

Vol. 20 No. 2 Summer 1997 Published by the American Homebrewers Association

ZYMURGY

FOR THE HOMEBREWER AND BEER LOVER

Brew an American Tradition

Chill with Summer Soda

19 Water Wonders

Juggle Your Batches

Yeast Basics

AHA Registered Club List

26 Recipes

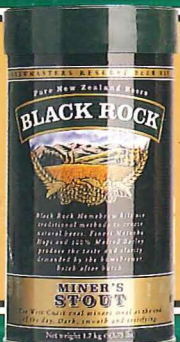
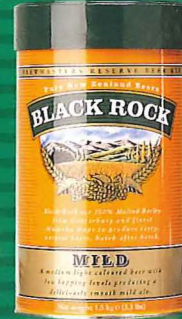
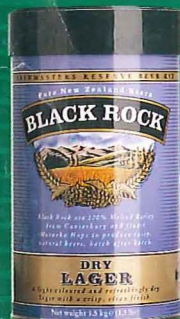
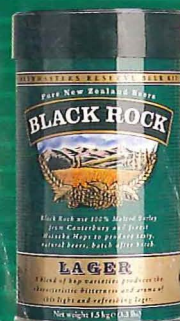
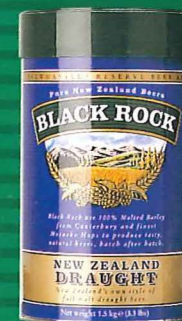
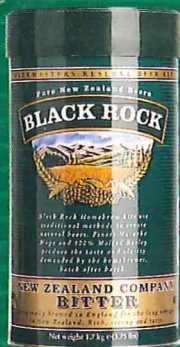


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To promote public awareness and appreciation of the quality and variety of beer through education, research and the collection and dissemination of information; to serve as a forum for the technological and cross-cultural aspects of the art of brewing; and to encourage responsible use of beer as an alcohol-containing beverage.

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20



VOLUME 20, NUMBER 2

FEATURES

CAPTURE THE PAST — THE REBIRTH OF PRE-PROHIBITION LAGER

MARK LISHERON

20

SIMPLY SODA

JIM DORSCH

26

SIPS AHoy —

WATER TREATMENT DEVICES FOR THE HOMEBREWER

GINGER WOTRING, Ph.D.

30

WILL JUGGLE FOR HOMEBREW

TIM RASTETTER

36

AHA REGISTERED HOMEBREW CLUB LIST

BETWEEN PAGES 42 & 43

DEPARTMENTS

Editorial	5
Dear <i>Zymurgy</i>	7
Brew News	9
Sponsors	43
Winners Circle	49
Dear Professor	59
New Products	61
Reviews	67
Homebrew Connection	71
Calendar	76
Classified	103
Advertiser Index	106
Last Drop	108

COLUMNS

JACKSON ON BEER At Liberty to Brew in Philly	13
MICHAEL JACKSON	
HOMEBREW COOKING Celebrate the Art of Beer and Food	15
JOSEPH STYKE	
TIPS AND GADGETS Quick Tips from Homebrewers Like You	19
OUR MEMBERS	
FOR THE BEGINNER Yeast at Work	45
ROBERT A. SCLAFANI, Ph.D.	
WORLD OF WORTS Turn-of-the-Century Chokecherry Charlie Barley Wine	55
CHARLIE PAPAZIAN	
BEST FROM KITS Cider — An Appealing Alternative	63
JAMES SLATON	

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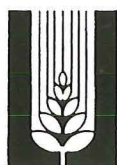
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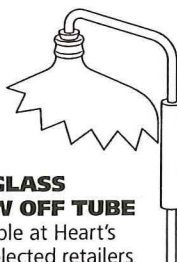
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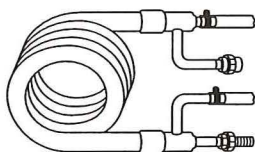
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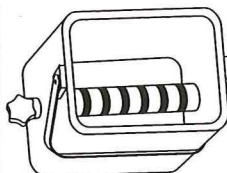
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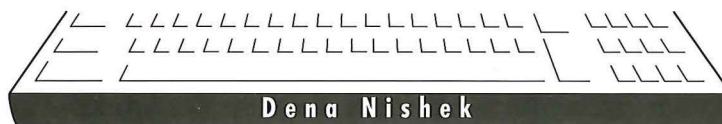
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EDITORIAL



Dena Nishek

Inspiration in a Copper Coil

I finally added a wort chiller to my homebrewing system. 'Bout time, many of you are probably saying. The truth is, changing your system can be difficult. You get used to a system, regardless of its quirks. You know what to expect and when. To introduce a new procedure – even when you know it's for the better – can take some nerve.

Adjusting my homebrewing to accommodate the chiller was simple. Virtually all I had to do was buy the thing. After sanitizing the immersion chiller in the boiling wort, I slide my brewpot onto a potholder on the counter between the stove and sink, hook the chiller to the faucet, make sure the outflow hose is going down the drain and I'm ready. It chills wort in about 20 minutes, cutting substantial time from my previous ice-bath method. I've shortened my lag time (and the time during which the kitchen is a mess) and I'm making better beer and worrying less. Of course, now I don't know why I didn't do this sooner.

Changing any system – be it brewing or making a magazine – is often met with apprehension even when we know the change will make a better product. In the past six months we've changed how we make *Zymurgy*. Like my brewing system before the addition of a wort chiller, our procedure was working, but the editorial and production schedules were cumbersome and lengthy. We knew we could do better. You could liken the change to shortening the lag time prior to pitching.



You won't see all of the changes because some affect the way we plan, edit and think about design for the magazine. Some changes you will notice. If you're reading this column you've probably noticed the first change – I'll be writing the editorial, representing the editor's voice and vision for the publication. You'll also notice the absence of "Association News" and "Club News." You told us in the latest reader survey that they are among your least favorite columns. In our attempt to bring you more of what you do like – features and recipes – we've shifted the association and club content to newsletters produced by the AHA.

Look for more relevant club information in the "Club Report," to be published six times annually and distributed to AHA registered homebrew clubs. "AHA News and Notes" will include information relative to your membership and Association, as well as an extra recipe or two. This newsletter is scheduled for publication with *Zymurgy* spring, fall and special issues.

We decided to do a little rearranging with the placement of advertisements, too. This should make the magazine easier to read and more balanced in its visual presentation. I won't point out every little change in our efforts to make *Zymurgy* more homebrewer friendly and streamlined – you get this magazine to read about the art and science of homebrewing, not of magazine production.

Certainly all change involves some compromise and risk. These were pretty negligible in the case of my wort chiller, but when we put the magazine's editorial and production schedules on the table and asked everyone to imagine a different way of doing things – a more streamlined way, a more communicative way – we were asking a lot. I want to thank the art, marketing and advertising departments for supporting the changes. Our efforts are worth it if you readers are pleased with the result.

I invite you to write to me with feedback and article ideas at PO Box 1679, Boulder, CO 80306-1679; FAX (303) 447-2825 or dena@aob.org via e-mail.



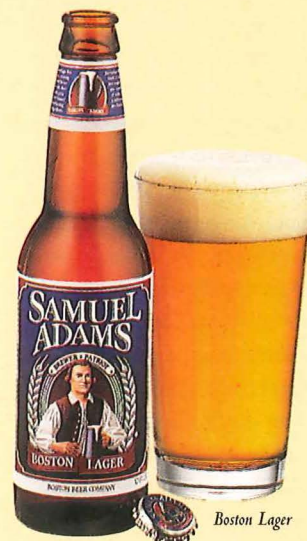
R&D.

Our nine brewers spend their time perfecting the brewing process at the traditional breweries where we brew our Samuel Adams beers.

With more than 125 different parameters to control in every batch, it's not surprising to find them tasting, testing, and talking beer deep into the night.

As they tell us all too often, a brewer's work is never done.

**The Brewers of
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DEAR ZYMURGY

Our Readers

Surprising Suds

Dear *Zymurgy*,

As a new initiate into the realm of homebrewing I have found myself somewhat alone in my ventures. For my first batch I attempted a wheat beer and it was an amazing failure. After that I thought I might have more success with a heavier beer so I tried a stout. I bought a well-known stout kit from my local supplier and was amazed at the outcome. Amazed, I say, not because of the finished stout, but because of the fine pale ale the stout kit produced. When I started the brew I expected a nice full-bodied, roasted barley brew, but ended up with a nice hoppy amber beer. My "stout" left me bewildered and confused. I wondered what I'd done wrong.

I took a bottle to the brew store that sold me the kit and asked them to take a look at it. I was not upset at the outcome, just perturbed. It turned out that the kit was mislabeled and the pale ale was no fault of mine. Without hesitation the man helping me set me up (free) with a complete extract recipe for stout. The point of this letter is to praise the supply store, as well as others, for caring about the homebrewer, especially the new brewer. I have found something very wonderful in the homebrewing experience. I would like to express my sincere gratitude to the people at that small store in Tallmadge, Ohio.

We brew because we can,
Gregory Giberson
Akron, Ohio

Homebrewed Banana Bottle

Dear *Zymurgy*,

Just a quick note to say I continue to enjoy your magazine (after five years of subscribing). I'm enclosing some photos of my latest creation, the Hefeweizen Banana Bottle, made because my friends really picked up on the banana (clove) flavor of that style of beer. I'm a glass blower who makes specialty bottles, carboys and beer glasses to suit. Anyway, I thought you might get a kick out of it. Keep up the good work.

Aloha,
Ed Schmid
Bellingham, Wash.



Inspired by the banana esters in his weizen, Ed Schmid made a beer bottle worthy of his best homebrew.

Personal Motivation

Dear *Zymurgy*,

I very much enjoyed the Special Issue 1996 (Vol. 19, No. 4), Why We Brew. I had to laugh, however, because on the wall next to the sink in the "brewery" corner of my basement is a collage of labels from every skunky, miserable commercial beer we've stripped the labels from when prepping bottles. We call that piece of folk art, "Why We Brew."

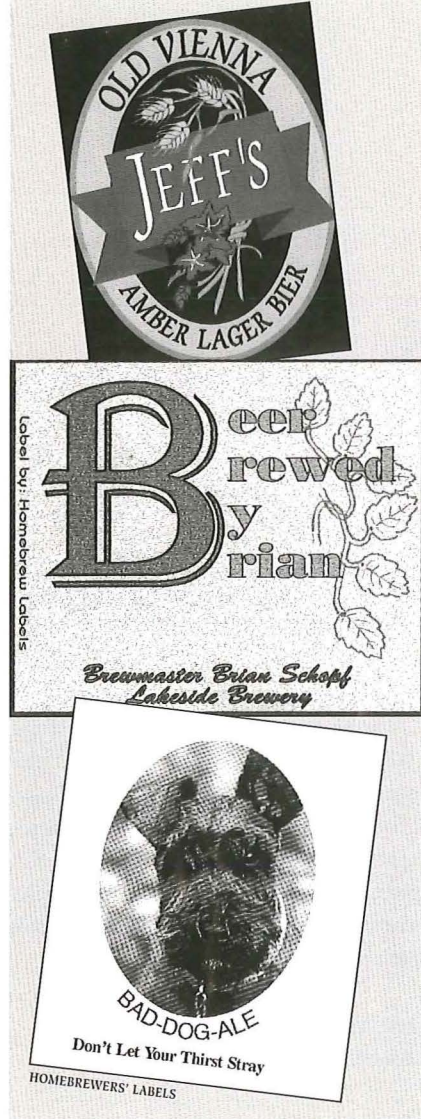
Steve Waddell
Louisville, Ky.

Better Safe Than Sorry

Dear *Zymurgy*,

I was pleased you informed your readers of the possible hazards to pets of ingesting spent hops. On the other hand, I was a little set back by the critical tone of Gerard W. Ch. Lemmens' response to that information. Information such as that published about hop toxicity can be more helpful than harmful. The possible toxicity of hops to dogs will not stop people from buying and using hops. I would compare this subject to that of dogs and chocolate. It is commonly known that chocolate is sometimes toxic to dogs, yet billions of people — even dog owners — buy, store and consume chocolate every day. Dogs can consume chocolate without dying, but deaths do occur.

One thing must be understood about the original article — greyhounds are special-



needs dogs. I am the happy owner of a retired greyhound named Max. When my wife and I adopted Max we were informed, and reminded several times, about the peculiarities of the breed. For example, when anesthesia is used on a greyhound extreme care must be taken. The types and dosages used for other breeds could kill a greyhound because their systems are extremely sensitive. The sensitive nature of greyhound chemistry is why a greyhound might die from eating hops while any number of other creatures would not be affected at all.

Thanks to the information your magazine has given me, I now remove all spent materials from inside the house while the wort is chilling to ensure my dog's safety. I have passed on the information about spent hops and greyhounds to my local greyhound adoption group for publication in their newsletter. I hope it will make a difference in at least one household.

The U.S. hop industry should not be offended by the publication of such information. It is only meant to help pet owners and it will not hurt their precious bottom line.

Thank you again,
Jim Hackett
Hamden, Conn.

Checking the Small Print

Dear AHA,

In the small print of the AHA 1997 National Homebrew Competition Rules and Regulations, there is some text I don't quite understand the rationale behind. It states in rule F: "... Upon entering this Competition, entrants agree to allow (at no cost) publication of their recipe by the Association of Brewers or any of its divisions in any publication. The recipe becomes the intellectual property of the AHA. Entrant will receive all due credit."

Why am I signing away my rights to the AHA? I could see agreeing to publication of my recipe in future issues of *Zymurgy*, but all rights? That's ridiculous. If you're not asking for all rights, then maybe you need a clarification in *Zymurgy*. If you do want all rights, then this may help me decide not to enter the Nationals.

My beer may not be the greatest thing since Arthur Guinness came up with his stout, but it is mine, and my intellectual property. Should I win a ribbon, then the North American first printing rights are yours, gratis.

Later,
Robert Marshall
via e-mail

*It was never the intention of the AHA to own the recipes. The AHA was trying to provide copyright protection for the brewer and the National Homebrew Competition. Sometimes recipes are used without notifying the brewer or the AHA. If you win in the National Competition the AHA would like to publish your recipe in *Zymurgy* and ensure that others who publish your recipe give due credit to the brewer and the AHA National Homebrew Competition. — Caroline Duncker, AHA project coordinator*

A Stylish Protector

Dear *Zymurgy*,

Regarding "Well-Guarded Wort" in *Zymurgy* Spring 1996 (Vol. 19, No. 1), "Tips and Gadgets," a method I've used that seems to be very effective at keeping light away from my wort is using a dark-colored turtleneck to cover the carboy. I put the jersey over the carboy and tie the sleeves at the back for a secure protector.

Hoping you like my idea,
Jim M. Waring
Fall River, Mass.

Good idea! Keep mailing your clever tip and gadget ideas to PO Box 1679, Boulder, CO 80306-1679. — Ed.

Gas Leak

Dear *Zymurgy*,

In *Zymurgy* Spring 1996 (Vol. 19, No. 1), a reader asked Professor Surfeit about uneven carbonation across bottles within a batch. The Professor diagnosed the problem as "a mixing/stirring thing" (is this a technical term?) and/or inadequately rinsed serving glasses. Could be, but I used to have this problem regularly for a different reason. Eventually I noticed my resealable Grolsch-type bottles were never flat, only the crimp-capped bottles. I began checking my bottle caps after opening each bottle. Sure enough, the seal inside every one of the flat bottles was contorted out of shape. Perhaps I had just purchased some bad caps, but I suspect instead that I was boiling the caps too long. Since then I have been careful to avoid this mistake, and I haven't had the problem.

