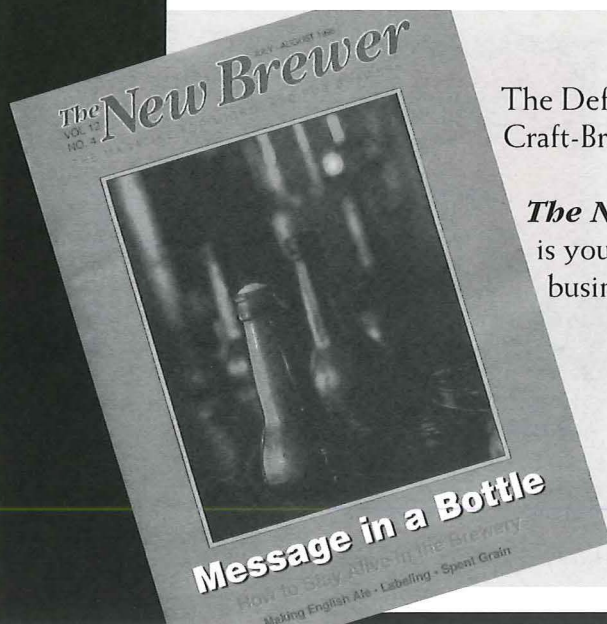
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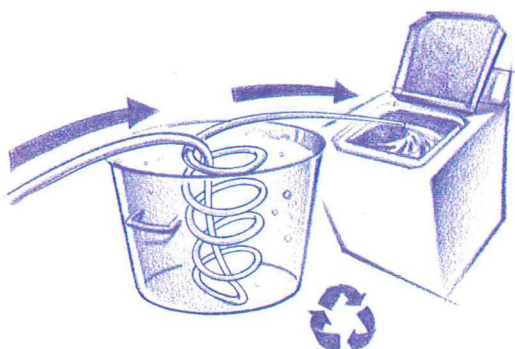
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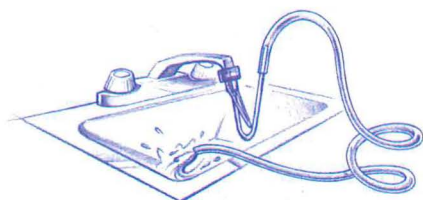
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## Water Conservation

If you hate watching all of that water go down the drain while chilling wort with an immersion or counterflow chiller, arrange your hoses so the outflow drains into the washing machine. After chilling a batch of beer there is enough water to do a load of laundry.

— Jim Fariss via CompuServe



## Red-Hot Racking Tube Rinser

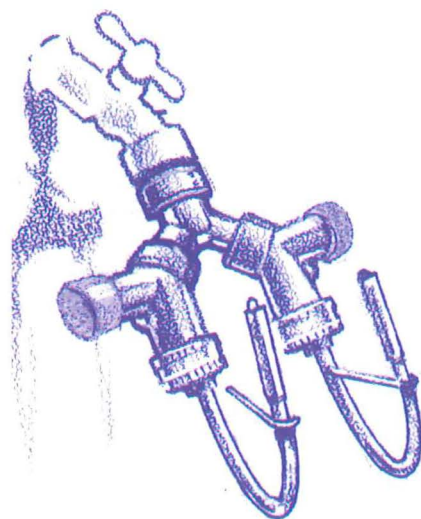
If you own a faucet-mounted bottle washer you can use it to clean your siphon hoses and racking tubes without scalding your fingers. Push the end of your siphon hose over the tip of the bottle washer, push down on the bottle washer stem valve to open it, then turn on the hot water. Hot water will coarse through the hose and into the sink without ever touching your fingers. To clean a racking tube just attach it to the end of the siphon hose.

— Kurt Elia, Peekskill, N.Y.

## Well-Guarded Wort

If you have to ferment in well-lit living quarters, you can avoid light-struck beer by putting plastic garbage bags (the thickest, most opaque bags work best), dark T-shirts or brown paper bags over your carboy or plastic fermenter. Cut a small hole in the bottom of the bags for the airlock to stick through. With T-shirts, the neck can be tucked or clothespinned snugly around the airlock.

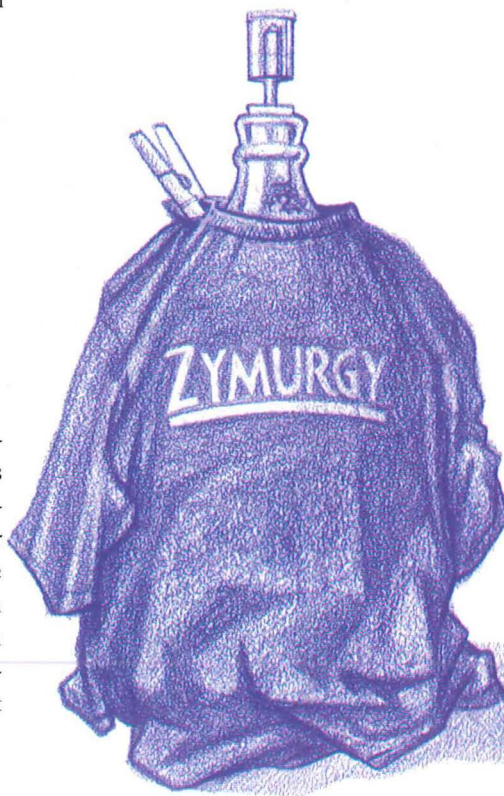
— Jim Hackett via Internet, and the AHA tip file



## Double Bottle Rinser

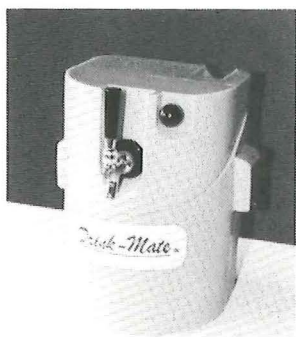
An easy way to convert an outdoor faucet to a double bottle rinser is to buy two bottle washers and three Y hose connectors: two with shut-off valves and one without. Attach the Y connector without the shut-off valves to the faucet then attach the remaining Y connectors to the first. Open the valves facing down and close those facing to the sides. Attach the bottle washers to the two faucets facing down. Now the washers are parallel to each other and you can rinse two bottles at once. This setup enables you to attach a hose to one side of the faucet as well for cleaning convenience.

— Jeffrey Lee, Sons O'Beaches Brewers, Hermosa Beach, Calif.



If you have a quick tip or a tested gadget to share, send a brief description and photos to Tips & Gadgets, PO Box 1679, Boulder, CO 80306-1679.





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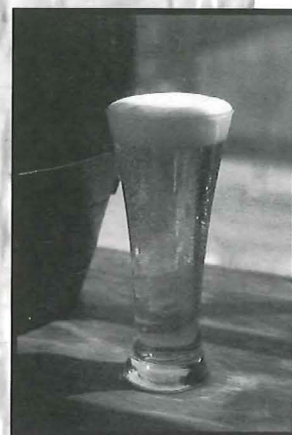
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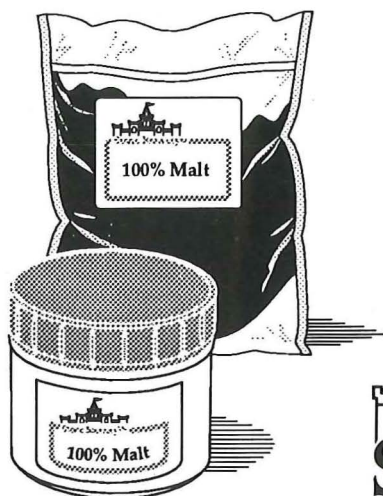
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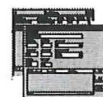
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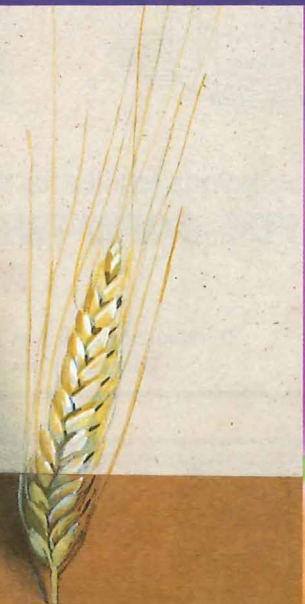
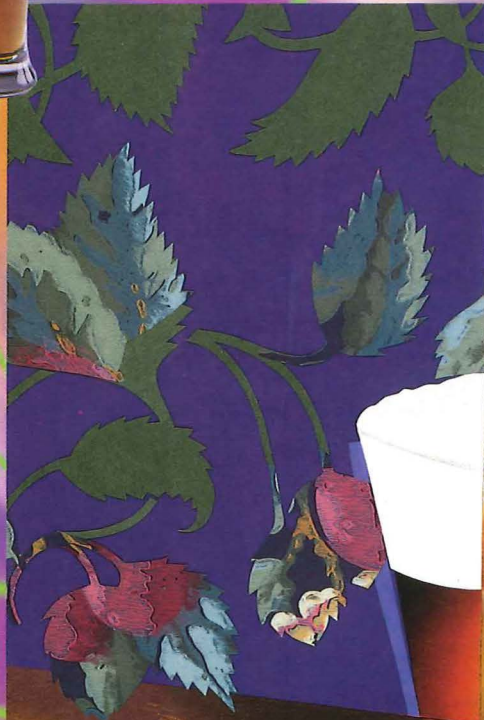
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# THE Science OF THE Art of Beer



BY RANDY MOSHER

**I**T is often thought that art is the chaotic underworld of drug-crazed Bohemian revolutionaries, and the art world certainly has its share. But a considerable body of rational thought has accrued over the centuries concerning the creation of art. Far from being an orderless morass, art has its own set of methods, techniques and logic, a science of sorts. If you study any art form, from carved stone to holography, you will find that the same kinds of aesthetic considerations are at work.

I have spent 25 years in art and design, and 11 years brewing. In that time I have learned a few things about how to put things together in a pleasing way. There is a world of things anyone can do to go beyond brewing by the numbers, beyond just going for the style. The very best beers go far beyond just hitting numerical targets and, whether you're going for best of show or just trying to make yourself and your friends happy, this calls for a deeper investigation of the science of art.

Over the millennia, there have been discussions about the nature of the artistic experience, and an ongoing struggle to define a set of aesthetic principles that apply to all art forms. There has been considerable disagreement about this, but some generalities emerge.

Beauty reigns supreme, and philosophers have agreed that the search for beauty is a deep-seated urge of the human species.

Socrates defined beauty as "profitable pleasure," the supreme good. He described

another quality of art, sublimity, which he characterized as an "echo of a great soul" — the power of art to bring forth emotion in its highest form.

St. Thomas Aquinas defined artistic beauty as a three-part combination of wholeness or perfection, proper proportion or harmony and clarity. German philosopher Georg Wilhelm Friedrich Hegel viewed artistic creation as part of the same sphere as religion and philosophy and just as close to the soul. Immanuel Kant gave us something a little more practical: aesthetic experience occurs when perception of sensations arrives at the essence of an artistic creation in a free harmonious play between understanding and perception.

In its ever-elegant manner of summing up, the Encyclopedia Britannica tells us not to think of beauty as an intrinsic quality in physical objects but only as a relation of them to the sensibilities of those conditioned in various ways. Now *this* is something we can use, and we will return to it later. First, some points to consider before you create your next five-gallon batch of art.

**Artistic rules.** Of course, rules are meant to be broken, but if you don't know how to use them you won't know how to break them in a way that has meaning and good effect. Remember, breaking the rules is not the same as being ignorant of them. Rules are like any tools, they can be a big help, but they don't always apply to everything.

**Clarity of purpose.** is important when starting any artistic work. By this I mean you should have a "big" idea. This can be anything; even "small" can be a "big" idea, even chaos can be a clear thought — just look at the work of Jackson Pollock.

**Unity.** Once the "big" idea is decided, every element in the composition should work toward this artistic goal.

**Clarity of action and appropriate level of craft.** Artistic elements should be rendered in a way that maximizes their ability to be effective and minimizes distracting flaws, vagaries and errors. If a line is meant to be horizontal, make it exactly horizontal, or it will look like you just didn't quite have it together. Lack of proper attention to craft can be highly destructive to a work's artistic impact, ruining an otherwise good idea.

**Tension and balance.** These are really two sides of the same coin. In music it is melody and counterpoint; in painting it may be foreground and background. The artist makes use of contrasting, opposing elements to sustain interest. In brewing, we can work with hoppiness against maltiness, acidity against sweetness and sweet malt flavors against roasty, toasty ones. In beer, this tension usually is a two-way thing, but it can be three-way, as in the case of Fuller's winter brew, Mister Harry, a magical triad of caramelly, hoppy and toasty flavors. Well-considered



tension results in a drama that plays out fresh every time, never losing our interest.

**Depth and complexity.** A work of art usually functions simultaneously on many levels. This is more difficult to achieve with the limited conceptual voice of beer, but it is something to aim for, especially if you consider labels and names part of the total artistic package, as I think is appropriate. One graphic designer I know has a theory he calls "big to teeny." One way to get something interesting is to make the big thing really big and the small thing just as small as you can make it without it winking out altogether. In beer, you are working with hundreds of flavor and aroma elements both above and below threshold levels, so this is always playing out. But if you are aware of this, you may be able to control it to your own ends.

**Relevance.** Art cannot be art if it is created in a vacuum. The artistic experience is created as much by the *artee* as by the artist. It is important to consider your audience, to think of how they will react. Remember, beer is not marble sculpture, and it will not endure until future generations can evolve to appreciate your opus. Timid or avant garde, hop-head homebrewers or regular folks at a wedding, it is important to consider their limits.

**Surprise!** Once you have found that limit, push the audience — it is your duty as an artist! You don't want to put them off, but you do want to challenge them a little. Make your art change them — that is the core of gratification we feel as artists. Take risks, learn from them; what the hell, it's just a batch of beer! Take a delicate, elegant pale strong ale and throw some mushrooms in. Take a huge, inky imperial stout and lighten it up with some maple syrup. Do something unexpected.

**Discretion and economy.** Another art school trick is to finish your composition then take one thing away. Don't be afraid to understate things, to use a little white space. Sometimes a work of art needs a little room to breathe. Exuberance is a good thing, and we all like lots of flavor, but it's easy to overdo it. That lip-peeling resinous IPA will have them talking at the homebrew club meeting, but may wear out its welcome fast.

**Refine, rinse, lather, repeat.** There is no need to reinvent the wheel each time. The great jazz clarinetist Benny Good-

man played his solos the same way every time until he found a way to improve them. Unless you happen to be a genuine genius like Louis Armstrong, it is usually better to improve on your successes.

**The egoless ego.** This is not a technique so much as a necessary and precarious psychological state of artists. While an ego is required to create any artwork, to honestly deal with criticism in order to grow requires losing your ego-driven pride. Discovering you are sometimes mistaken in your beliefs is painful, but this is the essence of learning, of growing. It is a fine balancing act.

## SENSE AND NONSENSE IN BREWING ART

Art is subject to the particularities of why and how a particular medium is sensed and perceived. Again, the audience makes art happen as much as the artist. Which brings us to the human interface, the physiological and psychological factors that are our only way into the minds of our audience.

What is there to work with? Basically, you can break it down into hardware and software. The hardware is chemistry and physiology, in which specific molecules interact with receptors in the nose and mouth in a sensitive lock-and-key arrangement. Software is psychology, the weird baggage of perception and conception we deal with all the time. In reality, the hardware/software boundary is hard to delineate because the line between them is drawn over and over as neurons link upward into higher and higher processing centers in the nerves and brain.

Olfactory signals go to three places in the brain, all of them very primitive: the hypothalamus, seat of appetite, anger, fear, pleasure; the hippocampus, regulator of memories; and the brain stem, controller of basic bodily functions such as breathing. Because they interface with such low levels of the brain, aromas have the ability to stimulate powerful psychological responses, memories and emotions, far more than other senses. This provides us with incredible leverage for art, and probably accounts for much of beer's appeal, but at the cost of being quite unpredictable from person to person.

In addition to aroma and taste, other physical sensations play a role in the perception of beer: mouthfeel sensations such as carbonation, body fullness and temperature. Certain chemicals have other effects: the astringency of polyphenols, the oiliness contributed to high levels of diacetyl and the eye-watering effect of ethyl acetate (reminiscent of nail polish remover).



### Ingredients for 5 gal (19 L)

- |        |  |
|--------|--|
| 2 7/10 | lb U.S. six-row lager malt (1.2 kg)                                  |
| 2      | lb De Wolf-Cosyns pale ale malt (0.9 kg)                             |
| 1 1/3  | lb De Wolf-Cosyns biscuit malt (0.6 kg)                              |
| 1 1/3  | lb flaked red wheat (0.6 kg)   |
| 1      | lb oatmeal (0.5 kg)  |
| 11     | oz DeWolf-Cosyns Munich malt (312 g)                                 |
| 11     | oz DeWolf-Cosyns Special "B" (extra-dark crystal) (312 g)            |
| 5      | oz DeWolf-Cosyns CaraMunich (dark crystal) (142 g)                   |
| 3      | oz De Wolf-Cosyns chocolate malt (85 g)                              |
| 2 1/2  | oz black patent malt (71 g)  |
| 3/5    | oz Northern Brewer hops, 7.1% alpha acid (17 g) (90 min.)            |
| 3/4    | oz Styrian Golding hops, 5% alpha acid (21 g) (20 min.)              |
| 2/5    | oz Northern Brewer hops, 7.1% alpha acid (10 g) (20 min.)            |
| 1/2    | oz Northern Brewer hops, 7.1% alpha acid (14 g) (5 min.)             |
| 1/4    | oz Cascade hops (7 g) (5 min.)                                       |
| 1/2    | oz Curaçao orange peel (optional, for a "witporter") (14 g) (5 min.) |
|        | Wyeast London Ale No. 1968 liquid yeast culture                      |

- Original gravity: 1.053 or 13.1°Plato
- Bitterness: 29 IBU (est.)
- Color: 30 to 35 SRM (est.)

The 10 1/3 pounds of malt was calculated assuming 80 percent efficiency.

Use a two-step mash: a one-hour protein rest at 122 degrees F (50 degrees C); raise to 155 degrees F (68 degrees C) and hold for one hour. Mash-out at 170 degrees F (77 degrees C) and sparge until 6 1/2 gallons (24.6 L) are collected. A single-infusion mash is not recommended for this beer. If you are unable to heat the mash, mash-in with one quart per pound and add boiling water to bring to saccharification, then mash-out. Boil 90 minutes, chill wort, pitch yeast and ferment at 60 to 65 degrees F (16 to 18 degrees C).



## ARTISTIC MATERIALS: TOOLS FOR BREWING



**The canvas:** Think of water as a blank base for your brew. Water is about 90 percent of every beer. It affects everything else that comes on top of it. Your object as a brewer must be to produce a smooth surface, ready for painting. The biggest problem usually is alkalinity — too much of it. This comes from calcium carbonate hardness, and is a huge problem with pale, hoppy beers, leading to a distracting harshness. Obviously, this works counter to the desired effect. Dark malts supply acidity, and are usually lightly hopped as well, avoiding the problem. The good news is that water is usually treatable: to soft water add whatever you want; to temporarily hard water add calcium and boil it; if you have permanently hard water, brew pale ales and Dortmunders, or just dilute with distilled water.

**The palette:** Malt is the essence of beer, and it has some interesting chemistry that can help us understand the way malt flavor works. All malt flavors are a result of kilning and other browning such as wort caramelization. This all happens in a hogglingly complex chemical cascade called the Maillard reaction. This phenomenon combines various sugars with amino acids, creating hundreds of aromatic compounds and some dark, sludgy polymers called melanoidins. Each variation of specific reactants, time, temperature and pH produces a unique set of aroma chemicals. Dark Munich malt, for example, which is roasted moist, tastes completely different from the dry-roasted biscuit/amber malt.

You can think of malt as forming a spectrum from light to dark, with first caramelly, then toasty and finally roasty flavors kicking in as you move to the dark end. Just like colors, these flavors will either complement or contrast with one another, depending on how far apart they are on the scale.

When brewing, don't forget the malt flavor created during decoctions and extended boils, which are specially noticeable in pale beers. Consider Pilsner Urquell: an amber beer made from the palest of malts using a triple decoction and a very long boil.

Of all malts there seems to be the most variety of flavor in crystal malts. Taste them and you'll find a striking difference between Belgian, German, English, Scottish and American crystals. This variety can be very useful to the beer artist looking for ways to add a unique seasoning to a beer. Fortunately, crystal is the malt most useful to the extract brewer, so we all benefit from this variety.

Hops are broken into flavor categories by national origin: German, British, American and Czech. These flavor differences are the result of differing proportions of a range of aromatic oils, which vary from rosy to cedary to spicy to herbal, to name a few. Artistically, hops may be the focus of a beer or used simply as a counterpoint to malt. The bitter stuff has about the same flavor in all hops. In general, the use of high-alpha-acid hops minimizes the amount of flavor. Heavy hopping in the 10- to 30-minute time frame of the boil boosts the perception of individual hop flavors, as does the use of low-alpha-acid hops for bitterness.

Aroma fades dramatically with age in beer, so if you want hop aroma to last the best way is to overdo it.

For hop bitterness and flavor, I have had good results calculating IBUs for each hop addition. There are many formulas, all of them wrong, including my own (it's just too complex to calculate accurately), because every brewery is different and because of all the squirrel-

ly stuff that affects bitterness. But in general, every brewery will be consistent from batch to batch, so you should be calculating bitterness. Just don't put too much stock in the numbers you come up with. Do make adjustments to your utilization figures if you find your beers coming out too bitter or not bitter enough.

In painting, it's the brush strokes, the texture, the way paint and image are manipulated to make a statement. In brewing, it's time, temperature, pH, dilution and other factors that affect the ingredients and recipe and can work to tell the story or enhance the message. Think of how a triple decoction mash nails a Czech Pilsener with its layers of rich caramelly flavors. Such a process would totally fight the desired dryness of an Irish stout (it might work for a London stout, though).

You can think of yeast as a process or a tool, as much as an ingredient. A specific strain may be chosen to enhance maltiness or hoppiness, to add spiciness, butteriness or other yeast character. Temperature is the throttle for the yeast: turning up the heat cranks up the volume on yeast personality. Whatever yeast does, it will do it more at a higher temperature.

**The composition:** The recipe is the composition, subject matter, choice of color and the way they are all arranged, which takes us back to the "big" idea.

I think it's always important to have an idea, a "big" idea:

"A pale beer with lots of personality."

"The richest porter in the universe."

"The creamiest cream ale."

"The brownest-tasting brown ale."

"An easy-drinking beer you won't get bored with."

It is best to keep it simple. If it can't be expressed in a short sentence, it's probably too complicated to work well. You might write a description for the beer before you brew it, the kind you might find on a beer menu.

"A hearty pirate stout with exotic ingredients looted from the seven seas: molasses, nutmeg, grains of paradise and other strange and dangerous herbs. Thick, dark and strong, but with a crisp edge that makes it enjoyable in the hot Caribbean sun."

What are you trying to say with this beer, how do you want people to feel? Taste it in your head — like a virtual beer. Without the "big" idea you're lost — nothing makes sense, and it's very hard to make the correct decisions. Without a "big" idea, we're just monkeys with brewpots.

To be successful, make sure everything works toward that "big" idea: recipe, process, yeast, conditioning and serving. Try to figure out what's most important to making the beer work as planned. I searched many years for pure malt flavor, which was for me the Holy Grail of beer flavor. After years of thinking, reading and brewing, I found that malt flavors are easily obscured by fermentation flavors and especially by off-tastes. I came to the realization that American malt just doesn't have the stuff. Belgians and Germans make malt better when it comes to the sort of sweet caramel maltiness I craved.

Our eyes are at work here also, and play a larger role than we would like to admit. By seeing a beer, certain taste expectations are created: the light maltiness of pale beer, the roastiness of stout. Besides, beer can be quite a beautiful thing, as Thomas Hardy wrote of the beer of Dorchester:

"It was the most beautiful color that the eye of an artist could desire; full in body, yet brisk as a volcano; piquant, yet with-

out a twang; luminous as an autumn sunset; free from streakiness of taste; but finally, rather heady."

Taste and aroma sensations are chemically driven at their base level, but quickly take on meanings not inherent in their molecular nature. There are both instinctive and conditioned responses to tastes and aromas. Bad odors are unpleasant for mostly good reasons: rotting stuff is bad to eat, so it's best

to stay away. So is stagnant water with its mustiness — in fact, the musty smell is the most powerful aroma chemical known, perceptible in the parts-per-quintillion range. A bitter taste of a plant can indicate poison is present. We can be conditioned to love this harbinger of danger, of course, as hop-headed homebrewers can attest.

Likewise, a good taste or aroma usually means something good for the body. In the



nutritionally poor world of the hunter-gatherer, the sweet taste of honey signaled a nutritionally dense food that sometimes meant the difference between survival and death.

While tasting and smelling may seem to be a very straightforward process, this is far from the case. There is a considerable amount of non-linearity in the way we perceive aromas and tastes. Some of these are:

**Variable thresholds.** As an example, 20 percent of the population is blind to phenol, an important contaminant in beer. You may yourself be blind or supersensitive to some of the chemicals found in beer. Having the receptors does not guarantee one will recognize a scent when present. Those of you who have gone through the effort to become beer judges know just how important palate training can be.

**Concentration effects.** The amount of a chemical can determine not just the intensity, but the *quality* of its aroma. There is one chemical that tastes like malt in parts per billions, like tacos in parts per millions, and grape juice in parts per thousands, where it finds industrial use as soda and bubble gum flavoring. In my experience, diacetyl and DMS seem to exhibit variable qualities at different concentrations, too.

**Matrix effects.** These are interactions in which the individual aroma chemicals add up to something different from any single one. Although there are 900 identified chemicals in coffee, there is no known flavor chemical called "coffee," nothing that by itself tastes "coffee-like." I recently tasted a "gingerbread" beer, to which a mixture of cinnamon, ginger, nutmeg and other spices was added. I have brewed and tasted many beers with these spices, but this was the only one that tasted exactly like gingerbread. The aroma sent me back to my childhood. The effect was quite striking. It was the exact proportions of those ingredients that created the effect. Matrix effects also are involved in "meaty" aromas, which involve many of the same kinds of chemicals as the flavors of malt acquire from the Maillard reaction.

**Masking.** This is a phenomenon in which one chemical covers up, or diminishes, the effect of another. Vanilla is a famous one, and can cover a multitude of minor sins in beer, if you don't mind turning your slightly defective brew into a spiced beer. High hop rates can mask oxidation; high carbonation can mask hops.



**Nirvana**

(A chanterelle ale.)

#### Ingredients for 5 gal (19 L)

- 9 1/3 lb U.S. two-row lager malt (4.2 kg)
- 2 lb British two-row pale ale malt (0.9 kg)
- 1 1/5 lb German Munich malt (0.5 kg)
- 1 1/5 lb wheat malt (0.5 kg)
- 12 oz U.S. two-row malt, toasted 20 minutes at 350 degrees F (177 degrees C) (340 g)
- 3 oz U.S. two-row malt, toasted 30 minutes at 350 degrees F (177 degrees C) (85 g)
- 3/5 oz Saaz hops, 3% alpha acid (18 g) (90 min.)
- 1 oz Saaz hops, 3% alpha acid (28 g) (30 min.)
- 1/2 oz Tettnanger hops, 4.6% alpha acid (14 g) (30 min.)
- 3/4 oz Saaz hops, 3% alpha acid (21 g) (10 min.)
- 1/2 oz Cascade hops, 5% alpha acid (14 g) (10 min.)
- 1/2 oz Saaz hops, 3% alpha acid (14 g) (finish)
- 1/2 oz Cascade hops, 5% alpha acid (14 g) (finish)
- A neutral yeast: alt or London ESB, perhaps.
- 1/2 lb fresh chanterelle mushrooms (or 1 oz-dried) chopped and soaked for a week in enough vodka to cover the mushrooms. Drain and add the liquid at kegging or bottling.
- Original gravity: 1.084 or 20.5 °Plato
- Bitterness: 25 IBU (est.)
- Color: 12 to 15 SRM (est.)

Employ a step mash: mash in at 122 degrees F (50 degrees C), hold for one-half hour, raise to 145 degrees F (63 degrees C), hold one-half hour, raise to 156 degrees F (69 degrees C), hold for 45 minutes. Mash-out at 170 degrees F (77 degrees C) and sparge until 6 1/2 gallons (24.6 L) are collected. For a single infusion mash, hold at 154 degrees F (68 degrees C) for one hour. Add hot water to mash-out.

## WORDS OF WISDOM

### FROM A BEER ARTIST

**If it doesn't contribute, toss it out. Edit the recipe! Yes, I know you like the taste of dry hops, but does it work with the brown ale? Many new homebrewers exhibit starving man syndrome, loading up on hops like this is the last time they will ever get to taste them. Relax, hops will still be available next year! It is not necessary to use every trick for every beer; in fact, that makes it difficult sometimes to tell what is working and what is not.**

#### FRactal BEER — A CLEAR HIERARCHY OF INTENT.

A fractal is a special type of curve that breaks into smaller and smaller segments, and the closer you look at it the more detail there is. What I mean by that is don't just break everything like ingredients or processes into equal parts. Use a lot of one flavor and less of another. Get most of a kind of flavor from one ingredient, and the next most from another, and so on. Design is weakest when elements are precisely balanced. A little asymmetry is a good thing. English hop character with a twist of Cascade is probably better than the two in equal amounts, battling for dominance. Tension is good, remember? You have to know your ingredients, though, because there is a lot of difference in the intensity of the flavor between Pilsener and black malt, for example.

#### INNOVATE, BUT REFINE ALSO.

I have evolved a number of beer concepts, some of them I've been working with since my first year of brewing. I keep coming back to them and brewing new variations, trying new things, refining recipes.

#### TREAT IT WITH RESPECT.

Age and serve beer properly, like a perfectly chosen frame on a painting displayed in a well-lighted gallery. Stash the best stuff away until it's really good, and bring it out on the most special of occasions. For me these beer experiences are the most wonderful aspect of homebrewing — pulling out a five-year-old fruit ale in a lovely bottle, pouring, sniffing, ahhhh!

#### ACCEPT FEEDBACK — FROM YOURSELF AND OTHERS.

Taste your beers critically; a well-aimed nose is far better than any laboratory instrument. Seek opinions of those you respect, whether they're brewers or not. It doesn't hurt to keep notes as you taste; sometimes those impressions can be hard to recover later. Incorporate all this feedback into the next brew, and try to aim for something even more wonderful.



**Adaptation/potentiation.** After smelling a substance for a while receptors become desensitized. As you know, when hops first hit kettle, the smell is strong and wonderful. After a while you can't smell them, but if you leave then walk back into the house, wham, they hit you again.

Moving on to the realm of the psychological, we get to the truly irrational perceptions.

**Cross-sensory effects.** How would you grade a black Pilsener? The official AHA judging form would have you deduct only two points from the score. Yet the visual sense is so strong we sometimes tend to believe our eyes at the expense of other senses.

**The "hale" of name and identity.** Remember the mystique Coors once had for those of us east of the Mississippi? My college friends and I once drove 1,000 miles for it in 1973. What did you drink when you enjoyed junk beer (c'mon, admit it, everybody did)? Have you tasted one recently? Do you have the foggiest idea what it was you once liked about it? The fire brewing? The beechwood aging? Was it the Champagne of beer, the sky blue waters?

Labels and interesting, meaningful names can improve your beer — yes, even homebrew. Such trimmings give a context and set up expectations that are very real. They are a way to direct the perceptions of your audience. This is art, not trickery! If you have grungy bottles with shards of labels stuck on them, what does that say? If you don't respect your beer, should I?

#### KEEP THE CRAFT LEVEL HIGH.

At all costs avoid distracting off-flavors that can interfere with your audience's enjoyment of your beer. Things like contamination, DMS, diacetyl, water chemistry/hop harshness, oxidation, husky/graininess, oversparged or yeast-bitten flavors. These can dull the shine of a well-conceived beer.

#### MAKE IT MEMORABLE.

If you have a great idea, well-displayed in a finely crafted beer, the people who enjoy it will recognize your idea and play it right back to you: "Man, that's a chewy blonde ale." "That porter tastes like a milkshake." "I gotta have another pint of that bitter." And if they bring it up wistfully a year or two later, you know you're really onto something.

But we can create our own shifts in perception, as my wife attests, "You've ruined me. I can't drink that cheap beer anymore!"

So definitively and absolutely, science proves that beer is art, something that cannot be completely understood, let alone put into numbers. It's far too complex to model, but just because beer isn't science doesn't mean it's properties can't be controlled to fit our purposes. Remember, *real* science is only 300 or 400 years old; what about the last 100,000 years?

*This paper was presented at the American Homebrewers Association 1995 National Homebrewers Conference, "Planet Beer," in Baltimore, Md.*

Randy Mosher, a homebrewer since 1984, is an active member of the Chicago Beer Society, author of *The Brewer's Companion* (Alephenalia Publications, 1993) and numerous magazine articles on beer and brewing. Randy speaks frequently to audiences of homebrewers and inspires the artist in all of us.

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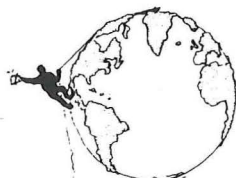
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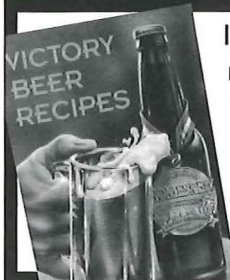
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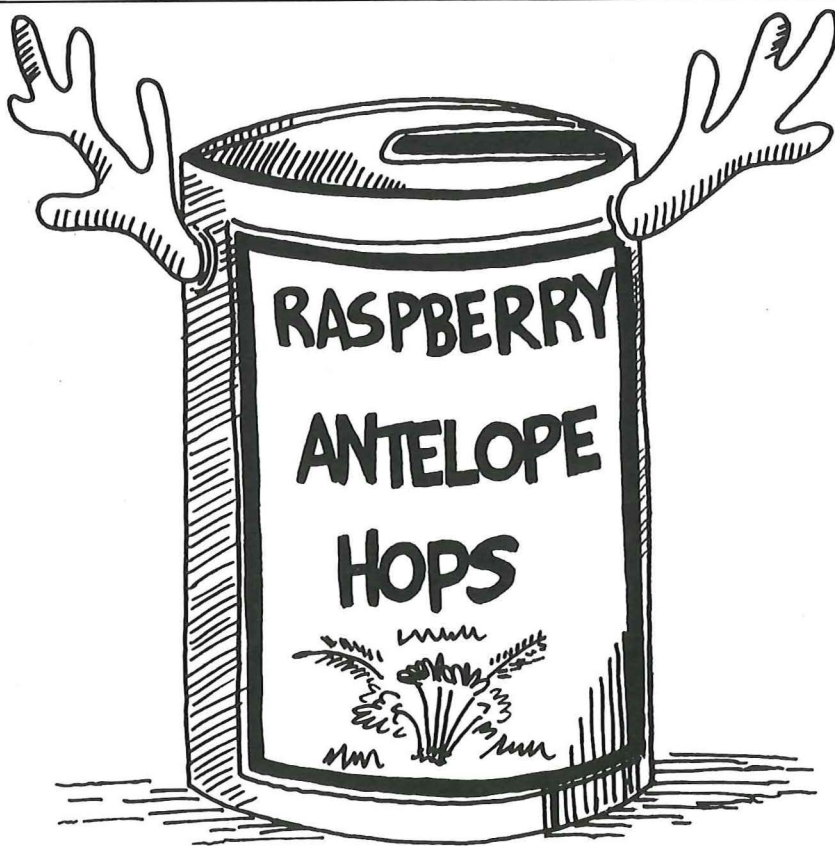
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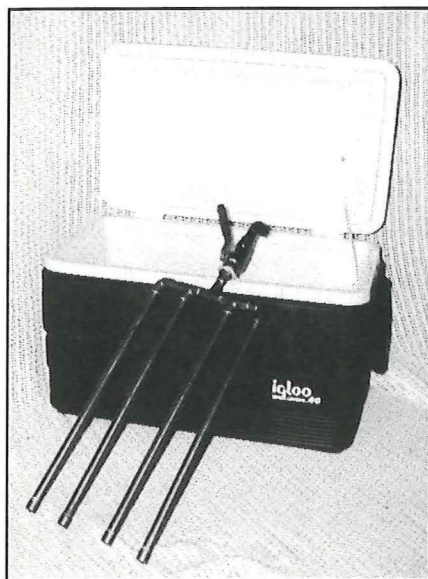
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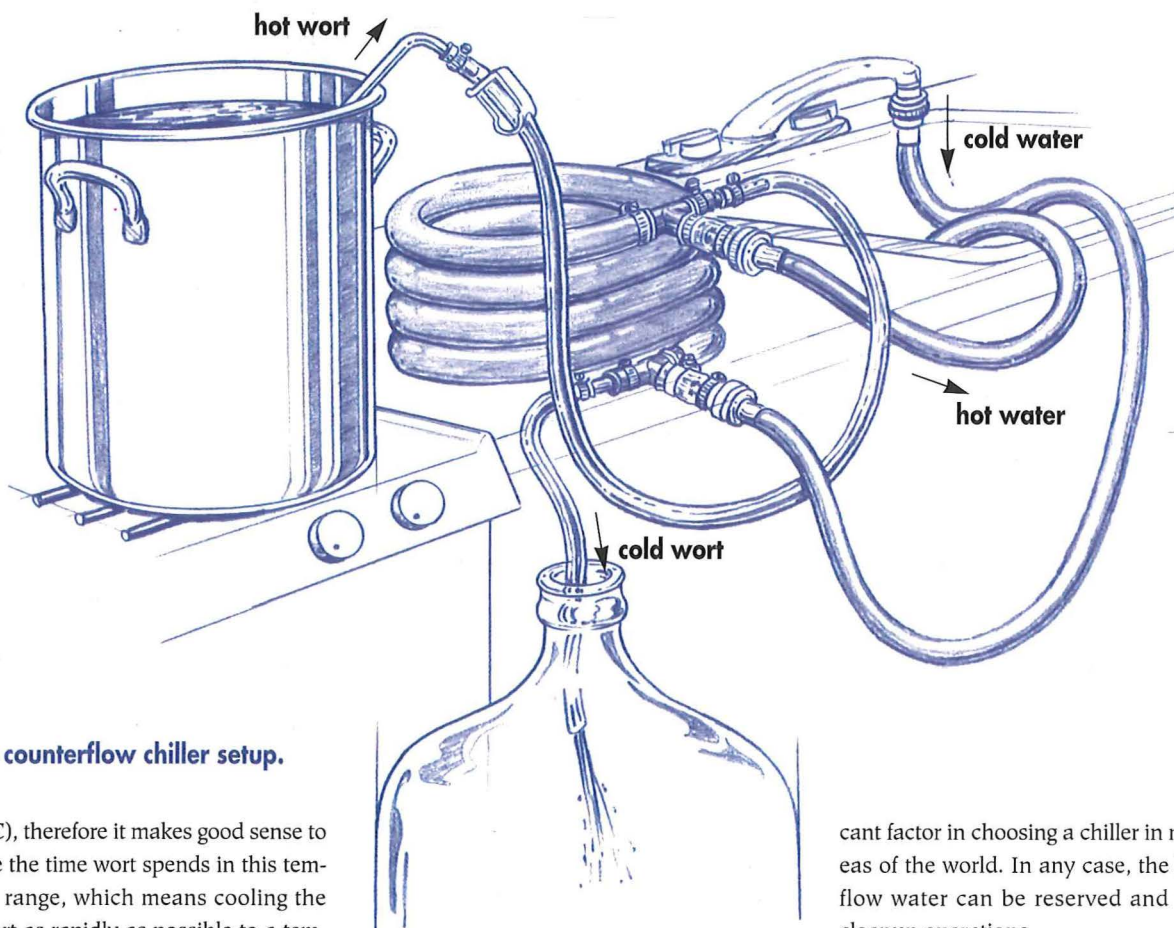
## A Cool Brew Cruise

**A**lthough beer and brewing have been around for centuries, the true cause of fermentation and the role of spoilage bacteria had not begun to be understood until the 19th century. Louis Pasteur, while studying problems of the brewers and vintners of France, found that some yeast produced good wine, but other organisms caused the wine to become vinegar. Only after careful study did it become apparent that bacterial contamination was the cause of vinegar and spoiled beer. Pasteur's studies led to the realization that careful attention to the prevention of bacterial contamination and elimination of the conditions that encourage growth resulted in better beer. Homebrewers can apply this knowledge as well.

After boiling the wort and prior to pitching yeast, the wort must be cooled to a temperature at which the yeast can carry out fermentation. Typically this is 57 to 61 degrees F (14 to 16 degrees C) for top-fermenting (ale) yeast and around 42 degrees F (6 degrees C) for bottom-fermenting (lager) yeast, according to Jean DeClerck in *A Textbook of Brewing* (Chapman and Hall, 1957). As soon as the wort is cool, it is susceptible to contamination by wort spoilage organisms. Bacteria thrive at temperatures between 68 and 104 degrees F (20 and 40

By Daniel S. McConnell & Kenneth D. Schramm





**Sample counterflow chiller setup.**

degrees C), therefore it makes good sense to minimize the time wort spends in this temperature range, which means cooling the sweet wort as rapidly as possible to a temperature suitable for pitching yeast. Once the yeast has begun to reproduce and become the predominant organism, alcohols and acids are produced, the pH lowers and the environment becomes less hospitable to bacteria. At this point the beer becomes more resistant to contamination.

Boiling wort promotes a number of desirable chemical reactions. Among these are the isomerization of hop acids and coagulation of proteins. As the wort is heated protein is denatured. With vigorous boiling these denatured proteins come in contact with one another and coagulate with tannins from the grains as large complexes of material referred to as hot break. After boiling, this hot break will drop to the bottom of the kettle leaving the wort clear and bright. However, despite its clear appearance, the wort still contains a sizable quantity of protein/tannin complexes. As the wort is chilled prior to fermentation, these complexes precipitate out of solution and are referred to as cold break.

Rapid cooling promotes the formation of cold break and facilitates its elimination before fermentation. This is desirable because

uncoagulated cold break can be adsorbed by yeast cells, which interferes with nutritional uptake and results in a poor quality fermentation as well as a less brilliant finished beer, according to *Malting and Brewing Science* Vol. 2 (Chapman and Hall, 1971). Typically, removal of cold break is of more concern to lager brewers for reasons of clarity and crisp, clean flavor. The cold break is easily removed by racking the cooled beer off of the precipitated break material. Many ale brewers simply allow cold break to enter the fermenter.

In his description of wort cooling, DeClerck mentions that a refrigeration system should have the following three requirements: (1) easy to clean, (2) watertight and (3) efficient. Homebrewers would do well to heed these suggestions. Ease of cleaning is important to ensure that the chiller itself does not become a source of contamination. Coolant water leaking into wort can both contaminate and dilute the resulting brew. And finally, although not an issue in some areas, water conservation and the need for efficient cooling can be a signifi-

cant factor in choosing a chiller in many areas of the world. In any case, the hot outflow water can be reserved and used in cleanup operations.

Homebrewers typically rely on a few simple methods to cool wort: natural cooling (ambient air and time), forced cooling (bucket in the bathtub, kettle in a snowbank, etc.), immersion chillers and counterflow chillers. There are many other methods (including plate heat exchangers commonly used in professional breweries) limited only by the imagination, ingenuity and cash reserves of the homebrewer. These other designs are beyond the scope of this article.

Natural and bathtub cooling methods allow the wort to remain in the critical temperature range of 68 to 104 degrees F (20 to 40 degrees C) at which bacteria thrive for an unacceptably long period of time. The duration depends in part on the ambient air or water temperature around the kettle. As this length of time increases so does the risk of infection and the length of the brewing session. Mixing hot wort and cold water works well to rapidly cool the wort to pitching temperatures, but it is not without some drawbacks. To be sure the cold water is free from bacterial contamination, it should be boiled and cooled a day or so before brew-



ing. The practice of placing cold water in a carboy or fermenter followed by addition of hot wort, unless the wort is carefully siphoned, can result in hot-side aeration and its effects on beer flavor and stability. Using counterflow or immersion chillers can provide rapidly cooled wort, which results in good cold break formation, reduces the time the wort spends in the critical temperature range and allows the brewer to pitch an active yeast culture sooner — in short, better beer.

In this article we will limit our discussion to counterflow wort chiller designs and present the results of an experiment in which we evaluated a number of commercially available units. The units used represent popular design styles. A chiller built by yourself or your local homebrew supply shop to the specifications described here can be expected to perform similarly. We also tested a number of immersion chiller styles, the results of which will be presented in Part Two, *Zymurgy* Fall 1996 (Vol. 19, No. 3).

## Experimental Methods

Each trial consisted of bringing a five-gallon (19-L) wort made with 6 2/3 pounds (3 kg) of malt extract (specific gravity 1.042 to 1.044) to a boil (212 degrees F or 100 degrees C). The unhopped wort was then cooled (using 52-degree-F or 11-degree-C well water as coolant) with a chiller as the data were gathered. The setup was identical in all cases and relied on gravity to

transfer hot wort through the chiller to a second kettle below the first. Upon cooling, the wort was topped up to five gallons and reboiled (including hot break material) for subsequent tests. Chillers were evaluated for completeness (were additional parts of any kind required), clarity of instructions, safety (was the user at risk of scalding, etc.), ease of use (was the siphon easy to start, was the unit mountable or unwieldy, etc.) and efficiency (the faster the chiller produces cool wort using the least amount of water, the better).

We ranked them outstanding (quality or performance well beyond all expectations); excellent, (complete, well-designed, safe and a good value); very good (meets the specified requirements and needs well); good (meets the specified requirements and needs, but no frills); average (meets requirements, but may have some very minor problems); poor (major problems, not recommended) and useless (no redeeming social value, dangerous and/or a waste of money or time). For the counterflow chillers, we measured water flow, wort flow, initial wort temperature, cooling water input temperature, cooling water output temperature, final wort temperature and time to cool five gallons (19 L). Wort and water flow were calculated by using a stopwatch to time the filling of a standard measure. Temperatures were taken with a Fluke (Model 51 K/J) or an Electro-Therm (Model SH66A) digital thermometer, each calibrated against the other and accurate to within one-tenth of a degree.

The results are as follows.



## BREWCO COUNTERFLOW CHILLER

BREWCO, PO BOX 1063, BOONE,  
NC 28607, (704) 297-7837

**TYPE** The length of the copper coil is a trade secret, but the inside diameter is one-quarter inch. The copper is enclosed in a six-inch diameter by 14-inch long PVC pipe.

**COMPLETENESS** A complete unit is provided, with no assembly required.

**CLARITY OF INSTRUCTIONS** Outstanding. Well-written instructions on use and cleaning.

**SAFETY** Average. We recommend the addition of hose clamps on hot wort fittings.

**EASE OF USE** Excellent operation.

**EXTRAS** Included a copper pot-scrubber assembly to filter trub and hops. Nice copper racking cane for hot wort. A flow control clamp was included.

**EFFICIENCY** Excellent.

## HOW DO YOU KEEP THOSE COILS CLEAN?

**T**o many of the experienced brewers reading this, sanitizing wort chillers is old hat. But to those who are new to using wort chillers, or are changing styles, here's the skinny, the real deal, the straight dope, the bird's-eye lowdown on this coiling chiller caper (whatever that means).

Immersion chillers are easier.

OK, so it's not that easy, but almost. Sanitizing an immersion chiller amounts to making sure that it is free of oxidation, and plunking it into your boil kettle at least 20 minutes before you intend to end the boil. A quick swab with white vinegar will remove the oxidation. Any household dish

detergent will do for cleanup, if you give the thing a sturdy warm- to hot-water rinse.

Counterflow chillers complicate the equation quite thoroughly. The problem with counterflow chillers is that they need to be cleaned thoroughly inside the copper coil where you can't see, and they don't lend themselves to the use of cleaning tools. Additionally, both sanitation (prior to use) and cleanup (after use) require additional steps to the brewing process, generally boiling another pot of water, which can add complications.

The use of sanitizing solutions with counterflow chillers is a dicey proposition. Chlorine-based

cleansers, chlorinated trisodium phosphate and hydrogen peroxide all present oxidation reactions with the copper that cannot be addressed easily inside the coils of a chiller. Sodium hydroxide (NaOH) or caustic solutions are traditional brewery cleansers and do an excellent job of cleaning and sanitizing. They can be dangerous and are not recommended for most homebrew applications. Iodophors will be effective without oxidizing the copper, but inevitably will need to be rinsed, and rinsing with tap water presents the possibility of re-contamination. It has been suggested that the rinsing of equipment is an appropriate



ILLUSTRATIONS BY JOHN MARTIN  
PHOTOS COURTESY OF DAN MCCONNELL







## BREWERS RESOURCE COUNTERFLOW CHILLER

BREWERS RESOURCE, 409 CALLE  
SAN PABLO #104, CAMARILLO, CA  
93012, (800) 827-3983

**TYPE** A classic 25-foot long by three-eighths-inch outside diameter copper tube inside a garden hose.

**COMPLETENESS** Good. Complete with all fittings, but requires user to provide racking cane, wort supply tubing, wort outlet tubing, water supply tubing, water outlet tubing and clamps.

**CLARITY OF INSTRUCTIONS** Outstanding. Well-written instructions on use and cleaning. Includes warranty.

**SAFETY** Average. We recommend the addition of hose clamps on hot wort fittings.

**EASE OF USE** Excellent operation.

**EXTRAS** Wort-Temp Monitor (thermometer unit) available for an additional \$18.95 makes outflow temperature monitoring simple.

**EFFICIENCY** Excellent.



## BREWERS WAREHOUSE COUNTERFLOW CHILLER

BREWERS WAREHOUSE, 4520  
UNION BAY PLACE N.E., SEATTLE,  
WA 98105, (206) 527-5047

**TYPE** A 25-foot long by three-eighths-inch outside diameter copper coil inside a four-inch diameter by 15-inch long PVC pipe.

**COMPLETENESS** Good. Includes racking cane and all hoses.

**CLARITY OF INSTRUCTIONS** Good.

**SAFETY** Excellent.

**EASE OF USE** The instructions specify, "Before chilling the wort, all hops must be removed to avoid clogging the unit," but don't recommend any specific methods. We found it difficult to start a siphon with this unit.

**EXTRAS** Aeration device on the cold wort tubing helps to provide proper oxygen levels. Flow control valve included. Temperature monitor available for an additional \$45 makes outflow temperature monitoring simple.

**EFFICIENCY** Very good.



## HEART'S SUPER CHILLER

HEART'S HOME BREW SUPPLY,  
5824 N. ORANGE BLOSSOM TRAIL,  
ORLANDO, FL 32810, (800) 392-8322

**TYPE** Seven-foot long by one-half-inch outside diameter helical copper tube inside a steel tube.

**COMPLETENESS** Fittings on wort flow tubing were larger than the standard diameter of a racking cane. We are able to make the tubing work by heating and softening the tubing and securing it with a hose clamp.

**CLARITY OF INSTRUCTIONS** No instructions were provided.

**SAFETY** Excellent.

**EASE OF USE** Excellent operation.

**EXTRAS** A compact unit at six inches in diameter. A bracket makes the unit capable of being bolted to a brewing stand.

**EFFICIENCY** Outstanding.

use for "commercial factory beer," but the authors haven't felt the need to resort to this. For an excellent discussion on sanitizers, see the article by Jim Liddil and John Palmer in *Zymurgy* Fall 1995 (Vol. 18, No. 3).

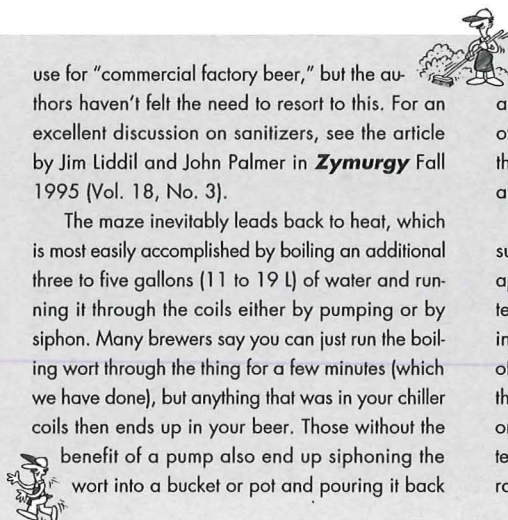
The maze inevitably leads back to heat, which is most easily accomplished by boiling an additional three to five gallons (11 to 19 l) of water and running it through the coils either by pumping or by siphon. Many brewers say you can just run the boiling wort through the thing for a few minutes (which we have done), but anything that was in your chiller coils then ends up in your beer. Those without the benefit of a pump also end up siphoning the wort into a bucket or pot and pouring it back

into the kettle, making for some classic hot-side aeration problems. The best solution is to put another pot of water on to boil about halfway through the wort boil, and run it through the coils immediately before you begin to chill.

Get your fermentation vessel and cold water supply in place first, and make sure you have an appropriate way to dispose of the hot and cold water outflow. You can get your siphon started by filling your chiller with tap water, crimping the ends of your vinyl tubing, plunging the upper end into the pot of boiling water then releasing the clamp on the outflow end. After you've siphoned hot water for a while, at least five minutes is recommended, raise both ends so they are even and level (this is

a warm operation, to put it mildly), attach your counterflow cold water supply and restart the siphon with your hot wort.

You might consider collecting the hot outflow water and returning it to a boil to run through the chiller after use. After your wort chilling is through, it's good practice to run the hot water through the chiller again to clean out the residual wort and prepare the chiller for storage. Some reference material advises using caustics to clean your counterflow chiller, but we're not advocates of that idea. An occasional pass of TSP (one teaspoon per gallon of water) or white vinegar will do the trick, and will eliminate the possibility of exposing your precious beer to chemical disaster.







## PHIL'S PHITTINGS

**LISTERMANN MANUFACTURING CO.,**  
1621 DANA AVE., PO BOX 12251,  
CINCINNATI, OH 45212-0251,  
(513) 731-1130

**TYPE** User determined. We used a 25-foot by three-eighths-inch outside diameter copper tube inside a garden hose and a 50-foot by three-eighths-inch outside diameter version.

**COMPLETENESS** Listermann Mfg. provides fittings only. Users must provide internal and external tubing, which allows a wide variety of possible user-defined configurations (overall length of copper coil, coil configuration, copper in copper design or copper in garden hose design, etc.).

**CLARITY OF INSTRUCTIONS** Excellent instructions on how to construct a counterflow chiller.

**SAFETY** User determined.

**EASE OF USE** User determined.

**EXTRAS** None provided.

**EFFICIENCY** Excellent with the configurations we used.

## Evaluation Summary

To compare the chillers we used the following formula to calculate a value,  $Q$ , which takes into account all of the critical data. The term  $Q$  can be thought of as a mathematical value that evaluates the ability of the chiller to cool the wort. The calculation uses water input temperature, wort input and output temperature, water flow rate and wort flow rate to arrive at a value. Efficiency of heat transfer is part of the calculation, thus overall, a higher  $Q$  reflects a more efficient unit that is capable of cooling wort faster with less water consumption. The results of our experiment are presented in Table 1. The prices listed are taken directly from product inserts provided with the units or from the manufacturer.

$$Q = \frac{\alpha}{\left(\frac{1}{Wr}\right) - \left(\frac{1}{Cr}\right)}$$

$$\alpha = -\ln \left[ \frac{(1-E)}{\left(\frac{1-E \times Wr}{Cr}\right)} \right]$$

$$E = Ti - Tf / Ti - Ci$$

Ti = initial wort temperature

Tf = final wort temperature

Ci = initial coolant temperature

E = efficiency

Wr = wort flow rate (in gallons per hour)

Cr = coolant flow rate (in gallons per hour)

## Conclusion

All chiller designs performed well and were within the stated performance specifications. They are a tremendous improvement over slow cooling methods. In our trials, the Heart's Super Chiller clearly performed in a remarkable manner. Small and compact, it is capable of chilling wort faster using less cooling water with a more rapid wort flow. The classic design of a copper line through a garden hose also performed well. Although the copper coil inside a PVC pipe designs look good, compared to the other design types they are slower and less efficient. This is not of much concern when chilling typical five-gallon (19-L) batches, but may be less than desirable with larger batches. We can unequivocally state that all of these product designs perform to stated specifications and are of uniform, excellent quality.

We recommend that in all cases the brewer use hose clamps on all fittings. As hot water exits or hot wort enters the plastic tubing it can soften, work loose and may result in scalding the user.

The use of a counterflow chiller (either a unit that we tested, a homemade or homebrew shop made version) enables the brewer to quickly cool five gallons (19 L) of boiling hot wort to temperatures safe for yeast pitching within a matter of minutes. These units are easily sanitized (see p. 44) and if properly used and cared for provide no risk of contamination. Furthermore, when using

TABLE 1. COUNTERFLOW WORT CHILLER PERFORMANCE SUMMARY	DESIGN TYPE *	MANUFACTURER OF SAMPLE EVALUATED	MANUFACTURER'S SUGGESTED RETAIL PRICE	FINAL WORT TEMP (°F)	TIME TO COOL 5 GAL (MINUTES)	WATER FLOW (GAL/HOUR)	TOTAL WATER VOLUME (GAL USED)	WORT FLOW (GAL/HOUR)	EFFICIENCY OF HEAT TRANSFER (%)	Q
	A	BREWCO	\$70.00	63	18:01	288	86.5	16.7	93.1	38
	B	BREWERS RESOURCE	\$49.90	63	15:15	200	50.8	19.7	93.1	45
	A	BREWERS WAREHOUSE	\$79.95	68	20:46	190	65.6	14.4	90.0	24
	C	HEART'S HOME BREW	\$79.95	61	09:34	180	28.7	31.4	94.4	106
	B	LISTERMANN MFG. (25')	\$14.00†	65	20:10	171	57.6	14.9	93.6	54
	B	LISTERMANN MFG. (50')	\$14.00†	64	12:05	171	34.5	24.8	94.3	65
	* KEY TO DESIGN TYPE:									
	A = COPPER COIL INSIDE A LARGE-DIAMETER PVC PIPE									
	B = COPPER COIL INSIDE GARDEN HOSE									
	C = COPPER COIL INSIDE STEEL TUBE									
	† LISTERMANN MFG. PROVIDES FITTINGS ONLY.									
	THE COST TO BUILD A CHILLER WILL VARY DEPENDING ON MATERIALS AND SPECIFICATIONS SELECTED.									



THE FOLLOWING LIST IS PROVIDED TO GIVE READERS INFORMATION WHEN SHOPPING FOR THE WORT CHILLER THAT BEST FITS THEIR NEEDS. WHILE IT IS NOT MEANT TO REPRESENT ALL THE COMMERCIALLY AVAILABLE CHILLERS OR ALL OF THE STORES THAT CARRY WORT CHILLING EQUIPMENT, IT GIVES THE READER AN IDEA OF WHAT THE MARKET HOLDS AS WELL AS A RANGE OF PRICES. CHECK YOUR LOCAL SUPPLY SHOP AS WELL.

THIS LIST WAS COMPILED AFTER A SURVEY WAS SENT TO 550 HOMEBREW SUPPLY SHOPS AND HOMEBREW SUPPLY WHOLESALEERS WHO DO BUSINESS WITH THE ASSOCIATION OF BREWERS. THE FOLLOWING COMPANIES PROVIDED INFORMATION BY THE DEADLINE.

KEY

Name of Company

(R = Retailer, W = Wholesaler)

price (suggested retail)

i = immersion, c = counterflow

## ARIZONA

**Gunnbrew Supply Co. (R)**  
16627 N. Cave Creek Rd.  
Phoenix, AZ 85032  
ph/fax: (602) 788-8811  
\$20 i; mfd. in-house  
\$40 c; PhillChill Phittings

### The Home Brewery (R)

4641 S. Hwy. 92  
Sierra Vista, AZ 85635  
(520) 378-4290; fax: (520) 378-4291  
e-mail: paulg@primenet.com  
\$49.95 i; Super Wort Chiller (Outdoor/indoor 50' copper for 10-15 gal. batches)

## CALIFORNIA

**Beer Makers of America (W/R)**  
1040 N. 4th St.  
San Jose, CA 95112  
(408) 288-6647; fax: (408) 288-6674  
\$34.95 i; Beer Makers Wort Chiller

**Beermakers & Restaurant Equipment Wholesale (W/R)**  
1965 Marina Blvd.  
San Leandro, CA 94577  
(510) 483-2267; fax: (510) 483-2268  
\$34.99 i; mfd. in-house  
\$15.99 c; PhillChill Phittings

**Bencomo's Homebrew (R)**  
1544 N. Palm  
Fresno, CA 93700  
(209) 237-5823;  
fax: (209) 237-7203  
\$39.99 i; Bencomo's Wort Chiller (25' 1/2" copper hose with compression fittings)

**The Beverage People (W/R)**  
840 Piner Rd. #14  
Santa Rosa, CA 95403  
(707) 544-2420;  
fax: (707) 544-5729  
\$32 i; 3/8" Precision Wort Chiller  
\$45 i; 1/2" Precision Wort Chiller

**Bucket of Suds (R)**  
317-A Old County Rd.  
Belmont, CA 94002  
ph/fax (415) 637-9844  
e-mail: bsuds@aol.com  
\$29.95 i; mfd. in-house

**Double Springs H.B. (R)**  
4697 Double Springs Rd.  
Valley Springs, CA 95252  
ph/fax: (209) 754-4888  
\$69.95 c; Kounter-Kooler

**Fantastic Fermentations (R)**  
421 N. Buchanan Circle #1  
Pacheco, CA 94553  
(510) 609-8567  
\$14.95 i; PhillChill Fittings

**Fermentation Settlement (R)**  
1530 Saratoga-Sunnyvale Rd.  
San Jose, CA 95129  
(408) 973-8970  
\$38.95 i; Wort Chiller

**Great Fermentations of Marin (R)**  
Larkspur St.  
San Rafael, CA 94901  
(800) 570-BEER;  
fax: (415) 459-3001  
e-mail: greatferm@aol.com  
\$39.95 i; Copper (25' x 8" or 12")  
\$59.95 i; Copper (50' x 8")  
\$69.95 i; Stainless Steel (25' x 8")

### Home Brew Supply (R)

6781 Sueno Rd.  
Isla Vista, CA 93117  
(805) 968-7233;  
fax: (805) 685-5808  
\$53.25 i; Advance Brewing Technology

### The Home Brewery (R)

24723 Redlands Blvd., Suite F  
San Bernadino, CA 92408  
(909) 796-0699;  
fax: (909) 796-0620  
\$29.95 i; 25' Indoor or Outdoor  
Model Wort Chiller  
\$49.95 i; 50' Super Wort Chiller

### Modesto Homebrew Supply (R)

1424 Carver Rd, Suite D  
Modesto, CA 95350  
(800) CXS-BREW  
fax: (209) 521-9995  
\$34.95 i; Penquat Wort Chiller

### Portable Potables (R)

1011 A 41st Ave.  
Santa Cruz, CA 95062  
(408) 476-5444  
\$53.95, \$47.95 i; copper coil

### Quality Homebrew Supplies (W)

PO Box 1645  
Escondido, CA 92025  
(619) 746-0170;  
fax: (619) 741-2863  
\$29.95 i; Easy On/Off

### Stein Fillers (R)

4180 Viking Way  
Long Beach, CA 90808  
(310) 425-0588  
c; PhillChill Phittings Chiller  
i; mfd. in-house

### Ruud Rick's Homebrew Supplies Inc. (R)

7273 Murray Dr., #17  
Stockton, CA 95210  
(209) 957-4549  
\$39.95 i; Immersion Copper

### South Bay Homebrew Supply (R)

2535 W. 237 #108  
Torrance, CA 90505  
(310) 517-1841;  
fax: (310) 517-1842  
e-mail: 74557.1102@compuserve.com,  
SouthBayHB@aol.com  
i; ABT Chiller

### The Wine Smith (R)

346 Main St  
Placerville, CA 95667  
(916) 622-0516;  
fax: (916) 626-3743  
\$38.50 i; Wort Chiller

## COLORADO

### Beer At Home (R)

3366 S. Broadway  
Englewood, CO 80110  
(303) 789-3676;  
fax: (303) 781-2388  
\$40 i; Beer At Home  
\$70 c; PhillChill Phittings

### Brew Ha Ha! (R)

708 8th St  
Greeley, CO 80631  
(970) 356-1566  
\$30 c; custom stainless steel  
\$53 i; copper

### Doc's Brew Shop (R)

3150-B1 S. Peoria St.  
Aurora, CO 80014  
(303) 750-6382;  
fax: (303) 750-1751  
\$52.50 i;  
Advanced Brewing Technology

### Front Range Bierhaus (R)

3025A N. Hancock Ave  
Colorado Springs, CO 80907  
(719) 473-3776;  
fax: (719) 473-0034  
e-mail: ltaylor@usa.net  
i; LD Carlson Catalog #5006 and  
PhillChill Phittings

### North Denver Cellar (R)

3475 W. 32nd Ave  
Denver, CO 80211  
(303) 433-5998  
\$25 i; mfd. in-house  
\$16 PhillChill Phittings

### Rocky Mountain Homebrew (R)

7292 Federal Blvd.  
Westminster, CO 80030  
ph/fax: (303) 427-5076  
e-mail: rmhbrew@ix.netcom.com  
i; immersion chiller