Just my \$0.02 worth,
Lee Kirkpatrick
Williamsburg, Va.

Boiling isn't the best way to sanitize bottle caps, especially the PureSeal™ caps. A better method is a soak them in dilute bleach or iodophor solution. — Ed.

BREW NEWS

Amahl Turczyn

HEAD LINES



Coors Brewing Co. hopes beer and brewing education will help culinary professionals communicate effectively with the growing number of beer connoisseurs.

Beer Course Required at University

At Rhode Island's renowned culinary school, Johnson and Wales University, the course "Principles of Beverage Service: Beer" is required for all students. After a Coors Brewing Co. employee graduated from the school, the Golden brewery donated a functional microbrewery, pub and brewing lab. Brewmaster Edward Korry, who runs the microbrewery, considers the beer education a natural extension of the culinary curriculum. There's no chugging, though, a sip is all students get. In fact, because the school isn't licensed to serve beer (no fun when you have a pub), some of the first batches to come from the brewery had to be dumped. Even though all students in the culinary program must take the course, there will be no major offered in that field. (*The Denver Post*, Oct. 11, 1996)

Rodenbach Employee Wins Olympic Gold

Frederik Dehurghraeve, a computer specialist at the Rodenbach Brewery in Roeslare, Belgium, began swimming under the recommendation of his doctor. A sufferer of chronic asthma, Frederik found the aerobic exercise helped his condition. He soon began to take swimming as seriously as his brewery job. Without an Olympic-sized pool for training and of smaller stature than most competitive swimmers, he persevered, his coach faxing his workouts from 70 kilometers away in Antwerp. With a diet that included one daily beer — Rodenbach — Frederik first won the European championships and went on to take a gold medal in the 1996 Summer Olympics in Atlanta. (Vanberg and DeWulf, December 1996)

Toy Microbrewery Trucks

Matchbox Collectibles, a division of Tyco Ltd., offers a line of toy trucks for beer lovers. The Great American Microbreweries Collection features 24 toy vehicles, each displaying a different microbrewery logo. Among the microbreweries included are Left Hand Brewing of Longmont, Colo.; Wild Goose Brewery of Cambridge, Md.; Alaskan Brewing of Juneau; North Coast Brewing of Fort Bragg, Calif., and Boston Beer Co. of Boston, Mass. (Boulder Daily Camera, Nov. 13, 1996)



Size really doesn't matter when it comes to these Matchbox microbrewery beer trucks. Collect all 24.

North American Brewery List

The following information is provided by the Institute for Brewing Studies. A complete list of breweries and brewpubs is updated quarterly and available for \$5 from the Association of Brewers at (303) 447-0816. Check <http://beertown.org> on the World Wide Web for more frequent updates. For corrections, omissions or additions, please contact the Institute at ibs@nab.org or (303) 447-0816.

OPENINGS

(As of Feb. 3, 1997)

UNITED STATES

Regional Breweries

California: Pyramid Brewery and Alehouse, Berkeley

Microbreweries

Alaska: Borealis Brewery, Anchorage

California: Yosemite Brewing Co., Mariposa

Connecticut: Essex Brewing Co., Niantic; Mystic River Brewing Co., Mystic

Georgia: Sweetwater Brewing Co., Atlanta

Illinois: Bent River Brewing Co., Moline

Indiana: Circle City Beer Works/James Edwards Breweries/Indianapolis

Michigan: Atwater Block Brewing Co., Detroit

New Jersey: Breakers Brewing Co., Allentown

Pennsylvania: Henry Ortlieb's Original/Philadelphia Beer Works, Philadelphia

Rhode Island: Great Providence Brewing Co., Providence

South Carolina: Southeastern Brewing Co., Lexington

Vermont: Hinesburg Brewing Co., Hinesburg

Brewpubs

Arizona: A-Z Brewing Co., Paradise Valley; Barley Brothers Brewery and Grill, Lake Havasu City

California: Golden Gate Park Brewing Co., San Francisco; Island Brewing and Pizza, Newport Beach; Kelley Brothers Brewing Co., Riverbank; Reckless Abandon, Santa Clara

Colorado: BJ's Pizza Grill and Brewery, Boulder; Linden's Brewing Co., Fort Collins; Phantom Canyon Brewing Co., Colorado Springs

Connecticut: Brewery at Ninth Square, New Haven; John Harvard's Brewhouse (No. 8), Westport; Main Street Café/Willimantic Brewing Co., Willimantic; Trout Brook Brewing Co., Hartford

District of Columbia: John Harvard's Brewhouse (No. 7)

Florida: Big Bear Brewery, Pompano Beach

Illinois: Forest City Brewing Co., Rockford

Iowa: Raccoon River Brewing Co., Des Moines; Saint's Brewing Co., West Des Moines

Maryland: Capitol City Brewing Co. (No. 3), Bethesda; Rock Bottom Brewing Co. (No. 12), Bethesda; Worcester Street Brewing Co. and Brick Oven Pizza, Ocean City

Michigan: Black River Bistro and Brewing, Holland

Minnesota: Watertown Brewing Co., Eden Prairie

New Mexico: High Desert Brewing Co., Las Cruces

New York: Empire Brewing Co. (No. 2), Rochester; Harbor Brewing Co., Brooklyn; John Harvard's Brewhouse, (No. 9), Lake Grove; Your Father's Mustache, Buffalo

New Jersey: Trap Rock Restaurant and Brewery, Berkeley Heights

Pennsylvania: Dirty Dawg Brewing Co., North Wales; Gettysbrew, Gettysburg; John Harvard's Brewhouse (No. 6), Wayne; Starview Brewing Co., Mt. Wolf; Strip Brewing Co., Pittsburgh

South Carolina: Smaragada's Table, Clemson

Texas: USA Café, Fort Worth

Washington: North Fork Brewers, Deming

Oregon: Southern Oregon and Pacific Brewing Co., Medford

Contract Breweries

New Jersey: Shore Brewing Co., Harvey Cedars

New York: Buffalo Brewing Co., Lackawanna

Washington, D.C.: Washington Brewing Co.

CANADA

Microbreweries

British Columbia: Shady Island Brewing Co., Richmond

Ontario: Magnotta Brewery, Mississauga

Brewpubs

British Columbia: Windemere Valley Brewing Co., Invermere

Nova Scotia: Maxwell's Plum English Pub, Halifax

CLOSINGS

UNITED STATES

California: Café Pacifica/Sankt Gallen Brewing Co., San Francisco

Colorado: Cherry Creek Brewing Co., Denver; Eldorado Canyon Brewing Co., Broomfield; Powers Brewing Co., Brighton; Tivoli Brewing Co., Denver

CANADA

Ontario: F & M Breweries, Guelph

Belgian Brewpubs to Open in U.S.

Belgian beermakers Brouwerij Sterkens and Minneapolis-based All-Saint's Brands have signed an agreement to bring Belgian beer to the United States in the form of St. Sebastiaan Belgian Microbreweries. Since All-Saint's began importing Sterkens' products in 1994, North America has become one of Sterkens' fastest-growing markets. Several brewpubs are scheduled to open across the country using the original Sterkens recipes. All brewing operations will

be overseen by members of the Belgian company to assure top quality. (St. Anthony Main, Nov. 11, 1996)

Interbrew to Market Globally

While big brewers like Guinness and Anheuser-Busch are seeking to consolidate available brands in the next two decades, Interbrew of Belgium wants to make more than 200 regional and specialty beers available in such far-flung markets as Eastern Europe and China. Such disparate beers as

the Belgian white Hoegaarden, dark abbey-styles and American Rolling Rock are all in the company's portfolio for global export. Interbrew is the world's sixth largest brewer by volume, having acquired John Labatt Ltd. of Canada last year. Although they are gambling that such widely varying beers will appeal to foreign markets, Interbrew's Johnny Thijs and Hugo Powell don't want to see the world market dominated by two brands 20 years from now. They said, "We believe in local markets, local brands, local management with local vision." (*The Wall Street Journal*, Nov. 26, 1996) (continued on page 79)

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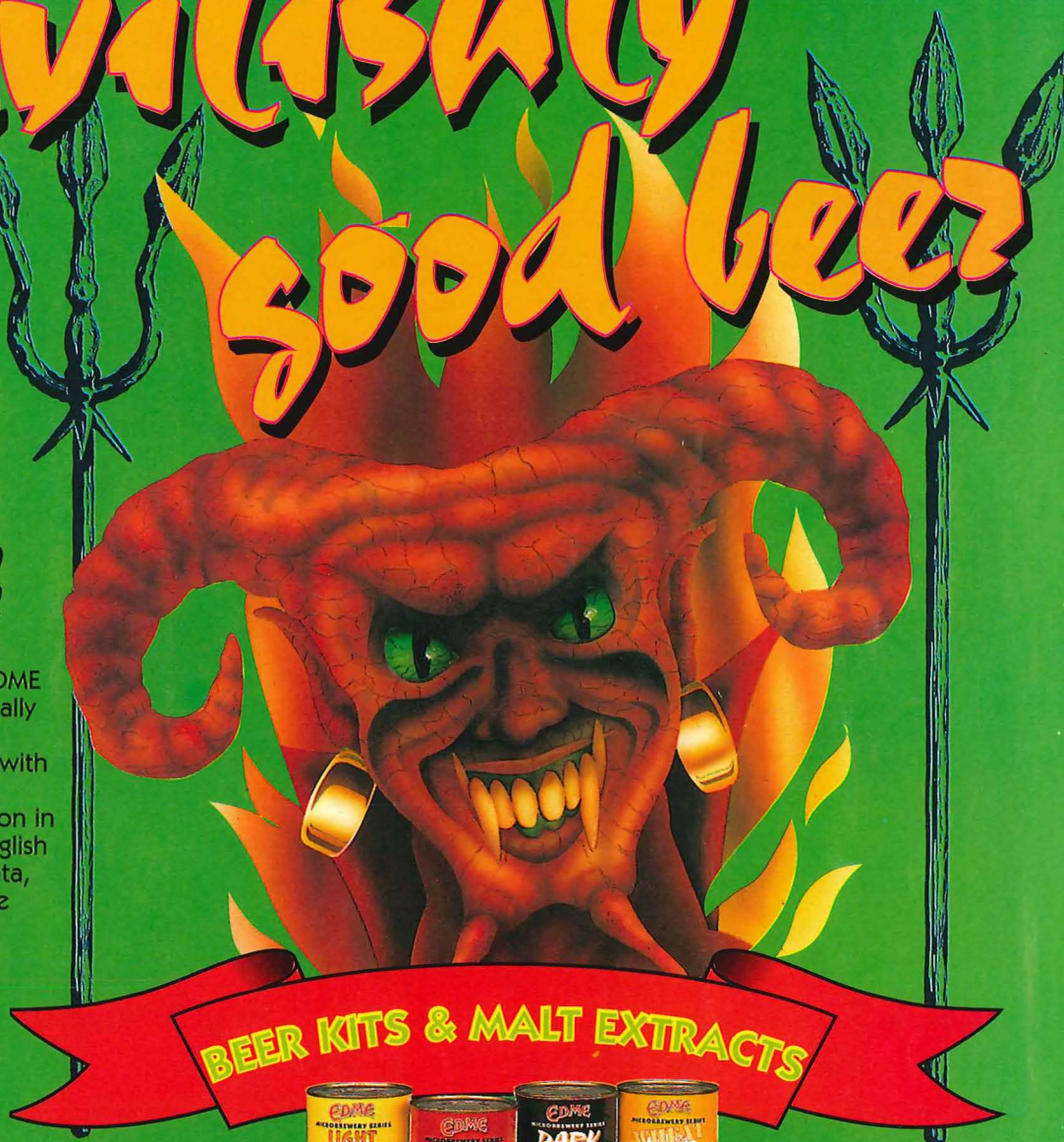
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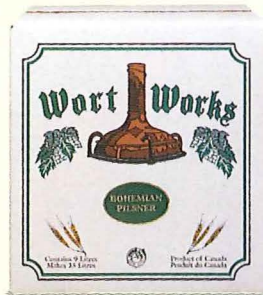
RDZ



This is Sean. He's our beer guy.

Matter of fact, around Brew King, we call him "The Beer Guy".

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all-malt brewing kit even by Sean's Sean belongs to that brewing purists - commercial brews and for their own brewing Sean would never cut

elite group of home the ones that scoff at most insist on choice natural ingredients masterpieces. With Wort Works,



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brew kettle. Sean even insisted

on including a special dry hop package

for extra aroma and flavour. And true to

form, his instructions are comprehensive,

even with information on the specific

ingredients used. Sean's no dummy. He made Wort Works with his

fellow homebrewers in mind, but he also made sure

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At Liberty to Brew in Philly

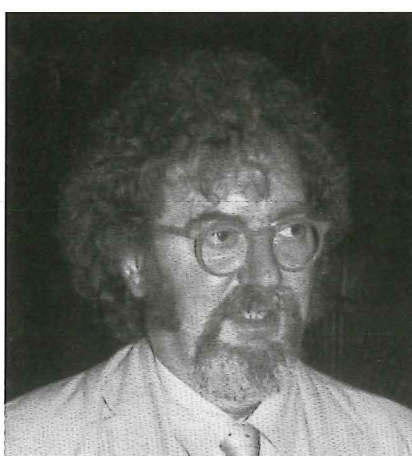
The Declaration of Independence was signed in Philadelphia and that provided a moniker for the city's first free-standing microbrewery, established in 1995. The Independence Brewing Co. was founded by Bob Connor, who collected beer cans in his youth, worked part time for a Budweiser distributor while attending college and later made a few dollars working for an investment banking firm.

The brewery is in an Irish neighborhood, well-served with bars, on the northeast edge of the city. Its spacious premises once housed a firm that made gravestones and was later a foundry for manhole covers. Now it accommodates a smart stainless-steel 40-barrel brewhouse.

The beers are produced by Bill Moore, who formerly worked for Carol Stoudt at the respected Stoudt's Brewery in nearby Adamstown. Bill makes complex beers using up to six malts and four or five hop varieties in each.

I visited Independence in the early weeks of operation and tasted its first product. This was a smooth, flavorful, chocolatey brew of 1.050 to 1.052 original gravity (4.8 to 5.0 percent alcohol by volume) called Independence Ale.

I also sampled from the tank a prototype golden ale, fruitier and fractionally lower in gravity and alcohol (1.048 to 1.050 original gravity, 4.6 to 4.8 percent alcohol by volume). This went into regular production soon afterward as Independence Gold. The brewery has since added a malty Dortmund (1.050 original gravity, 5 percent alcohol by volume) called Independence Lager and



Independence Oktoberfest (1.052 original gravity, 5.4 percent alcohol by volume).

On its cases of beer, Independence prints the legend, "Not a brewpub, not a contract beer, but an authentic microbrewery. Our recipes, our equipment, our brewery." The reference to contract brews rang a bell for me – not Philadelphia's cherished Liberty Bell, but a red one.

A company called Red Bell went into business in Philadelphia, contracting to var-

ious Pennsylvania breweries to make beers under its name. The founders were stockbroker Jim Bell (who has red hair) and brewer Jim Cancro, formerly of the city's Dock Street Brewing Co.

Now they have linked with two additional partners and installed their own kettles in a former brewery. The old brewery was called F.A. Poth. Established in the 1860s, the surviving buildings date from 1895 when the company was making 180,000 barrels a year. The five-story brick structure is by far the most complete old brewery building in Philadelphia, but there are vestiges of at least four more breweries in the immediate neighborhood.

Philadelphia was once a very German city, a beermaking capital with about 100 breweries at the turn of the century. F.A. Poth and its neighbors comprised a brewery town neighborhood about a mile north of the city center.

A writer of the time described in wonderfully evocative language, "The air was as rich and nourishing as vaporized bread. It seeped everywhere, reaching as far as the old

Craft-Brewing Hot Spots in the Philly Area

Dock Street Brewing Co. Brewery and Restaurant (brewpub)	(215) 496-0413	Philadelphia Brewing Co./Samuel Adams Brewhouse (brewpub)	(215) 563-2326
Fredimo Bottlers Inc. (contract brewing company)	(610) 975-9866	Red Bell Brewery and Pub at Core States Center (brewpub)	(215) 235-2460
Independence Brewing Co. (microbrewery)	(215) 537-2337	Red Bell Brewing Co. (microbrewery with restaurant)	(215) 822-7117
Manayunk Malt and Hops Co. (contract brewing company)	(800) 625-8467	Valley Forge Brewing Co. (brewpub)	(610) 687-8700
		Yards Brewing Co. (microbrewery)	(215) 482-9109

ballpark. The neighborhood was populated by renowned brewmasters, by titanic drivers in leather aprons and by giant draft horses with backs broad enough to play pinochle on. It was a place for family bakeries and rich delicatessens ... a neighborhood scrubbed within an inch of its placid life."

Red Bell is trying to restore its site as a tower brewery. Their new 40-barrel kettle had to be lowered through the roof—the walls are 36 inches thick and the floors 46 inches.

I was there just before the kettle was due to be fired, so the beers I tasted had all been

brewed elsewhere under contract. I particularly enjoyed a Black Cherry Stout (1.060, 6.3 percent alcohol by volume), blending cough syrup fruit flavors with a suggestion of roasted coffee. An IPA (1.056 original gravity, 5.8 percent alcohol by volume) had an earthy hop aroma, grassy flavors, a softly malty background and a dry, appetizing finish. Strawberry Mansion Wheat, named after a local landmark, was made with real fruit and also fruit extract. It was a creamy (4.8 percent alcohol by volume), fruity beer with a suggestion of hazelnuts.

For a further sense of Old Philly, I headed to Manayunk. The name derives from the Indian word for "where we go to drink." The district's hilly streets and traditional ethnic makeup leads to its being known as the Polish Alps. In recent years it has sprouted craft and antique shops and restaurants, and has become a Philadelphia village much as Greenwich is to London.

Now two lovers of British beer have established a tiny microbrewery in an old yarn mill. Jon Bovit previously sold upholstery fabrics and Tom Kehoe dealt in computers, but both were homebrewers.

They worked for a time at the British-accented Oxford Brewing Co. in Maryland before setting up their own. Their brewery is called Yards.

"Why?" I asked.

"Breweries have yards. Even we have a brewery yard," offered one partner. The home-made brewhouse initially produced only 3.5 barrels, but capacity is now 1,000 barrels.

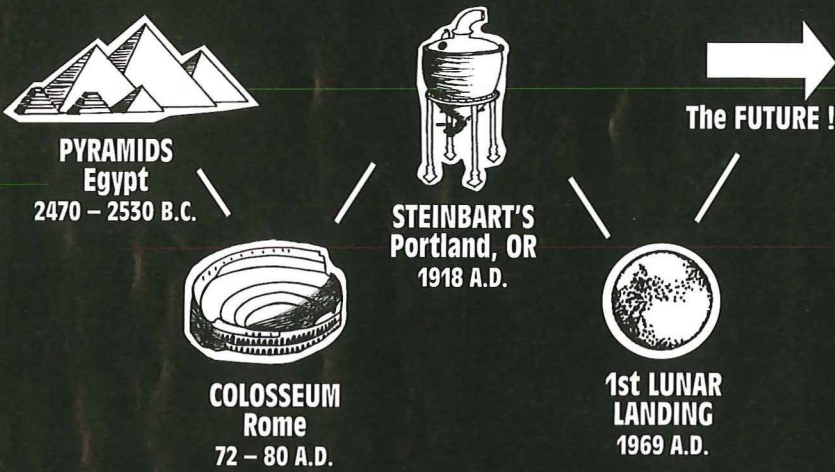
Their big-tasting, complex traditional brews include a strong, extremely dry IPA (8 percent alcohol by volume) which I tasted unfinished, a malty, hop-leafy, almost gingery ESA (Extra Special Ale, 5.75 percent alcohol by volume) and a delicious treacly Old Ale (6.25 percent alcohol by volume) with Demerara sugar in the boil.

Anxious to avoid counterrevolutionary sentiments, I headed to Valley Forge in Wayne, site of a decisive battle in the War of Independence. There in a mall I found the Valley Forge Brewpub. Its offerings include the sweetish Redcoat Ale, the well-balanced Regiment Ale, the chocolatey George's Porter and a whiskeyish Maibock.

I should have tried the beer daiquiris, but I was in a hurry. I had to get out before Washington's troops arrived.

Reprinted from What's Brewing with permission from the author.

Michael Jackson, internationally the best-known writer on beer, was awarded the Gold Tankard for 1996 Beer Writer of the Year by the British Guild of Beer Writers. His *Beer Companion* (Running Press, 1993) was awarded the 1994 Glenfiddich Trophy and the Andre Simon Award. Michael's articles, books, documentary videos and CD-ROM introduce beer styles to countless drinkers and brewers outside their native lands.



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HOMEBREW COOKING

Joseph Styke

Celebrate the Art of Beer and Food



With summer here two things come to mind – my grill and my beer. Nothing is better than having friends over to enjoy food from the grill and beer brewed during the winter and spring. The pairings of food with beer can be as varied as with wine, and just as delicious. Gourmet food and beer like the ones I present at the Waterclub Seafood Grill in Plymouth, Mich., are becoming quite popular around the country.

These recipes create a classy dinner party menu of sea scallop seviche with papaya-mango salsa served with Hoegaarden white; grilled portobello mushrooms with roasted garlic, roasted peppers and goat cheese just for starters, then a chilled fruit soup with spice broth. The salad is baby greens with tarragon-Saaz-Dijon vinaigrette served with Belgian blond or Kölsch. A charcoal-grilled tuna steak in citrus porter marinade served with English special bitter or English mild brown ale makes a light but satisfying main dish. For dessert, expand your beer and food horizons with lambic sorbet served with gueuze or faro, or try the sumptuous porter vanilla ice cream with black porter sauce accompanied by oatmeal stout.



Fruit Ale Sorbet

What could be better than sorbet and Champagne? If you ask me, it would be sorbet and lambic, the Champagne of Belgium.

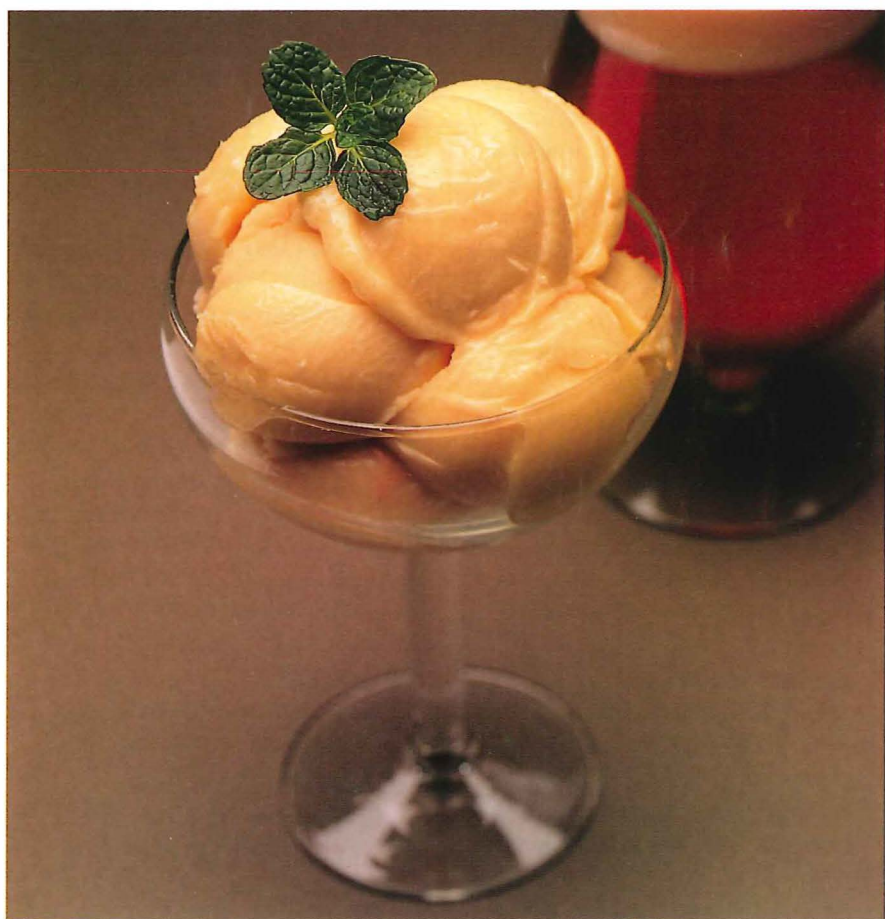
Makes 3/4 qt (0.71L)

22 oz fruit ale or fruit lambic with hearty fruit flavor and low hop profile (0.6 L)

- 3 oz water (89 mL)**
- 2 oz sugar (59 mL)**
- 1/2 lemon, juiced**

Heat water and sugar in a stainless-steel pan until sugar is dissolved and water is clear. Pour into a container and chill. Pour ale into a pan and heat to 170 degrees F (77 degrees C). As the alcohol cooks off

the temperature will rise. Do not allow the beer to boil. Pour into sugar water and add lemon juice. Stir and chill. Add mixture to ice cream maker and follow manufacturer's instructions or pour into a stainless-steel bowl and freeze. Stir when ice crystals form, repeating until you achieve a fine consistency. Place in plastic container, cover and freeze 24 hours. Serve with fruit lambic.





Scallop Ceviche with Papaya Mango Salsa

The tropical flavors of papaya and mango combine with fresh cilantro to contrast the heat of the jalapeños.

Serves 6 Ceviche

- 2 1/2 lb sea scallops (20/30 size) (1.13 kg)
- fresh squeezed lemon juice
(enough to cover scallops)
- Belgian wit (white) beer (enough
to cover scallops)

Rinse scallops well under cold water and pat dry with paper towels. Place in a glass or stainless-steel pan. Pour lemon juice to cover scallops, cover bowl with plastic wrap and refrigerate 24 hours. The acid from the lemon juice "cooks" the scallops. Four hours before serving, strain scallops, place in a clean non-reactive bowl, cover with beer and refrigerate.


Salsa

- 2 ripe papayas, peeled, seeded and cut into half-inch dice
- 2 ripe mangos, peeled, seeded and cut into half-inch dice
- 1/4 cup red onion cut into small dice (59 mL)
- 1 red bell pepper, roasted*, skinned, seeded and cut into small dice
- 1 jalapeño pepper, seeded and cut into fine dice
- 1 clove fresh garlic
- 1/2 cup fresh cilantro (118 mL)
- 1/4 cup fresh squeezed lime juice (59 mL)
- 2 tbsp olive oil (30 mL)
- fresh chives, for garnish

Place papaya, mango, onion, jalapeño and red pepper in a stainless-steel or glass bowl. Put cilantro, garlic, lime juice and olive oil in a blender or food processor and pulse until ingredients are well-blended. Pour over papaya mixture and mix well. Refrigerate overnight.

To serve, drain scallops. Place a bed of salsa on a small plate, place six ounces of scallops on salsa and garnish with fresh chives. Enjoy with Belgian wit (white) beer.

*To roast pepper, rub the outside with olive oil and char on a grill or gas burner until the skin is blackened. Quickly place pepper in a bowl, cover with plastic wrap and allow to "sweat" for 30 minutes. Remove pepper from bowl, peel and discard seeds.



Grilled Portobello Mushroom with Roasted Peppers, Garlic and Goat Cheese


The smooth roast garlic, meaty mushrooms and tangy goat cheese pair perfectly with Pilsener.

Serves 4

- 4 medium portobello mushrooms
- roasted red and yellow pepper strips
- roasted garlic*
- fresh basil, chopped
- 2 mini logs of herbed goat cheese

Remove stems and wash mushrooms. Rub mushrooms with olive oil and grill like steak until done – a few minutes on each side. Turn upside down and rub roasted garlic into the gills. Sprinkle with fresh basil to taste, lay pepper strips on mushrooms and top with crumbled goat cheese. Grill until cheese is soft and serve with Pilsener.

*To roast garlic, peel as much dry skin as possible from a whole bulb of fresh garlic. Cut off the top of the bulb so all the cloves are exposed. Rub with olive oil and wrap in foil with two tablespoons Pilsener and roast on a covered grill or in a 400-degree-F oven for 20 minutes or until garlic is soft and can be squeezed out and spread like butter.



Chilled Fruit in Spice Broth

I chose Schneider-Weisse as the beer element in this soup because the clove flavors complement the vanilla and anise.

Serves 6

- 1 vanilla bean, cut in half lengthwise
- 1 1/4 inch thick slice of fresh ginger
- 1 star anise, crushed
- 1 two-inch cinnamon stick
- 1/2 cup sugar (118 mL)
- 1 qt water (0.95 L)
- 1 orange, juiced
- 1/2 cup Schneider-Weisse (118 mL)
- 1/2 pineapple, peeled, cored and cut into half-inch dice (118 mL)
- 2 kiwi fruits, peeled and cut into small dice
- 1 cup assorted berries (blueberries, raspberries, strawberries, blackberries, thimbleberries, gooseberries, marion berries, red currants) (237 mL)

Combine vanilla bean, ginger, star anise, cinnamon, sugar, water, orange juice and beer in a pot with a tight-fitting lid. Heat to 170 degrees F (77 degrees C) and hold for 15 minutes. Remove from heat and cool to room temperature. Strain through fine mesh. Scrape seeds from the vanilla bean and stir into broth. Add fruit and chill in refrigerator for two hours. Serve in chilled bowls with a spicy Munich weisse.



Tarragon-Saaz-Dijon Vinaigrette

For the beer dinners, I serve a Bavarian wheat beer with fruit vinaigrettes. However, with herb vinaigrettes like basil, chervil or tarragon Dijon, a Belgian blond or Kölsch is perfect.

Dressing

Makes 14 oz (414 mL)

- 1 cup olive oil (237 mL)
- 3 1/2 oz tarragon vinegar (103 mL)
- 1 small clove fresh garlic, peeled
- 1 small shallot, peeled
- 2 tbsp fresh tarragon (10 mL)
- 1 1/2 g Czech Saaz hops, 3.1% alpha acid (about two whole hop flowers)
- 3 tbsp Dijon mustard (44 mL)
- salt and white pepper to taste
- roasted red and yellow bell pepper and red onion strips (for garnish)

Salad

mixed wild field greens (also sold as spring mix): frisee, tat-soi, mache, lollo-rosso, baby red oak, tango, baby spinach

Place oil, vinegar, garlic, shallot, tarragon, hops and mustard in a blender and blend one minute. Toss greens in a bowl with dressing. Garnish with peppers and onion. Serve with Belgian blond, India pale ale or Kölsch.