### What's Brewin' (R)

2886 Bluff St.  
Boulder, CO 80301  
(303) 444-9433  
\$35 to \$45 i; mfd. in-house  
(3/8" x 50' or 1/2" x 50' copper  
coil or built to order)

### Wine & Hop Shop (R)

705 E. 6th Ave.  
Denver, CO  
(303) 831-7229  
\$39.95 i; 25' copper; locally mfd.

## GEORGIA

### Brewtopia (R)

3573 Atlanta Highway  
Athens, GA 30606  
(706) 546-MALT  
\$14.99 c; PhillChill Phittings; i

### BrewYourOwn Beverages (R)

20 E. Andrews Dr. N.W.  
Atlanta, GA 30305  
(404) 365-0420;  
fax: (404) 261-4018  
\$42 i; Immersion Wort Chiller,  
#1242

### Homebrew of Columbus (R)

3709 Gentian Blvd., #4  
Columbus, GA 31907  
(706) 568-7772  
\$32.95 c/i; WortChiller/WC

### Home Brewing Supply Athens (R)

1383 Prince Ave.  
Athens, GA 30606  
(706) 548-5035  
\$39.95 i; 24' x 1/4' copper tubing  
and attachments (Crosby & Baker  
#5350)

## IOWA

### Home Brew Shop (W/R)

105 1/2 2nd Ave.  
Coralville, IA 52241  
(800) 228-8130, (319) 351-4487;  
fax: (319) 358-5528  
e-mail: canbrew@aol.com  
\$26.95 i; mfd. in-house

### New City Market (R)

4721 University Ave.  
Des Moines, IA 50311  
(515) 255-7380  
\$49.95 i; Wort Chiller 5006

### S.P.S. Beer Stuff (R)

1004 Regent St. N.E.  
Cedar Rapids, IA  
(319) 393-1219  
e-mail: spsbeer@netins.net,  
http://www.netins.net/showcase/spsbeer  
\$45.85 i; Immersion/E118  
\$14.55 i; PhillChill Phittings/E146

## ILLINOIS

### Advanced Brewing Technology (W)

888 E. Belirdere Rd. #215  
Grayslake, IL 60030  
(708) 549-0201;  
fax: (708) 816-4770  
\$42.97 i; mfd. in-house

### The Brewer's Coop (R)

1010 N. Washington St.  
Naperville, IL 60563  
(800) 451-6348  
e-mail: akcs.thecoop@vpnet.chi.il.us  
\$34.99 i; #5305  
\$14.99 c; PhillChill Phitting #5418

### Chicago Homebrew Supplies (R)

1444 W. Chicago Ave.  
Chicago, IL 60622  
(800) 213-BEER;  
fax: (312) 243-2881  
e-mail: beerstore@aol.com  
\$39.95 i; WortChiller 005006

### Home Brew Shop (R)

307 W. Main St.  
St. Charles, IL 60174  
(708) 377-1338  
\$39.95; i

### Malt-N-Hop Stop Inc. (R)

2019 E. Euclid Ave.  
Mt. Prospect, IL 60056  
(708) 827-BREW;  
fax: (708) 827-2739  
\$14.80 c; PhillChill Phittings

### River City Homebrewers (R)

802 State St.  
Quincy, IL 62301  
(217) 222-9813  
\$43.00 i; The Wort Chiller

## INDIANA

### The Home Brewery (R)

3705 Main St.  
Anderson, IN 46013  
(317) 622-0444  
e-mail: kurt@iquest.net  
\$29.95 i; Indoor Wort Chiller C44A,  
Outdoor Wort Chiller C44  
\$49.95 i; Super Wort Chiller C45  
and C45A,

### Worms Way (R)

3151 S. Highway 446  
Bloomington, IN 47401  
(800) 274-9676;  
fax: (812) 331-0854  
\$59.95 i

## KANSAS

### Bacchus & Barleycorn, Ltd. (R)

6633 Nieman Rd.  
Shawnee, KS 66203  
(913) 962-2501  
\$39.98 c; mfd. in-house

### Homebrew Pro Shoppe (R)

11938 W. 119th St.  
Overland Park, KS 66213  
(913) 345-9455;  
fax: (913) 681-9377  
e-mail: Aerobrew@Tyrell.net  
\$35.96 i;  
E-25/25' wort chiller  
mfd. in-house

### Lawrence Brewers Supply (R)

11 E. 8th St.  
Lawrence, KS 66044  
(913) 749-3278  
\$32.50 i; mfd. in-house

## KENTUCKY

### The Home Brewery (R)

153 Mulberry  
Bardstown, KY 40004  
(502) 349-1001;  
fax: (502) 348-9476  
e-mail: mattf321@aol.com  
\$29.95 i;  
Outdoor C44, Indoor C44A  
mfd. in-house

## LOUISIANA

### The Beerslayer (R)

3956 Fire Tower Rd.  
Grand Cane, LA 71032  
(318) 858-2219;  
fax: (318) 858-2219  
\$59.95 c; Thermoslayer 400  
mfd. in-house

## MASSACHUSETTS

### Beer & Winemaking Supplies Inc. (R)

154 King St.  
Northampton, MA 01060  
(413) 586-0150;  
fax: (413) 584-5674  
\$49.95 i; Stainless Wizard's Wort

### Frozenwort (R)

28 Smith St.  
Greenfield, MA 01301  
(413) 773-5920;  
fax: (413) 772-2333  
\$70 c; BrewCo

### Worm's Way Massachusetts (R)

1200 Millbury St.  
Worcester, MA 01607  
(508) 797-1156;  
(800) 284-9676  
\$59.95 i;  
25' 3/8" copper tubing w/faucet  
adapter

## MARYLAND

### Brew Masters Ltd. (R)

12266 Wilkins Ave.  
Rockville, MD 20852  
(301) 984-9557  
i; Koch's Kooler

### Chesapeake Brewing Co. (R)

1930 Lincoln Dr. Unit C  
Annapolis, MD 21401  
(800) 324-0450;  
fax: (410) 268-3705  
e-mail: chesbrewco@aol.com  
i; Koch's Kooler

### The Flying Barrel (R)

111 S. Carol St.  
Frederick, MD 21701  
(301) 663-4491  
\$36 i; Koch's Kooler  
\$75 c; BrewCo



**Happy Homebrewing Supply Co. (R)**  
351 Civic Ave.  
Salisbury, MD 21801  
(410) 543-9616  
\$30 i; mfd. in-house

**Koch's Concepts (W)**  
9510 Bruce Dr.  
Silver Spring, MD 20901  
(301) 587-5293  
\$45 i; Koch's Kooler  
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**Maryland Homebrew (R)**  
9009D Mendenhall Court  
Columbia, MD 20145  
(410) 290-3768;  
fax: (410) 290-6795  
e-mail: don.breton@shaw.com  
\$29.95 or \$39.95 c/i  
mfd. in-house

**MAINE**  
**The Whip & Spoon (R)**  
161 Commercial St.  
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(800) 937-9447;  
fax: (207) 774-6261  
\$34.90 i; NorEaster Wort Chiller

**MICHIGAN**  
**Brew It Yourself Ctr. (R)**  
13262 Northline Rd.  
Southgate, MI 48195  
(313) 382-2141  
\$29.99 i; Brew It Yourself Chiller  
\$59.00 c; Brew It Yourself Chiller  
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**Gus's Discount Warehouse Inc. (W/R)**  
4492 Country View Rd.  
Petoskey, MI 49770  
ph/fax: (616) 347-6865  
\$39.99 i; Immersible Copper

**G.W. Kent Inc. (W)**  
3667 Morgan Rd.  
Ann Arbor, MI 48108  
(313) 572-1300;  
fax: (313) 572-0097  
i; mfd. in-house

**Keweenaw Coop (R)**  
1035 Ethel Ave.  
Hancock, MI 49930  
(906) 482-2030  
c; PhillChill Phittings

**Ogie's Party Store Inc. (R)**  
435 North Park St. N.E.  
Grand Rapids, MI 49505  
(616) 361-1633;  
fax: (616) 363-2459  
\$39.95 i; G.W. Kent #2429

**Things Beer (R)**  
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(517) 655-6701  
\$42.95 i

**Wine Barrel Plus (R)**  
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**America Brews (R)**  
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Bloomington, MN 55420  
(800) 200-3647  
\$49.95 i; Immersion Chiller

**Brew & Grow - Minnesota (R)**  
8179 University Ave.  
Fridley, MN 55432  
(800) 230-8191;  
fax: (612) 780-6387  
\$39.39 i; Immersion Wort Chiller  
(25' copper tubing with faucet  
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**Semplex (R)**  
4159 Thomas Ave. N.  
Minneapolis, MN 55412  
(612) 522-0500;  
fax: (612) 522-0579  
\$54.95 i; Wort Chiller #2115

**WindRiver Brewing Co. (R)**  
7212 Washington Ave. S.  
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Chiller; mfd. in-house

**St. Louis Wine & Beermaking (R)**  
251 Lamp & Lantern Village  
Chesterfield, MO 63017  
(314) 230-8277;  
fax: (314) 527-5413  
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\$48.98 c; 25' GreenSnake  
mfd. in-house

**Worms Way - Missouri (R)**  
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St. Louis, MO 63146  
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fax: (314) 994-7467  
\$59.95 c/i

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**Happy Harry's Home Brew Shop (R)**  
2051 32nd Ave. S.  
Grand Forks, ND 58201  
(800) 367-2739; (701) 780-0902;  
fax: (701) 780-0905  
\$29.95 i; 25' The Homebrewery  
Immersion Wort Chiller  
\$49.95 i; 50' The Homebrewery  
Immersion Wort Chiller

**NEBRASKA**  
**Fermenter's Supply (R)**  
8410 'K' Plaza #10  
Omaha, NE 68127  
(402) 593-9171;  
fax: (402) 593-9942  
\$41.50 i; 25' Copper Wort Chiller

**Kirk's Brew (R)**  
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285 Union Square  
Milford, NH 03055  
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**BeerCrafters Inc. (R)**  
110A Greentree Rd.  
Turnersville, NJ 08012  
(609) 2-BREW-IT  
\$35 i; Immersion Chiller  
(25' 1/2" copper tubing)

**Hop & Vine (R)**  
11 DeHart St.  
Morristown, NJ 07960  
(201) 993-3191  
http://www.altitude.com/hop&vine  
\$29.75 i; Chilly Willy's Wort Chiller  
(25' copper coil, food-grade tubing,  
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mfd. in-house

**U-Brew Corp (W/R)**  
319 1/2 Millburn Ave.  
Millburn, NJ 07041  
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fax: (201) 376-0493  
e-mail: djbrew@aol.com  
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\$42.50 i; 50' coil  
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24 Bellemeade Ave.  
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310 White Plains Rd.  
Eastchester, NY 10707  
(914) 961-2407;  
fax: (914) 961-8443  
e-mail: brewshop@cornells.com  
\$69.99 c; BrewChiller by BrewCo.

**Hoppy Troll (R)**  
9 Phila St.  
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\$45 i; WW01 Stainless Chiller

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\$89.95 c

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(503) 924-9820  
i; mfd. in-house (25' soft copper)

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(503) 485-6238  
c; PhillChill Phittings  
i; Immersion

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fax: (717) 266-5954  
\$32 i; Mr. Steve's Chilly Chiller  
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**Scotzin Bros. (R)**  
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Lemoynne, PA 17011  
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**A to Z Services (R)**  
13465 Wetmore Rd.  
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(210) 545-2289;  
fax: (210) 545-2104  
\$37.99 i; Paul's Chiller (30' copper  
tubing); mfd. in-house

**The Beer Essentials (R)**  
2908 Fountain View  
Houston, TX 77057  
(713) 785-2739  
\$39.95 i; Custom Wort Chill of Texas

**Moninger's Homebrew Supply (R)**  
3905 Fredericksburg Rd.  
San Antonio, TX 78201  
(210) 737-6604  
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\$30 i; 30' immersion  
\$65 c; 25' counterflow

**Morrison Homebrew Supply (W/R)**  
1811 North Elm  
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\$19.95 i; 25'  
\$36.95 i; 50'

**St. Patrick's of Texas Brewers Supply Inc. (W/R)**  
12922 Station Dr.  
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The BeerNut Immersion Chiller

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1879 S. Main #160  
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\$64.99 i; #1892

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Yorktown, VA 23693  
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fax: (804) 596-1034  
\$29.95 i; 25' Wort Chiller

**WASHINGTON**  
**Badger Brewing Supply (R)**  
7904A N.E. 6th Ave.  
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fax: (360) 576-0085  
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\$39.95 c  
mfd. in-house

**The Beer Essentials (R)**  
15219 Pacific Ave. S.  
Tacoma, WA 98444  
(206) 536-8840  
\$39.95 i; Immersion Wort Chiller

**Northwest Brewers Supply Co. (R)**  
5963 Corson Ave. S. #176  
Seattle, WA 98108  
(206) 763-BREW;  
fax: (206) 763-3010  
e-mail:  
brewdog@wolfenet.com  
\$69.95 c;  
Northwest Brewers Supply  
Counterflow Wort Chiller

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**Brew and Grow of WI (R)**  
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Brookfield, WI 53045  
(414) 789-0555;  
fax: (414) 789-5120  
e-mail:  
brewgrow@earth.execpc.com  
\$39.95 i; 30' immersion  
mfd. in-house  
\$79.95 c; Counterflow (BrewCo.)

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7057 Hwy. 51s Box 439  
Hazelhurst, WI 54531  
(715) 356-4518  
\$49.95 i

**Homebrew Market (R)**  
520 E. Wisconsin Ave.  
Appleton, WI 54911  
(414) 733-4294;  
fax: (414) 733-4173  
\$54.95 i; 5006  
\$349.99 c; Stoelling WC 100

**The Malt Shop (R)**  
N. 3211 Highway 5  
Cascade, WI 53011  
(800) 235-0026;  
fax: (414) 528-8697  
e-mail:  
MaltShop@excel.net  
\$14.95 c;  
PhillChill Phittings  
\$32.95 i;  
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434 State St.  
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a wort chiller, bacterial contamination can be reduced because the wort spends less time at temperatures where bacteria thrive, resulting in better beer which is every homebrewer's goal.

## Acknowledgments

We wish to thank the suppliers who donated counterflow chillers to this project: BrewCo, Brewers Resource, Brewers Warehouse, Heart's Home Beer Supply and Wine Making Supply and Listermann Manufacturing. We would also like to thank the following gentlemen/scientists (and Ann Arbor Brewers Guild Members) who helped run the experiments. Without them this article would not have been possible: Mike O'Brien, Paul Philippon, Jeff Renner and Spencer Thomas.

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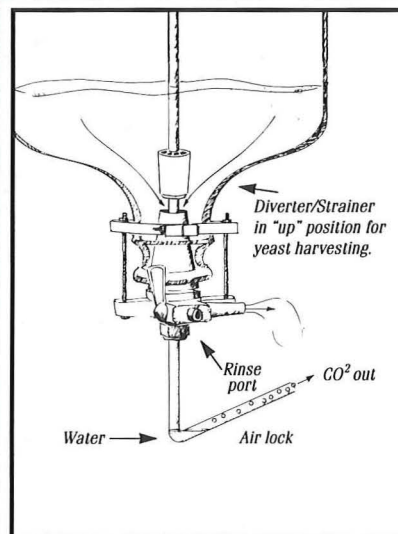
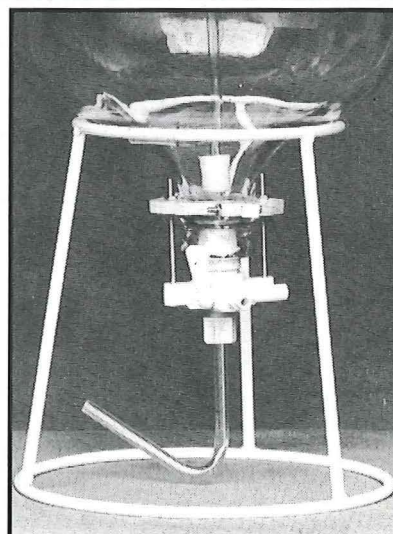
Dan McConnell is a research scientist at the University of Michigan, technical director of G.W. Kent and president of The Yeast Culture Kit Co., all located in Ann Arbor, Mich. He has been brewing beer and mead for 16 years and wine since he was 14. He wishes he had more time to fish.

Ken Schramm is the television consultant for the Wayne County Regional Educational Service Agency, competition director of the Mazzer Cup Mead Competition and an avid amateur orchardist, honey enthusiast and fly fisherman. ©1996 Daniel McConnell and Kenneth Schramm



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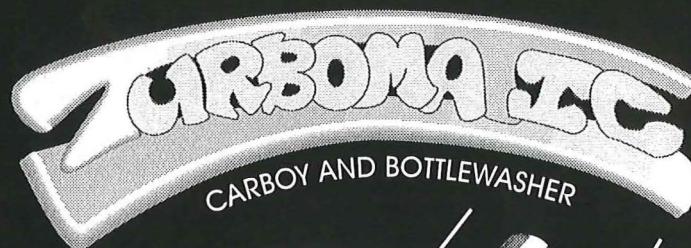
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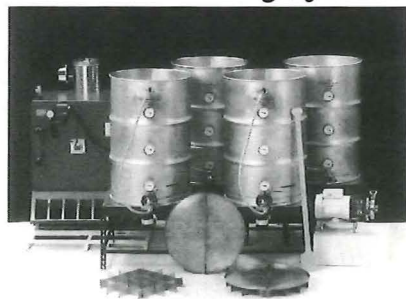
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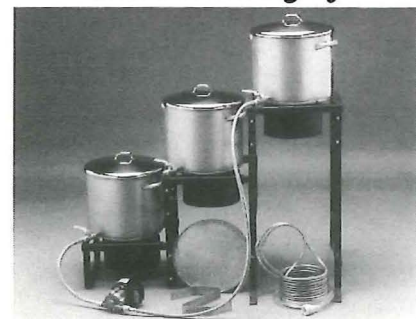
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# The Competitive

Have you noticed how many homebrew competitions are held every month? The calendar of events in each issue of *Zymurgy* is filled with small and large regional homebrew competitions. And every spring there is the big one — the AHA National Homebrew Competition. Have you thought about entering? Your most recent batch of homebrew is the best beer you have ever tasted, as usual. You love it. Your friends love it. That beer deserves a blue ribbon. Or does it?

Well, just because your beer is the tastiest beverage this side of Munich or London, you are not necessarily assured of succeeding in competition. The competition process offers more challenges than some brewers realize. As a veteran competitor, judge and competition organizer, I offer the following advice for avoiding common problems, and tips for maintaining your best advantage toward succeeding — even winning — at homebrew competitions.

## The Best Performer

Let's start with the recipe. When brewing for competition the goal is to emulate a recognized style with specific requirements for color, body, original and final gravity, bitterness, hop and malt flavor and aroma, and other fermentation characteristics. Hitting this target can happen by chance on the first try — or not. The best beers often result from a recipe tuned for your equipment and procedures. With experience you will be able to adjust a new recipe quickly. When you start to brew a new style it might be worth a trial or two to see what adjustments can be made to perfect your recipe.

Once you have the beer tasting the way you want, you will have to consider whether

the beer actually fits any of the competition's style guidelines. All competitions will categorize entries by style, and should explain their criteria for each style as part of the competition rules. Many competitions choose to adopt the styles used in the most recent AHA National Homebrew Competition, though some use their own descriptions. In any case, your entry will be evaluated in two ways. The judges will assess how good your beer tastes from a subjective point of view, but this is a minor component, usually 20 percent of the total score. They will concentrate much more on how well your entry meets the style description of the category in which you've entered it.

Regardless of what style you set out to brew, you should look over the style guide-





# Edge BY STEVE DEMPSEY

lines and place your entry in the category that best describes the finished beer. Just because you used a kit or followed a recipe calling itself "pale ale" does not mean your entry should go in a pale ale category for competition. The judges are looking for the proper color, level of carbonation, balance of malt sweetness and hop bitterness, and original and final gravity as evident by apparent alcohol content and body or mouthfeel. Your beer will be judged primarily on how well it exhibits these features within the range specified by the style guidelines. To win in competition, the style guidelines should describe your beer exactly.

Most styles originate from cultural brewing traditions and commercial brands that have achieved significant popularity among

beer consumers. Such commercial examples serve as a point of reference for the judges to help define the style. In many cases you will be able to obtain commercial examples of the classic styles. It is worth tasting some of these for comparison to your beers. I can think of no more enjoyable form of research than exploring a new beer style through sampling what the market has to offer.

Finally, keep in mind that your own personal preference may be in opposition to the style guidelines. When you adjust a recipe to your liking, you may be adjusting your beer so it lands outside the range for a given beer style. When you brew for competition, you brew for the judges as well as yourself. Fortunately, there is often significant overlap between the two and both can be satisfied.

## Policies of Packaging

Once you have identified the appropriate style to classify your beer, next take a look at the process of getting it from your homebrewery to the judges' palates. Except for a very few special events requiring you to produce a full keg, you normally will submit one to three bottles for competition. Standard 12-ounce, unlabeled, brown longneck bottles are required by most competitions to help maintain anonymity and objectivity in the judging process, and uniformity in handling. If all the bottles are the same size every entry will require the same handling, such as fitting into a standard case box with 23 similar bottles. If you send an odd bottle it can stand out, or may be hard to work with.





**Standard 12-ounce, unlabeled, brown longneck bottles are required by most competitions.**



**Bottles with bits of label still adhered can leave a poor first impression on judges. Entries in clear or green glass bottles can suffer from exposure to light. Odd shaped bottles are difficult for competition organizers to work with and can jeopardize your anonymity.**



**The most common method of submitting entries is to attach the recipe and fees to one of the bottles with a rubber band.**

There should be no special marks that might reveal your identity to the judges. Perhaps you are well-known for refilling bottles from a brand with painted labels and the judges would recognize your entry by the bottle markings. Or possibly the judges know someone else who uses such bottles and they have prejudiced opinions of that brewer's beers. Such bias can be introduced when any brewer's identity is suggested or revealed by the appearance of the bottle. These difficult situations are easily avoided by using standard bottles.

Avoid using green or clear glass bottles for competitions. It is well-known that beer can be damaged from light exposure resulting in a pungent, skunky character. When the beer is in your possession you can protect such bottles sufficiently from light. During the course of handling before and during the competition, reasonable efforts are made to protect entries from light, but the potential exists for minor to significant exposure. Entries in green or clear glass probably will suffer more than those in brown glass. It is to your advantage to use brown bottles.

One last bit of advice about bottles: the judge forms an initial impression from inspecting the bottle before opening it. While this inspection does not count in the score, it builds expectations in the judge's mind. A sticky bottle with bits of label and adhesive remaining, or with mold accumulating around the crown does not create a positive impression. A clean bottle avoids such problems.

Now let's look at the bottle's contents. Were all your bottles perfectly clean? Did you forget to wash, sanitize or rinse just one bottle? Don't let it be the one the judges will taste. Has a ring appeared at the fill line inside the bottle, indicating a minor contamination problem that you did not notice before? Maybe the problem is present in only a couple of bottles. You can double-check your bottles before entering.

## Timing is Everything

How long will it be from the time you send your entries until they are judged? All beer changes at varying rates with time. Has it been a while since you tasted that beer and has the flavor changed just a little bit? A beer that was overprimed may be perfect after two

weeks in the bottle and a gusher — or worse — several weeks later in the hands of the judges. A barley wine may be maturing and will improve with more aging; it may even score better next year than right now. A wheat beer may be just over the hill and still be very drinkable, but might deteriorate quickly over a week or two. If you notice a beer is no longer at its best, the judges probably will notice the same and tell you so. Refrigeration will help slow the aging process if you decide to compete with a fading beer. In general, ales are best when fresh and lagers are best aged until they are brilliantly clear, crisp and clean.

## Paperwork

Along with the filled bottles, competitions normally require an entry fee and some type of registration form. The form usually asks for your name and address so they know where to mail your prizes and completed score sheets, your club affiliation to help fuel the local rivalry and a style designation. Pay particular attention to the style; it tells the organizer how to group similar beers and tells the judges what standard they will use for evaluating your beer.

Entry forms also request the details of your recipe, although the judges will not see your recipe. Many competitions make these recipes available so other brewers can try to duplicate the winning beers. An accurate recipe, along with judge's comments, will help fellow brewers improve their brewing and recipe design skills.

In the case of specialty styles including fruits, herbs or other flavorings, the judges will want to know about these special ingredients. Entry forms will ask you to list the fruits, spices, flavorings or other unique details for these styles. These styles have fewer criteria in what is required for color, gravity and bitterness. In a way, you define the style by telling the judges what to look for when you list your special ingredients.

After you have made sure your paperwork is in order, you should make it easy to locate when your entry is received and processed. The most common method is to attach the recipe and fees to one of the bottles with a rubber band. Keeping everything together prevents competition organizers having to search through packing material to locate the paperwork when your entry is registered.



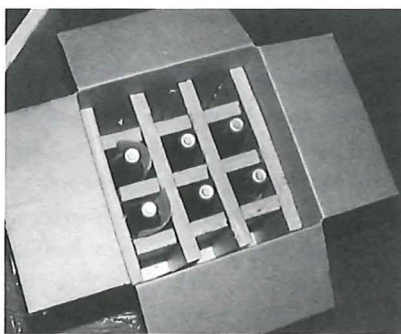
## Arranging for Transport

The next step is to consider how your entries will be delivered to the competition. For a local competition you probably will be able to deliver entries in person. A couple of six-pack holders may be all you need, but it is better to pack your entries as if they were being shipped to reduce the chance of broken or misplaced entries. If you want to hand deliver entries to an event sponsor who expects to receive them by common carrier, you should contact the organizer to make sure hand delivery is acceptable.

If you will not be delivering entries in person, you will have to pack them for shipping. You should prepare for the worst possible treatment by the carrier. The article "How to Pack Your Beer," in *Zymurgy* Spring 1991 (Vol. 14, No. 2), contains good advice on packing and shipping. At least one new type of container has become popular since that article was printed. My favorite is the carton used by several beer-of-the-month clubs for shipping beers to customers. If you know someone who is a member of one of these clubs, you might be able to trade a few homebrews for a couple of boxes. Well-constructed cartons can be reused or even returned to you if you provide return postage.

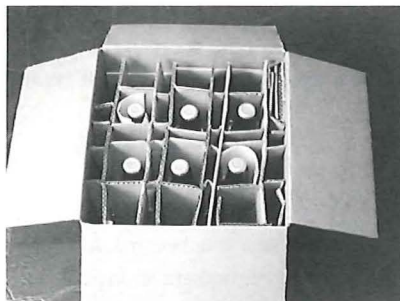
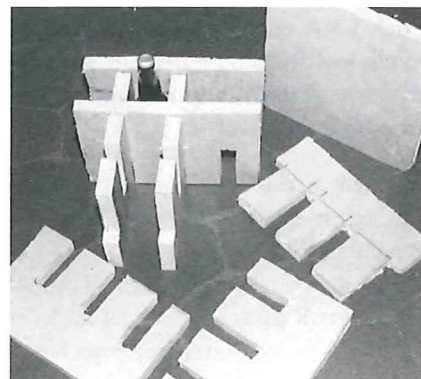
You can make your own shipping carton from an ordinary box and some extra cardboard or rigid foam, like Styrofoam™. Relatively inexpensive sheets of rigid foam insulation in various sizes are available at building supply retailers. Construction consists of standard bottle carton configuration with additional padding all around. To protect from the impact of a fall, rigid foam or cardboard goes in the top and bottom, and extra layers of cardboard are placed on each side of the box. Additional padding between bottles is used to protect them from the shock of hitting one another during such an impact, which is the leading reason why bottles break in shipping. Instead of the double-walled dividers, another option is to fill compartments in the box alternately with bottles and packing material.

For packing materials, cardboard and newspaper are easy to recycle at the receiving end. Excessive tape and bubble wrap are more difficult to unpack and reuse. One material that does not work well is the extruded cornstarch peanuts. In many cases condensation will cause these to stick to the bottles. In the event of a leaking or broken bottle, the peanuts will dissolve easily, leaving no insulation. For this



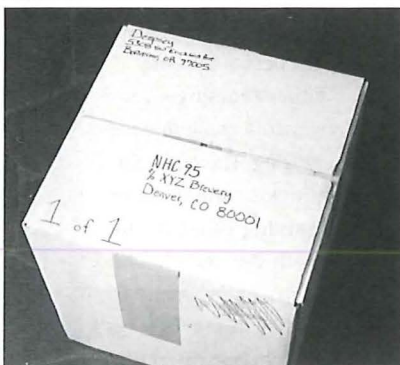
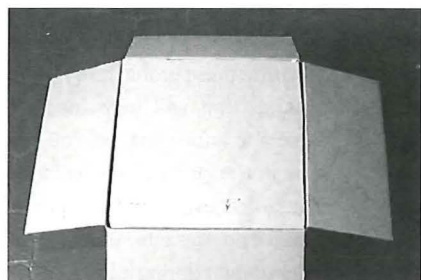
**Well-constructed cartons can be reused or even returned to you if you provide return postage.**

**Interlocking foam dividers are easy to make and they protect bottles from the shock of hitting one another, which is the leading cause of breakage.**



**You can make your own shipping carton from an ordinary box and some extra cardboard or rigid foam.**

**Boxes should have a layer of foam above and beneath the bottles to protect them in case the box is dropped.**



**When boxes are packed securely and neatly, there should be few problems or questions when sending a few bottles to a competition.**





**Pack your entry with unpacking in mind, too. Styrofoam peanuts are particularly difficult to work with on the receiving end.**

same reason, crushed newspaper should not be used alone for insulation; it will collapse completely when wet.

Another packaging problem is overall weight. Sending a large number of entries in one package forces you to use a larger box or less packing material. A heavier box is also more likely to be damaged in a fall. Six to eight 12-ounce bottles plus the packing material seems to be a convenient size and weight.

Don't forget problems caused by temperature variation. Freezing may be a problem with ground transportation during winter months. Extreme heat likewise could cause bottles to break under increased pressure, though this is unusual. Even without these extremes, it is well-known that beer does not travel well and has shorter shelf life if it is not maintained at controlled temperatures. You can try to minimize these problems by using packing material that will help insulate against rapid temperature changes. You can minimize time in transit by choosing faster delivery options, obviously at higher expense.

Also, you have no guarantee that the bottles will remain upright during transit. If you mark the box "this side up," however, organizers will usually store it this way, giving your beer a chance to settle properly prior to the judging.

While it is illegal to ship alcohol using the U.S. Postal Service, there are fewer restrictions on private carriers. The primary concern of the shipper is that federal and state tax laws are obeyed. Since your homebrew is not being sold and is not taxable, you are not violating these laws by shipping it for competition. However, some carriers have a

standard policy to refuse shipment of alcohol for any purpose. Shipping well-packed competition entries has never been a problem. If questioned about the contents, I declare the package to be non-perishable food. Most stories I have heard of problems with the shipper could be traced to insecure packaging. If bottles can be heard rattling when the package is shaken, it probably will be refused regardless of the contents. If bottles break and the leaking contents can be identified as beer, it also may be returned. When boxes are packed securely and neatly, there should be few problems or questions when sending a few bottles to a competition.

Timing the arrival of your entry also is important. Some competitions count on collecting entries at a central site for transportation elsewhere; a late arrival may not be accepted. Refrigeration space also could be limited and timely delivery could mean the difference between keeping your entry cold or storing it warm even for a short while. Your shipper should provide an accurate estimate of delivery time and you should aim for the earliest time when entries will be accepted.

## Letting Go

Finally, after all that care and preparation to make sure your beer measures up to stylistic standards and arrives in good condition, a few elements of the process remain beyond your control. There is that portion of the judges' score allowing for personal preference. The judges may like sweeter beers or particular hop varieties. This may not change the final score by much, but it can decide the winner between two beers of equal technical merit. The judges sometimes will choose the one they happen to like better. This factor is more important at smaller competitions where several styles may be judged together and in best-of-show rounds where the judges must select the best of the best.

Other seemingly random factors can influence the judging. There is a certain luck of the draw in the serving order of the beers to be tasted. The first entry of any group to be judged often has no clear point of reference

and the judges will give it an "average" score. As they progress, a relative order emerges and scores stabilize. Yet it will be difficult to erase initial impressions of the first one or two entries. The other major factor in serving order is a problem called error of contrast. If your entry is judged following another with some extreme character such as high bitterness, your beer may appear too sweet in comparison. These are the unexpected extreme variations that can cause problems. Normally, when mixed styles are served together they are arranged to avoid any transition from strong flavors to more delicate ones. Another serving order problem could be storage limitations that allow entries to sit on the table and warm up as the judging session progresses. Depending on when your beer is served, its score may change by a few points.