Tuna Steaks in Citrus Porter Marinade

I enjoy brown ale with this dish because its smoothness and slight sweetness don't compete with the tuna marinade. If you serve bitter, the soft hop bite provides a nice contrast to the nuttiness and malt of the porter in the marinade.

Serves 4

- 4 8-oz yellowfin tuna steaks

Marinade

- 1 lime, juice and zest
- 1 lemon, juice and zest
- 1 orange, juice and zest
- 6 oz honey (177 mL)
- 6 oz olive oil (177 mL)
- 3 cloves fresh garlic, finely minced
- 1 tbsp dry mustard (15 mL)
- 8 tbsp Inner Beauty brand black marlin sauce (118 mL) (available in most large grocery stores or specialty food markets)
- 12 oz porter (355 mL)
- 1/4 tsp each salt and pepper (1.2 mL)

Place marinade ingredients in bowl and mix well. Place tuna steaks in nonreactive pan, pour marinade over, cover and refrigerate four or five hours. Grill to desired doneness and serve with English mild brown ale or special bitter.



Vanilla Porter Ice Cream with Porter Sauce

People who aren't homebrewers may question the combination of beer and ice cream, but we know better. This ice cream is rich and creamy – and what better topping than a thick wortlike sauce.

Makes 1 1/4 gal (4.73 L)

Ice cream

- 24 egg yolks
- 1 1/2 lb sugar (0.68 kg)
- 2 qt milk (1.89 L)
- 1 qt heavy cream (0.95 L)
- 4 tsp vanilla (20 mL)
- 1/4 tsp salt (1.2 mL)
- porter

Porter sauce

Makes 1 qt

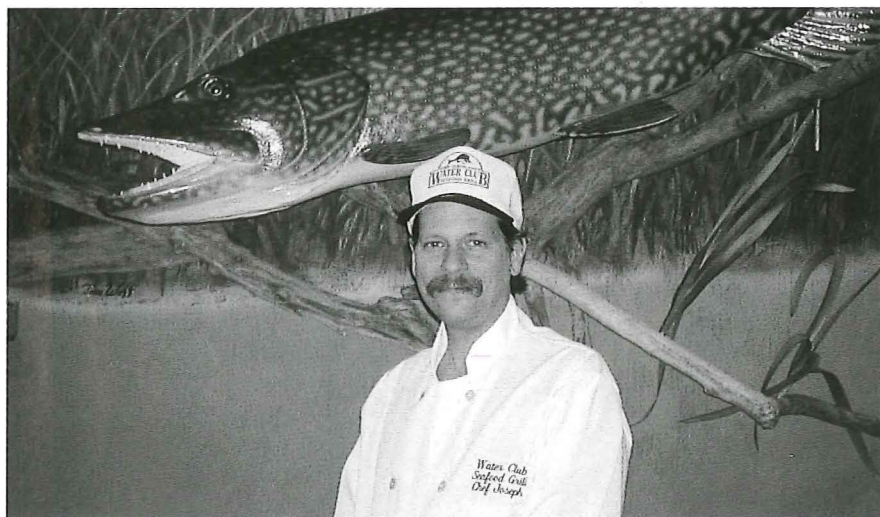
- 1 lb Munton and Fison light malt extract (0.45 kg)
- 3 oz chocolate malt, crushed (38 g)
- 1 oz roasted barley, crushed (28 g)
- 2 oz 60 °L crystal malt, crushed (57 g)
- 12 oz water (355 mL)

To make ice cream, combine yolks and sugar in a bowl and whip until light and thick. Scald milk and gradually beat into egg mixture. Heat over hot-water bath stirring constantly until the mixture thickens to coat the back of a spoon. Immediately remove from heat, stir in cold cream, vanilla and salt. Chill thoroughly, place in ice cream maker and follow manufacturer's instructions. As mixture thickens and is almost done, add porter to taste – too much will result in a thin ice cream. Place in container, cover and freeze for several days.

For the porter sauce, steep grains in 150-degree-F (66-degree-C) water for 30 minutes. Strain well. Add malt extract and simmer 30 minutes. If the sauce is too thin, thicken with cornstarch and water.

Joseph Styke, sous chef at the Waterclub Seafood Grill in Plymouth, Mich., creates five beer dinners a year for the restaurant. A homebrewer of three years, Joseph brews mostly all-grain batches and says he has an affinity for high-gravity beers.

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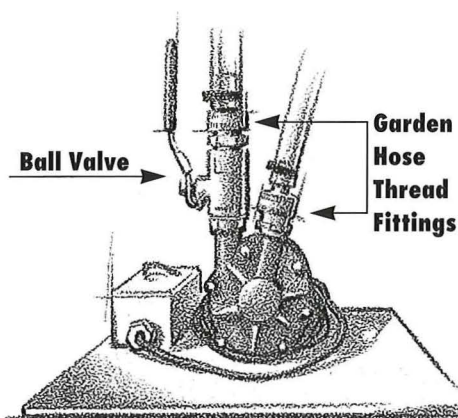
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TIPS & GADGETS

Our Members

Pump Tips



To regulate the output from my magnetic-drive pump I use a half-inch stainless-steel ball valve. I can increase or decrease the flow rate of wort through my pump by opening or closing the ball valve to the desired level of flow. The ball valve is mounted on the output side of the pump. Never restrict the input side of your pump or you can damage the pump motor.

John Carlson Jr., Hop Barley and the Alers, Boulder, Colo.

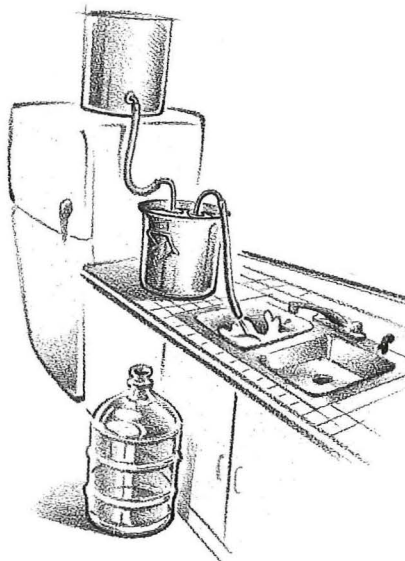
Quick Pump Connections

To quickly connect and disconnect tubing sections from kettle to pump I use brass garden hose thread (GHT) fittings. Each section of tubing has a female GHT fitting on each end secured by a nylon hose clamp. I have installed male GHT fittings on the outlet valve of both my pump and kettle. These

fittings are inexpensive and available at most hardware stores. By using these fittings I am able to simply screw in a section of tubing from kettle to pump.

John Carlson Jr., Hop Barley and the Alers, Boulder, Colo.

Cooler Chiller Water

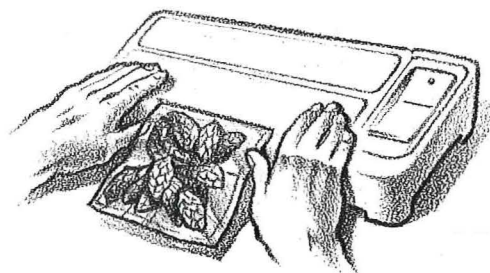


If you live in a part of the world where cold tap water isn't very cold, you can increase the efficiency of your wort chiller by siphoning ice water through it. Place about four gallons (15 L) of water and ice in a five-gallon (19-L) plastic pail (your bottling bucket is perfect) and raise it to a decent height for siphoning. I place mine on top of the refrigerator and siphon the ice water through my 25-foot, three-eighths-inch-diameter copper immersion chiller, which is in the brewpot sitting on the counter. In the 15 to 20 minutes it takes the

four gallons of ice water to flow through, the wort is cool enough to transfer to a carboy and to pitch yeast. Not only does this technique beat the heat in the summer but it also uses a minimal amount of water. I use this technique year-round.

John MacDougall, Music City Brewers, Nashville, Tenn.

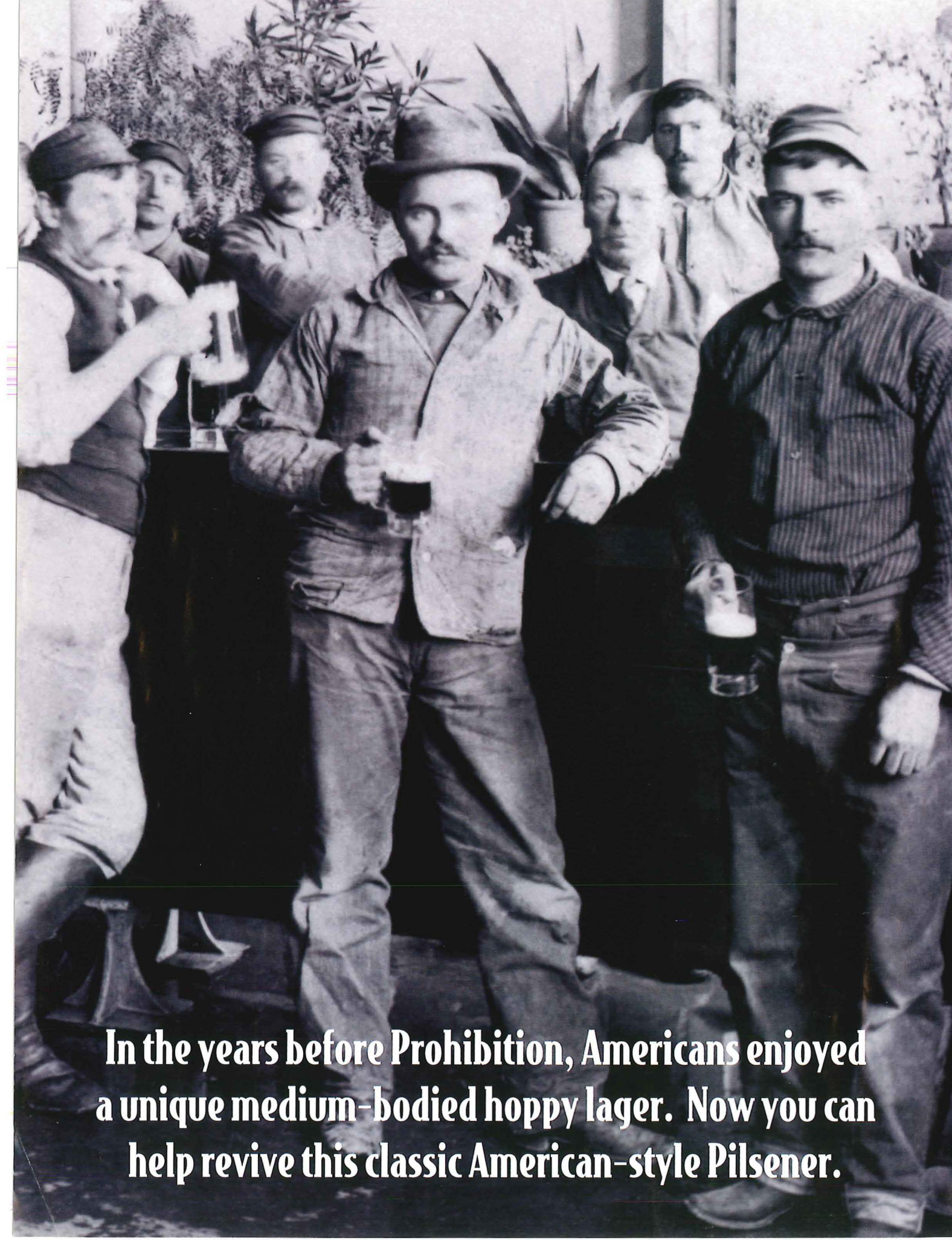
Easy Hop Storage



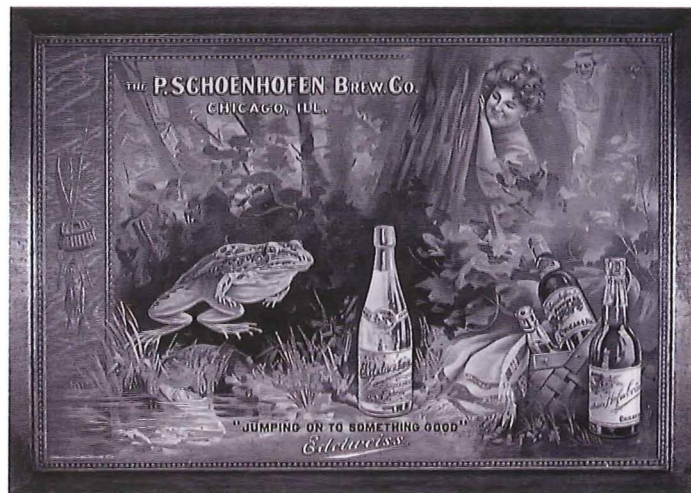
Oxygen-barrier bags do a great job of protecting hops, but require a heat sealer to reseal the bags. A good inexpensive sealer is the Dazey Seal-a-Meal. It puts out enough heat to reseal most bags. These sealers are available new and the bags they sell for it are good oxygen-barrier bags. You can often find them at thrift stores or garage sales for \$5 or less. The sealer doesn't evacuate air, but that's not as important as stopping the constant interchange of air you get with zipper-style plastic bags.

Mark Garetz, HopTech, Hopland, Calif.

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



In the years before Prohibition, Americans enjoyed a unique medium-bodied hoppy lager. Now you can help revive this classic American-style Pilsener.



This framed print from the P. Schoenhofen Brewing Co. in Chicago, Ill., dates from 1901. The brewery was in operation between 1867 and 1925. The 1894 photo at left shows Coors' workers taking a beer break.

Capturing the Past

By Mark Lisheron

The customer had just finished his ale, complimented brewer Tom Cizauskas on the wonderful flavor and told him he wouldn't be having another.

Cizauskas, brewmaster at Manayunk Brewing Co. in Philadelphia, Pa., said he and assistant brewer James Brennan had made this sparkling ale with about 20 percent corn, whereupon the customer announced he was a homebrewer.

"He told me he wasn't going to have another one because of the corn," Cizauskas said. "I had used a politically incorrect adjunct in my beer and no matter how much I like the beer, no matter how much he liked the beer, it wasn't going to be right. It is just silly."

Silly. And ignorant of a historical legacy in American brewing that Cizauskas and a tiny vanguard of homebrewers are trying to resurrect. During the first golden age of American brewing, prior to the passage of the 18th Amendment to the U.S. Constitution, most American brewers made – and most Americans drank – lager beer made with malted barley and corn.

This was a beer as pale golden in color as Budweiser, but every bit as robust as a Märzen. A beer with the hops of a Bohemian Pilsener. A beer whose edges were rounded by the grainy sweetness imparted by corn.

This was a beer brewed with pride by mostly German immigrant brewmasters making optimal use of the raw materials they were provided in the New World. These brewers continued making all-malt beers with imported two-row malt, specialty grains and "noble-type" hops. But the beer that within a generation changed the taste of Americans from ales to lagers was the beer this current vanguard has come to call pre-Prohibition lager or Pilsener.

Homebrewers Peter Garofalo of Syracuse, N.Y.; Nathaniel (Del) Lansing of Philadelphia, Pa.; Rhett Rebold of Maui, Hawaii; and Jeff Renner of Ann Arbor, Mich.; with the help of people like Cizauskas brought the reemergence of the style to the American Homebrewers Association's attention and petitioned to include the style in the 1997 National Homebrew Competition guidelines.

The Rebirth of Pre-Prohibition Lager



The Potosi Brewing Co. in Potosi, Wis., was in operation between 1886 and 1972. These pre-Prohibition brewers posed for the photo in 1902.

American-style Pilsener, a subcategory of Classic Pilsener in the AHA style guidelines, can contain as much as 25 percent corn in the grist. The corn flavor and sweetness are to be expected in a beer of medium malt flavor, aroma and body, with original gravities ranging from 1.045 to 1.060 (11.3 to 15 °Plato).

Beer judges should expect American-style Pilseners to be of medium to high bitterness with "noble-type" hops providing an International Bitterness Units range of 20 to 40. In addition, low levels of dimethyl sulfide (DMS) and diacetyl, flavor components supporters say are desirable in the style, are acceptable. Within those guide-

lines Cizauskas and Brennan are brewing the first known commercial example of the style – Harry's Prohibition Lager – for patrons at Manayunk.

"I think it's still a little hush-hush, but I think there is a sort of clandestine return to corn," Cizauskas said. "Brewers across the country making training-wheels beers are using wheat as an adjunct. Why wheat? Because it's not corn. Corn is an indigenous grain with historical legitimacy in American brewing. To scorn an ingredient because it has been overused by a group of brewers is, I hesitate to use the word ignorant, but it just doesn't make any sense."

George Fix, a University of Texas at Arlington professor and a longtime homebrewer and brewing consultant, knew firsthand the prevailing antipathy toward corn on the part of homebrewers made little historical sense. Homebrewers escaping the light American lagers that dominated the U.S. market took as their brewing models the European imports they had turned to out of desperation. *Rheinheitsgebot* became

Old Richmond Debuts at Smithsonian

Rhett Rebold earned his reputation as AHA Homebrewer of the Year and Ninkasi Award winner in 1995 for brewing the all-grain, all-malt beers he has been brewing since the early 1980s.

Rebold was considerably "underwhelmed" when Tom Cizauskas asked for help in preparing for a series of short courses called American Craft Beers running between October and December 1995, coordinated through the Smithsonian Institution by *American Brewer* editor Jim Dorsch.

It says something of the uncertain reputation of pre-Prohibition brewing in America that, when the course was organized, the discussion of historical American brewing styles was placed under "Specialty Beers."

As Dorsch and Cizauskas sought focus for the forum, Cizauskas said it occurred to him that any discussion of the development of American beer styles would lead to the lager brewers of the 19th and early 20th centuries. Inevitably, the conversation would turn to six-row American barley and corn, he said.

While Cizauskas, brewmaster at Manayunk Brewing Co. in Philadelphia, was comfortable, happy even, with corn, Rebold was not. Cizauskas had asked Rebold to brew a batch of pre-Prohibition-style lager to serve to the class to illustrate the wide gulf between the lagers made before and after Prohibition.

"It was an honor to brew for this class, but it was a style I wasn't too excited about brewing," Rebold said in a telephone interview from his home on Maui. "Initially, I wasn't too psyched about brewing an adjunct beer, and when Tom said I would be using six-row American barley I said, 'Oh, *that's* going to be good.'"

Rebold, however, agreed to brew following a recipe from corn brewer extraordinaire George Fix of Dallas. Fix's recipe has been seized upon by fellow homebrewers as a gateway to America's forgotten brewing heritage.

Rebold made few changes in Fix's recipe, filling a grain bill for a 12-gallon (45.4-L) batch with 78 percent six-row barley malt and 22 percent flaked maize. He hopped for the entire boil with Northern Brewer and Hallertauer and added French Strisselspalt hops midway. He fermented with Wyeast No. 2124, a European lager yeast, fermented 12 days at 52 degrees F (11 degrees C), raised the temperature to 62 degrees F (17 degrees C) for a two-day diacetyl rest then lagered for three weeks at 35 degrees F (2 degrees C). Rebold filters with a 5 micron filter for what he calls a pretty beer then force carbonates.

The huskiness Rebold expected from the corn was missing and in its place was a firm sweetness offset by about 32 IBUs. The beer was a bright, clear golden color with a long-lasting, creamy white head. The beer recalls the best traits of Carlsberg Elephant but with a more robust hop finish, he said.

"The results amazed me," Rebold said. "This beer yields nothing to a German Pilsener. Something like this could be someone's everyday beer."

He was so happy he called James Spence, then AHA administrator, asking the American Homebrewers Association to give recognition to the style. The beer was being brewed by more and more homebrewers and, when brewed to style, it had the potential for widespread commercial acceptance. By brewing the beer, Rebold said he came to understand the importance of the Cizauskas segment of the Smithsonian seminars.

"It is a patriotic notion to revive an American beer that is world class in a country where its big brewers are often the butt of jokes. This is a beer that makes me proud of the American brewing heritage, proud to think that this is the kind of beer my grandfather drank."

More importantly, Cizauskas served Rebold's Old Richmond Pre-Prohibition Lager to about 180 people in the class, "a mix of beer geeks and yuppie sophisticates," Rebold said. The geeks questioned the propriety of corn, but otherwise everyone seemed to enjoy the beer.

"You can bet I'll be brewing this again," Rebold said.

★★ American-Style Pilsener Style Guidelines ★★

This Pre-Prohibition American-style Pilsener is straw to deep gold in color. Hop bitterness, flavor and aroma are medium to high, and use of "noble-type" hops for flavor and aroma is preferred. Grist should contain up to 25 percent corn, and some slight sweetness and corn flavor are expected. A low level of DMS is accepted. Malt flavor and aroma are medium. This is a medium-bodied beer. Fruity esters and citrusy flavors or aromas should not be perceived. Slight diacetyl is acceptable. There should be no chill haze. American-style Pilsener is a subcategory of Classic Pilsener.

Original Gravity (Balling/Plato)	Final Gravity (Balling/Plato)	Percent alc. w/w (w/v)	IBU	Color SRM (EBC)
1.045 - 60 (11.3 - 15)	1.012 - 18 (3 - 5)	3.9 - 4.7 (5 - 6)	20 - 40	3 - 6 (6 - 12)

FROM THE AMERICAN HOMEBREWERS ASSOCIATION 1997 STYLE GUIDELINES

a rallying cry that launched a thousand microbreweries and brewpubs in America.

Fix has been homebrewing with corn since 1975, using recipes based on those of his grandfather, whose commercial brewing career in Buffalo, N.Y., and Dallas, Texas, was ended by Prohibition. To the end of his life, Fix's grandfather brewed beer in his basement on a one-half-barrel system he built himself.

"I was my grandfather's chief cook and bottle washer. I watched him make this beer and I have this memory of what the beer tasted like, this incredibly drinkable beer. After I got out of college I started homebrewing again, so I guess you could say I've been brewing this beer for most of my life."

Fix did considerable historical research on the conditions that led to the predominant beer styles of the late 19th and early 20th centuries. The study led him to conclude that



The Glab Brewing Co. in Dubuque, Iowa, was in operation between 1865 and 1897. From 1897 to 1900 it was called the Dubuque Malting Co.

more important than any of the conditions in the United States after the repeal of the Volstead Act – changing tastes, the marketing of beer to emancipated women – was the loss of a generation of brewmasters whose insights were European and whose adaptations were clearly American.

The breweries emerging from 13 years of Prohibition were guided by people whose business acumen had assured their survival. Misguided morality ensured a victory of accountants over brewmasters. Many of the brewers of Fix's (continued on page 82)

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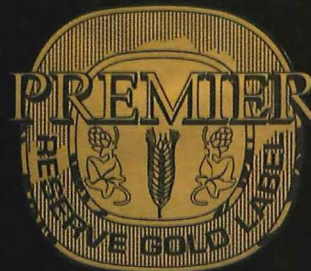
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Simply Soda

By Jim Dorsch

Admit it. There are times when you might want soda instead of beer, and homemade soda is tasty and refreshing. It's inexpensive and easy to make – as American as, well, cherry cola.

Why make soda pop? "Sometimes it's nice to have non-alcoholic stuff available," says Polly Goldman of Alexandria, Va., who makes ginger ale from scratch. "And for \$5 worth of ingredients I've got five gallons of really nice ginger ale." Furthermore, she adds, "In these days of heightened awareness [of drinking and driving], it's pretty smart to have it available [at homebrew club functions]."

Goldman makes soda for beer competitions so judges have something non-alcoholic available. "For beer competitions I make a half-strength ginger ale. Regular strength is hard on the palate," she says. Campers drank 10 gallons of her soda at the last Mash Out, an annual event attended by homebrewers from the mid-Atlantic area.

Sodamaking is a nice way to involve kids in your homebrewing hobby. "My kids, ages eight, 10 and 12, help measure the ingredients. It's a big event – Dad's making root beer," says Don Rutledge of Oregon City, Ore. "Plus, it justified a Corny keg."

For David Lubar of Nazareth, Pa., sodamaking is a simple way to satisfy his brewing urge. "It's like a maintenance dose for the urge to brew," he says. "And it takes less than an hour." Lubar makes a gallon of root beer at a time. "When you're used to boiling five gallons, boiling a gallon is a joke," he says.

Fruits and Nuts

Like beer, soda is made from a few basic ingredients. At its simplest, the recipe for soda is water, sugar, flavor and perhaps an acid to enhance flavors and modify sweetness. But the *Reinheitsgebot* of soda pop is pretty long. Sodas can contain any of dozens of flavorings. Most ingredients are extracted from naturally occurring substances such as fruits, roots and barks. A host of synthetics are used in some mass-market sodas, and they sometimes show up in homemade sodas and the expanding range of sodas made by microbreweries.

Sweeteners don't just sweeten. They add body and sometimes flavor. Sweetness comes with different flavors depending on the source of the sugar. Most homebrewers of soda use sucrose (cane sugar) and/or honey; a departure from corn sugar and sugars obtained from malt.

Acids add tartness or sourness, modify sweetness, accent and intensify flavors and act as a preservative. Phosphoric acid and citric acid are most common, but malic acid and tartaric acid also are used. Soda flavor extracts usually contain the necessary acids, so homebrewers needn't be concerned about acidity unless they're making soda from scratch. If you do need to obtain acids, most homebrew supply shops carry a variety.

Carbonation balances sweetness and dramatically affects mouthfeel. It lays an acid bite on the tongue, helps preserve the beverage and contributes a minor taste element.

Summertime is the perfect time for light, refreshing sodas. Finally, a homebrew your whole family can make and enjoy.

The Pop Process

The basic method for producing bottled root beer is illustrated in the "Brew It At Home" videotape by Jack Schmidling Productions. A similar process is outlined in the instructions accompanying bottles of flavoring.

Schmidling suggests making a one-gallon (3.8-L) batch. This is an especially sound approach for beginners who are adjusting their sodamaking techniques. This technique also obviates the need to clog your refrigerator with soda — once bottled, soda with yeast in it must be refrigerated to arrest fermentation.

As in homebrewing, sanitation is extremely important to successful sodamaking. To avoid contamination, sanitize everything — PET bottles, caps and utensils — that will contact your soda. One way to avoid unwanted fermentation is to add sodium benzoate or potassium sorbate. Mark Garetz of HopTech, a homebrew supplier in Pleasanton, Calif., says potassium sorbate is available from home wine shops under the name Sorbistat-K.

Schmidling uses one-quart PET plastic soda bottles in his video. While glass bottles have aesthetics on their side, Bob Bruner of Rainbow Flavors recommends brewers use PET containers until they've determined the correct amount of yeast to use, which varies by type and brand. Kirk Weidner of Kirk's

Do It Yourself Brew in Lincoln, Neb., believes soda served from larger bottles has a less yeasty taste, perhaps because these containers offer less exposure to yeast per unit volume.

Fizz Frenzy

Homemade soda can be carbonated in two ways. The first is the traditional yeast method where a controlled amount of yeast is introduced to consume sugars in the bottle and produce CO₂ for carbonation.

Yeast can affect flavor in a way some brewers don't like. Lubar once separated his soda from the yeast in a process reminiscent of the disgorgement of yeast from a Champagne bottle. After carbonation, he placed the bottles in the freezer until they started to freeze, then decanted the soda into other bottles. "I had to set the timer and check the bottles in the freezer every hour or so," he recalls.

A second is to force carbonate in a keg, or use a Carbonater Cap™ on a PET bottle. Goldman chills her soda in a Cornelius keg in a beer cooler, then hooks a CO₂ supply to the keg's liquid outlet. To force the carbon dioxide into solution you must continuously shake or rock the keg for about 15 minutes at 30 psi. Alternatively, one or two days under top pressure also will do the trick.



AOB staff members Tyra Segars and Mark Snyder create a batch of Sufferin' Sas-safras with molasses, sasaparilla, vanilla and a collection of other herbs and spices.

Be POpular

Bottled Extract Soda



(1) Boil one gallon tap water for five minutes to sanitize.

(2) Add two cups (about one pound) cane sugar and return to boil.

(3) Allow the mixture to cool to room temperature, then add soda flavoring to taste and stir until well mixed.

(4) Add one-eighth to one-quarter (0.6 to 1.2 mL) teaspoon of dry yeast to a 98-degree-F (37-degree-C) cup of water. Any type of ale, wine or baking yeast will do the job, but the amount of yeast needed for proper carbonation will vary by type and brand. Because fermentation is arrested by refrigeration, it's best not to use Champagne or lager yeast, which ferment in a cold environment, says HopTech's Mark Garetz.

(5) Add the yeast solution to the flavoring/sugar mix. Allow to sit for one-half hour, then bottle in sanitized PET plastic soda or water bottles. Pour through a sanitized funnel, filling the bottles within one inch of the top and close with sanitized caps.

The mixture can be tasted before bottling, and the flavor adjusted by adding more flavoring or sugar.

(6) Give the soda 48 hours to carbonate, then test by squeezing the bottles. Hard bottles indicate sufficient carbonation. Monitor the process carefully — a day either way can make all the difference.

(7) When there is sufficient carbonation, refrigerate the soda to arrest fermentation.

(8) Decant your soda as you would homebrew. Even more than with beer, it seems homemade soda will gain an objectionable flavor from yeast in solution.

Once you open a bottle, you don't have to drink it all. The soda should retain its carbonation, and flat soda will recarbonate if capped and left at room temperature.

Kegged Soda

(1) Follow steps one through three above.

(2) Rack to keg, cool to 45 degrees F (7 degrees C) and apply 30 psi of CO₂ pressure for two days.

Diet Soda

To make diet soda, add artificial sweetener to taste and reduce the sugar to four to six tablespoons per gallon of soda — just enough to carbonate. Without the sugar of a normal soda, the diet drink might suffer lack of body. Some artificial sweeteners break down over time.



Root beer makers who keg and force carbonate can enjoy the bubbly beverage in a little more than an hour.

Bret Wortman of Manassas, Va., force carbonates his sodas in both Cornelius kegs and PET bottles. He doses bottles twice with 30 to 35 psi through a Carbonater Cap, shaking them to force the CO₂ into solution.

Hot and Sour

Goldman has made a variety of sodas from raspberry to guava to celery. She has collaborated with husband Bruce Feist to make sodas flavored with hot peppers and coffee, and has even concocted a garlic soda.