Then there is the problem of fatigue. All judges have senses that will reach saturation after too many beers, and this will decrease their ability to distinguish between the finer aspects of the beer's taste and aroma. Sometimes in the interest of saving time a large number of beers will be served in one session and the evaluation of the later beers may suffer from judges simply being burned out. Experienced competition organizers and judges will do their best to minimize these factors to ensure a fair competition.

## Applying Strategies

When you know about all these details, you can begin to apply some strategy in choosing where to place your entry. Judges sometimes prefer the more flavorful beers. If you have a beer that is just a little bit too hoppy or too strong for the style, you may want to try entering it anyway. The judges will not see the recipe; they can judge only what they taste.

For example, they probably will not discredit your beer for having 32 IBUs when the style is limited to 30, or if your original gravity was a few points too high. If the resulting beer seems close, you most often will receive the benefit of the doubt.

If your beer falls close to the line between two similar styles, you might try entering the same beer in both subcategories.







Another strategy is to target styles that usually receive smaller numbers of entries. If your aim is to win, you have a better statistical chance of placing among fewer competitors. Numbers of entries received in each category for many competitions are included with the results or should be available from the organizer simply by asking for them. Odds of winning may increase with the number of entries you submit. This helps you beat the odds when a decision comes down to judges' personal preferences. But it should be obvious that you cannot hope to win simply by entering every category with whatever beer you have on hand if it only marginally fits into the style. Smaller competitions offer greater advantage in submitting multiple entries. Larger competitions attract a wider field of entrants and therefore stiffer competition. In any case, check the rules for limitations on multiple entries in a single category, or in multiple subcategories that will be judged together. There usually are some entry restrictions to prevent anyone from taking too much advantage.

### Benefits of Competition

So what will you learn from all this when the competition is over and the winners are announced? Whether victorious or humbled, you should know why you received the scores you did. You should expect score sheets describing what the judges found when tasting your beer. If there were faults with procedures or recipe formulation, the judges ideally should explain what was wrong and how to make adjustments so you can try again and do better with the next batch. You may even want to reserve a bottle to taste when you receive your score sheets. Comparing what the judges described with your own taste perceptions can be a valuable learning experience and a satisfying confirmation that your beer received a fair and accurate evaluation.

And if you are not satisfied with the results you receive after a competition, there is something you can do to introduce change. Volunteer as a steward to help make your local competition run smoothly. Or get involved in judging. You will be welcome as an apprentice judge, especially at smaller competitions. With expe-

rience you will be given increased responsibility to help choose the winners, as well as opportunities to taste many great beers along the way.

So next time you prepare to enter a competition, remember these guidelines. Brew good beer — the kind the judges like — according to recognized style criteria. Use standard bottles if only for sending to competitions. Make sure the beer arrives in good condition. And hope for that extra bit of luck to place your beer in the winner's circle.

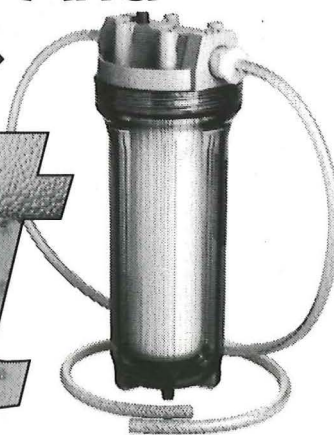
Steve started judging in 1990 and is currently a National BJCP judge with experience at more than 40 competitions. He organized Denver's first round of the National Homebrew Competition for 1993 and 1994, and was a best-of-show judge in 1995. Steve has entered and won awards at many regional competitions including first place for a bock at '92 NHC and second place for a wheat beer at '93 NHC. He's currently a member of the Oregon Brew Crew in Portland, Ore. His day job is a unix computer system administrator at Intel Corporation in Hillsboro, Ore.

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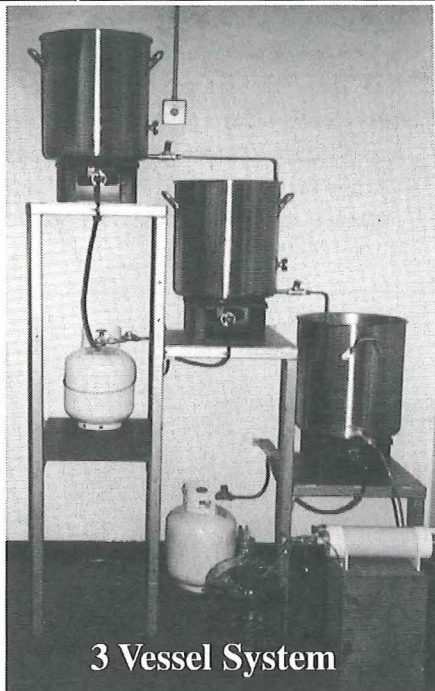
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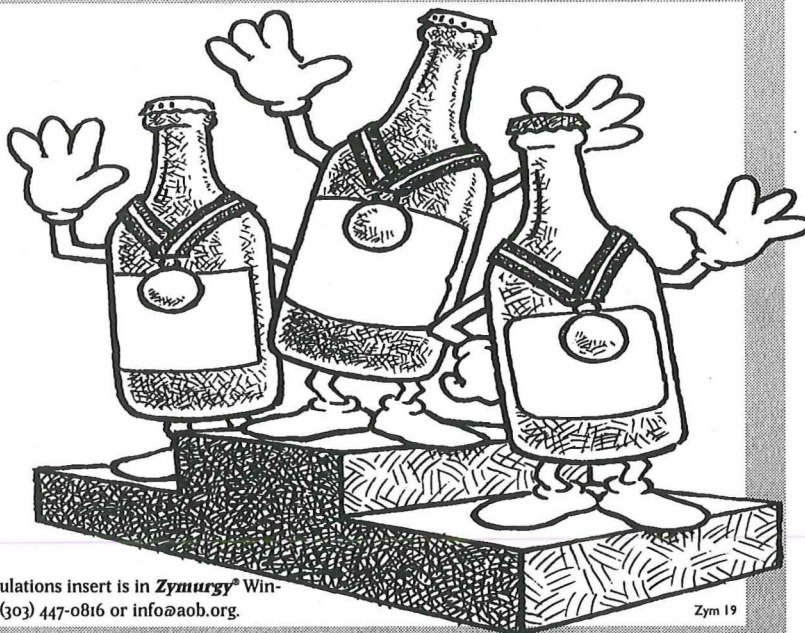
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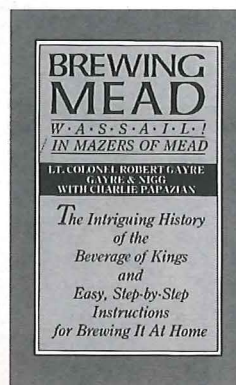
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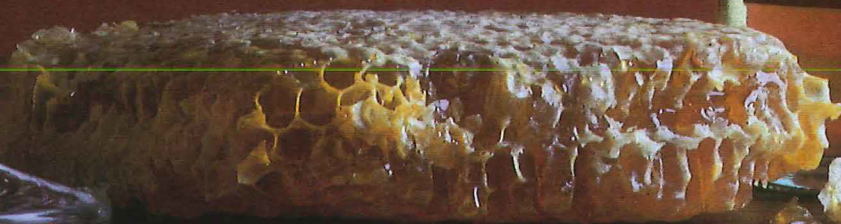
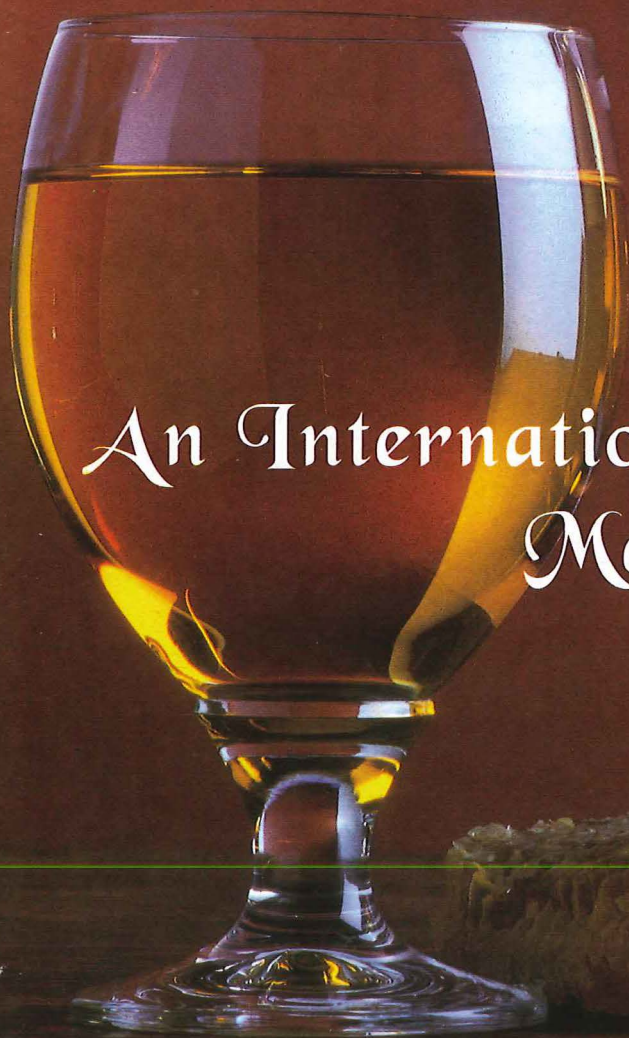


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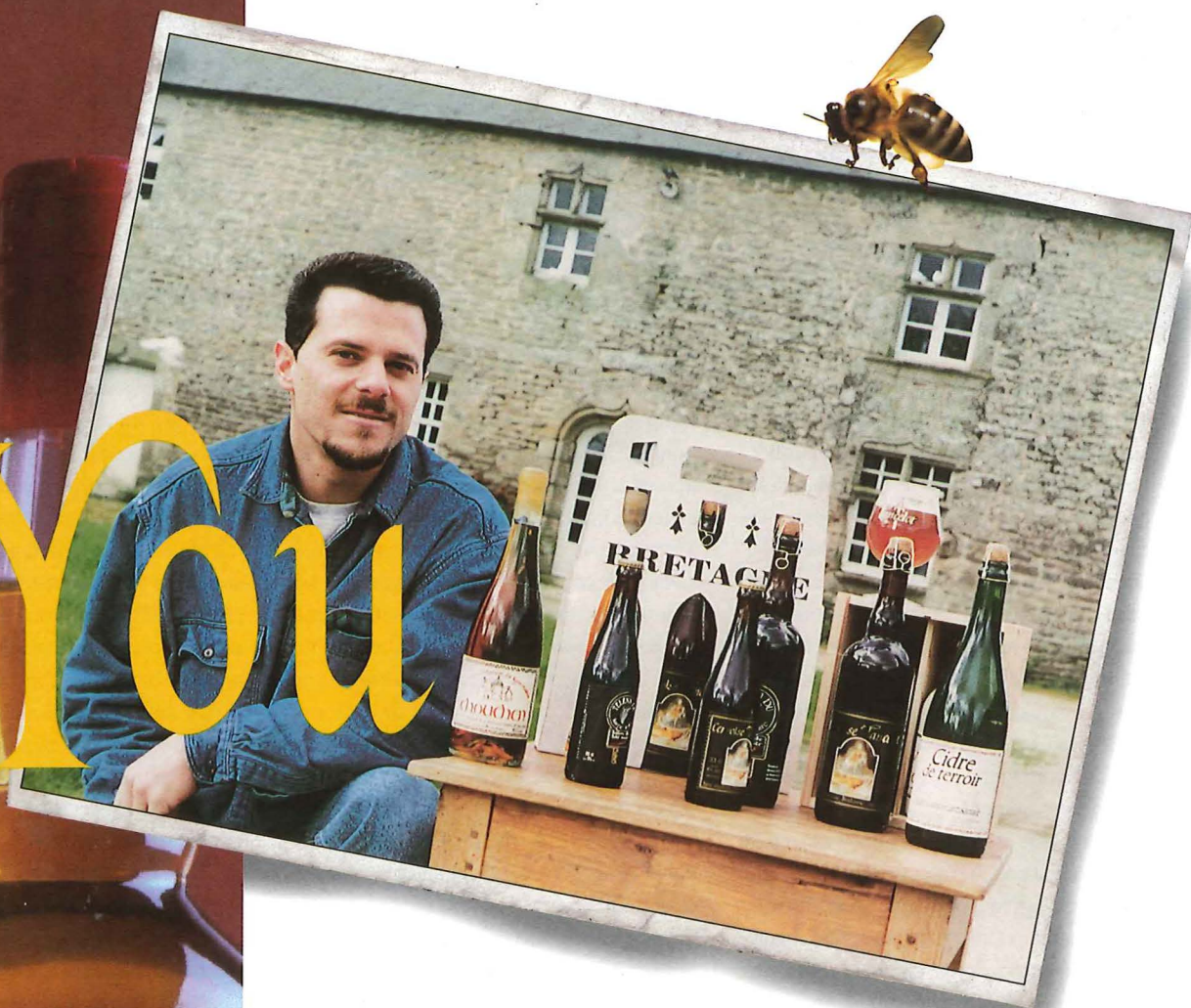
# Mearring

An International  
Meadery Tour





# You



By Jim Martella



Mead's own presence in Europe is growing and mead continues to gain popularity here in the United States. Mead may be one of the world's best-kept secrets. The variety is spectacular. Think about it – different countries, different beers, incredible beers, why shouldn't you expect incredible meads?

In 1990 I finished a year of study in the south of France, completing a master's degree in French literature, and was on my way to the Nice airport en route to the States. Wandering down the narrow country roads leaving the Maures (a mountain chain), I tried not to forget the beautiful country I would soon be leaving. Then I saw a sign that read "hydromel." It was an intriguing word and I begged my friend to stop. I think if I had not read about mead in Charlie Papazian's book, *The Complete Joy of Home Brewing* (Avon, 1984), I never would have stopped to figure out why the word "hydromel" seemed so familiar, so *déjà vu*. For the etymologist hydro means water and mel, a word derived from *miel*, means honey. A serendipitous discovery on my last day in France to be sure.

PHOTO BY GALEN NATHANSON. PHOTO OF JIM MARTELLA AT BERNARD LANCELOT'S MEADERY AND MICROBREWERY COURTESY OF THE AUTHOR. ALL BEE PHOTOS COURTESY OF THE NATIONAL HONEY BOARD



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I stopped briefly at the beekeeper's farm and bought a bottle of mead and hurried to the airport. I had forgotten the mysterious bottle for perhaps six months until one day I opened my closet, contemplating which homebrew to enjoy and there it lay, possibly the finest mead in the world yet still unknown to me. I chilled the bottle of French pyment-style mead and opened it that evening with friends. Dumbfounded, we exchanged wide-eyed stares. I can still remember the silence after the first sip, then the oohes and aahes of my friends savoring the joy of drinking a beverage so extraordinary.

That bottle of fermented honey water had me hooked. I became fascinated by mead and began making it at home, corresponding with a new friend in France, talking to the American Mead Association in Grand Junction, Colo., while desperately trying to find American-produced mead and finding none. Many commercial American-made meads now exist (see p. 63) and are available at liquor stores.

In 1995, five years after that first "mead-ing," I found myself back on a plane headed for Paris. This time I was leaving home with five years of research on mead and two years of experience as a microbrewer neatly stored in my head. This time however, I took a list of about 25 addresses of meadmakers in four countries. My visit would last just two weeks.

This quest resulted in one of the most educational and enjoyable two weeks of my life. Although, in my experience, the French are very reluctant to show their meaderies to strangers, even to me, and I speak French better than English.

My first stop was in Vidauban, France. I had to visit Jean Claude Daval, the man who had placed first in the pyment mead category of the 1994 Ambrosia Adventure in Denver with his commercially made mead. He has a small organic farm in the south where he produces honey. Jean Claude

uses a white organically grown grape juice for his pyment as well as his own organic honey. He uses clover honey in combination with wildflower honey he gets from another of his farms somewhere along the Franco-Swiss border. This extraordinary sweet mead conditions in oak for six months. As a result it has a prominent oak character in both flavor and aroma. It has been spontaneously fermented, contains no additives such as acid blends or yeast energizers and the honey has not been heated. In fact, I would say that Jean Claude makes the best mead I've ever tasted.

While in the south I spoke to several beekeepers at the local market. One of them opened his truck and sold me two bottles from his three-case collection of a 10-year-old *sec* and *demi-sec* mead brewed by one particularly famous meadmaker, Alfandery, who passed away 10 years ago. He was the last in a long family tradition of meadmaking since the 16th century. As the story goes, Alfandery was the finest meadmaker in France and his house, in the Avignon area, had the largest library on mead. I have yet to taste this 12-year-old mead. I guess I'm waiting for the right occasion.

The next mead-producing region in France is also the largest, located in the northwest. This is the land of the Celts, mysterious enchanted forests, Tristan and Yseut, the land of Asterix and Obelix, Brittany, Normandy, the Côtes D'amour, Finistere and Morbihan. These are the regions of France where mead-making has developed for centuries and the tradition continues today.

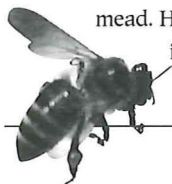
When I arrived in the city of Nantes, the first thing I did was go to a *hypermarket* (a megastore) to see if mead was as prevalent as I had heard. Much to my satisfaction, I found four or five different meads on the shelf and added four more bottles to my collection. Further north, in Vannes, you can enjoy a glass of hydromel at almost any café. The variety

of meads in France is almost comparable to the various wines produced. The regions vary widely in indigenous vegetation in addition to fruits and vegetables farmed, which leads to diverse, complex honey flavors. The honey available in France varies regionally and differs greatly from American honey. Imagine a mead made from lavender or acacia honey! Other honeys include Tileul, thyme, rosemary, heather and chestnut.

While roaming about northern France, I found meaderies dot the north much like microbreweries do in Colorado. It would literally take three weeks and two iron livers to visit them all. After some time I began to understand the French meadmakers, their techniques, their proud attitude toward mead and its production. I realized their attitude differs greatly from those of most American homebrewers and commercial meadmakers. In France, mead is compared to a young Bordeaux Grand Cru wine. They believe mead may not be perfect when only a year old, but would be best aged for five or 10 years. One meadmaker proudly said he has several bottles that are 50 years old. He guards them jealously and recommends storing mead for at least 20 to 50 years.

The French use a variety of methods for meadmaking. Some do not heat honey, some do, some do not add any yeast energizers nor acids, others do. Some of the mead is spontaneously fermented. Most of the meaderies do ferment and condition mead for months. Some condition in oak barrels, others use wine yeasts and some in the cider regions use cider yeasts. I have seen recipes that call for ale yeasts, but not one French meadery would even think of using Champagne yeast; in fact, they all had a good laugh at the suggestion. One meadmaker suggested Champagne yeast would make mead that tasted like flat Champagne, not allowing enough honey flavor to express itself as it should in mead.

The French have several classifications of mead. There is *sec*, *demi-sec*, *doux* and *liqueux*, or dry, semi-dry, sweet and liquor-like, respectively. The major yeast used is a Chablis yeast strain. The sweetness of the mead is not determined by the attenuation of the yeast, but rather by the quantity of honey. For example, dry mead calls for starting specific gravities of 1.055 to 1.065 and a final





# Take Your Own Meadery Tour

Here is a list of U.S. and international meaderies. The information is courtesy of the author and the American Mead Association, Grand Junction, Colo.

## Australia

**Mount Vincent Mead**, Jane Nevell, Common Rd., Mudgee, NSW 2850 Australia.

## Canada

**Ferme Apicole Desrochers D**, Marie-Claude Dupuis & Claude Desrocher, 113, rang 2 Gravel, Ferme Neuve, Quebec J0W1C0; (819) 587-3471.

**Intermiel**, Christian & Viviane Macle, 10291, Chemin La Fresnière, St. Benoît (Mirabel), Quebec J0N1K0; (514) 258-2713.

**Le Rucher Bernard Bee Bec & Associates des Hyrdomeliers du Quebec**, Diane Rice & Bernard Blachère, 152, rue Principale Beebe Plain, Quebec J0B1E0; (819) 876-2800.

**Les Entreprises Prince-Leclerc**, 239 Chemin Haut de la Paroisse, St. Agapit, Quebec G0S1Z0; (418) 888-3323.

**Les Vins Mustier Gerzer**, Gérald Hénault, 3299 Route 209, St. Antoine Abbe, Quebec J0S1E0; (514) 826-4609.

**London Winery**, 540 Wharncliffe Rd. S., London, ON N6J2N5; (519) 686-8431.

**Musée de l'Abeille & Les Ruchers Promiel Inc.**, 8862 Blvd. Ste. Anne, Château-Richer, Quebec G0A1N0; (418) 824-4411.

**Rucher Les Saules**, Patrick & Stéphane Vanier, 27, chemin Saxby Nord, Saxby Corner, Granby, Quebec, Canada J2G 8C7; (514) 372-3403.

**Rucher Tete en Fleurs**, CP 222, St. Anaclet, Quebec G0K1H0.

## Costa Rica

**La Abejita Ltd.**, Federico Alvarado, Apartado Postal 783, 1100 Tibas, Costa Rica.

## England

**Lurgashall Winery**, Jerry Schuler, Petworth, West Sussex, England.

**Palace Meade**, Hatfield, U.K.

## France

**M. Andre Lozachmeur Hydromellerie de Cournouailles**, 29300 Baye, France.

**Côtes D'amour**, M. Joel Mercier, La Guefaudiere, 22150 Plemly, France.

**M. Gilles Barbe**, 22230 Merdrignac, France.

**La Ruche Celtique**, 22110 Rostrenen, France.

**Jean Claude Daval**, Lou Rey D'Ageneou, 83550 Vidauban, France.

**M. Alexis Quelen**, 22200 St. Agathon, France.

**M. Patrick Gouedard**, Keriguiniou, 22110 Glomel, France.

**M. Marc Caserta**, Milin Ar Fol, 22160 St. Servais, France.

**Cervoiserie du Manoir de Guermahia**, M. Bernard Lancelot, 56120 St. Servan/Ouste, France.

**M. Jean Francois Durand**, La Cornais 56380 Guer, France.

**M. Daniel Pont de Molac**, 56230 Le Cours, France.

**M. Crolas**, Kervorel 56230 Berric, France.

**M. Jose Nadan**, L'Abeille Vivante, Kercadorcet 56230 Le Faouet, France.

**Pelissier/Freref**, Forcalquier, France.

## Germany

**Immkermeisterin Christa Siebold**, 36289 Friedewald Lautenhausen, Germany.

## Ireland

**Bunratty Mead**, Bunratty County.

## New Zealand

**Havill's Mazer Mead Co. Ltd.**, Leon Havill, Plas-ketts Rd., Fernside, Rangiora, New Zealand.

## Scotland

**Highland Wineries**, Moniac Castle, Iverness, Scotland.

## United States

**ADK Productions**, Daniel Kassa, 5845 Q General Washington Dr., Alexandria, VA 22312; (703) 750-1056; (800) 9647-9957.

**Alaskan Mead Co.**, David Snow/James Jensen, 5915 Lake Otis Pkwy., Anchorage, AK 99507.

**Anderson's Orchard & Winery**, Ben Mortenson, 430 E. U.S. Hwy 6, Valparaiso, IN 46383; (800) 673-2384.

**"As You Like It" Meadery**, 362-370 Main St. Fitchburg, MA 01420; (508) 345-6407.

**Bargetto Winery**, Paul Wofford, 3535 N. Main St., Soquel, CA 95073; (408) 475-2258.

**Berrywine Plantation**, Lucille Aellen, 13601 Glissan's Mill Rd., Mt. Airy, MD 21771-8599; (301) 831-5889.

**Betterbee Meadery**, Wayne Thygesen & Bob Stevens, RR 4 Box 4070, Meader Rd., Greenwich, NY 12834; (800) MEADERY.

**Coventree Meadery**, John Zeron, PO Box 9765, Newark, DE 19714; (302) 292-2239.

**Earle Winery**, John & Esther Earle, Rd. 1, Box 246, Locke, NY 13092; (607) 898-3012.

**HoneyRun Honey Co.**, John & Amy Hasle Box 3172, Chico, CA 95928; (916) 695-2966.

**Inn Wines**, Dick Phaneuf, 4 Elm St., PO Box 464, Hatfield, MA 01038; (413) 247-5175.

**Julius Bochantin Winery**, Julius Bochantin, 115 W. California Blvd., Pasadena, CA 91105; (818) 584-9048.

**Lakewood Mead**, Christopher Stamp, 4024 SR 14, Watkins Glen, NY 14891; (607) 535-9252.

**Life Force Honey & Winery**, 1193 Saddle Ridge Rd., Moscow, ID 83843; (208) 882-9158 or (800) 497-8258.

**Little Hungary Farm Winery**, Frank Androczi Rt. 6, PO Box 323, Buckhannon, WV 26201; (304) 472-6634.

**Mountain Meadows Mead**, Ron Lunder, PO Box 1174, Westwood, CA 96137; (916) 256-3920.

**Oliver Winery**, Bill & Kathleen Oliver, 8024 Hwy 37, Bloomington, IN 47404; (812) 876-5800.

**Pirtle's Weston Vineyards**, Elbert & Trisha Pirtle, Weston, MO 64098; (816) 640-5728.

**Rocky Mountain Meadery**, Fred & Connie Strothman, 3701 G Rd., Palisade, CO 81526; (303) 464-7899.

**Volcano Winery**, PO Box 843, Volcano, HI 96785; (808) 967-7479.



gravity of 1.000, sweet mead ranges from 1.085 to 1.090 with a final gravity of 1.000, and liqueur-style mead has a starting gravity between 1.100 and 1.120, with a final gravity of 1.005 to 1.020.

All the French meadmakers agreed on one thing: a good mead is not made in a hurry. I believe this constitutes the major difference between European and American mead. The mead producers in the States are caught up in the "now" generation, quick fermentations, shortened conditioning time and ultra filtration, all of which strip certain characteristics from the honey and the resulting mead, making it an inferior product compared to European counterparts. In Europe, the majority of meadmakers ferment their product up to four months and condition at least that long.

On the rare occasions I was given a tour of the meaderies I saw the normal equipment that one would expect to find in a meadery — plate and frame filters, Italian-made conditioning tanks, huge oak vessels, kettles, mixing tanks and expensive bottling machines that would make a microbrewer drool. One meadery, run by Bernard Lancelot and buried deep in the forests of Morbihan in Brittany, was actually a meadery and a microbrewery. I found this impressive because it would be a dream come true for me to brew beer and mead in the same place.

In the United States commercial mead-making requires a winery license. The French are free to brew beer and make mead under the same license. The closest an American brewer can come is to produce braggot, a sibling of mead, made with honey and at least 25 percent malt. I was impressed because this particular brewery/meadery had revived a beer style referred to as "cervoise," lost long ago with the Celts. Cervoise is a brew made with malt, honey and herbs (Bernard wouldn't tell me which local herbs) as well as a local cereal known as *ble noire*, black wheat or Sarrasin.

One thing the French had in common was that most of them assured me they were the best meadmakers and that there is only one type of mead — traditional still mead. Meadmakers who produce flavored meads such as pyment and cyser do not have the right to sell it under the name hydromel. In the north, where the older generation still speaks Celtic, they scoffed at me, thinking

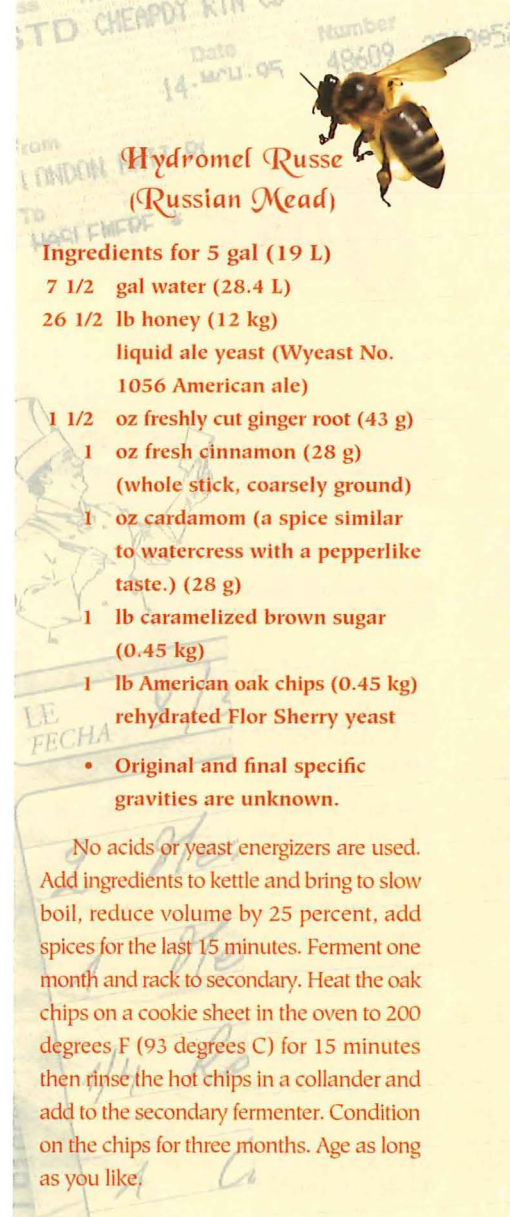
I was a southerner because I used the term hydromel. In the north mead is not referred to as hydromel, but rather by the Celtic word "chouchen" (pronounced shu-shen).

I tasted a variety of meads in France, all of which in my opinion were better than any American-produced mead I've tasted. The pyment made in the south ranks first in its class. There was the excellent 10-year-old cyser with an incredible apple nose and tartness well-balanced with honey, produced by Patrick Gouedard, who lives in the cider-producing region of Brittany. There was the excellent spiced mead produced by Lancelot and a very good still mead with a warm amber color and caramel aroma produced by Gil Lozachmeur.

Next I visited meaderies in England and Scotland. Some called their product mead (I won't mention any names), but I disagree after seeing how their "mead" was made — there was no fermentation of the honey at all! Some producers purchase bulk white wine, heat the honey to a less viscous state, add it to the wine, filter through a plate and frame filter, and add ethanol. Be careful of labels that read "meade," because regulations surely required them to change the spelling of the word for a reason. These "meades" are not all that bad. The two I tasted had a pronounced winelike character to them, naturally, and lots of alcohol. Of course, with ethanol added to stabilize the mead it would be difficult to not taste it.

On a more traditional note, I tasted several of the best meads in southern England at Lurgashall Winery. One dry mead had been conditioned for seven years in an oak barrel that was previously used for the production of single malt scotch. It was the best dry mead I have tasted. It had scotch aromas mingled with other single malt scotch characteristics and was nothing less than fantastic. In addition, Lurgashall Winery makes a great still sweet mead with a bit of a buttery (diacetyl) flavor that enhanced the overall character.

The English meaderies I visited were few and far between. In my opinion there is only one true meadery in the United Kingdom, The Lurgashall Winery, which supplies the royal family. The royals must like the mead, too, because I doubt any of the other meaderies get letters from the Queen of England thanking them for the



**Hydromel Russe (Russian Mead)**

**Ingredients for 5 gal (19 L)**

- 7 1/2 gal water (28.4 L)
- 26 1/2 lb honey (12 kg)
- liquid ale yeast (Wyeast No. 1056 American ale)
- 1 1/2 oz freshly cut ginger root (43 g)
- 1 oz fresh cinnamon (28 g) (whole stick, coarsely ground)
- 1 oz cardamom (a spice similar to watercress with a pepperlike taste.) (28 g)
- 1 lb caramelized brown sugar (0.45 kg)
- 1 lb American oak chips (0.45 kg)
- rehydrated Flor Sherry yeast
- Original and final specific gravities are unknown.

No acids or yeast energizers are used. Add ingredients to kettle and bring to slow boil, reduce volume by 25 percent, add spices for the last 15 minutes. Ferment one month and rack to secondary. Heat the oak chips on a cookie sheet in the oven to 200 degrees F (93 degrees C) for 15 minutes then rinse the hot chips in a collander and add to the secondary fermenter. Condition on the chips for three months. Age as long as you like.

wonderful beverage. Shakespeare said, "A pint of ale is a dish for a king," so perhaps a glass of mead is fit for the queen.

The Moniac Castle meadery in Scotland makes a very sweet dessert-style mead that I found too bitter. The color was a bit darker than an English brown ale and was made (I think) with an abundance of wildflower honey, which gave it both bitterness and color. It was one of the sweetest meads I have tasted and was quite viscous.