To make five gallons (19 L) of soda, Goldman boils three gallons (11.36 L) of water, adds two pounds (0.91 kg) of sugar, 2 1/2 pounds (1.13 kg) of honey and two to four fluid ounces (59 to 118 mL) of lemon juice to produce a soda base. She adds appropriate flavorings, racks to a Cornelius keg and tops it up to five gallons.

Why the lemon and honey?

"Citric acid from the lemon helps make it less cloying, and honey gives the soda a little more body than straight sugar. If you use that base, you can make almost anything," Goldman says. Well, almost anything that's a soda.

Goldman and Feist make their soda just a few days before the event at which it will be needed. "If it's not refrigerated, there's the danger of fermentation," Goldman says.

Watered Down

Delano and Katy Dugarm of Arlington, Va., developed a sparkling water habit, so they started making it themselves. "It started

off like something minor," says Delano, "but soon we were buying cases every week. When we got our keg system, it seemed like a great idea to make our own."

The Dugarms add one-quarter cup (59 mL) each of lemon and lime juice to five gallons of water they've run through a tabletop filter. They force carbonate in a Cornelius keg.

"I've tried adding ginger. It's a nice change of pace," says Delano. He and Katy go through a keg every couple of weeks. They don't bother to sanitize the keg,

because there's essentially no sugar that can ferment. They use bottled lemon and lime juice. The resulting product is "vaguely cloudy, not crystal clear, but not as cloudy as lemonade," says Delano. Before it's carbonated, it tastes like lemonade.

The water is carbonated under 30 psi at 45 to 48 degrees F (7 to 9 degrees C). "It's one-third consumed by the time it's carbonated," says Delano. "We turn off the CO₂ and there's enough pressure to push it out." Water is easier to carbonate than solutions with lots of sugar, he says. (continued on page 88)

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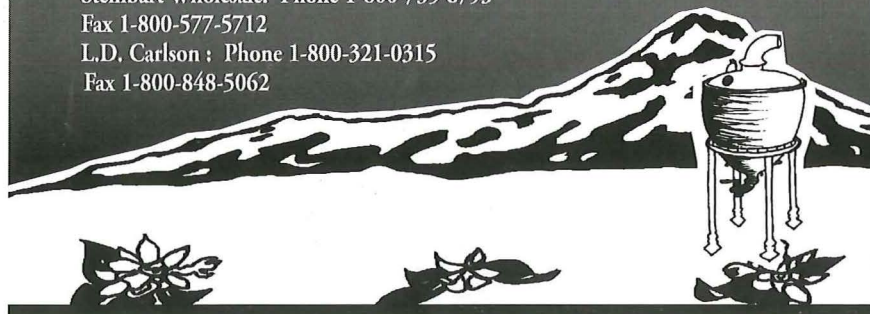
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By Ginger Wotring, Ph.D.

If you're striving for brewing perfection,
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hen a homebrewer writes a recipe for a batch of beer, water probably is not in the ingredient list, although it is the major ingredient. Unlike the hops we add to our brews, which contain only hops, natural water supplies are never pure. In some cases the foreign matter is beneficial to the brewing process, but there are unwanted constituents as well. Depending on the source and the surrounding environment, water may contain dissolved minerals, other ions, gases and even agricultural and industrial pollutants.

Historically, the characteristics of the local water supply had a tremendous effect on the kinds of beer made in a particular region. Not only were early brewers careful about locating their breweries near a source of water, they had to be near good water. Because of this, certain recipes are difficult to duplicate using water from a different source. Some brewers have good results removing or adding certain compounds to capture the essence of a beer style. In the article "Why Water Matters," *Zymurgy* Special Issue 1995 (Vol. 18, No. 4), the additions of salts to water to increase concentrations of certain ions were discussed. Beyond the salt additions, it is important to understand the ways to remove or reduce the concentrations of compounds that may be present in the water supplied to you.

Why Treat Water?

Those who have thought about their brewing water may think they need to do something to it before they can brew good beer. This is not necessarily true. Most of us have access to safe and relatively good-tasting municipal water supplies. After removing the chlorine compounds and maybe adding certain salts for special beer styles, we're set. But I get questions from people who seem to think they have a problem, whether or not they've looked at a water analysis. I am constantly surprised by the number of people who tell me they buy purified water for brewing. I know from experience we homebrewers are an enterprising and thrifty bunch, so

spending money for something that comes out of the tap doesn't make much sense. In this article, I'll help you (1) read your water analysis, (2) determine if you have a problem and identify it, and (3) decide what water treatment options would be reasonable for you.

First, get a water analysis. Depending on where your water comes from, this may be simple or difficult. If it comes from a public utility, call them and ask. They should be happy to help you, especially after you tell them you want to know these things to make better homebrew. Ask for average values, and highs and lows. Find out if the highs and lows correspond to a particular time of year or pattern of rainfall. Is your water from an underground source, or from a river or lake? Public utilities are expected to provide their customers with information about the product they supply. If you have trouble getting this information, you can have the water analyzed yourself. You could also check with your local newspaper or other media, since they often keep track of utilities' performance.

If you have water from a private well, you will have to take responsibility for getting a water analysis. Check your Yellow Pages for local businesses that perform this service. Most businesses selling water treatment devices will test water free of charge, because the service could lead to a sale. If you go this route, be aware you are dealing with a salesperson who may attempt to sell things you may not need. Before you test, see if you can get some information about the ground water in your area from the local public health department. Do-it-yourself water test kits are available, but probably will not provide good results for all the parameters a homebrewer needs to measure.

Even if your water is perfectly suited to the beer you want to make, consider taking steps to remove chlorine compounds, which can contribute plastic or medicinal flavors and aromas in beer. Doing this is simple and inexpensive, and could improve your beers. Many homebrewing references say preboiling brewing water will remove chlorine, which is true. However, nearly all municipal



The Water Works Board of the City of Birmingham

Excerpts of a Birmingham, Ala., water analysis are provided here to familiarize you with what an analysis looks like. A complete water analysis will have more items under each heading. With information like this about your water, you'll be able to decide what kind of water treatment is appropriate for you and which salts might be necessary for brewing.

TYPICAL ANALYSIS OF WATER PRODUCED AT: Shades Mountain Filter Plant
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NOTES: All values are in parts per million except where otherwise noted. PPM represents parts per million, equivalent to milligrams per liter. PPB represents parts per billion, equivalent to micrograms per liter. BDL is defined as Below Detection Level of Analytical Instrumentation. Grains per gallon is calculated by dividing 17.1 into parts per million. Monitored contaminants have no MCL (Maximum Contaminant Level). MFL is defined as Million Fibers per Liter, with fiber length > 10 microns.

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Iron	BDL	BDL	0.3
Lead	BDL	BDL	0.015
Magnesium	4.18 – 4.93	4.57	Monitored
Mercury	BDL	BDL	0.002
Nitrate	BDL – 0.49	0.335	10
Silver	BDL	BDL	0.10
PHYSICAL			
Color	BDL	BDL	15
pH	7.85 – 8.10	7.92	Monitored
Total Alkalinity	44	44	Monitored
Chloride	5.90 – 7.9	7.39	250
Sulfate	36.4 – 53.9	41.1	250
Turbidity	BDL	BDL	0.5
Total Hardness	89.4	89.4	Monitored
Chlorine Residual	2.30	2.30	None
VOLATILE ORGANICS			
Benzene	BDL	BDL	0.005
Toluene	BDL	BDL	1
SOCs and PCBs			
2, 4 – D	BDL	BDL	0.07
TRIHALOMETHANES			
Total Trihalomethanes	13.0 – 41.0 PPB	25.0 PPB	100 PPB

water companies *chloramine* rather than *chlorinate*. Chlorine is driven off by heat, aeration and time, but chloramines are much less volatile, which is why they are preferred for sanitation purposes. Boiling is not an effective way to remove chloramines, but activated carbon filtration works well and is much faster than boiling. Activated carbon filtration removes both chlorine and chloramines.

Reading a Water Analysis

Most water analyses will be divided into several parts. You may find units like ppm (parts per million) or "mg/L" (milligrams per liter) listed. In a discussion of water quality, they are equivalent.

Physical characteristics are the gross features of the water. Is it clear (color and

turbidity or cloudiness)? What is the pH? Alkalinity? Unless you have problem water, it should be clear and colorless. The pH of brewing water can vary from about 6.5 to almost 10. Alkalinity can be very high before brewing problems arise. Even if the pH and alkalinity are high (as in water from an underground reservoir made of limestone), when grain is added the pH will drop naturally to around 5.5.

Inorganics (for example, calcium, nitrate, lead, iron, etc.) probably are the most important components for those of us who get safe water delivered to our homes. For some beer styles, getting the ion levels tweaked just right can make the difference between a good beer and a near perfect example of a traditional style.

In brewing water, nitrate (NO₃) should not exceed 25 ppm. Nitrates are found in fertilizers and runoff carries them into water supplies. Some bacteria (called nitrifying bacteria) can break nitrates down into nitrites (NO₂), creating potential brewing problems.

The first inorganic component to note is your calcium level. If it is below 50 ppm and you are an all-grain brewer, you will need to add some form of calcium to most of your beers. Which salt to add will depend on the concentrations of anions in your water and the beer style you are making. Beyond this, it is a matter of matching your ion profile to that of the home city of the beer you want to make.

Organics (for example, benzene, toluene and halomethanes) also are important components of water, although most municipal water supplies are carefully monitored to keep the levels of volatile organic compounds low. Many of these compounds can contribute to unpleasant odors and



Brita Ultra Max 35034

PHOTO COURTESY OF BRITTA



Pollenex model WP300

tastes, some are linked to increased cancers and some promote microbial growth. Unfortunately, they are all too common contaminants of the water supply, particularly in areas where oil drilling or heavy industry is found. Even a dry cleaner or auto repair shop that closed decades ago can still contaminate water supplies. On an analysis, look for values that are less than the "Regulatory MCL" (maximum contaminant level), not detected (ND) or below detectable limits (BDL).

SOC (synthetic organic compound) and **PCB** (polychlorinatedbiphenyls) arise from the chemical industry and heavy agriculture. Examples are 2,4-D and lindane. Many are neurological toxins and some cause cancers. Look for values that are less than the "Regulatory MCL," not detected or below detectable limits.

Trihalomethanes are usually industrial solvents or dry cleaning fluids. Look for val-



Pur model FM-1000

PHOTO COURTESY OF
THE RIVAL COMPANY AND PUR

ues that are less than the "Regulatory MCL," not detected or below detectable limits.

If your water analysis indicates high levels of organics, SOCs, PCBs, trihalomethanes or microorganisms, you have a problem that is beyond the scope of this article. Until the problem is remedied, you should consider an alternate water source for drinking and cooking as well as for brewing. If this water comes from a municipal supply, ask your local government about cleanup plans. If the water is from your well, you may want to dig another that would tap a different source.

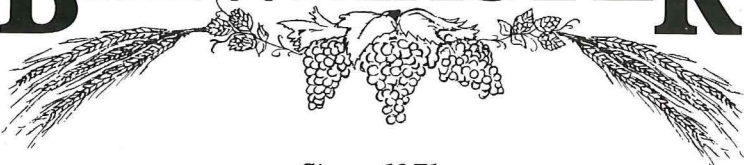
How To Treat Water

There are three common ways of treating water.

- Carbon filters are fairly effective in removing the majority of organic pollution. By this I mean for most compounds they will remove between 90 and 98 percent of what is present.
- Distillation removes ions, but does not work for removing organics.
- Reverse osmosis (continued on page 94)

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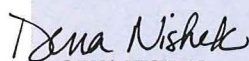
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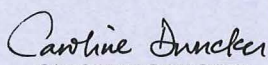
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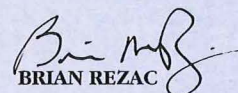
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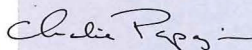
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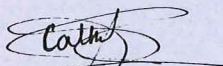
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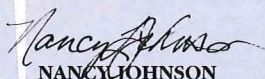
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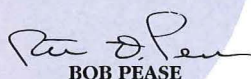
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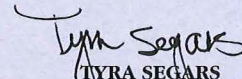
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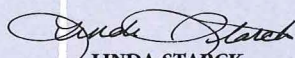
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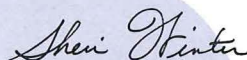
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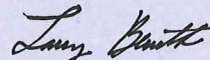
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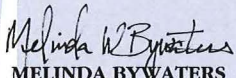
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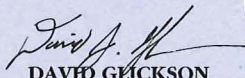
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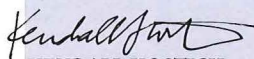
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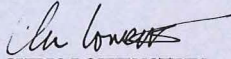
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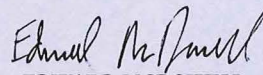
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Will Juggle



By Tim Rastetter

for Homebrew

Sure, multiple-batch brewing is a balancing act, but if you follow these easy steps you'll be rewarded with more homebrew in less time.

All homebrewers, both extract and all-grain users, are slaves to time.

It takes time to brew a good beer, which is why our storage closets are full of five-, 10-, even 15-gallon pots, all cast aside as we increase our batch size in an effort to use our time more efficiently, or even to occasionally turn the kitchen over to the Significant Other for preparing food.

There is something of a Catch-22 here. As we've increased our batch size, we're able to brew more *beer*; now we want more *variety*! Well, we can have the best of both worlds. We can brew more gallons per hour, have greater variety and spend less time in the brew house, whether we do extract, partial-mash or all-grain batches. We can accomplish this apparent miracle by brewing more than one batch at one time. It's not as hard, or as expensive, as you think. In fact brewing multiple batches is similar to orchestrating your laundry chores. All the brewing procedure requires is a little extra equipment (remember that closet full of pots?) and a solid plan, which I'll show how to put together. I'm

going to focus on all-grain brewing because it's the most time-consuming, but I'll also touch on how extract brewers can benefit as well. The descriptions that follow are specific to my brewery and may not apply at all to yours, but the multiple-batch concept is one that any homebrewer can customize to their needs.

My system is based on a three-vessel brewery – I use separate vessels for mashing, lautering and boiling/whirlpooling. Actually, my modified system works more like a four-vessel brewery. I use two different vessels for the boil/whirlpool, with a heat source for each container.

The secret to multiple-batch brewing is timing. First, you must have a very good idea of how much time it takes to do each step. In addition, you need all your grains, hops, adjuncts, minerals and anything else needed for brewing weighed and well organized. If you time your lauter by using a specific quantity of sparge water for all of your batches, this should be measured and ready, too.