Finally, although I have not been there, Leon Havill in New Zealand produces a wide variety of mead styles: traditional, melomel, mead liqueur and a metheglin, to name a few. On this leg of the tour the meads came to me through correspondence with Leon. All of the meads he sent were excellent. Leon uses a special yeast that he calls his own. He said he does not heat or boil his honey



and adds no sulfites or acids. The advantage is that more honey aroma and flavor are expressed in his meads than some American commercial varieties that are blends of fruit wine and honey, which I find bland, tart and rather acidic.

To be sure, mead thrives in England, France, Scotland and Ireland, but also exists on the global scale. In Germany it is called "met," in Italy, "idromele." I have heard that there is Spanish mead, and that mead is well-known in Poland, as well as Holland, Australia, Canada, Russia, South America, Japan

(a great honey plum wine), Israel and more countries to be sure.

So on your travels be sure to "mead" the locals, you just might be surprised.

Jim Martella, who has a master's degree in French literature from San Diego State University, has been working as a brewer for Left Hand Brewing Co., Longmont, Colo., for two years, judges AHA homebrew competitions and works as a mead specialist for Blancheflor Imports of Lafayette, Colo., and sleeps sometimes, too.

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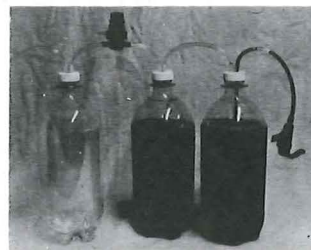
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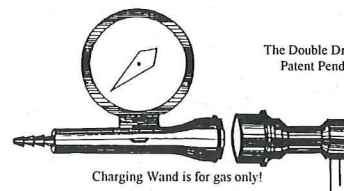


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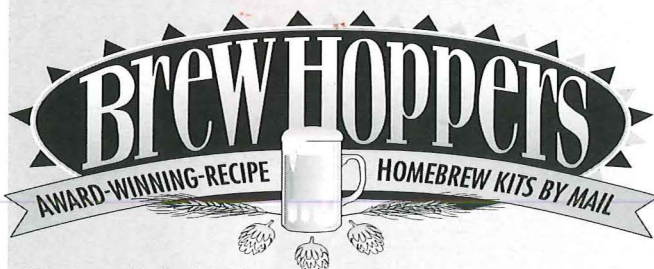


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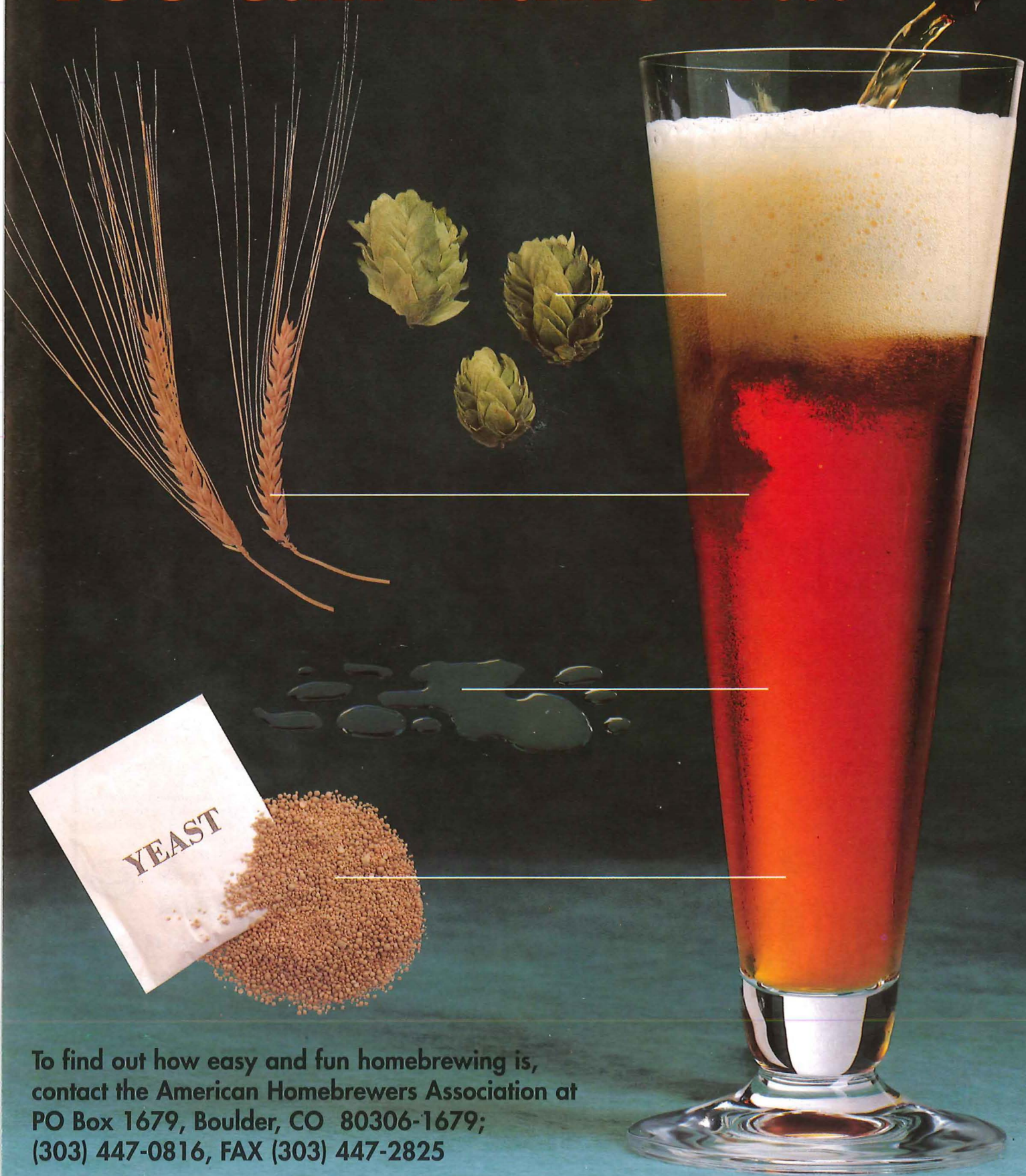
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# FOR THE BEGINNER

Jeff Shurts

## Easy Starter Steps

**B**e forewarned! You are now reading the words of a liquid-yeast bigot. If you're using dry yeast and are perfectly content with your beer, read no further. If, however, you are looking for ways to improve your brew, read on.

Before I clear my throat and assume the soapbox, let me concede that it's possible to make very good beer using dry yeast. A quality dry yeast can be every bit as good as a liquid culture. However, I believe there are drawbacks to using it exclusively. First, your choices of yeast strains are limited. There is a vast array of yeast strains available, each of which imparts its own signature to the overall flavor profile of your beer. Many strains are available only in liquid form. In fact, modern industry has not yet found a way to successfully package bottom-fermenting lager yeasts in dry form, so if you want to brew a lager using a true lager yeast strain, you'll have to use a liquid culture. The other problem with dry yeast is that its quality (cleanliness, purity and viability) can vary. There are very good dry yeasts available, but there are some poor

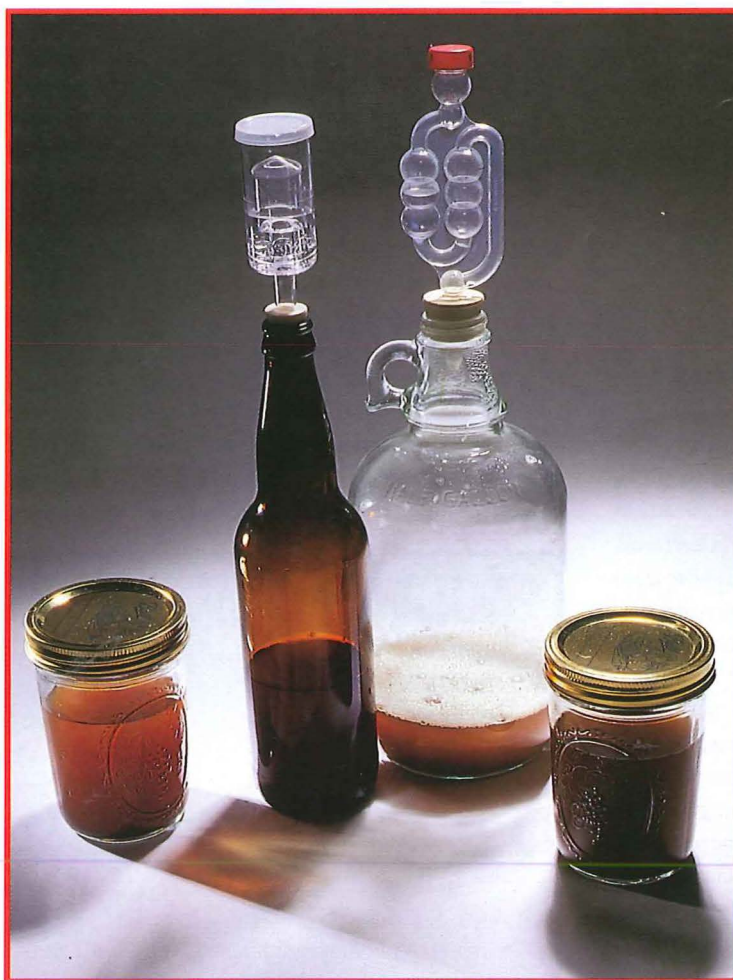
ones as well. The purity, and therefore quality, of liquid cultures is less likely to vary from sample to sample.

All that said, I'd still suggest using dry yeast when you're first starting out. You have

too many other things to worry about (like adding hops and stirring with one hand while holding your favorite homebrewing tome in the other). Like most beginning brewers, I used the yeast pouches that came

with the kits for my first several batches. And, like most beginning brewers, my beers improved with each successive batch as, through diligent reading and even more diligent wrong turns in the kitchen, I picked up tips and tricks of the trade (technical stuff, like it's not a good idea to use a dish towel to strain hop pellet residue when transferring from boiler to primary fermenter, but I digress). Once you have your technique down and feel comfortable with the overall brewing process, it's time to start working on taking your beers to the next plateau. For me, that was when I started using liquid yeast cultures.

If nothing you've read so far has you ready to run to the kitchen and start boiling up some wort, here are a couple more points to ponder. First, by making





a yeast starter, you will be establishing a relatively large population of healthy, active yeast. Pitching this into your finished wort (as opposed to a small culture or freshly hydrated dry yeast) will help reduce the "lag time" before fermentation begins in earnest. It is this lag time that gives bacteria and other nasty creatures a crack at the fermentable sugar in your wort. Large healthy populations of active yeast equal shorter lag times which mean fewer infections in your beer, and less detectable off-flavors when they do occur.

Finally, making a starter from a liquid culture actually will make brewing easier. Because yeast starters are made ahead of brewing day, they are ready to go when your wort is cooled and awaiting the opening pitch. With dry yeast packets, you have the extra hassle of rehydrating the yeast while brewing your beer. This is not insignificant. It means boiling the water you will use to hydrate the yeast, cooling it to just the right temperature and giving the hydrated yeast ample time to sit before pitching, while maintaining sanitary conditions throughout the process. All this while tending to a wort that might boil over and simultaneously poring over your recipe to see what you'll be doing next. Things happen fast enough in the kitchen on brewing day without having all this to worry about. And as we all know, worrying is off-limits while brewing.

## Doing It Right: Making Starters

Now then, let me make a graceful dismount from high atop the soapbox. If I've been at all persuasive you are now ready to start brewing with liquid yeast (or at least making starters for dry yeast). So it's time to learn all about making starters. Obligatory opening statement: Relax, don't worry, have a homebrew. OK, so we're talking about microbiology here. That doesn't mean it's hard. Think of making a starter as the brewing process in miniature. Same ingredients, same steps, only it's much less time-consuming because you're dealing with ounces instead of gallons. Basically you need to select a liquid yeast culture, make some wort then combine the two a few days before you plan to brew. Fear not, ye knights of the round vessel. Read on!



## Where To Get Yeast Cultures

So you're ready to use liquid cultures and promise to make starters. You face the question of what yeast to use. This is a good problem. It means you have choices, not only in terms of the type of yeast but also in terms of where to get it. Here's a brief list:

**Your local micro.** For those fortunate enough to live near a microbrewery, it is often possible to make arrangements with the brewmaster to acquire some of the dregs from their fermenters. Call the brewmaster to see if he or she would be willing to give you some yeast slurry, and arrange a convenient time to stop by with a sanitized canning jar or some other adequate vessel. Because of the scale of brewing involved, the yeast will be plentiful and, if the brewmaster is careful, the yeast will be free of contaminants. Because of the volume involved, you won't need a starter if you use the yeast within two or three days of the time it was harvested. If you can't use the yeast right

away, fear not. Stick it in your refrigerator until you're ready to make a starter.

**Your homebrew shop.** If you don't live near a micro, don't fret. Most homebrew shops offer liquid yeast cultures for between \$3 and \$4 each. The number and quality of yeast strains available to homebrewers in this manner have never been greater (see *Zymurgy* Summer 1994, Vol. 17, No. 2). If your local shop doesn't carry the yeast, take a quick peek through this magazine and you'll find several that do. Some cultures are packaged in "smack packs" containing a yeast culture and a small amount of sterile wort. By breaking an inner seal with your hand, you mix the yeast with the wort and the yeast begin to multiply. Once the inner seal is broken, keep the pouch at room temperature. Other labs package yeast in large plastic "test tubes" with screw-on lids. I have used both types with equal success. Whichever style you select, store it in the refrigerator until you are ready to make a starter.

**Your favorite liquor store.** For the more adventurous (or spendthrift), many sources of "free" yeast are available. Many imported and microbrewed beers are bottle conditioned and have yeast residue in the bottom of the bottle. The "dregs" are typically not as plentiful as in a bottle of homebrew, but are nonetheless sitting there waiting to be revived from their alcoholic slumber. To try this for the first time, I recommend culturing from Sierra Nevada Pale Ale (you'll be harvesting the famous Chico ale yeast, said to be the American ale strain offered by popular yeast providers). I've used it several times without a hitch. The thing to consider when shopping for these 12-ounce cultures is freshness. Select beer that has been on the shelf for no more than four months, if possible.

## EQUIPMENT LIST

### THE STARTER WORT

- ✓ light dry malt extract
- ✓ water
- ✓ saucepan
- ✓ canning jars and lids

### THE YEAST CULTURE

- ✓ smack pack or test tube culture
- ✓ slurry from a micro- or homebrewery
- ✓ two bottles of bottle-conditioned beer

### THE STARTER

- ✓ starter wort
- ✓ yeast culture
- ✓ sanitizing solution
- ✓ one-half gallon glass jug or some other glass jar
- ✓ airlock and stopper to fit jar
- ✓ butane lighter (if using yeast from a commercial bottle of beer)
- ✓ scissors (if using a smack pack)
- ✓ tablespoon (if using slurry)
- ✓ funnel



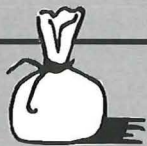





**Your own homebrewery.** If you have even one batch under your belt, you've noticed the thick layer of yeast, sometimes called a yeast cake, on the bottom of your fermenter after siphoning the beer away. If handled with reasonable care to avoid contamination, this yeast can be recycled and used in a future batch. To save yeast, sanitize a canning jar and an ordinary funnel. Then sanitize the mouth of your carboy. Do the same to the rim if you're using a plastic bucket by using a cotton ball moistened with iodophor solution. Rinse the funnel and container with preboiled water then pour the slurry through the funnel into your jar. Go ahead and fill it up — the more you save, the more viable yeast you'll have when you make your next starter. Screw on the lid and pop it in the fridge. It will keep for several weeks this way. For other storage tips and techniques, check out *The Home Brewer's Companion* by Charlie Papazian (Avon, 1995).

Another good way to recycle yeast is to reculture it from a bottle of your beer. If you can make a starter from the dregs of a commercial beer, why not use your own? Just make sure it's a batch that doesn't suffer from any off-flavors, which could be a sign of contamination (no need to pass that along to the next batch). A final word of caution: most experts advise reculturing no more than three times, whether from your fermenter or from bottles. Even a contaminant-free yeast will eventually suffer from mutation (random creation of cells that exhibit different genetic characteristics from the original strain). Mutant forms can multiply rapidly, eventually outnumbering cells of the original strain. It's best to play it safe and start from a fresh culture every few batches.

## When and How To Make a Starter

One thing to consider when deciding to make yeast starters is that a bit more planning is required. You won't be able to wake up some Saturday morning and decide to brew that afternoon. Yeast starters take time to grow. On average, most fresh cultures will reach high krausen (peak activity) within two days after you mix the starter together. The perfect time to pitch is just after high krausen, when the

Procedures	
<p><b>To prepare STARTER WORT:</b></p> <ol style="list-style-type: none"> <li>(1) Pour 16 ounces of water into a saucepan.</li> <li>(2) Bring the water to a boil.</li> <li>(3) Put funnel, canning jar and lid in sanitizing solution.</li> <li>(4) Add three or four tablespoons of light dry malt extract to the boiling water. Stir.</li> <li>(5) Boil for 15 minutes, watching for boilovers.</li> <li>(6) Put a few inches of water and ice in the sink.</li> <li>(7) Place the lid on the pan tightly and place the pan in the ice bath for about 10 minutes.</li> <li>(8) Remove the pan from the ice bath and let it sit on the counter for a minute.</li> <li>(9) Rinse the funnel, jar and lid.</li> <li>(10) If the bottom of the pan feels like it is room temperature, pour the wort into the jar and put the lid on snugly. If the pan still feels hot, return it to the ice bath.</li> </ol>	
<p><b>To prepare a starter with a SMACK PACK:</b></p> <ol style="list-style-type: none"> <li>(1) Bring starter wort to room temperature.</li> <li>(2) Sanitize smack pack, scissors, glass jug, airlock and stopper.</li> <li>(3) Rinse glass jug, smack pack and scissors.</li> <li>(4) Pour starter wort into glass jug.</li> <li>(5) Cut corner off smack pack and pour contents into glass jug.</li> <li>(6) Rinse stopper and airlock and place on glass jug.</li> </ol>	
<p><b>To prepare a starter with BOTTLED BEER:</b></p> <ol style="list-style-type: none"> <li>(1) Bring starter wort and beer to room temperature.</li> <li>(2) Sanitize glass jug, airlock and stopper.</li> <li>(3) Rinse glass jug.</li> <li>(4) Pour starter wort into glass jug.</li> <li>(5) Open bottle and flame opening with butane lighter.</li> <li>(6) Decant beer into glass, reserving the last ounce.</li> <li>(7) Flame opening of beer bottle with butane lighter again.</li> <li>(8) Pour dregs into glass jug (repeat steps 5-8 with the second bottle of beer).</li> <li>(9) Rinse stopper and airlock and place on jug.</li> </ol>	
<p><b>To prepare a starter from SLURRY:</b></p> <ol style="list-style-type: none"> <li>(1) Bring starter wort and slurry to room temperature.</li> <li>(2) Sanitize glass jug, tablespoon, airlock and stopper.</li> <li>(3) Rinse jug.</li> <li>(4) Pour starter wort into jug.</li> <li>(5) Rinse tablespoon.</li> <li>(6) Scoop out two tablespoons of slurry and pour into jug.</li> <li>(7) Rinse stopper and airlock and place on jug.</li> </ol>	

fermentation begins to slow down. And, if you're starting from a smack-pack-style culture, you'll want to plan on breaking the seal two to three days before making your starter to activate the contents.

If you're planning to brew a "big" beer (with an original gravity of 1.070 or higher), you would do well to pitch twice as much yeast to get a vigorous fermentation started early. In this case, allow another two or three days to step up your first starter into a double-size starter. It's not hard work, it just requires a little forethought.

Making a starter is a very simple procedure. Culturing from very small colonies (slants or plates) is not difficult, but is beyond the scope of this article.

On the day you plan to make a starter you'll need a suitable culture. This could be an active smack-pack (puffed up), a culture purchased in a test tube, a couple bottles of bottle-conditioned beer so you can use the dregs or a tablespoon or two of yeast slurry from a previous batch of beer (yours or a micro's). In any case, the yeast should be at room temperature to avoid shock when adding it to your wort. If it's been in the fridge, take it out a few hours before you plan to use it to give it some time to warm up slowly.

Once you have a yeast source, gather and sanitize your equipment. You'll need a suitable container. This could be a wine bottle, 22-ounce (650-mL) beer bottle, "growler" (half-



gallon or one-gallon glass jug) or a similar vessel. You'll also need a funnel, a pair of scissors (if using a smack pack), a butane lighter (if using dregs from a bottle of brew) a tablespoon (if using slurry from a micro- or homebrewery) and something to cover your starter (stopper and airlock). Toss everything except the lighter into a clean sink or bucket of sanitizing solution.

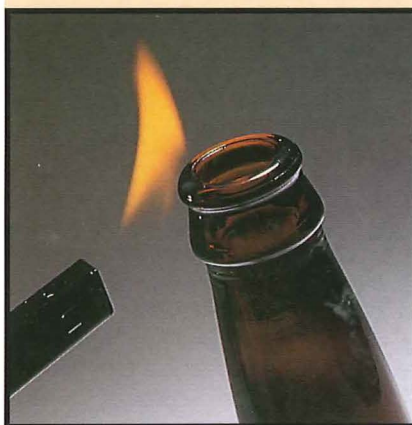
Now, measure 16 ounces (473 mL) of water into a saucepan or other small boiling vessel with a lid. Bring it to a boil and add three to four tablespoons (44 to 59 mL) of dry malt extract. Stir well to prevent the extract from scorching. Cover the pan loosely and boil for 15 minutes watching for boilovers.

After boiling, place the lid on tightly and set the pan in a shallow sink of ice water. Take care not to let it float or tip; you don't want any non-sanitized water coming in contact with your wort. Let it sit for about 10 minutes, then remove the pan from the ice bath. Let it sit on a counter top for a minute. Then, if the bottom of the pan feels like it's room temperature or lower, you are ready to proceed. If you want to be absolutely sure your wort is room temperature, sanitize a thermometer, dip it in and see for yourself.

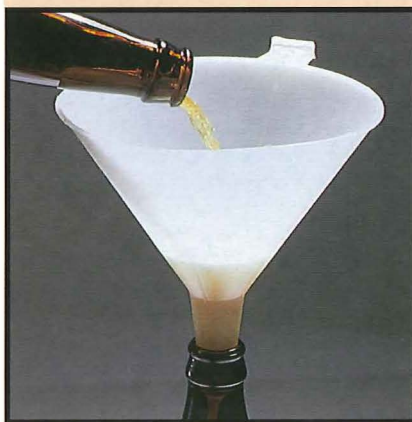
Remove your starter container and funnel from the sanitizing solution. If you need to rinse (recommended if using bleach to sanitize), you can do so with preboiled water or an inexpensive commercial beer (see *Zymurgy* Fall 1995, Vol. 18, No. 3). Now, pour your sanitized wort from the saucepan into the bottle. Next, add the yeast culture.

If using a smack pack, sanitize the pouch and your pair of scissors, shake then cut open the pouch and pour it in.

If using dregs from a beer bottle, open the bottle then flame the mouth with a butane lighter. To do this just run the flame along the mouth of the bottle at a steady pace for two or three seconds, that's enough to kill any beasties living on the glass. Now, slowly decant the beer into a glass (don't touch the mouth of the bottle to anything) until you have about an ounce left. Swirl the remaining beer around a bit to loosen any yeast that may be stuck to the bottom, flame the mouth of the bottle once more, then pour the yeast slurry into your starter. Repeat this process until you've pitched the dregs of two 12-ounce bottles into your 16-ounce starter. If using slurry from a micro-



**Flame the mouth of the beer bottle (above) before decanting the beer and again before pouring the dregs into a prepared starter (below).**



brewery or homebrewery, add a tablespoon or two of the slurry to the starter. Don't pitch slurry that's been sitting around more than a few weeks; byproducts of dead yeast can impart some off-flavors to your precious brew. (To find out why, look for a section on autolysis in your favorite homebrewing book).

Rinse your stopper/airlock and fix to the top of your starter container. Presto! The hard part's done. Your sterile starter is effectively sealed off from the world.

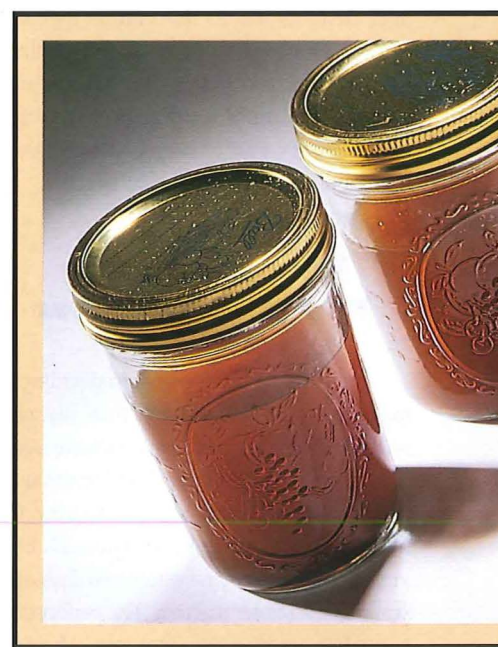
Now, shake the starter vigorously to oxygenate the wort. Dissolved oxygen in the wort feeds growing yeast in turn reducing the amount of time your starter will need to grow. Shake for at least 30 seconds immediately after preparing the starter. Then place the starter somewhere reasonably warm and away from direct sunlight. It helps to shake the starter every 12 hours or so over the next day or two; this will reintroduce yeast into the wort that will have settled to the bottom.

## What if I Can't Brew When I Planned To?

Your starter will be ready to pitch within three or four days after you made it. It is best to pitch the contents just after high krauesen. If this is impossible (I know, sometimes the world refuses to wait while we brew a batch of beer), fear not. After krauesen has subsided, most of the yeast will have settled to the bottom of your starter. Think of it as a really big bottle of beer with healthy sediment at the bottom. Pop your starter into the fridge for storage. If your refrigerator is like mine, it won't have a handy compartment for a 22-ounce bottle with an airlock on top. No worry — if all signs of fermentation (bubbles in the airlock) have subsided, it is safe to cap the bottle with a sanitized bottle cap or screw on a sanitized growler lid for storage. Now, three or four days before your next brew date, just make another starter from the dregs, following the instructions above for culturing yeast from a beer bottle.

## The Opening Pitch

When brewing day finally arrives, you will have a nice, healthy yeast culture ready to go. If your starter is just past high krauesen, you will want to pitch the entire





contents of your starter. If your starter is well past this stage and the majority of the yeast has settled out of suspension, you may want to pour off some of the liquid before swirling and pitching. This brings up another issue to consider: If you are making a delicate beer (such as a Pilsener) that has very specific color and aroma demands, you won't want to pitch a significant volume of liquid with your starter if it doesn't precisely match your beer. For example, say you're brewing a Pils but made a starter from amber malt extract because it was all you had lying around. Pitching even 16 ounces (473 mL) of amber extract with your yeast could be enough to darken the beer to an unacceptable color, or add uncharacteristic flavors from crystal malts that were used to darken the extract. To avoid this problem, make your starter with extra light dry malt extract or make it a day earlier than normal to give the yeast some time to drop from suspension, then decant most of the liquid off before swirling and pitching the bottom quarter to one-third of the liquid. And don't forget to sanitize the mouth of your starter container by wiping with iodophor, flaming with a lighter, or both.

That's it. Pour your yeast into the fermenter, shake it until your back hurts and go away. You have just inoculated your wort with a culture of pure brewing yeast that's precisely matched to the style of beer you are making. Your taste buds will thank you.

## Bulk Starter Production

You can save time by preparing a gallon of starter wort, "canning" it in one-pint jars and storing them in the refrigerator until needed. Boil one pound of light dry malt extract in one gallon of water for 15 minutes monitoring carefully to avoid boilovers. Pour the hot wort into eight cleaned and sanitized canning jars and fit the cleaned and sanitized lids on snugly. Put the jars in the refrigerator until needed. As the wort cools, the canning jar lid will seal securely.

These jars of wort can be used to make starters, build up the volume of starters or "feed" starters to maintain the yeast activity.

## Further Reading

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- Ligas, Michael. "Yeast Management Techniques," *Zymurgy* Summer 1994 (Vol. 17, No. 2).
- Rajotte, Pierre. *First Steps in Yeast Culture*, Alliage Éditeur, 1994.
- Weix, Patrick. "Become *Saccharomyces* Savvy," *Zymurgy* Summer 1994 (Vol. 17, No. 2).

Yeast and Beer *Zymurgy* Special Issue 1989 (Vol. 12, No. 4).

During the week, Jeff Shurts is a computer analyst at Illinois Power in Decatur, Ill. Evenings and weekends, he's an avid homebrewer who enjoys reading and writing about beer almost as much as brewing and drinking it. Jeff and brewing partner Terry Banicki have brewed some 30 batches over the course of two years. Jeff is a member of the Central Illinois Brewers Association.

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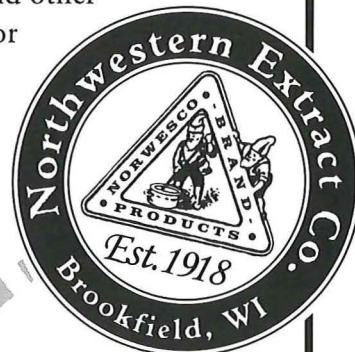
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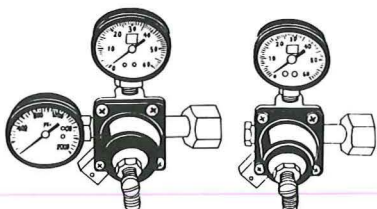
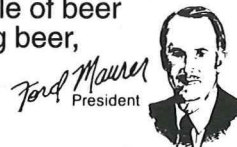
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# WINNERS

C I R C L E

James Spence



**H**ere's a fine assortment of award-winning recipes that should brew up nicely one day if you don't have anything better to do — which, of course, ought to be every day. This collection includes beer styles from all around the world. Savor Ross Hasting's classic American brown ale, or George Fix's rendering of a Dortmunder export lager. Raid the spice cabinet for Carl Laman's herb beer or try those spices in Sally Ilger's mead. It's all up to you. Don't forget to add a pinch of spring fever.

ILLUSTRATION BY LIZ HOWE

## ENGLISH BITTER



**SILVER MEDAL**

**AHA 1995 NATIONAL HOMEBREW COMPETITION**

**Brian Bliss**

**Dallas, Texas**

**"Brian's Bitter's"**

**Extra Special Bitter**

**Ingredients for 4 1/4 gal (16 L)**

- 10 lb pale malt (4.54 kg)
- 2 lb aromatic malt (0.91 kg)
- 2 oz Belgian Special "B" malt (57 g)
- 2 1/3 oz Fuggles hop plugs, 4.1% alpha acid (65 g) (60 min.)
- Wyeast Special London Ale No. 1968 liquid yeast culture
- force carbonated in keg

- Original specific gravity: 1.056
- Final specific gravity: 1.014
- Boiling time: 120 min.
- Primary fermentation: two weeks at 67 degrees F (19 degrees C) in glass
- Age when judged (since bottling): unknown

### Brewer's specifics

Single step decoction mash.

### Judges' comments

"Good malt expression starting right up front. Yields to a fairly bitter middle and a dry finish. Pretty beer with nice complex balance of ingredients. Fairly pale but plenty of kick."

"Alcohol evident, balance OK for style. Could use more maltiness/sweetness. A good beer."

"Alcohol strength evident. Nicely rounded flavor profile. Well-made, clean and complex flavors are nicely blended. A very pleasant beer. Hops provide nice counter to residual sweetness."



## BROWN ALE



### SILVER MEDAL

AHA 1995 NATIONAL HOMEBREW COMPETITION

**Ross I. Hastings**  
**Edmonton, Alberta**  
**"Break in Brown"**  
**American Brown**

#### Ingredients for 3 1/4 gallons (12.3 L)

- 6 lb two-row malt (2.72 kg)
- 11 oz Hugh Baird 75 °L crystal malt (312 g)
- 5 oz CaraMunich malt (142 g)
- 4 1/2 oz chocolate malt (128 g)
- 1/2 oz Centennial hops, 10.2% alpha acid (14 g) (60 min.)
- 1 oz Cascade hops, 6.5% alpha acid (31 g) (20 min.)
- 1/4 oz Centennial hops, 10.2% alpha acid (7 g) (dry)
- 1/2 oz Cascade hops, 6.5% alpha acid (14 g) (dry)
- Wyeast Special London Ale No. 1968 liquid yeast culture
- 1/3 cup corn sugar (79 mL) (to prime)

- Original specific gravity: 1.053
- Final specific gravity: 1.015
- Boiling time: 80 min.
- Primary fermentation: six days at 65 degrees F (18 degrees C) in glass
- Secondary fermentation: 14 days at 65 degrees F (18 degrees C) in glass
- Age when judged (since bottling): seven months

#### Brewer's specifics

Mash grains at 128 degrees F (53 degrees C) for 15 minutes. Raise temperature to 155 degrees F (68 degrees C) for 60 minutes. Mash-out at 180 degrees F (82 degrees C) and sparge with 180-degree-F (82-degree-C) water.

#### Judges' comments

"Some malt with hop flavor and bitterness to balance. Should have more of all three. Not sufficiently bitter."

"Nice hop aroma. Hop bitterness could be higher. Maltiness could be slightly higher. Nice beer."

## BELGIAN AND FRENCH ALE



### SILVER MEDAL

AHA 1995 NATIONAL HOMEBREW COMPETITION

**Thomas J. O'Connor III, M.D.**  
**Rockport, Maine**  
**"T. Duck's Dubbel"**  
**Dubbel**

#### Ingredients for 5 gal (19 L)

- 8 lb Pilsener malt (3.63 kg)
- 1 lb aromatic malt (0.45 kg)
- 1/2 lb CaraMunich malt (0.23 kg)
- 1/2 lb CaraVienne malt (0.23 kg)
- 1/4 lb Belgian Special "B" malt (0.11 kg)
- 1/4 lb brown malt (0.11 kg)
- 3/4 lb candi sugar (0.34 kg)
- 1/2 oz Styrian Goldings hops, 5.3% alpha acid (14 g) (60 min.)
- 1/2 oz Tettnanger hops, 4.5% alpha acid (14 g) (60 min.)
- 1/4 oz Hallertauer Mittelfrüh hops, 4.7% alpha acid (7 g) (2 min.)

Wyeast Belgian Ale No. 1214 liquid yeast culture  
 force carbonated in keg

- Original specific gravity: 1.077
- Final specific gravity: 1.014
- Boiling time: 60 min.
- Primary fermentation: 28 days at 64 degrees F (18 degrees C) in glass
- Age when judged (since bottling): four months

#### Brewer's specifics

Mash grains at 130 degrees F (54 degrees C) for 30 minutes. Raise temperature to 153 degrees F (67 degrees C) for 60 minutes.

#### Judges' comments

"Lots of maltiness, medium hop flavor. Spicy. Bitterness lingers in aftertaste. Perhaps overhopped for style. Very nice beer, but balance lies toward hopiness rather than maltiness."

"Spicy hops stand out from roasted malt background. Very dry. Long bitter finish. Some fruity esters. Well-made, drinkable beer. Dry for a dubbel. More fruity character and less hop would be closer to style."

"Some toasted malt flavor — nice. Sweetish in the middle. Good balance, nice malt flavor. Bitterness increases as it warms — a bit too high for style. A very tasty beer. Lower bitterness slightly, and possibly ferment a little cooler to subdue the esters a little."

"Special 'B' and aromatic malt nuttiness. Perfect! Good malt foundation trails into semidry and complex finish. Spicy finish. Fantastic job."



## BOCK



**BRONZE MEDAL**  
**AHA 1995 NATIONAL HOMEBREW COMPETITION**  
**Mike Bardallis**  
**Allen Park, Michigan**  
**"Bock"**  
**Traditional German Bock**

### Ingredients for 5 gal (19 L)

- 9 lb two-row pale malt (4.08 kg)
- 3 1/2 lb Munich malt (1.59 kg)
- 1/4 lb 80 °L crystal malt (0.11 kg)
- 1/4 lb chocolate malt (0.11 kg)
- 3/4 oz Hallertauer hops, 7.5% alpha acid (21 g) (60 min.)
- 1/2 oz Hallertauer hops, 7.5% alpha acid (14 g) (10 min.)
- Wyeast Munich Lager No. 2308 liquid yeast culture
- force carbonated in keg

- Original specific gravity: 1.072
- Final specific gravity: 1.025
- Boiling time: 90 min.
- Primary fermentation: 18 days at 49 degrees F (9 degrees C) in glass
- Secondary fermentation: 64 days at 29 degrees F (-2 degrees C) in stainless steel
- Age when judged (since bottling): 15 months

### Brewer's specifics

Double decoction mash. Mash-in with 13 quarts (12.3 L) 134-degree-F (57-degree-C) water to reach 124 degrees F (51 degrees C). After 10 minutes, draw off 7 quarts (6.62 L) of the thickest part of the mash for the first decoction. Raise decoction to 155 degrees F (68 degrees C) over 10 minutes, then boil for 15 minutes. Return to main mash to bring temperature to 155 degrees F (68 degrees C). Hold for 30 minutes or until conversion. Remove the thinnest 8 quarts (7.57 L) of the mash for second decoction. Boil for five minutes and return to main mash to raise the temperature to 166 degrees F (74 degrees C) for mash-out. Lauter and sparge to collect 7 gallons (26.5 L) of sweet wort.

### Judges' comments

"Initial impression malty. Finished malty. Very clean and balanced. Finishes slightly bitter. Excellent beer."

"All malt with hint of chocolate and hint of alcohol. A good solid beer."

"Nice malt tongue. Tail is pleasant sweet/alcohol. Very nice balance. Very well-rounded and subtle. Very nice beer."

## GERMAN LIGHT LAGER



**SILVER MEDAL**  
**AHA 1995 NATIONAL HOMEBREW COMPETITION**  
**George Fix**  
**Arlington, Texas**  
**"High Test"**  
**Dortmund/Export**

### Ingredients for 13 1/2 gal (51 L)

- 18 lb Durst Pils malt (8.16 kg)
- 5 lb Durst Munich malt (2.27 kg)
- 2 oz Tettnanger hops, 4.5% alpha acid (57 g) (45 min.)
- 2 oz Hallertauer hops, 4.2% alpha acid (57 g) (30 min.)
- 1 oz Liberty hops, 3.5% alpha acid (28 g) (finish)
- Wyeast Bavarian Lager No. 2206 liquid yeast culture
- force carbonated in keg

- Original specific gravity: 1.056
- Final specific gravity: 1.014
- Boiling time: 90 min.
- Primary fermentation: 10 days at 50 degrees F (10 degrees C) in stainless steel
- Secondary fermentation: six weeks at 35 degrees F (2 degrees C) in stainless steel
- Age when judged (since bottling): three months

### Brewer's specifics

Mash grains at 122 degrees F (50 degrees C) for 30 minutes. Raise to 140 degrees F (60 degrees C) for 30 minutes. Raise to 158 degrees F (70 degrees C) for 30 minutes.

### Judges' comments

"Well-balanced with malt up front and hops sticking. Well-made beer that lacks some complexity. Could use about 5 to 10 percent more bitterness."

"Malty and very rounded up front with DMS coming through in taste. Continues with malty sweetness and ends balanced but bland."





## HERB BEER



**BRONZE MEDAL**  
**AHA 1995 NATIONAL HOMEBREW COMPETITION**  
**Carl Laman**  
**Harwich, Massachusetts**  
**"Santa's Little Helper"**  
**Herb Beer**

### Ingredients for 5 gal (19 L)

- 6 2/3 lb Munton and Fison light malt extract (3 kg)
- 1/2 lb crystal malt (0.23 kg)
- 2 lb clover honey (0.91 kg) (60 min.)
- 4 oz maltodextrin (113 g) (60 min.)
- 2 oz Styrian Goldings hop plugs, 5.7% alpha acid (57 g) (60 min.)
- 1 oz grated ginger root (28 g) (30 min.)
- 1/2 oz crushed coriander seed (14 g) (30 min.)
- 4 three-inch cinnamon sticks (30 min.)
- 5 whole cloves (30 min.)
- 1 oz dried orange peel (30 min.)
- 1/2 oz Czech Saaz hops, 5.3% alpha acid (14 g) (5 min.)
- Wyeast American Ale No. 1056 liquid yeast culture
- 1 cup corn sugar (237 mL) (to prime)

- Original specific gravity: 1.060
- Final specific gravity: 1.010
- Boiling time: 60 min.
- Primary fermentation: 19 days at 65 degrees F (18 degrees C) in glass
- Age when judged (since bottling): five months

### Brewer's specifics

Steep grains until boil.

### Judges' comments

"Seems to be going through acidification. Has a tart almost acetic character. Malt balance seems quite good. Astringent finish. I miss the honey."

"Blended very nicely and the hops come through. Could use more maltiness. Merry Christmas. Well done."

"Full malty beer with interesting spiciness. Clean spicy/malty finish. Very enjoyable spiced beer."

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**Kellogg, Idaho**  
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**Still Traditional Mead**

### Ingredients for 1 gal (3.8 L)

- 3 lb raw desert mesquite honey (1.36 kg)
- Red Star Côtes de Blanc dehydrated yeast in an 8-oz starter
- pinch Irish moss
- 1 teaspoon acid blend
- 3/4 yeast nutrient tablet
- 108 oz water (3.2 L)

- Original specific gravity: 1.112
- Final specific gravity: 1.065
- Boiling time: five min.
- Primary fermentation: three months at 70 degrees F (21 degrees C) in glass
- Secondary fermentation: three months at 55 degrees F (13 degrees C) in glass
- Age when judged (since bottling): three months

### Brewer's specifics

Bring water acid blend and yeast nutrient to boil, add Irish moss. Stir in honey. Bring back to boil. Boil for five minutes, skimming foam. Cool in ice bath to 68 degrees F (20 degrees C). Pour must into fermenter and pitch yeast. Fine with Sparkoloid®. Stabilize with 3/4 teaspoon potassium sorbate dissolved in cold water and stirred into mead prior to bottling.

### Judges' comments

"No off-flavors. Nice balance between acid and sweet. It's a little cloying. Nice effect, a very good sweet mead, but needs some alcohol balance."

"Good honey. Balance very nice. Very good job."

"Very sweet. Not much alcohol evident. Very sweet and delicious. Make more. Keep this recipe."

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### Ingredients for 5 gal (19 L)

- 8 lb malted wheat (3.63 kg)
- 4 lb pale malt (1.81 kg)
- 1/2 lb 60 °L crystal malt (0.23 kg)
- 1 oz Perle hops, 6.3% alpha acid (28 g) (110 min.)
- 1 oz Perle hops, 6.3% alpha acid (28 g) (60 min.)
- 1 oz Hallertauer Mittelfrüh hops, 3.6% alpha acid (28 g) (20 min.)

Wyeast Bavarian Weissen No. 3056 liquid yeast culture

2/3 cup corn sugar (158 mL) (to prime)

- Original specific gravity: 1.075
- Final specific gravity: 1.024
- Boiling time: 120 min.
- Primary fermentation: nine days at 65 degrees F (18 degrees C) in plastic
- Secondary fermentation: nine days at 60 degrees F (16 degrees C) in glass
- Age when judged (since bottling): seven months

### Brewer's specifics

Double decoction mashing schedule for all grains. Mash-in at 104 degrees F (40 degrees C) for five minutes. Heat to 122 degrees F (50 degrees C) for 25 minutes. Pull one-third of the thickest part of the mash, heat to 160 degrees F (77 degrees C) over 15 minutes. Boil for 20 minutes. Return to rest mash to raise temperature to 145 degrees F (63 degrees C), hold for 10 minutes. Pull one-third of the thickest part of the mash, heat to 160 degrees F (71 degrees C) over five minutes. Boil for 20 minutes. Return to rest mash, raise temperature to 147 degrees F (64 degrees C), hold for 15 minutes. Raise to 169 degrees F (76 degrees C) and hold for 15 minutes. Sparge with 6 1/2 gallons (24.6 L) of 175-degree-F (79-degree-C) water.

### Judges' comments

"Outstanding malty, yeasty, Germanic nose. Beautifully balanced malt and other fermentation characteristics. Recipe formulation excellent."

"Wonderful aroma. Great flavor. High maltiness, low bitterness, nice yeast character. Phenolics could be increased. A very good beer."

"Wonderful maltiness. Hops appropriate. Excellent balance. Maybe try a more aromatic yeast to produce more esters and phenolics."



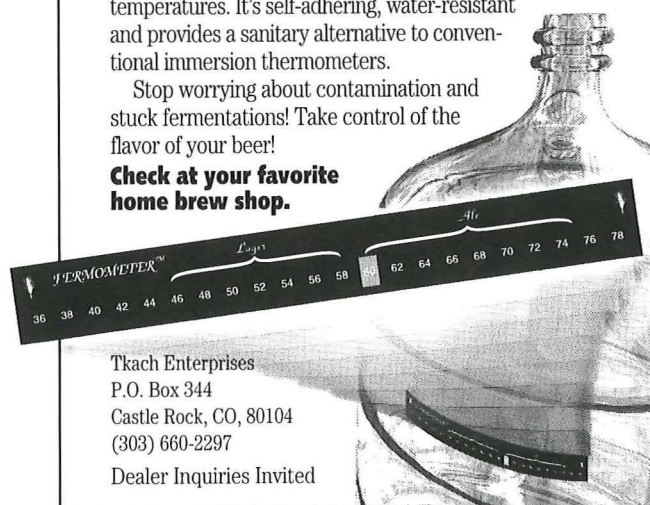
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# WORLD OF WORTS

Charlie Papazian

## Felicitous Belgian Stout

Perhaps there's nothing more conversational among homebrewers and beer enthusiasts than discussing beer style. Some, no doubt, would prefer to make "just beer" and to hell with stylistic endeavors. After all, "It's the beer, stupid." And then there are the royal guardians of beer styles and notaries of authenticity upholding the traditions of beer through the ages. I can appreciate both sides of the issue, having developed the beer style guidelines for the Association of Brewers and various competition guidelines since 1979. What strikes me as most important is that beer styles evolve. New styles come, some old ones fall by the wayside. Traditional ones help steer a course and uphold the pride and tradition of brewing, while new ones give current generations of brewers the opportunity to develop their creative skills and perhaps one day invent a beer that in the future will be upheld as a classic beer style whose origins date back 200 years to 1996.

I was relaxing, having a homebrew, taking note of my thoughts recently that the essence of style has a basis other than simply circumstantial. I considered styles based on one of eight principal characters: (1) malt, (2) hops, (3) yeast, (4) water, (5) alcohol, (6) process, (7) packaging and (8) special ingredients.

You might ask, where's color, head retention and mouthfeel? They are to be considered, to be sure, but in my opinion they are not the essential basis of style. They help define styles and the variation within a tradition, but if there is one overriding basis, I'll stick to these essential eight.

Then I attempted to think of examples of classic styles that might fit into these eight bases. Let's consider the first:

**Malt.** The predominant character of a bock, maibock, doppelbock and eisbock is its maltiness. Malt more than any other characteristic defines this style. The same might be true for English-style brown ale. Yes, hops, yeast, water, alcohol, processing and packaging all have a role in creating this style, but if you don't have the malt character you'll never have a bock or brown ale, whereas the other seven characteristics can vary.

**Hops.** The India pale ale style of beer is based on hops. The style is virtually defined by hops.

**Yeast.** Bavarian-style wheat (weiss or weizen) is singularly defined by the special strains of yeast used in its brewing. No, I wouldn't say that it is so much the wheat or the lack

of hops — these components can be varied. But without the special yeast you simply cannot authentically achieve this style of beer.

**Water.** This is a tricky one. I hesitated to include this one, but for the sake of discussion I beg the question: Does the peculiarly hard quality of the water define the basis of classic Burton-type pale ales? I think it does more than any other ingredient. The quality of the water affects the final perception of hops and malt so important in British pale ales. There are dozens of malts, hops, yeast strains and processes that can be integrated into the making of pale ale, but without the uniqueness of the water one cannot brew to tradition.

**Alcohol.** Barley wine has to have alcohol. Without it this style does not exist in mind or matter. Hard water, soft water, "noble-type" hops, American hops, cold or warm fermented, dark or lighter in color — the essence of this style is alcohol and all the resulting qualities that naturally occur.

**Process.** German-style altbiers come immediately to mind. Warm fermenting, and cold lagering is the process that precursors all altbiers. Without this process and some of the unique qualities it imparts to the overall quality, altbier could just as well be another bitter or sweet brown ale or dark lager. The warm ferment-cold lager is the most important defining basis of this enjoyable brew.

**Packaging.** This is a tricky one. Can packaging alone define the character of a style? As beer enthusiasts we'd hate to consider it, but the realities of the beer world may preclude our own preferences. Let's consider many of the sweet fruit lambics that are making their way into the market. They simply could not exist without special considerations during packaging: sweet fruit juice or





flavoring added at packaging time. The beer is then pasteurized to prevent fermentation in the bottle, a process identical to the making of some classic English-style sweet stouts. These sweet fruit beers and sweet stouts are enjoyed by millions. It is a style of beer and packaging more than the specifications of malt, hops and yeast that are the bases of these styles. Would you agree?

**Special ingredients.** Herein lie the beers that may not be considered so classic by most beer enthusiasts — yet. But in this day and age special ingredients have come to overwhelm the character of many beers. Belgian wit beer almost falls under this basis, with its unique blend of coriander and orange peel, but upon consideration I'll default to the quality of the yeast as the principal basis of wit beer. Chili beer, pumpkin beer, spiced holiday cheer beer, cranberry beer, cherry beer all as a classic style, if there is such a thing these days, might fall under the basis of specialty ingredients. Perhaps special ingredients is a catchall second-string basis for those beers that are in their early stages of evolving. We don't know under which of the other seven bases to categorize them — yet.

So you are considering 30 or 40 other classic styles of beer. Under what basis would you place them? And why would you want to go through this exercise, anyway? It helps me better understand what and why I am brewing. Brewing as a craft involves these kinds of thought processes. If I didn't think about these kinds of things, I'd be pumping out "just beer." I'm not into that kind of brewing.

At our 1986 American Homebrewers Conference, Michael Jackson thought I'd really gone nuts when I introduced my commemorative conference beer. It was called Blitzweizen Honey Steam Barley Wine Lager. My intention was, and still is, not to make fun of beer traditions but to expose myself to the edge, peek over and goose the creative possibilities. I have to admit there was no one basis upon which I brewed this beer. It was, rather, a celebration of all styles.

Little does Michael know that he is in part responsible for my latest "goose." It was the spring of 1995. I was in Philadelphia to participate in the Book and the Cook festivities, as was Michael. I had no sooner entered the University of Philadelphia Museum when I was handed an absolutely deli-

cious locally brewed imperial stout. With that in hand I was invited to attend Jackson's beer tasting being held in the adjoining hall. I quietly entered the hall in the middle of his presentation, happening to sit among a few homebrewers. I still had quite a bit of tasty imperial stout in hand. Jackson was halfway through his beer-tasting session and pouring Celis White, a light wheat beer spiced with coriander and Curaçao orange peel.

I looked about me pondering the Egyptian mummies and fantastic architecture of the hall. Then, as the ancient spirits swirled around the room, I had an impulse to create and go beyond what everyone was tasting. Before I knew what I had done I was staring at a glass filled half with Celis White and half with imperial stout. I sipped, smiled and shared it with the homebrewers sitting next to me. I thought it had great potential as a new beer. It was a new idea and, as I realize now, its basis was simply special ingredients with the combination of Belgian traditions. The notion adhered to my inventive brewing plans.

In June 1995, after a trip to Belgium, Felicitous Belgian Stout was born. It was a beer I had never tasted before, except in my mind. There is no such style in Belgium. Why do I dub it Belgian stout? I brewed it with newly learned appreciation and knowledge of Belgian brewing traditions. If there were ever to be a Belgian stout, what would it be? I considered the question seriously. It would be strong. Golding-type hops would be used. A warm ferment would comfort the yeast. And the flavor and aroma of noble Saaz and Hallertauer would subtly finesse an already complex beer. If I had any candi sugar on the day I had chosen impulsively to brew Felicitous Belgian Stout I would have used it as the Belgians so often do. Honey would have to do on this inaugural occasion.

Many Belgian ales possess the flavor and aromatic character of crushed coriander seed and Curaçao orange peel. Banana aroma and flavor also are part of the character of many Belgian ales, especially the stronger types. The banana is a byproduct of certain strains of yeast usually fermented in 70- to 80-degree-F (21- to 27-degree-C) temperatures. I can appreciate these banana esters in certain ales, but I chose not to include these in the design of this stout. Their inclusion or exclusion

depends on the yeast you choose. Wheat could have been used in the formulation, really authenticating the original half-and-half mixture of imperial stout and Celis White.

So what is it like? Felicitous Belgian Stout is a 6 1/2 to 7 percent (I'll keep pushing the higher end next time I brew this) alcohol by volume (5.1 to 5.5 percent by weight) dark-as-night stout, but without the sharpness of roasted malt. The roasted malts and barley are mellowed and lightened by the overriding mysterious combination of coriander and orange peel characters. The sweet earthy character of Saaz and Hallertauer Hersbrucker hops lay a foundation of beer quality upon which the sparkle of spice rides. The Vienna and crystal malt help produce an overall malty character without being excessively full-bodied. Fully fermentable honey boosts the alcohol while contributing a unique fermented character to the beer, much as candi sugar would if it had been used.

You've read enough. The mystery is no longer. So let's cut the shuck and jive and get on with the recipe:

#### Mash-extract recipe for 5 gal (19 L)

- 3 lbs two-row Klages malt (1.36 kg)
- 2 lbs Vienna malt (0.9 kg)
- 1 lb 40 °L English crystal malt (0.45 kg)
- 1/3 lb black malt (0.15 kg)
- 1/3 lb chocolate malt (0.15 kg)
- 1/3 lb roasted barley (0.15 kg)

#### Add to the mash runoff:

- 1 3/4 lbs extra light dried malt extract (0.8 kg)
- 1 lb light honey (0.45 kg)

#### And boil with hops:

- 7.5 Homebrew Bittering Units (I used 1 1/2 oz or 43 g 5.3% alpha acid Styrian Golding whole hops) for bittering
- 1.5 Homebrew Bittering Units (I used a 1/2 oz or 14 g of 3% alpha acid Saaz whole hops) for flavor
- 3/4 oz (21 g) Hallertauer Hersbrucker hops (I used pellets) for aroma

#### Other ingredients:

- 1 1/4 oz freshly crushed coriander seed (35 g)



- 1/4 oz crushed dried Curaçao orange peel (7 g)
- 1/4 tsp Irish moss
- ale yeast is recommended
- 3/4 cup corn sugar (177 mL) (to prime)

- Original specific gravity: 1.056 to 1.060 (14 to 15 °B)
- Final specific gravity: 1.012 to 1.016 (3 to 4 °B)
- IBUs: about 27

Use step-infusion mash with the grains. Because this was essentially an all-malt beer, a nutrient-developing lower temperature protein rest was not used in favor of a foam-developing higher temperature protein rest. Add 7 quarts (6.6 L) of 143-degree-F (62-degree-C) water to the crushed grain, stir, stabilize and hold the temperature at 133 degrees F (56 degrees C) for 30 minutes. Add 3 1/2 quarts (3.3 L) of boiling water and add heat to bring temperature up to 156 degrees F (69 degrees C) and hold for about 30 minutes.

After conversion, raise temperature to 167 degrees F (75 degrees C), laut and sparge with 3 gallons (11.4 L) of 170-degree-F (77-degree-C) water. Collect about 4 gallons (15 L) of runoff and add the malt extract, honey and bittering hops. Bring to a full and vigorous boil.

The total boil time may need to be 2 to 2 1/2 hours in order to achieve a volume of 2 1/2 gallons (9.5 L) of concentrated wort. When 15 minutes remain add 1 1/2 Homebrew Bittering Units of flavor hops, 3/4 ounce (21 g) of crushed coriander seed, 1/4

ounce (7 g) each of orange peel and Irish moss. After 15 minutes turn off the heat and add aroma hops. Then strain into a sanitized fermenter to which you've added 2 to 2 1/2 gallons (7.6 to 9.5 L) of water to achieve a total of 5 gallons (19 L). It helps to prechill (33 degrees F or 1 degree C) the water added to the fermenter rather than simply adding warmer tap water.

About 27 IBUs were calculated for this recipe by making the following assumptions: (1) whole hops were used, (2) the wort boil was concentrated with about 3 pounds (1.4 kg) of extract per gallon (3.8 L) of liquid boiled, (3) 23 percent utilization was assumed for two hours of boiling and 6 percent utilization was assumed for 15 minutes of boiling. Beginners and intermediate brewers should relax, don't worry and have a homebrew.

Primary fermentation temperatures should be between 60 and 75 degrees F (16 and 24 degrees C) with ale yeast. After primary fermentation has subsided add 1/2 ounce (14 g) crushed coriander seed to the secondary fermentation or bulk aging period (one to three weeks). When fermentation is complete, prime with sugar and bottle. Serve slightly chilled and pour a rich head. You'll agree that Felicitous Belgian Stout might have a chance through the ages. Now if only we could figure out what basis to establish this style on.

Charlie Papazian in the founder of the American Homebrewers Association and president of the Association of Brewers. His books and CD-ROM have inspired thousands of homebrewers worldwide.

**HOME BREW BITTERING UNITS** are a measure of the total amount of bitterness in a given volume of beer. Homebrew Bittering Units can easily be calculated by multiplying the percent of alpha acid in the hops by the number of ounces. For example, if 2 ounces of Northern Brewer hops (9 percent alpha acid) and 3 ounces of Cascade hops (5 percent alpha acid) were used in a 10-gallon batch, the total amount of bittering units would be 33: (2 x 9) + (3 x 5) = 18 + 15. Bittering units per gallon would be 3.3 in a 10-gallon batch or 6.6 in a five-gallon batch, so it is important to note volumes whenever expressing bittering units.

**INTERNATIONAL BITTERNESS UNITS (IBU)** are a measure of the bitterness of a beer in parts per million (ppm), or milligrams per liter (mg/L) of alpha acids. You can estimate the IBUs in your beer by using the following formula:

$$IBU = \frac{(\text{ounces of hops} \times \% \text{ alpha acid of hop} \times \% \text{ utilization})}{\text{gallons of wort} \times 1.34}$$

Percent utilization varies because of wort gravity, boiling time, wort volume and other factors. Homebrewers get about 25 percent utilization for a full one-hour boil, about 15 percent for a 30-minute boil and about 5 percent for a 15-minute boil. As an example 1 ounce of 6 percent alpha acid hops in five gallons of wort boiled for one hour would produce a beer with 22 IBUs:

$$IBU = \frac{1 \times 6 \times 25}{5 \times 1.34} = 22 \text{ IBUs.}$$



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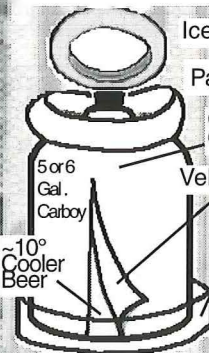
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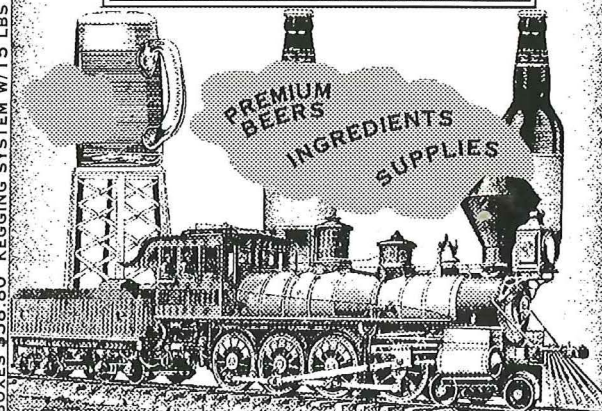
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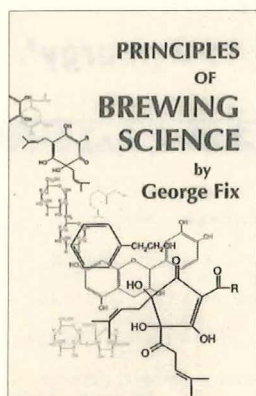
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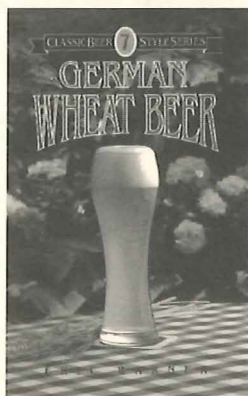


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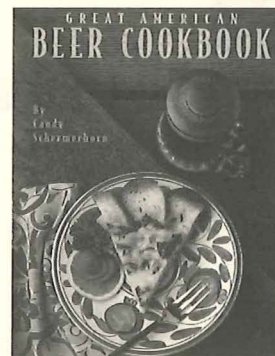


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Professor Surfeit

# DEAR

P R O F E S S O R

## Agitating in Colorado

Dear Professor,

Even though I'm somewhat new to homebrewing, when my family or friends say, "Hey, this stuff's pretty good! You made this yourself?" It's one of the best things about homebrewing.

Speaking of fizz (weren't we?), here's a question for you: I recently brewed a quite tasty pale ale and after the brew is poured from the bottle into a clean glass, some bottles develop a good head with bubbles of carbonation rising to the top, yet some other bottles from the same batch, in the same glasses, do not. Their carbonation level is noticeably different, the head dissipates quickly and the ale looks flat. The carbonation seems to vary from bottle to bottle yet they all taste virtually the same.

Could it be that I didn't mix my priming sugar solution into my beer well enough prior to bottling? Why would carbonation vary from bottle to bottle?

Just wondering,  
Greg Gustafson  
Golden, Colorado

Dear Greg,

*You've probably hit the ale right on the head. You don't need to agitate the beer once you've added priming sugar, but please do give it some gentle stirs. Now the other thing that could be happening perhaps, but not as likely, is that you*

*haven't rinsed the sanitizer out of your bottles completely enough.*

*If you pour a beer and it is always fizzy but sometimes there's head and other times there isn't, then it is very likely a problem with the serving glass. Do you have hard water? Are you able to rinse off all the dish soap after washing?*

*My guess is it's probably just a mixing-stirring thing.*

*Stir crazy after all these beers,  
The Professor, Hb.D.*



## Diacetyl Avoidance

Dear Professor,

In his book, *Brewing Lager Beer* (Brewers Publications, 1986), Gregory Noonan describes a method for reducing diacetyl by raising the post-krausen temperature to 52 degrees F (11 degrees C) and holding it at there for a number of days.

Is there any method for reducing diacetyl in ale brewing, other than the obvious choice of using a low diacetyl yeast strain?

Hold the butterscotch,  
Yoni Fishman  
Arnold, California

Dear Yoni,

*The best solution for reducing the possibility of diacetyl in an ale, or any beer, is careful yeast selection. Another method that can be used is rousing the yeast. When yeast is in suspension it has the ability to remove the diacetyl it originally produced. Ale yeast that settles out prematurely for one reason or another will not reduce much of the diacetyl. Rousing is best done in a closed fermenter with a gentle swirling motion. If you must stick something into your wort to rouse, be positive that it is sanitized and damn well close to sterile, and gently rouse the yeast back into suspension without introducing air, which would aerate the wort.*

*Rousingly,  
The Professor, Hb.D.*



## Home-grown Grist

Dear Professor,

As I am a member of AHA, I figured this would be as good a place to write for information as any. I have a problem: namely the starch/sugar conversion. Being a farmer, I raise my own barley. This past season we raised the Baroness variety which is a European malting barley that has not caught on in this country. I decided to sprout, roast and brew using just this barley. The sprouting went very well with almost a 95 percent sprouting. From there things went downhill. I am of the opinion that the way I dried and roasted the grain is why I did not get the conversion. Can you help me out?

Here is what I did: first I dried the grain for about 26 hours at 125 degrees F (52 degrees C), then removed all the rootlets and roasted at 170 degrees F (77 degrees C) for four hours. I'm not sure, but I don't think that worked. What should I have done? I am trying to brew a nice golden beer with the head retention and body of darker beers. I got the body and the head retention down pat but the conversion and the roasting leave me hanging. The recipe I used is on page 270 of Charlie Papazian's book, *The Complete Joy of Home Brewing* (Avon, 1984). I substituted the five pounds (2.27 kg) of six-row barley with six pounds (2.72 kg) of two-row Baroness. It should have worked out but the conversion did not take place and I think the problem is with my roasting technique.

While I am on the subject, should rice be cracked before cooking or just used in whole form?

If you can shed some light on my problem it would be appreciated.

Larry L. O'Connell  
Kalispell, Montana

Dear Larry,

Once you dried the malt at 125 degrees F (52 degrees C) you should have stopped there. The high-temperature roast at 170 degrees F (77 degrees C) probably killed off a lot of enzymes. If your malt was truly dried after 26 hours at 125 degrees F (52 degrees C), you probably had some mighty fine malt. Next time only toast a small portion to use as color and

flavor in amounts of 5 to 20 percent of your total grain bill. My guess is that the 170-degree-F (77-degree-C) malting turned the grain kind of red inside. It was probably great malt, but not to be used exclusively; rather in combination with pale malts.