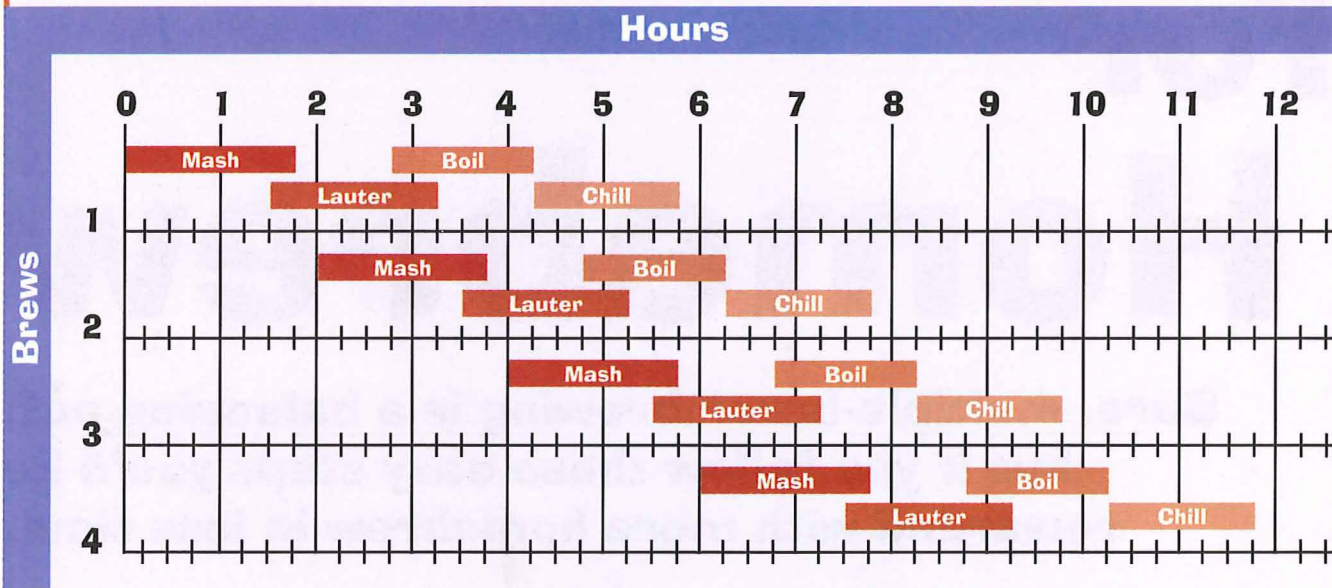
The most difficult step for me to time was the sparging and lautering. I made several timetables listing where I should be as each gallon of wort is collected, depending on whether I'm doing a 60-minute sparge/lauter, a 70-minute sparge/lauter or boiling in one or two vessels. With that information, I can see whether I am sparging/lautering too slowly or too quickly. Either can be a problem because this multiple-batch system works best when you don't have too many changes going on at the same time with the various brews.

I can brew four beers in one day using one mash tun, one lauter tun, two boil/whirlpool vessels, two heat sources and one immersion wort chiller. You may already have everything necessary to do the same. All I needed was an additional heat source for the boil, so I purchased another Cajun cooker from a friend and was ready.

Remember, "multiple brews" refers not only to doing more than one brew in a day but, more importantly, doing more than one brew at a time. The more vessels you

Brew Graph

This schedule represents a four-brew day with batches beginning 120 minutes apart. When you adapt this graph to your own needs, pay careful attention to overlapping steps, what equipment is needed at each step and which steps need more attention than others.



120-Minute Mash Schedule

Time Elapsed	Brew Activity
:00	Fill mash tun with correct amount of heated water, or heat water in mash tun if time permits. Add grains and minerals. Put on lid, clamp it down and turn on paddles.
:20	Rest at 122 degrees F (50 degrees C). Set paddles at about 40 to 50 rpm.
:40	Heat to saccharification temperature, turn off burner, set paddles at 60 to 70 rpm.
:50	30-minute saccharification rest. Set paddles at about 40 to 50 rpm. In the middle of this time period, add hot water to preheat the lauter tun.
1:20	Strike out. Turn on burner, set paddles at 60 to 70 rpm. Drain hot water from lauter tun. Raise temperature to 172 degrees F (78 degrees C).
1:30	Transfer grains to lauter tun. Be gentle, avoid hot-side aeration.
1:35	Clean mash tun. Give it a quick, hot rinse and put it back on the burner. If hot water is not ready for the next mash, you have time to start heating it. Even if you're not quite ready at the beginning of the next mash, you have 20 minutes to finish heating water, add grains, minerals and whatever before the first 20-minute rest of the next brew.
2:00	Total time from mash of this brew to mash of next brew

70-Minute Lautering Schedule

Time Elapsed	Gallons Collected	Brew Activity
:00	0	Take gravity reading of first wort.
:06	1/2	Recirculate first wort.
:25	1 1/2	Turn on burner of boiling vessel.
:38	2 1/2	Check gravity of cooled wort sample, keep wort in kettle below boil.
:57	4	Continue to keep wort below boil.
:64	4 1/2	Check gravity of cooled sample. Raise temperature to boil.
1:10	5	Begin boil. Add first hops.
1:13	5 1/2	Stop the sparge water.
1:17	6	Check gravity of cooled wort sample. Maintain boil.
1:21	6 1/2	Maintain boil.
1:25	7	Kettle is full (approximately seven gallons for a five-gallon batch), end lautering, check gravity of cooled sample.
1:35	—	Clean up lauter tun for next batch.

Preparation List

Think of brewing multiple batches as a mini Boy Scout operation. Be prepared, because the better your preparations are, the more likely you are to succeed. And remember, it's details, details, details. Think making your sandwiches the night before is a luxury? Better not wait till you're right in the middle of everything and starving. Here's my list — obviously personal and specific to my system, so feel free to customize as needed.

The week before:

- Prepare yeast starters.
- Check propane tank and fill if necessary.
- Measure the grains, put them in the hopper and store excess in buckets and begin crushing.
- Get the recipes ready.
- Have the hops and water minerals weighed out.
- Make sure spring water is ready.

A few days before:

- Charge the pipe lighter.
- Have two timers ready.
- Charge two nine-volt batteries for thermometers.
- Prepare a third thermometer, if doing three batches.
- Clean the sink area.
- Clean floor area of brew house.
- Get all hoses ready.
- Start as much as I can on the brew logs.
- Find a full roll of paper towels.

The night before:

- Put water in mash tun and hot water heaters.
- Prepare the mash stirrer.
- Set up the wort chiller.
- Set aside scissors, lighter, aluminum foil, plastic wrap, twist ties, stirring stick, measuring stick, floating and probe thermometers, hydrometer and jar, wine thief and anything else I might need on brew day.
- Put the sanitizer in its spray container.
- Make sandwiches.

Brew day:

- Place fan in window.
- Turn up hot water heater to 170 degrees F (77 degrees C).
- Sanitize all hoses, transfer tubes, fermentation vessels, airlocks and wort chiller.
- Start brewing.

use to brew, the more batches you can have going at once. If you use one container for a mash/lauter tun and a second vessel for boil/whirlpool, then you can only have two brews going on simultaneously. On the other hand, if you have a four-vessel system, you could have four batches brewing at a time, each at a different stage in the process. Each step is timed to happen when there's a pause in another brew cycle. Factors limiting the number of brews you can make in one day might include the number of fermenters you have available (if you like

to use secondary fermenters, you'll need one more fermenter than the number of batches initially brewed), the volume your bottle and keg collection can accommodate and the amount of time you want to spend brewing in one day.

Tossing the First Ball

After everything you need for all of your brews is weighed, measured and organized, you are ready to start brew No. 1 by mashing.



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My recipes and thus my mash schedules determine which brew graphs I use. The graphs are based on a 90- to 120-minute routine from the beginning of one mash to the beginning of the next.

My brewery setup is flexible enough to mash in two different pots, but because one of the two containers also is used for a boiling vessel, I can only mash the first brew in it. Then the pot is relegated to boiling. This boiling vessel that doubles as a mash tun is larger than the dedicated mash tun. With this in mind I'll use it for mash No. 1 if I am

doing a very high-gravity brew because it will hold more grain than the other mash tun.

I've tried to make my brew house as efficient as possible so I don't have to spend a lot of time doing things that automation, gravity or more sophisticated instruments can handle. I prefer step mashing. I use a home-made automatically stirred, digital temperature readout mash tun. The mash can proceed unattended, except when I turn the heat source on and off as I go through temperature changes. This frees me to do other steps in the other brews. A single-temperature

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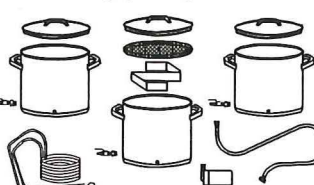
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- One - Copper Wort Chiller
- Three-SS/Rubber Drain Tubes
- Two - 2" Dial Thermometer
- One - 1/100HP pico-Pump

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Pump Assembly

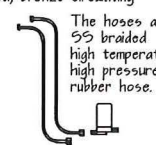

The pump is a magnetically coupled, bronze circulating pump.

The hoses are SS braided high temperature high pressure rubber hose.

The entire system is rated to 230°F. Operates on 115VAC.

The pump is used to:

- Pump water to the mash.
- Circulate wort in the mash.
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- Circulate wort to speed cooling and to establish a whirlpool.
- Pump wort to the fermenter.

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IPA

Ingredients for 5 U.S. gal (19 L)

- 10 lb English pale ale malt (4.54 kg)
- 1/2 lb wheat malt (0.23 kg)
- 5 1/3 oz English crystal malt (151 g)
- 1 1/4 oz Galena hops, 12.8% alpha acid (35 g) (90 min.)
- 1 1/2 oz Willamette hops, 4.5% alpha acid (43 g) (30 min.)
- 2.5 oz Kent Golding hops, 5.5% alpha acid (71 g) (five min.)
- Wyeast No. 1028 London ale liquid yeast culture

Adjust water to:

- 100 - 150 ppm calcium
- 20 ppm magnesium
- 20 - 30 ppm sodium
- 300 - 425 ppm sulfate
- 0 ppm carbonate
- 16 ppm chloride

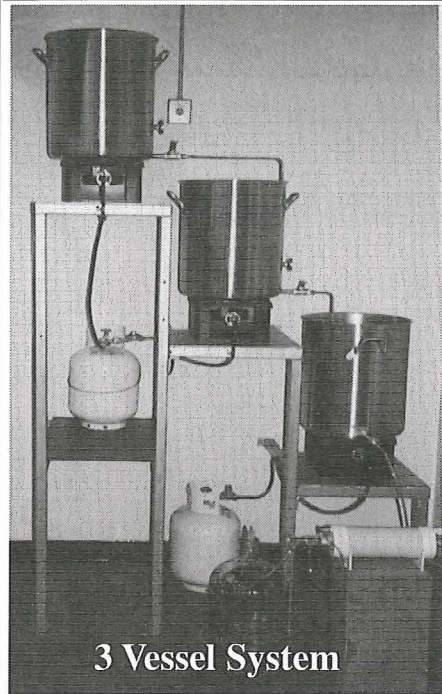
- Original specific gravity: 1.064
- Final specific gravity: 1.015
- IBUs: 88

Use a single temperature infusion mash at 150 degrees F (66 degrees C) with 1 1/3 quarts (1.26 L) water per pound (0.45 kg) of grain. Sparge to collect seven gallons (26.5 L). Boil for 90 minutes. Ferment at 69 degrees F (21 degrees C).

infusion mash will do its job completely unattended. Obviously, decoction mashes will require more attention and may limit the number of batches you can brew in one day.

Because the beginning of brew No. 1 is the least busy time, I use this time to be sure everything is ready for subsequent brews. Mashing takes me 105 minutes, which includes cleanup. The mash is transferred into my lauter tun (a picnic cooler with slotted copper pipes). About 25 minutes into lautering No. 1, I start mashing for batch No. 2 in the dedicated mash tun. This is exactly two hours after brew No. 1 began. Lautering usually takes about 75 to 85 minutes. This leaves me with about 30 minutes to clean the lauter tun and preheat it for the next brew. Lautering for brew (continued on page 99)

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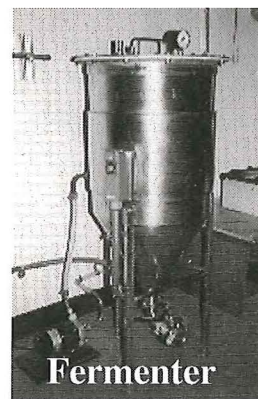
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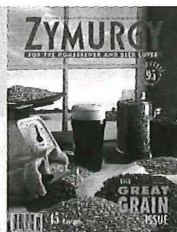
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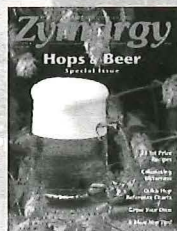
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AUSTRALIAN CAPITAL TERRITORY

Canberra Brewers Club
c/o The Secretary
PO Box 1999, Tuggeranong
Canberra, ACT 2903
(06) 294 4378
jnagle@pcug.org.au

The Fern
c/o Christopher Pittock
46 Glossop Crescent
Campbell, ACT 2601

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Northside Wine/Beermakers Circle
c/o Brian Starley
1 Young Crescent
Frenchs Forest, NSW 2086
(02) 9451-3999

Redwood Coast Brewers
c/o Mark Sayer
35 Chalmersford St.
Tamworth, NSW 2340
(067) 66-7852

QUEENSLAND

Brisbane Amateur Beer Brewers
c/o John Thorp
20 Anna Marie St.
Rosedale South, QLD 4123
(07) 3223-8573

VICTORIA

Amateur Brewers Association - Victoria
c/o Colin Penrose
5 Raleigh St.
Seville, VIC 3139
(800) 637 072

Amateur Brewers of Victoria
c/o Barry Hastings
10 Aston Heath
Glen Waverly, VIC 3150
(03) 561-4603

Bayside Brewers Club
c/o The Secretary
PO Box 175
Chelsea, VIC 3195
future@alphalink.com.au

The Fermenters
276 Raymond St.
Sale, VIC 3850
(03) 5143 1143

Sale Area Amateur Zymurgists (SAAZ)
c/o Paul Robinson
276 Raymond St.
Sale, VIC 3850
(03) 5143 1143

AUSTRIA

Austrian Homebrew Club
c/o Fernando Gerevini
Krottenbachstrasse 58A/37
Wien, A-1190
<http://www.wu-wien.ac.at/ust/h90/h9001590/>

CANADA

ALBERTA

Dryland Brewers
c/o Dale Merkel
Box 3113
Drumheller, AB T0J 0Y0
(413) 823-9591

Edmonton Homebrewers Guild
c/o Ross Hastings
10932 130th St.
Edmonton, AB T5M 0Z3
(403) 451-7633

Fairview Independent Zealous Zymurgists (FIZZ)
c/o Garth Hart
10912-103 Ave. Box 2230
Fairview, AB T0H 1L0

Marquis De Suds Homebrewers
c/o Randy Davis
226 Huntington Close N.E.
Calgary, AB T2K 5B2
(403) 274-5195

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Campaign for Real Ale (CAMRA) - Victoria
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Central Postal Outlet
Victoria, BC V8X 5E1
(604) 595-7728

Royal Canadian Malted Patrol
c/o Jim Cave
828 E. 17th Ave.
North Vancouver, BC V7L 2X1
(604) 987-8262

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Sparky's Social Club
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120 Queen St.
Moncton, NB E1A 1R7
(506) 876-7977

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Fish N' Brew's
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240 Portugal Cove Rd.
St. John's, NF A1B 2N6
(709) 368-5038

St. Florian's Brewers' Guild

c/o Christian St. Pierre
21 North St.
Corner Brook, NF A2H 2K9
(709) 634-8138

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Halifax, NS B3K 4T9
(902) 425-5218

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RR #1
Aylesford, NS B0P 1C0
(902) 847-3288

Valley Brewnosers
c/o Alan W. McKay
PO Box 642
Wolfville, NS B0P 1X0
(902) 542-1661
brewers@dragon.acadiau.ca
<http://www.acadiau.ca/cc/alan/brew/>

ONTARIO

Amateur Winemakers of Ontario
c/o Paul Jean, Jr.
28 Otten Dr.
Nepean, ON K2J 1J2
(613) 825-3229