*Don't give up. And about that rice: No need to crush the rice before gelatinizing, which you need to do before adding it to your mash (unless you are using flaked rice). See the Zymurgy Special Issue 1995 (Vol. 18, No. 4) for instructions on gelatinization and using flaked adjuncts.*

*Keep high-country malting,  
The Professor, Hb.D.*

## Yeast Effects

Dear Professor,

I'm curious about whether you've done any research on the consequences of brewing a batch of all-barley-malt homebrew using a Bavarian wheat yeast strain. Would using such a yeast with an all-barley recipe, instead of malted wheat used in conjunction with malted barley, still produce the banana and clovelike esters and phenolics typically associated with traditional weizen beers? I eagerly await your response.

Sincerely,  
Richard Biegaj  
Berwyn, Illinois

Dear Richard,

*The peculiar banana esters and clovelike "phenolics" associated with Bavarian weizen come from the byproducts of the yeast during fermentation. The wheat may accent these qualities to some extent, but you're going to get that character with an all-barley-malt or an all-rye-malt or an all-oat-malt brew.*

*Go figure why it hasn't been done yet,  
The Professor, Hb.D.*

## Lager Appeal

Dear Professor,

I have been reading *Zymurgy* for a number of years and have been doing homebrewing kits since 1987. I have been pleased

with the vast majority of my brews (all sorts of ales) but continue to look for something light, a summertime "lawnmower" beer. I believe that a lager would fit the bill, but because my time and space are limited, I really have no way at this time of getting a second refrigerator for real lagering. Nor can I really get in to all-grain brewing (yet).

I read the "Best From Kits" column in a recent *Zymurgy* and thought the recipes would be wonderful examples of what I have in mind, except for the need for stable lower brewing temperatures.

I have been told that there are ways to make ales that have many of the characteristics of lagers. Unfortunately, no one has been able to tell me what the ways are! I know some recipes are better for producing a light beer than others. Are there lager yeasts that will work in the 68- to 70-degree-F (20- to 21-degree-C) range? What else can you suggest to help me produce a light, lager-style brew without temperature restrictions?

You have provided a great deal of good advice in your articles. I hope you can give me some suggestions. Your help is appreciated.

Sincerely,  
Hoyt Allen  
Rockwall, Texas

Dear Hoyt,

*Go for it. You can't really go wrong and within a matter of four or five batches you will have hit on the lager yeast you think best for brewing "lagers" at ale temperatures. It's all a matter of preference, but in the meantime use lager-type hops (if there really is such a thing) like Hallertaner and Saaz. You might even try an altbier yeast, which is an ale yeast intended to be secondary lagered at colder temperatures. You could also try Wyeast No. 1056, an ale yeast not known for producing fruity esters. Surely you can fit a few bottles of bottle-conditioning brew in your fridge.*

*I have done side-by-side experiments with the same yeast used in two different five-gallon (19-L) batches, both primary fermented at about 60 degrees F (16 degrees C), but one lagered at 38 degrees F (3 degrees C) while the other continuing at 60 degrees F (16 degrees C). There was a difference, but hey, who's gonna tell?*

*Try those yeasts,  
The Professor, Hb.D.*



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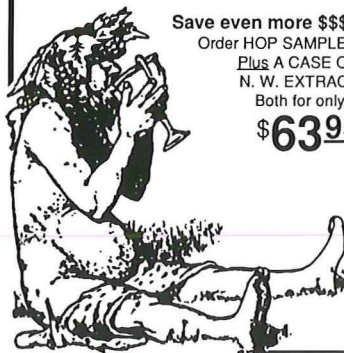
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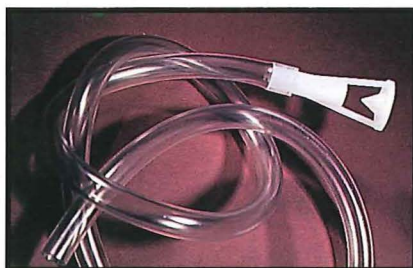


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## Wort Aerator

Fermentap manufactures and distributes the Siphon Spray Wort Aerator, designed to aerate cooled wort while racking from the kettle into the fermenter. Attach the aerator to the end of a three-eighths-inch or seven-sixteenths-inch siphon hose. As cool wort is siphoned from the kettle to the fermenter the flow is dispersed in a pattern that allows maximum contact with the air, thus aerating the wort and promoting healthy yeast cell development. The wort aerator is energy and time efficient, and easy is to clean.

The Siphon Spray Wort Aerator's suggested retail price is \$2.25. It is distributed through F.H. Steinbart, Mid America Brewing Co., Crosby & Baker and is available from your local homebrew supplier. For information or to find your local retailer call (800) 942-2750.



## BrewStuff's ColdCloak

BrewStuff's ColdCloak offers homebrewers a way to control fermentation temperatures in five-, six- and 6 1/2-gallon carboys without a refrigerator. It also provides protection against unwanted sunlight. Made of terry cloth, the ColdCloak keeps fermenting beer up to 10 degrees cooler than the surrounding air temperature with a specially designed ice pocket. As the ice melts, cold water runs down the sides of the fermenter through the terry-cloth cover, cooling the enclosed fermenter of beer. As that water evaporates, more heat is removed. The ColdCloak can be used year-round.

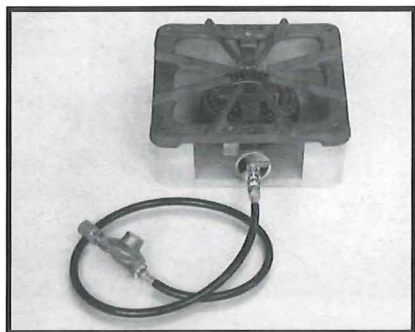
The ColdCloak's suggested retail price is \$16.95 plus \$4.95 shipping and handling. For information contact BrewStuff, PO Box 716, Avondale Estates, GA 30002-0716; or call Pete Wingard at (404) 373-5583, FAX (404) 378-9471.



## Dark Ale Kit

Now available from Consolidated Beverages America is a new kit from Coopers Brewery of Australia. Coopers' new kit, "Classic Old Dark Ale," is a blend of crystal and roasted malts that give this beer its rich ruby color while the hops impart a fruity character. The "Classic Old Dark Ale" is a full-bodied classic ale in the traditional style designed to appeal to those who prefer a darker style of beer with more body and flavor.

This kit is available from G.W. Kent, L.D. Carlson, F.H. Steinbart, Crosby & Baker, Spagnol's ABC Cork, Niagara, Distrivin and Vinotech. For information contact Consolidated Beverages America at (800) 368-9363.



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The manufacturer's suggested retail price is about \$120. For information or to find your nearest local retailer contact Superb Gas Products Co., 48 Empire Dr., Belleville, IL 62220, or call (618) 234-6169, FAX (618) 234-5218. Compiled by Christopher Lowenstein, advertising assistant.



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# T H E B E S T F R O M KITS

Jack Hagens

## Add a Little Hoppiness to Your Life

**W**hen I started making beer at home in 1987 (thank you Roger Hasper!) I thought it would be a good idea to take a class. It seemed that in doing this I could learn from someone else's mistakes and triumphs and, I hoped, avoid a few mistakes myself.

The class was taught through my county "Free University," and I found nothing more noble than a few people gathered together who enjoy beer. Of course, this is nothing profound now, is it? The mere fact that you are holding this magazine proves this point. At that time in my life I had not heard of *Zymurgy* and much less *The Complete Joy of Home Brewing* (Avon, 1984). My only exposure to homebrewing had been seeing a couple of wine-art stores open and close in communities where I had lived, and something my Uncle Charlie had made a few years earlier.

The class was taught lecture style with handouts provided by our instructor. *The Complete Joy* was suggested as further reading. Malt extract, syrup and dry, were to be our base, but coloring grains, spices, honey, dry-hopping and oak chips were strongly encouraged. "Let your creativity be your guide," seemed to be what our instructor was telling us. This was all the encouragement I needed to be consumed with my new hobby.

Kit beers in the mid-80s were composed of a can of extract, a packet of dry yeast and instructions to add a few pounds of

sugar to a well-rinsed bucket. I never really brewed a "kit beer." William's Brewing and my local retailers were supplying my extract, fresh flower hops and the latest thing — liquid yeast cultures!

After agreeing to take on the "Best from Kits" project and the parcels started arriving, I was intrigued to see how beer kits have evolved. All were packaged in neat little boxes with freshness dates affixed. Specialty grains were packed in sealed bags and each kit sported a corresponding liquid yeast pouch. Homebrew has indeed improved during the last eight years.

The instructions were followed for each kit reviewed in this column unless otherwise noted. Exceptions included a glass primary fermenter with blowoff and transfer to a glass secondary fermenter. Irish moss was used at the end of each boil. Yeast packages were punched and allowed to swell according to instructions, then added to a canned starter composed of one-half cup (118 mL) of dry malt extract, one quart (0.95 L) water boiled with one-fourth teaspoon (1.2 mL) yeast nutrient.

The starter solutions were pitched in the primary when they were at high kraeusen. Additions of extra hops and malt that deviated from kit directions are listed with the recipes. Finally, all brews were fermented within the temperature range of 65 to 75 degrees F (18 to 24 degrees C). With these disclaimers out of the way I'll get on to the kits.



### Amy's Awesome Ale Kit

The first kit arrived courtesy of the James Page Brewing Co. It's a little, or should I say big, number they call "Amy's Awesome Ale." I say big because this one contains nine pounds (4 kg) of malt extract syrup in the recipe. Here's what they include:

- 3 lb gold extract syrup (1.36 kg)
- 3 lb amber extract syrup (1.36 kg)
- 3 lb dark extract syrup (1.36 kg)  
chocolate and crystal specialty grains
- 1 oz Northern Brewer hop pellets  
(28 g) (bittering)
- 2 oz Mt. Hood hop pellets (57 g)  
(aroma)
- Wyeast No. 1338 European ale yeast

This kit is marketed as an intermediate kit, but if you own a thermometer and a strainer it's a cinch.

Add 1 1/2 gallons (5.68 L) tap water to your boiling kettle with the packet of grain.





## All the elements of an India pale ale come labeled and ready to brew in William's IPA kit.

(You will want to crush the grain first.) When this solution reaches 160 degrees F (71 degrees C), strain or skim out the grains, remove the pot from the burner and add the extract — stirring to dissolve.

Raise the temperature of the wort to boiling, add the bittering hops and maintain a rolling boil for 60 minutes. At 30 minutes into the boil I added one ounce (28 g) whole Cascade hops and let them play with the Northern Brewers for a while. I thought with this beer's higher gravity, I would like a little more hop profile.

After the full 60 minutes I turned off the heat, added the aroma hops and let stand for 30 minutes off the burner. The wort was then chilled and racked to the primary fermenter and topped up to the five-gallon (19-L) mark of the carboy. A gravity reading at this point indicated 1.072. The wort was then pitched with the yeast starter solution and was merrily spewing foam within 16 hours. Primary fermentation was completed in five days. The beer was then racked to a secondary carboy for another three weeks. A gravity check at that point gave me a finishing gravity of 1.020.

I primed the beer with 16 ounces (473 mL) of water mixed with three-fourths cup (177 mL) of corn sugar before bottling.

The taste profile as of this writing is quite favorable. The additional hopping, although not necessary, did indeed prop up the high

malt content. The brew reminds me of a light barley wine or a holiday beer. I really like this kit. It is a fine beer but would also be one someone could play with. I think additions of fruit, spices or dry hops would really make it a good beer for holidays and other special occasions. Finally, this would be an excellent subject that someone, a very patient person, could lay down in a cool, dark place and enjoy many months later.

## William's India Pale Ale Kit

My second kit was William's India Pale Ale. Contents were as follows:

- 7 3/4 lb blended malt extract (3.52 kg)
- 1 gauze bag with flavoring grains
- 1 pkg Fuggles hop pellets (bittering)
- 1 yeast pouch William's English Brewery Yeast No. Y19
- 4 1/2 oz corn sugar (128 g) (to prime)

I brewed this recipe by the book. Three gallons of water were set on the burner and coloring grains, this time in a handy gauze bag, were added then pulled out when the temperature reached 160 degrees F (71 degrees C). When this reached a boil, the syrup pouches were added. When it came back to a boil the Fuggles hops were added to the kettle and

boiled for 55 minutes. The aroma (Goldings) hops were added at this time with Irish moss and the brewpot was pulled off the heat. After standing 30 minutes the wort was chilled, racked and topped up to five gallons (19 L). Starting gravity was 1.050.

My brew was then pitched with the standard one-quart (0.95-L) yeast starter and the fermenter fitted with a blowoff tube. Active fermentation was noted well within 24 hours.

After a four-day primary fermentation I racked to a secondary. This beer was finished within three weeks and ready for bottling. I bottled with the priming sugar included with the kit dissolved in 16 ounces (473 mL) water.

Tasting notes as of this date are as follows: I think this is a nice beer. It's light in color and is of the best quality. I do think, however, this beer is a bit miscast as an IPA. Although IPA has myriad interpretations, I think this kit is a little too thin in body for the style. Final gravity was 1.010 and alcohol and bitterness were a bit mild, too. I found this to be a fine extra special bitter at any rate, and very drinkable.

## Kama Sutra India Pale Ale Kit

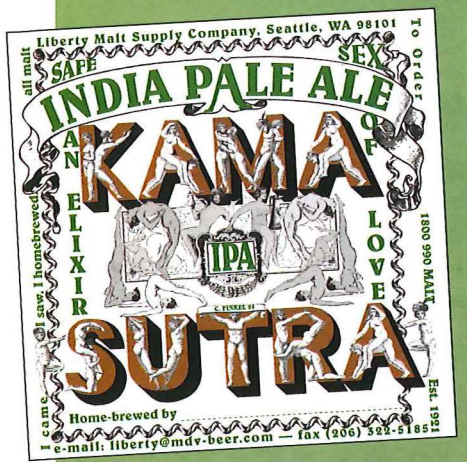
The final brew kit comes from Seattle. It is Liberty Malt Supply's Kama Sutra India Pale Ale. Components of the kit are:

- 6 lb pale malt extract syrup (2.72 kg)
- 1 lb light dry malt extract (0.45 kg)
- 1/2 lb Crisp Maltings pale malt (0.23 kg)
- 1/2 lb Crisp 80 °L crystal malt (0.23 kg)
- 2 oz Chinook whole hops (57 g) (bittering)
- 2 oz Goldings whole hops (57 g) (aroma)
- Wyeast British ale No. 1098 liquid yeast
- 3/4 cup corn sugar (177 mL) (to prime)

This kit was brewed according to the instructions:

Two and one-half gallons (9.5 L) of water, one teaspoon (4.9 mL) of gypsum (optional) and the grains were brought to a boil. The





grain was removed just prior to boiling. When the wort began to boil, the extracts were added. When the boil resumed, one ounce (28 g) of the Chinook hops was added. At 30 minutes into the boil a second addition of Chinooks was made. At 45 minutes one ounce (28 g) of Golding hop pellets was added with one-half teaspoon (2.5 mL) of Irish moss.

At the end of a 60-minute boil the final ounce of Goldings was added and my brewpot was pulled off the burner and allowed to stand for the usual 30 minutes, then chilled, racked, topped up with water and pitched in the usual manner. Starting gravity was noted at 1.048. After a seven-day primary fermentation and a three-week secondary the beer was racked, primed and bottled. Final gravity was 1.010.

After tasting this beer I found it to be of very good quality. It was dark gold in color and big on hops. It is a little light in body, though, so I might recommend upping the extract by a couple of pounds. This

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is a good kit with lots of little packages and envelopes inside. I found it fun to brew.

Conclusions? I had a good time visiting my homebrew roots. I forgot how much fun it was to have packages delivered to my door and the anticipation of brew day. The new kit beers I tested are well thought out and they yield a fine product.

Is it enough to persuade an all-grain type like myself to come back? Probably not. I like the control and variations afforded with all-grain brewing and grain is relatively inexpensive.

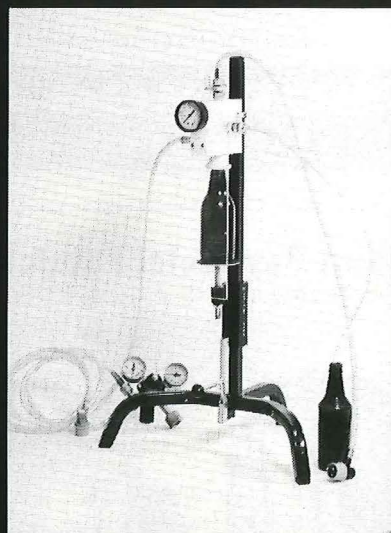
The upside to kits is certainly not to be neglected, however. I forgot that you could brew on a week night. Kits are great for beginners, but I don't think any beer lover would bemoan the fact that you can assemble your kit, brew, bottle and savor quality homebrew in four to five weeks.

Jack Hagens, a die-hard hop lover, has been homebrewing since 1987. He lives in North Bend, Wash., and is a member of the Brews Brothers of Seattle homebrew club. Jack won first place in the Hail to Ale Club-Only Competitions in 1991 and 1995.

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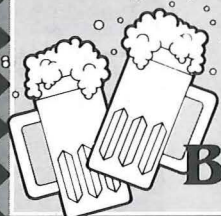
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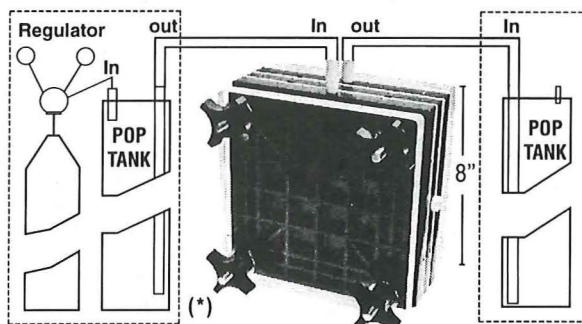


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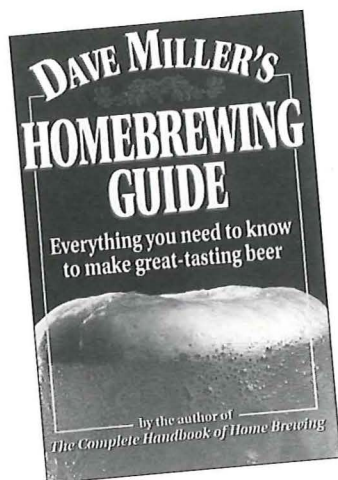
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# REVIEWS

**T**he opinions of individual reviewers do not necessarily represent the opinions of the American Homebrewers Association or *Zymurgy*.



## Dave Miller's Homebrewing Guide

With the increasing number of introductory homebrewing books on the market these days, a beginning brewer is faced with the dilemma of choosing a book that will provide the most information. Fortunately, the arrival of *Dave Miller's Homebrewing Guide* (Storey Publishing, 1995) provides a solution to the dilemma. Novices and more experienced brewers will find little missing from its 368 pages. Encouraged by the publishers of his revered 1988 book *The Complete Handbook of Homebrewing* (Storey Publishing, 1988) to create a revised and updated version, Miller, current brewmaster of the Blackstone Pub in Nashville, Tenn., took on the job with seriousness and gusto. The product of this effort is *Dave Miller's Homebrewing Guide*, a comprehensive, cutting-edge exploration of the homebrewing process. Included in its pages are discussions on recent develop-

ments in homebrew equipment, ingredients, techniques and theory.

Miller's new book will appeal to everyone, from the beginner to the seasoned brewer. He begins with malt extract and dry yeast basics. Even simple instructions like these touch on more advanced themes, such as the importance of yeast rehydration and wort aeration. From there topics advance to complex discussions of water ions, yeast autolysis and diatomaceous earth filters.

Each chapter begins with a simple heading, detailing various problems or steps in the brewing process. However, the ensuing descriptions are far from simple, as they evolve into advanced discussions that examine processes on the molecular level. Brewers interested in knowing precisely what happens during the brewing process will be satisfied by the book's scientific depth.

Brewers who wish to add Miller's new book to their brewing library will find it is laid out to accommodate cross-referencing and skipping around. Many of the chapters overlap. For example, "Kettles, Wort Coolers and Other Equipment" is followed by "What Happens in the Kettle and Wort Cooler." Information is repeated, promising coherent instruction even for the reader who, rather than read cover to cover, chooses to skip around.

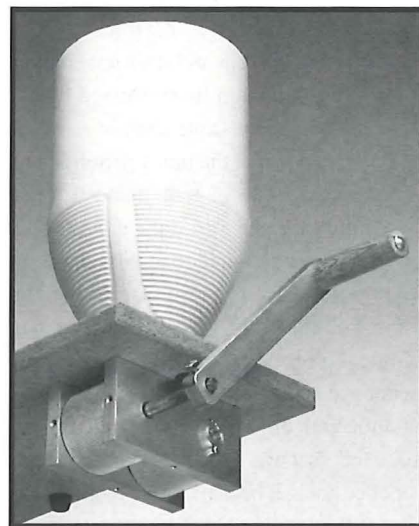
Less concerned with the flow charts and tables generally found in other books, or popular topics such as how to grow your own hops, Miller focuses on the basics of the brewing process. In this respect, *Dave Miller's Homebrewing Guide* dives into the foam, going as deep as an introductory book has ever

gone. With its scientific discussion on standard brewing procedures, beer style recipes and even-handed explanations about the pros and cons of symbiotic brewing techniques, Miller has produced a stellar guide for those of us dedicated to brewing great-tasting beer.

*Dave Miller's Homebrewing Guide*, Storey Publishing, 1995 publisher's suggested retail price is \$14.95.

*Reviewed by Michael D. Murphy, currently a caretaker of a small island and lighthouse off the coast of Maine. He is a recognized BJCP judge and homebrewer of six years.*

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## BrewTek Mill

The latest roller mill to come out of Brewer's Resource is an improvement over their original BrewTek mill. It's composed of two two-inch wide by 2 1/2-inch diameter steel rollers each with a deeply cut diamond knurl. The rollers fit snugly between two half-inch stainless-steel plates that are fastened



to a pressed wood base. A plastic bleach bottle serves as a grain hopper and screws directly into the base of the mill. When full, the hopper can hold about five pounds (2.27 kg) of grain. The hopper feeds left of center away from the drive shaft directly over the gap between the rollers. The gap is adjustable from 0.030 to 0.070 inches. Adjustments are made by rotating two collars surrounding the oilite bronze bushings on the passive roller. Each collar is held in place by a set screw. Both collars are notched for a common reference point. When both notches are facing up, the roller gap is about 0.050 inches. When the notches are turned 90 degrees away from the drive shaft the gap is about 0.030 inches. When both notches are pointing in the direction of the drive shaft the gap is about 0.070 inches.

As you work with the mill you can find and mark your optimum settings on the housing. The whole unit can be bench mounted with bolts, clamped to a workbench (as I do) or placed over a five-gallon (19-L) bucket with a hole drilled into the side for the drive shaft. The master roller is easily driven by a nine-inch hand crank attached to a three-eighths-inch shaft. The passive roller is driven by the force of grain going through the unit and does not employ O-rings. The mill can be motorized by attaching a drill to the drive shaft.

For my review of the mill's performance I tried several kinds of malt: domestic two-row, Vienna, light and dark crystal and wheat malt. I attempted to maintain a consistent rotation of 120 rpm that resulted in a throughput of about two pounds per minute. I also tried the three major settings mentioned above by themselves and in combination with other settings. I found that at 0.030 inches it was difficult to start the grind, but once going it became easier to turn. The grist at that setting looked pretty uniform, but I also noticed that some husks were pulverized. At the 0.050 inch setting, the mill still left some kernels intact. With the gap at 0.070 inches the grain needed to be run through again at a smaller setting. Unfortunately, the grain tended to clump and stop flowing the second time through. This problem could be alleviated by slowing pouring the grain into the hopper rather than all at once. Because of its size, wheat malt need-

ed to run through twice at the 0.030 inch setting to get a uniform crush.

In all tests some grain tended to get stuck in the handle of the bleach bottle. You can either tap the handle until all the grain comes out or plug up the hole. It's kind of disappointing to get such a rugged mill and be stuck with a bleach bottle as a hopper. I would have paid more to get a more durable hopper. I was concerned about how diamond knurl mills tend to pinch kernels, leaving the husk attached to the end pieces. This mill exhibits this same phenomenon at all three major settings. This may be of consequence to those of us with Type A personalities when brewing, but we should probably take Charlie Papazian's well-known advice.

Overall, this mill is easy to turn because of its long handle, produces a more than adequate crush and, because of its design, should last a lifetime. At the manufacturer's suggested retail price of \$96.90 this mill is definitely affordable. For more information contact Brewer's Resource, 409 Calle San Pablo #104, Camarillo, CA 93012; (805) 445-4100.

*Reviewed by Guy Ruth, founder of the Dukes of Ale homebrew club in Albuquerque, N.M., and homebrewer for more than 10 years.*

### Sure Screen™



Inspired by Jack Schmidling's Easy-Masher, the Sure Screen™ is a six-inch stainless-steel screen, shaped and spot welded into a tube and designed to fit on the end of your racking tube or cane. The Sure Screen can be used to filter out trub, whole hops and fruit from the boiling kettle, or to filter hops and fruit when siphoning from the secondary. The Sure Screen is attached to the racking cane with a small stainless-steel hose clamp (not included). The manufacturer suggests

the use of a copper or stainless-steel racking cane because a plastic one is easily scratched and could invite infection. The whole assembly can then be sanitized with boiling water or iodophor.

The Sure Screen works best with whole hops or hop plugs. Use with pelletized hops is not recommended. The device can be used when dry-hopping in a keg, but will become deformed when clamped to the dip tube and can no longer be used on your racking cane. For do-it-yourselfers, the Sure Screen can be adapted easily for use in a hop back, too.

When I tested the Sure Screen, I used a copper racking cane because it could be bent to allow the device to lie flat on the bottom of my kettle. I used whole hops without a hop bag. After chilling the wort, I placed the racking cane with the Sure Screen attached in the kettle and let the hops and trub settle for about 20 minutes. Between the hops and the Sure Screen, all the trub was filtered out and I had crystal clear wort in the primary. Loose fruit in the secondary was completely filtered out with the Sure Screen. Not a single seed or piece of fruit made it to my bottling vessel. I highly recommend this product.

The Sure Screen is distributed by Sheaf and Vine Brewing Supply, PO Box 1673, Bridgeview, IL 60455. To find a local retailer call (708) 430-HOPS. The manufacturer's suggested retail price is \$7.99.

*Reviewed by Ron Moucka of Fort Collins, Colo., a homebrewer for five years.*

## The Interactive Complete Joy of Home Brewing

Advertised as "the definitive multimedia guide to making and enjoying your own beer," this recently released CD-ROM presents an interactive version of that best-selling homebrew guide from the American Homebrewers Association's own Charlie Papazian. The disc includes the following sections:

- "Brewing by the Book" features all the text from the book, some photos including pictures of all the basic equipment, some sortable tables and spartan use of hypertext jumps.
- "Brew TV" has video clips from "Home Brew with Charlie Papazian" available on VHS tape.
- "Charlie's Recipe File" contains all the





recipes from the book, presented in a recipe card format, complete with a beer-ring stain from the bottom of a glass. The user has the ability to print the recipes. As with the book, recipes are geared to intermediate extract and extract with specialty grain brewers; there are only 10 all-grain recipes provided.

- "BrewNet" lists selected homebrew shops, beer by mail suppliers and more. The Brewpub/Microbrewery section only lists 22 breweries! The World Wide Web section lists only 11 link sites, with glaring homebrew omissions such as Spencer's or Dan Brown's Beer Pages.

- "Homebrewer's Log" section is a good feature with many sections that lets you record details, ingredients and tasting evaluation. However, it doesn't perform calculations, doesn't provide fields for extract ratings, Lovibond figures or hop alpha acid percentages. The disc promises enhancements when the The Home Brewer's Companion CD-ROM is released.

- "Relax" section features eight countries with the country's flag, tidbits of information about local beer customs, good descriptions of glassware (but no pictures), local beer cuisine and festivals (although the data on the Great American Beer Festival™ is outdated).

Other features include a calculator with options for calculating alcohol content by weight and volume, HBU and IBU calculations (but with no allowances for hopping schedules) and specific gravity calculation (which adjusts for temperature); a search engine; a bookmark function; and the ability to "Tap Into" in-depth related sections.

Depending on the street price and how close your PC is to your brew kettle, this CD-ROM can be useful. For the novice brewer it's as great a resource as the book it's based on and should be considered as an addition to the CD library.

The screen presentation has some nice touches: six bottles of beer for the main menu, bottle caps for menu buttons, a bottle opener for forward/backward screen scrolling and a few nice screen background pictures, but overall the package remains a fairly straightforward electronic conversion of a book originally written in 1984 (and revised in 1991). This means that some information is out of date, i.e. the discussion of hop varieties is missing all of the new developments of the last few years and the attempts to include information relating to the World Wide Web is inadequate.

System requirements:

Multimedia PC 486/25 or better. Windows 3.1, 15 MB RAM on hard drive (although it only used 8.5 MB on mine). Double-Speed CD-ROM, 256 color SVGA with 640 x 480 resolution, 8-bit sound card and speakers.

Manufacturer's suggested retail price is \$49.95. For more information contact Media Right Technology at (212) 966-7383.

*Reviewed by Joe Bradley, a member of the Hetch Hetchy Hopheads in Millbrae, Calif., a beer aficionado for nearly 20 years and a homebrewer for two years.*

I N T R O D U C I N G

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Just shake it up and down and the siphon magically starts to flow. Splices right into your racking cane.



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Listermann Manufacturing produces products for serious and advanced homebrewers, including:

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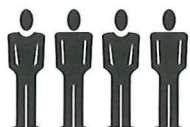
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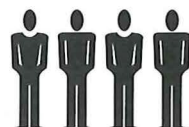
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# HOMEBREW CLUBS



Caroline Duncker

## Putting Some Fizz



**Y**our club has it all: monthly meetings at a local brewpub, an informative and fun newsletter, guest speakers, beer-style tastings, brewing demonstrations and trips to nearby breweries. But, the same group of people is organizing

club events and the veterans desire new activities. How do you keep members active and interested in club activities? And how do you make sure members are getting what they want out of the club? A number of clubs shared what they have done.

The Worts of Wisdom in Santa Clara, Calif., developed a membership survey that covered various aspects of their club. They asked members what they wanted at meetings, such as guest speakers, brewing demonstrations, formal tastings and critiques, casual gatherings to share homebrew or peer

brewing sessions where experienced brewers team up with less experienced brewers.

The survey also asked what activities members would like outside regular meetings, such as more club-sponsored homebrew competitions and trips to local breweries. Finally the club asked, "What kind of brewer are you?" to determine whether the club was directing enough attention to the needs of homebrewers who make up the membership. Richard Pedretti-Allen, past president, reports, "The club survey brought a renewed interest to the club and attracted new members as well."

While receiving feedback from your members about what they would like to do, you can also gather volunteers. Incorporate questions asking members to volunteer for any of the club improvement efforts. It is easy to fill out a ques-

tionnaire, but for a club considering a new undertaking, it helps to have motivated individuals to spearhead the activity. Finding a new group of motivated volunteers also gives the core group a chance to let others take charge.

All the clubs contacted mentioned the time, day and meeting place as important factors in club attendance. In the newsletter ask members if the current meeting schedule is convenient or allow them to vote on alternative times and places. Mike Snyder of Cedar Rapids Association of Zymur-

## into Your Homebrew Club





## AHA SANCTIONED COMPETITION

# Kudos

April 23, 1995

### FIFTH ANNUAL DOCKSTREET HOMEBREW COMPETITION

Philadelphia, Pa., 85 entries  
Dean McNulty of Philadelphia, Pa.,  
won best of show.

May 6, 1995

### SIXTH ANNUAL CENTRAL FLORIDA SUNSHINE CHALLENGE

Orlando, Fla., 270 entries  
Todd Killenbenz of Houston,  
Texas, won best of show.

May 12, 1995

### SEVENTH ANNUAL HOME- BREWERS' EXTRAVAGANZA

Memphis, Tenn., 95 entries  
Steve Peeler of Gaffney, S.C.,  
was the competition winner.

June 14, 1995

### SAN JOAQUIN COUNTY FAIR

Stockton, Calif., 74 entries  
Gary King of Stockton, Calif.,  
won best of show.

June 22, 1995

### EDMONTON HOMEBREWERS GUILD SEVENTH ANNUAL OPEN BEER COMPETITION

Edmonton, Alberta, Canada,  
138 entries  
Ian MacLaren of Edmonton,  
Alberta, Canada, won best of show.

July 8, 1995

### SMALL BREWERS FESTIVAL OF CALIFORNIA AMATEUR BREWING COMPETITION

Mountain View, Calif.,  
196 entries  
David Pappas and  
Gary Michael of Orlando, Fla.,  
won best of show.

July 8, 1995

### FIRST ANNUAL METRO PULSE BREW-OFF

Knoxville, Tenn., 120 entries  
John Yust of Knoxville, Tenn.,  
was the competition winner.

July 8, 1995

### WISCONSIN STATE FAIR

West Allis, Wis., 250 entries  
Steve Klafka of Madison, Wis.,  
won best of show.

July 9, 1995

### SUMMER CAP-OFF 1995

Ceres, Calif., 78 entries  
Kelly Robinson of Ceres, Calif.,  
won best of show.

July 15, 1995

### BLUES, BREWS & BARBEQUE III

Lexington, Ky., 106 entries  
Kevin Banta of Lexington, Ky.,  
won best of show.

July 22, 1995

### EIGHT SECONDS OF FROTH — FRONTIER DAYS BREW-OFF

Cheyenne, Wyo., 32 entries  
Richard Mincer, Bob Tucker  
and Dick Oster of Cheyenne,  
Wyo., won best of show.

July 22, 1995

### DI CARLO ARMANETTI LIQUORS FIRST HOMEBREW COMPETITION

Mundelein, Ill., 28 entries  
Shawn Quigley of Round Lake  
Park, Ill., won best of show.

Aug. 12, 1995

### JOSEPHINE COUNTY FAIR

Grants Pass, Ore., 48 entries  
Tim Egan of Medford, Ore.,  
was the competition winner.

Aug. 12, 1995

### BEER AND SWEAT

Fort Mitchell, Ky., 46 entries  
Steve Zabarnick of Dayton, Ohio,  
won best of show.

Aug. 13, 1995

### CALIFORNIA STATE FAIR HOMEBREW COMPETITION

Sacramento, Calif., 316 entries  
Douglas King of Winnetka,  
Calif., won best of show.

Aug. 18, 1995

### NEW MEXICO STATE FAIR PRO AM BEER COMPETITION

Albuquerque, N.M., 211 entries  
Dennis Cunningham of Albuquerque,  
N.M., won best of show.

Aug. 19, 1995

### MADE IN THE SHADE

Flagstaff, Ariz., 124 entries  
Tom Golden of Phoenix, Ariz.,  
won best of show.

Aug. 19, 1995

### 1995 OREGON STATE FAIR BEER COMPETITION

Portland, Ore., 75 entries  
David Hunter of Gaston, Ore.,  
won best of show.

Aug. 20, 1995

### 1995 ALASKA STATE FAIR HOMEBREW COMPETITION

Palmer, Alaska, 200 entries  
Gwen Vickery of Anchorage  
won best of ale; Carolyn Frey of  
Wasilla won best of lager and  
Larry Maile of Anchorage won  
best of specialty beer.

Aug. 27, 1995

### COLORADO STATE FAIR

Pueblo, Colo., 112 entries  
Chuck Allen of Westminster, Colo.,  
won best of show.

Aug. 28, 1995

### PLUM CREEK PUB CLUB HOMEBREWING COMPETITION

Vernon, Mich., 20 entries  
David Reneaud of Byron, Mich.,  
won best of show.

Sept. 1, 1995

### TRUB OPEN VII

Durham, N.C., 255 entries  
Ron Raikie of Orlando, Fla.,  
won best of show.

Sept. 4, 1995

### ETHNIC FESTIVAL HOMEBREW COMPETITION

Springfield, Ill., 87 entries  
Steve Otto of Maize, Kan.,  
won best of show.

Sept. 4, 1995

### RENAISSANCE BEER FESTIVAL

Shakopee, Minn., 108 entries  
Gary Sinnen of Victoria, Minn.,  
won best of show.

Sept. 8, 1995

### EASTERN IDAHO STATE FAIR AND HIGH DESERT BREWERS ASSOCIATION HOMEBREW COMPETITION

Blackfoot, Idaho, 58 entries  
Kevin McCarthy of Idaho Falls,  
Idaho, won best of show.

Sept. 10, 1995

### BREWER'S DREAM

Libertyville, Ill., 40 entries  
Paul Klocek of Wadsworth, Ill.,  
won best of show.

Sept. 15, 1995

### GREAT NORTHWEST HOME BREW COMPETITION

Seattle, Wash., 119 entries  
Jaimie Roeder of Seattle, Wash.,  
won best of show.

Sept. 23, 1995

### TAMPA BAY BEERS ULTIMATE ALT COMPETITION

Tampa, Fla., 17 entries  
Mark Stober of Lutz, Fla.,  
won best of show.

gy, Yeastology and Homebrewers (CRAZY) says, "Once we changed our meetings from Saturday afternoon to Tuesday nights and started meeting at a local bar, more members have been able to attend." Mike is considering meeting more than once a month to accommodate those who were only able to meet on Saturday afternoons.

Members may also think the meetings were once interesting and informative but have fallen into a pattern with little variety. While it is important to have a schedule and calendar of events established, mixing in special events entices attendance by old and new members. Some ideas include bringing in a local well-known brewer, renowned beer writer, homebrew supply store owner, brew-on-premises owner or medal-winning homebrewer as guest speaker.

While trying to improve attendance and activism, it is important to remember the club's roots. Certainly a main part of its inception was people enjoying one another's company. Many members may desire the meeting to be more a social function than a chance to learn about beer and homebrewing. If the meetings have tipped the scale and become too social with little homebrewing information, your club may need to establish scheduled gatherings, parties, picnics and camping trips outside the regular meetings to fill that social void. Having parties in addition to the monthly meeting keeps meetings on track, offering homebrewing information to members.

The Chicago Beer Society has four major events throughout the year for the beer lover and homebrewer: the Blues and Brews Cruise in August, formal commercial beer tastings in the spring and fall and the Winter Beer Extravaganza. Ray Daniels, CBS board member says, "We get a lot of good beer donated for these events and they are quite popular with the membership." The Winter Beer Extravaganza started as a meeting to collect dues and evolved into a party. CBS has two meetings a month with one designated for beer appreciation and the other strictly for homebrewing information.

Many clubs started as a "group of guys," but as the homebrewing hobby has grown, more women are getting involved. It's important to include this segment of the pop-





ulation into the brew club. A good way to bring in more women is to offer a household membership for married couples or life partners. Having new faces attend club meetings can revitalize a club.

## Success Stories

With more than 600 active AHA registered homebrew clubs, there are plenty of good, creative activities your club can implement. Three clubs, the Great Northern Brewers of Anchorage, Alaska, Brewmeisters Anonymous of Phoenix, Ariz., and the Impaling Alers of Kent, Wash., all challenged their members to break the world record for gallons of homebrew brewed in one day. The challenge has brought members at all brewing levels together with their equipment and ingredients for a full day's brewing extravaganza. The Great Northern Brewers brewed 250 gallons (946 L) in October 1993 and 450 gallons (1,703 L) in May 1994 and October 1995. It has become something of an annual event. Brewmeisters Anonymous brewed 441 gallons (1,669 L) of all-grain beer on Feb. 18, 1995, and the Impaling Alers brewed 781.5 gallons (2,958 L) of beer and mead on National Homebrew Day, May 4, 1995. The Impaling Alers appear to hold the record!

The Great Northern Brewers have established competitions with a local bar and microbrewery. Anyone in the club can enter a homebrew and the brewery will make a 10-gallon (38-L) batch of the winning recipe. The competition works well to encourage members to brew, and the night of judging always has a high turnout.

The North Texas Homebrewers Association of Rowlett, Texas, was interested in taking more brewery visits and traveling to major competitions and festivals in Texas and beyond. Tom Henderson, a member and auto mechanic, proposed purchasing a 15-passenger van to make these trips a reality. He offered to donate one year of mechanical labor charges. Members would pay for the van's insurance policy and a charge for each trip to cover the costs and some maintenance. Tom says, "The van would make these activities more accessible for those of us who cannot afford to fly

## NEW AHA REGISTERED HOMEBREW CLUBS

For a complete list of AHA registered homebrew clubs, contact the AHA. If you want to register your homebrew club with the AHA, send a brief letter including the same kind of information you see here and your club roster to AHA Administrator James Spence, PO Box 1679, Boulder, CO 80306-1679; (303) 447-0816 ext. 121; FAX (303) 447-2825; CompuServe 70740,1107; Internet james@aob.org.

This list reflects club registrations and address corrections received through Oct. 20, 1995. Club registrations received after that date will appear in Zymurgy Summer 1996 (Vol. 19, No. 2).

### SWEDEN

**Olsallskapet HBK**  
Tony Magnusson  
Centralgatan 75, s-149 40  
Nynashamn, 468520 203676  
FAX: 46 852017647

**Swedish Homebrewers Association**  
c/o Håkan Lundgren  
Vallstanäsavägen 75, S-195, 70  
Rörsberg, 0468 590 35 727  
lundgren@shbf.se

### UNITED KINGDOM

**Craft Brewing Association**  
c/o James McCrorie  
82 Elmfield Rd.  
London, SW17 8AN,  
0181675-0340

### UNITED STATES

**ARIZONA**  
**Arizona Society of Homebrewers**  
Zach Hilgers  
2322 S. Rogers St., Villa 61  
Mesa, AZ 85202  
(602) 491-8236

**CALIFORNIA**  
**Dampf Brewers**  
c/o Racso Lestam  
PO Box 3593  
Pinedale, CA 93650-3593

**Grain Damage**  
c/o Kevin Keehn  
407 S. Leman  
Orange, CA 92666  
(714) 704-3719

**COLORADO**  
**Keg Ran Out Club (KROC)**  
PO Box 1162  
Broomfield, CO 80020  
(303) 465-1776

**The Weissenheimers**  
c/o Herschal  
4422 1/2 Delaware St.  
Denver, CO 80216  
BREWHERSCH@aol.com

**Yampa Valley Yeast Ranchers**  
c/o Tom Williams  
PO Box 775868  
Steamboat Springs, CO 80477

**IDAHO**  
**Magic Valley Brew Crüe (MVBC)**  
c/o R. Jenö  
1285 Falls Ave. W.  
Twin Falls, ID 83301

### ILLINOIS

**Fermenters at Large**  
c/o Mike Hennessy  
1359 Portsmouth Court  
Carol Stream, IL 60188  
708830-1210

**INDIANA**  
**Duneland Homebrewers Association; The Retentive Head Society**  
Alonso Villarreal, President  
430 East US Hwy. 6  
Valparaiso, IN 46383  
(219) 947-7802

**MARYLAND**  
**Frederick Original Ale Makers (FOAM)**  
Bob Frank  
111 S. Carrol St.  
Frederick, MD 21701  
(301) 663-4491

**Gaithersburg Area Brewing Society (GABS)**  
c/o Bill Lawrence  
762 Tiffany Dr.  
Gaithersburg, MD 20878

**MICHIGAN**  
**Brew Monkees**  
c/o Paul May  
904 Adams Rd.  
Frankfort, MI 49635  
(616) 352-5210;  
FAX (616) 352-5338

**MINNESOTA**  
**Big Muddy Homebrewers**  
c/o Randall Thompson  
3648 37th Ave. S.  
Minneapolis, MN 55406  
(612) 624-0906  
billodo@rosemount.com

**Grin and Brew It**  
c/o Mark Olson  
502 6th St. S.W.  
Willmar, MN 56201  
(612) 235-3345

**Minnesota Mashers**  
c/o Rex Houserman  
14912 Summit Oaks Circle  
Burnsville, MN 55337

**MONTANA**  
**Flat Heads Brew Society**  
c/o Pat Cross  
1220 3rd Ave. E.  
Kalispell, MT 59901  
(406) 756-8195

### NEBRASKA

**Cops & Hops**  
c/o Doug Phillips  
13630 Guildford  
Waverly, NE 68462

**Platte River Brew Crew**  
c/o John Michaels  
PO Box 99,  
Columbus, NE 68602-0099

**NEW JERSEY**  
**Morristown Mashers**  
c/o Hop & Vine  
11 DeHart St.  
Morristown, NJ 07960  
(201) 993-3191  
jules@gti.net

**NORTH CAROLINA**  
**Cary-Apex-Raleigh Brewers of Yore (CARBOY)**  
Mary Jo Ciccarelli  
10207-C Chapel Hill Rd.  
Morrisville, NC 27560  
(919) 467-8934;  
(919) 467-6082

**NORTH DAKOTA**  
**Aurora Breweralis/Northern Lights Brew Club**  
c/o Pete Farney  
1625 20th Ave. S. No. 308  
Grand Forks, ND 58201  
(701) 775-5430

**OREGON**  
**Strange Brew**  
c/o Cliff Rice  
606 Vermillion  
Newberg, OR 97132  
(503) 538-6072

**SOUTH CAROLINA**  
**South Carolina Homebrewers Of Lagers, Ales and Real Suds (SCHOLARS)**  
c/o Steven Andrews  
483 Cinnamon Ridge Dr.  
Inman, SC 29349-6225  
(803) 472-6516  
BGUW37A@Prodigy.com

**WASHINGTON**  
**Dark Ship Homebrewers**  
c/o Kim's Place  
3405 175th St. N.E. No. 9  
Arlington, WA 98271  
(360) 658-9577



or take the time to drive." The van was not approved this year, but Tom will continue in his efforts for next year.

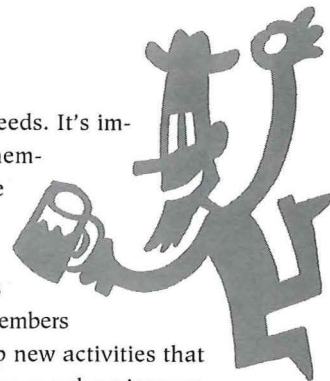
Another club, the Hogtown Brewers of Gainesville, Fla., designed cards to give local bars and restaurants. They wanted to educate establishments that real beer goes beyond the definition of American lager. The cards read, "As avid beer lovers, my friends and I would like to enjoy a wider selection of quality beers in your fine establishment. The beers listed on this card are but a few

of the choices available to you from the local distributors. Please open your coolers to new and profitable ideas." The cards list several craft beers and the distributors who carry them. It is a great idea to get your club motivated to spread the good word about the ongoing beer renaissance. Plus, you are circulating your club name and attracting other beer enthusiasts and homebrewers to see what your club has to offer.

Whatever ideas your club decides to incorporate, they will be tailored to your

club and its needs. It's important to remember that there are ways to spread responsibilities among more members and to develop new activities that keep the veteran members interested. Your club *can* be revitalized!

Caroline Duncker is the AHA assistant and has been homebrewing since 1992.



## AHA CLUB-ONLY COMPETITION WINNERS

### WEISS IS NICE WHETS WHEAT APPETITES

The 1995 Weiss is Nice Club-Only Competition received 66 entries for the Aug. 26 judging in Boulder, Colo. The American Homebrewers Association organized the competition.

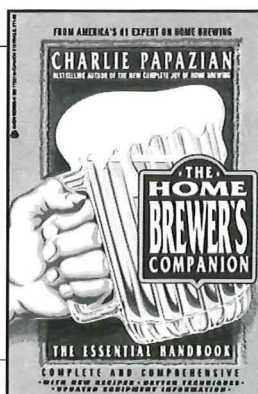
- 1<sup>st</sup>** JOHN GRIFFITHS of Fayetteville, Ark., representing the Fayetteville Lovers of Pure Suds (FLOPS).
- 2<sup>nd</sup>** MARK GROSHEK Mark Groshek of Denver, Colo., representing The Unfermentables.
- 3<sup>rd</sup>** ERIC MILLER of Newport, R.I., representing the Virtual Village Homebrew Club.

## AHA CLUB-ONLY COMPETITION SCHEDULE 1996

COMPETITION	<b>ULTIMATE ALT</b>
ENTRIES DUE	March 18, 1996
ORGANIZING CLUB	Upstate New York Homebrewers Association
COMPETITION	<b>BOCK IS BEST</b>
ENTRIES DUE	May 13, 1996
ORGANIZING CLUB	New York Notorious Brewers
COMPETITION	<b>MEAD MAGIC</b>
ENTRIES DUE	Aug. 12, 1996
ORGANIZING CLUB	American Homebrewers Association
COMPETITION	<b>BEST OF FEST</b>
ENTRIES DUE	Oct. 21, 1996
ORGANIZING CLUB	Northeast Florida Society of Brewers
COMPETITION	<b>BELGIAN BLOCKBUSTER</b>
ENTRIES DUE	Dec. 2, 1996
ORGANIZING CLUB	Carolina Brewmasters

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Charlie Papazian, America's leading authority on home brewing, offers readers two comprehensive, in-depth guides to brewing everything from the lightest lager to the darkest stout.



THE HOME BREWER'S COMPANION takes readers to the next level of home brewing expertise. It includes sections on:

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- Hops varieties, mashes and grains
- Typical problems encountered during the brewing process and how to go about solving them
- Dozens of delicious new recipes and tips on how to create your own recipes
- Information on beer evaluation, handling and storage

**THE HOME BREWER'S COMPANION**  
#0-380-77287-6  
\$11.00 464 pages



THE NEW COMPLETE JOY OF HOME BREWING is the original home brewing bible. Perfect for the beginner, intermediate or advanced home brewer. It includes:

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- Ten easy lessons to making your first bubbling batch of beer
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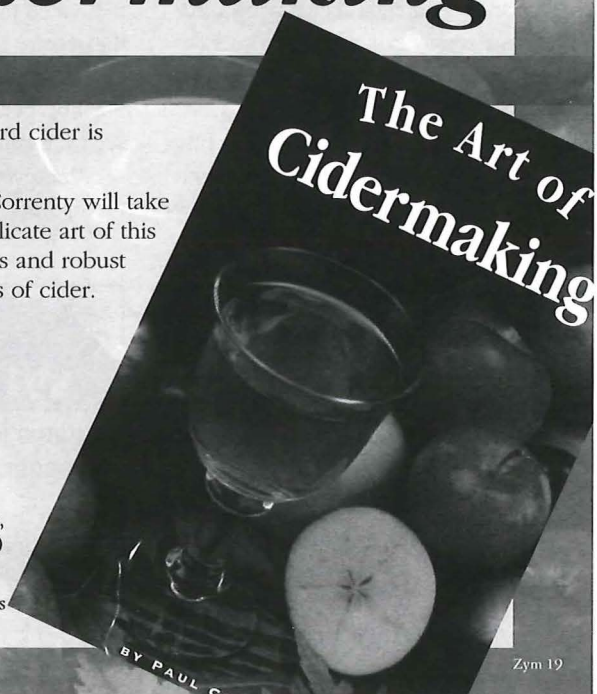
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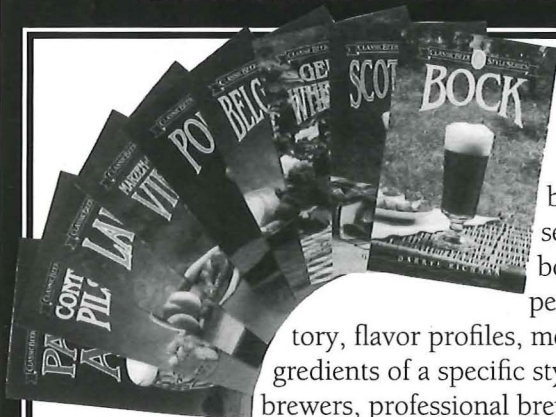
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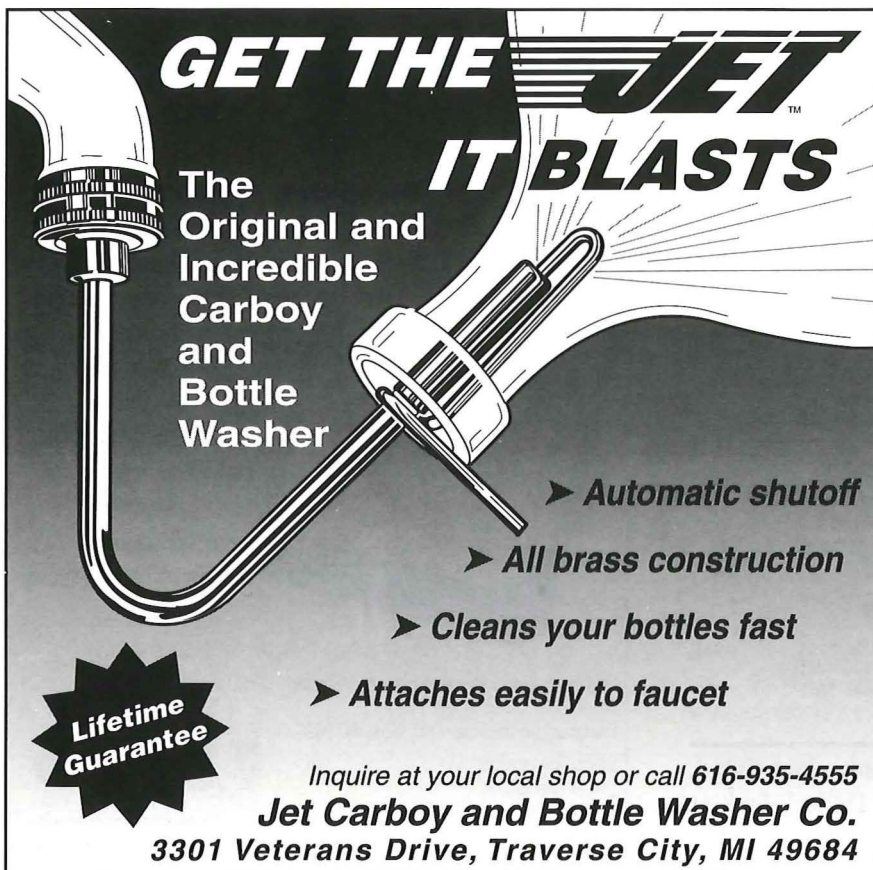


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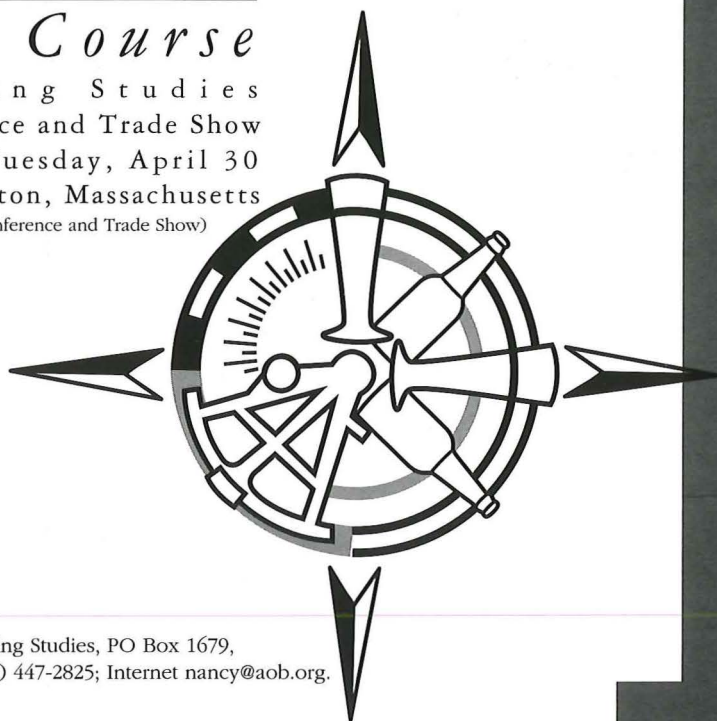
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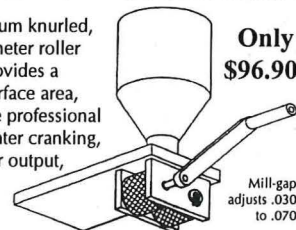
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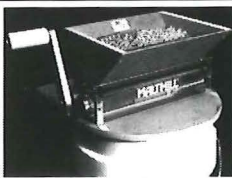
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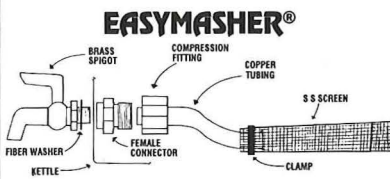
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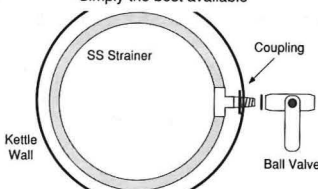
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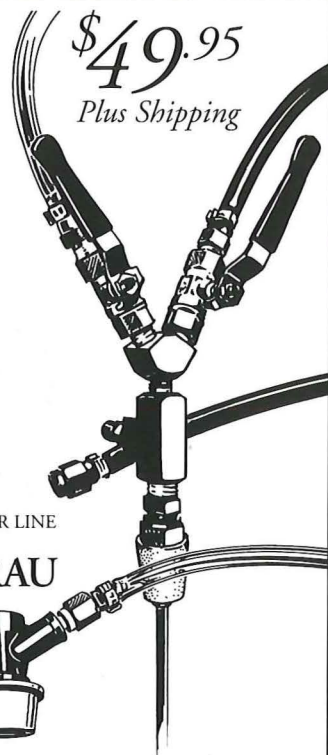


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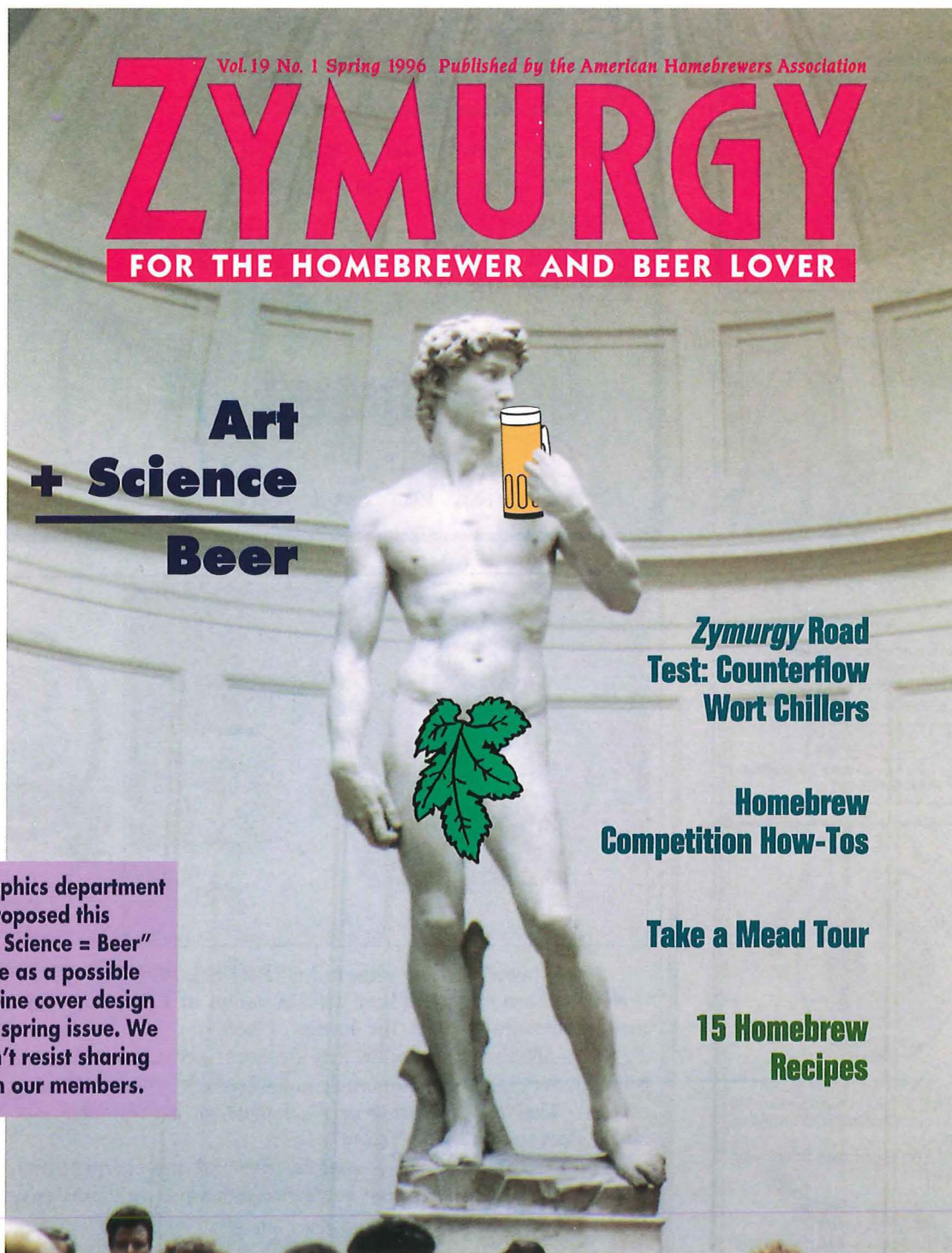
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Vol. 19 No. 1 Spring 1996 Published by the American Homebrewers Association

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Our graphics department proposed this "Art + Science = Beer" image as a possible magazine cover design for the spring issue. We couldn't resist sharing it with our members.

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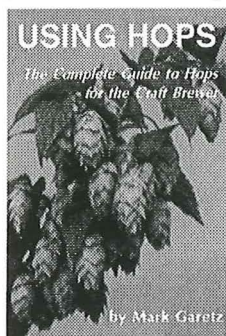
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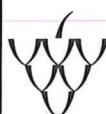
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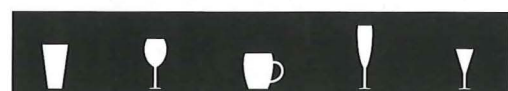


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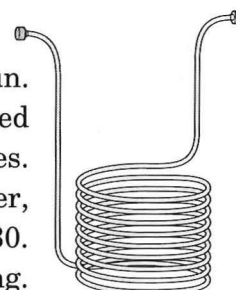
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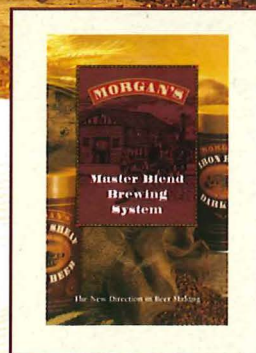


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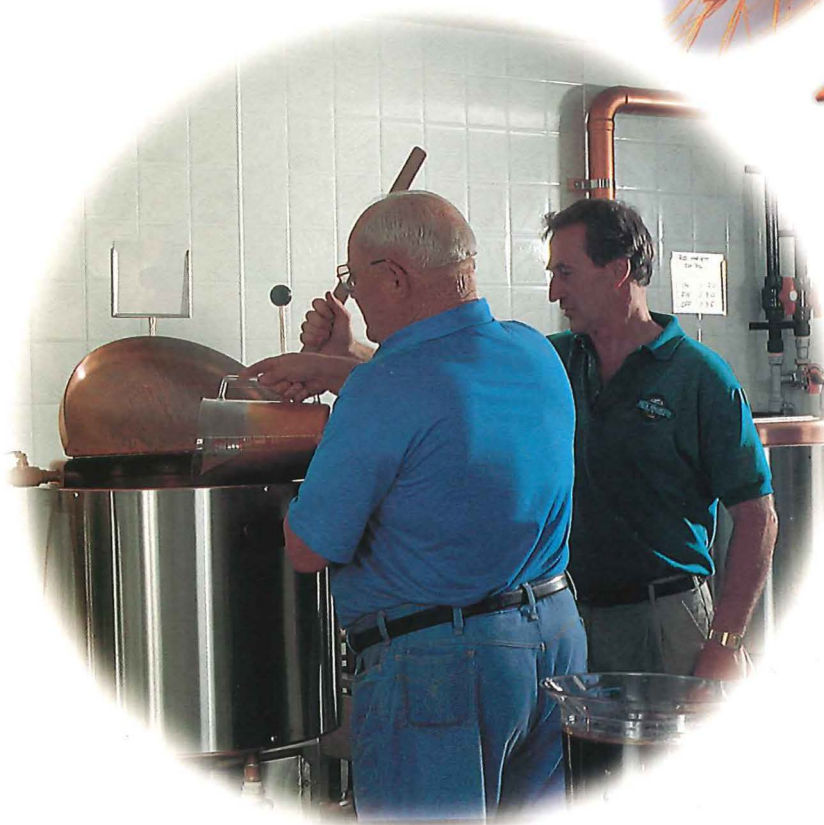
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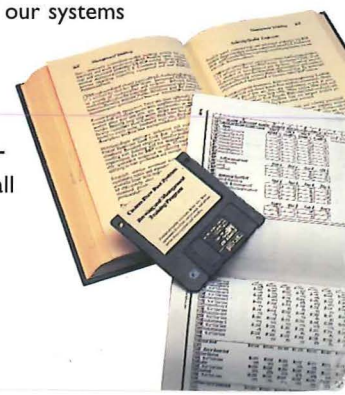
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