Brewers Or Zymurgists Only Society (BOZOS)
c/o Mike Aylward
79 Grath Crescent
Whitby, ON L1N 6N7
(905) 433-1784

CABA - Canadian Amateur Brewers Association
c/o Matthew Plexman
146 First Ave.
Toronto, ON M4M 1X1
(416) 462-9981

Canadian Association for Better Ale and Lager (CABAL)
c/o B. Peter Holland
PO Box 631
Toronto, ON M5C 2J8
(416) 287-0195

The Chartwell Brewers Union
c/o Glenn Anderson
12 Chartwell Crescent
Keswick, ON
(905) 476-9658
gramps@interlog.com

Cochrane Homebrewers Club
c/o Adrian J. Cantin
PO Box 1185
Cochrane, ON P0L 1C0
(705) 272-5335

Collingwood Brewing Club

c/o Joanne Anderson
Box 3068, RR3
Collingwood, ON L9Y 3Z2
(705) 445-1087

East Enders

c/o Erich Mann
67 Brockman Crescent
Ajax, ON L1T 2L2
(416) 427-9324

Golden Horseshoe Amateur Brewer's Association (GHABA)

c/o Craig Pinhey
25 Melbourne St.
Hamilton, ON L8P 2A5
CPINHEY@DHC.DOFASCO.CA

Thunder Bay Home Brewers Association

c/o Bruce Holm
160 Iris Crescent
Thunder Bay, ON P7A 8A1
(807) 767-5077

Toronto Regional Association of Specialty Homebrewers' (TRASH)
c/o Dave Kimber
1540-C King St. W.
Toronto, ON M6K 1J6
(416) 532-3754
<http://www.io.org/~ath/trash-can.html>

QUEBEC

Montreal Association of Serious Homebrewers (MASH)
c/o Scott Vitus
1385 Garneau St.
Bruno, PQ J3V 2V5
(514) 441-9529

Technovin

c/o Mitch Hamilton
475 Dumont, #112
Dorval, PQ H9S 5W2
(514) 636-3669

SASKATCHEWAN

Saskatoon Berry Brewers
c/o Robert Schultz
326 Brunst Crescent
Saskatoon, SK S7N 3S8
(306) 966-7822

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El Nil Brewers

c/o Wayne Hocking
#8 Rd. 208 Maadi
Cairo
(20) 2353 2953
ruwh@lockmtn.dom.eg.net

GERMANY

German Homebrewers Association
c/o Dipl. Brm. Christian von der Heide
Adlzreiterstr 27
München, D-80337
100541.2263@compuserve.com

ITALY

The Congo River Delta Master Brewers Association
c/o A.V. Bonetti
Via Moretta 25030 Rudiano
Brescia

JAPAN

Beer Club of Japan
c/o The Cellar Japan
2-1-19 Shichinomiya-cho
652 Hyogo-ku, Kobe
(078) 651-1437

Far East Brewers
c/o Norman Fewell
Nakagusuku son, Kita Hama
381 Ban Chi, Okinawa

Foreign Fermentations
c/o Randy Lillard
343 Nikaldo, Kamakura-shi
248 Kanagawa-Ken
(046) 723-5187

Japan Homebrewing Promotion Association
c/o Miyana-Biru 301
Motoakasaka 1-5-1 Minato-Ku
Tokyo

Japanese Homebrewers Association
c/o Satoru Ishii
994-19 Shiratori-cho, Tsuchiura
Ibaraki, 300
(029) 832-2735
s-ishi@da2.so-net.or.jp

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01640 37715

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50456 GT Tilburg
01335 1011

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05793 1518

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Ruitersveldweg 46
8091 HW Wezep

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Alternatieve Bierbrouwers (SNAB)**
c/o Secretariaat
Postbus 4189
1620 Na Hoorn
0206 932448

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Willemsweg 110
6531 DN Nijmegen
080 562952

'tWort wat

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Houtwijkerveld 24
2131 MG Hoofddorp
02503 31286

NEW ZEALAND

Auckland Guild of Winemakers
c/o Hec Denniston
426 Sandringham Rd.
Auckland 3

Far North Brewers & Vintners
c/o Nancy Barden
PO Box 214
Mangonui Northland

Hamilton Brewers & Winemakers Club
c/o Barry G. Whiteley
45 Radiata St.
Hamilton
64-7 8559653
barry@datacom.co.nz

Hibiscus Winemakers & Brewers
c/o Jessie Evans
111 Whangaparaoa Rd.
Orewa, Auckland

Manukau Winemakers & Apiarists
c/o Basil Dempsey
30A King St.
Papatoetoe, Auckland 1701

North Shore Fermenters Club
c/o I.M.T. Ansin
13 Sundown Ave.
Whangaparaoa, Auckland

Waimea Amateur Brewers Society
c/o Marie Stephens
4 Churchill Ave.
Richmond, Nelson 7001

SLOVENIA

Drustvo domacih pivovarjev Ljubljana
c/o Miran Sinigoj
Cankarjeva 10
Ljubljana 1000
(386) 61 1253 071
miran.sinigoj@lek.si

SWEDEN

Amylase
c/o Tommy Sandstrom
Tomrosvagen 29
Molnlycke 43531
(031) 882371

Heimbrewed
c/o Anders Jonasson
Rådhusgatan 60
83134 Östersund
(063) 131463

Högborgs Brygg Kollektiv
c/o Charles Cassino
CF Box 1419
S-111 84 Stockholm
(070) 7221296
charles.cassino@cf.se

Olsallskapet HBK
c/o Tony Magnusson
Centralgatan 75
s-149 40 Nynashamn
(46) 8520 203676

Swedish Homebrewers Association
c/o Håkan Lundgren
Vallstanäsavägen 75, S-195
70 Rosersberg
(046) 8 590 35 727
lundgren@shbf.se

Vörtens Vänner
c/o Patrik Sjöberg
Lomvagen 643
S-19157 Sollentuna
(08) 758 16 35

SWITZERLAND

Association des Buveurs d'Orges (ABO)
c/o A. Schmid
Case Postale 2
1800 Vevey 1

Swiss Homebrewing Society
c/o Marco Sängler
Langmattstrasse 494
CH-5064 Wittnau
(62) 871 73 03
rholtkamp@access.ch
http://www.access.ch/whoiswho/rholtka
mp.html

UNITED KINGDOM

Beeston Beer Circle
c/o R. N. Brooksbank
17 Dovecote Ln.
Beeston, Notts NG9 1HR
0115 925 5999

Campaign For Real Ale (CAMRA)
c/o I.W. Dobson, Company Secretary
230 Hatfield Rd.
St. Albans, Herts AL1 4LW
0172 786 7201

Craft Brewing Association
c/o James McCrorie
82 Elmfield Rd.
London SW17 8AN
0181 675 0340

North Cotswold Brewers
c/o Steve Merrett
17 Hall Rd.
Cheltenham, Glouc.
0124 223 8086
paul@ptalder.demon.co.uk

UNITED STATES**ALABAMA**

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2208 2nd Pl. N.E.
Birmingham, AL 35215
(205) 854-4884
darren@ua1vm.ua.edu

Lower Alabama Lagers
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366 Michigan Ave.
Mobile, AL 36604
(205) 649-9436

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130 Spinnaker Ridge Dr., #F228
Huntsville, AL 35824
trix@ingr.com

Tuskaloosa Brew Club
c/o Edwin Hicks
4114 Shaw Dr.
Tuskaloosa, AL 35404
(205) 553-4833

Wiregrass Brewers Clubs
c/o John Sartwell
Rte. 3, Box 107
Ozark, AL 36360
(205) 299-3472

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Great Northern Brewers
c/o James S. Roberts
3605 Arctic Blvd., #1204
Anchorage, AK 99503
(907) 337-9360
docherty@arco.com

Matanuska Thunder Brewers
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453 N. Bonanza St.
Palmer, AK 99645
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Q & Q Brewers Guild
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(907) 235-2874

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Fairbanks, AK 99712-2017
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Phoenix, AZ 85023
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Arizona Society of Homebrewers
c/o Zach Hilgers
2322 S. Rogers St., Villa 61
Mesa, AZ 85202
(602) 491-8236

Brewmeisters Anonymous
c/o Greg Sharrer
6901 E. Joan De Arc
Scottsdale, AZ 85254
mclynn@paloverde.com

Dead Brewer's Society
c/o Homebrewers Outpost
823 N. Humphreys
Flagstaff, AZ 86001
(520) 774-2499

Old Pueblo Homebrewers
c/o John Francisco
2635 W. Sandecker Pl.
Tucson, AZ 85745
(520) 743-7961
clisco@u.arizona.edu
http://www.u.arizona.edu/~cisco/opf.html

Prescott Union of Brewers
c/o Nathan Jones
220 Grove Ave.
Prescott, AZ 86301-2912

Rillito Creek Brew and Yacht Club
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4775 N. 1st Ave.
Tucson, AZ 85718
(520) 293-1740
rillito@azstarnet.com

**Southern Arizona Natural Draughts
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(520) 378-4290

Suds of the Pioneers
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Bisbee, AZ 85603
(602) 432-5242

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Pinetop, AZ 85935
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Flagstaff, AZ 86001-9546
(602) 774-7513

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Little Rock, AR 72205
(501) 664-2774

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c/o John Griffiths
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Fayetteville, AR 72701
(501) 521-0456

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PO Box 3
Fort Smith, AR 72902
(501) 783-5404

CALIFORNIA

Anderson Master Brewer's Association (AMBA)

c/o Bill Garretson
402 The Strand
Hermosa Beach, CA 90254
wgarrets@agsm.ucla.edu

Antelope Valley Brewers

c/o Jay D. McGough
6330 Prairie Ct.
Quartz Hill, CA 93536
(805) 722-8138
103331.1125@compuserve.com

Bakersfield Foam

c/o Steven Gibbs
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Bakersfield, CA 93301
(805) 634-1144

Barley Bandits

c/o Dick Reese
218 S. Alice Way
Anaheim, CA 92806-4033
(714) 630-6527

The Barley Literates Homebrew Club

c/o Tim Woodard, Beer Crafts
950 W. San Marcos Blvd., Suite 1
San Marcos, CA 92069
(619) 788-7696
barleylit@aol.com
<http://members.aol.com/vmakebeer/barleyliterates.html>

Bay Area Brew Crew

c/o Mike Winslow
3336 Kimberly Way
San Mateo, CA 94403
(415) 341-0696
MKSGRIST@AOL.COM

Bay Area Mashers (BAM)

c/o Doug Ashcraft
5998 Alhambra Ave.
Oakland, CA 94611
(510) 339-1816
Spm67@aol.com

Big Ring Brew Club

c/o Scott Parr
1223 Carmel Ct.
Walnut Creek, CA 94596
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Bonita Avenue Brewers

c/o R. Graham Jones
1624 Bonita Ave.
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c/o Rick Stanton
7273 Murray Dr., #15
Stockton, CA 95210
(209) 957-4549
NancyLHawkins@juno.com

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c/o Kelly Dunham
1229 Lerida Way
Pacifica, CA 94044
(415) 355-7143

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c/o Tom Messenger
1424 Bayoaks Dr.
Los Osos, CA 93402

Brewers of the Central Coast (B.O.C.C.)

c/o Sean Portwood
470 Price St., #A2
Pismo Beach, CA 93449

Caligula's Guard

c/o Rich Mansfield
1040 N. 4th St.
San Jose, CA 95112
(408) 288-6645

Clan de Stein

c/o Current President, Brewers Resource
PO Box 916
Camarillo, CA 93011-0916
(805) 445-4100
tloves@blackbird.jetlink.net

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c/o Kevin Valentine
6484 Alta Gracia Dr.
Tujunga, CA 91042
(818) 951-9782

Culinary Brewing Arts Assoc. - Sacramento

c/o David Avalos/Lederwolff Culinary Academy
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Sacramento, CA 95820
(916) 446-9426

Culinary Brewing Arts Assoc. - San Francisco

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5340 Paso Del Rio Way
Concord, CA 94521
(510) 672-6471

Dampf Brewers

c/o Racco Lesiam
PO Box 3593
Pinedale, CA 93650-3593

Davis Homebrewers Association

c/o Sean Mick
231 G St., Suite 8
Davis, CA 95616
homebrew@dcn.davis.ca.us

Delta Brewing Club

c/o Pat Meadows
24 Drake St.
Antioch, CA 94509
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Diablo Order of Zymiracle Enthusiasts

c/o Olin Schultz, President
PO Box 4538
Walnut Creek, CA 94596
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Pleasant Hill, CA 94523
(510) 372-8060

Die Hopfen Koepfe Brew Club

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Irvine, CA 92714
(714) 851-0798
diehopkopf@aol.com
<http://users.aol.com/diehopkopf>

Draught Board Home Brew Club

c/o Ken Koupal, Editor
10060 La Paz Ave.
San Ramon, CA 94583
(510) 487-4274
krkoupa@ccmail2.pacbell.com
<http://www.bdt.com:80/home/bjones/drifbrd.html>

The Fermenters

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27324 Camino Capistrano, #114
Laguna Niguel, CA 92677
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1487 Arthur Neal Ct.
Lemon Grove, CA 91945
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San Bruno, CA 94066
(408) 988-2285
jmancebo@sirius.com

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c/o Dan Bell
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Pacifica, CA 94044-2341

GenenBrewers

c/o David Allison
460 Pt. San Bruno Ave., M/S #70
S. San Francisco, CA 94080
(415) 225-5764
allison2@gene.com

Gold Country Brewers Association

c/o Donna Bettencourt
PO Box 160854
Sacramento, CA 95816
(916) 381-1300
<http://www.ns.net/GCBA>

Grain Damage

c/o Kurt Steinhebel
1928 W. Tedmar Ave.
Anaheim, CA 92804
(714) 648-2207

Hangtown Association of Zymurgy Enthusiasts (HAZE)

c/o Gary Sandler
PO Box 1662
Placerville, CA 95667
(916) 676-9722
sandler@spider.lloyd.com

Hetch Hetchy Hopheads

c/o Bucket of Suds
317 Old County Rd.
Belmont, CA 94002
(415) 637-9844

High Desert Barley Hoppers

c/o Don Miller
8755 Devon Ave.
Hesperia, CA 92345
(619) 947-7944

Hobbiton Imbibing Consortium

c/o Jeanpaul Powell
16150 Showlow Ln.
Lathrop, CA 95330

Homebrew Consumers Union

c/o Mark Thompson
4055 Valerie Dr.
Campbell, CA 95008
(408) 379-1046
markt@cup.hp.com

Humboldt Brewers Guild

c/o Cary Bellak
PO Box 883
Blue Lake, CA 95525
(707) 668-5456
cdb1@axe.humboldt.edu

Inland Empire Brewers

c/o The Home Brewery
24723 Redlands Blvd., Suite F
San Bernardino, CA 92408
(909) 796-0699

Lagerheads Homebrewing Guild

c/o Bruce Garlinger
PO Box 651
Inyokern, CA 93527
(619) 378-4BRU

Lodi Brew'n's

c/o Jerry Melton
312 S. Fairmont Ave., Suite C
Lodi, CA 95242

Long Beach Homebrewers

c/o Wayne Holder
3810 E. Ocean Blvd., #1
Long Beach, CA 90803
(310) 434-1611
zymie@sprynet.com
<http://ourworld.compuserve.com/homepages/geldridge/lbh.htm>

MAD BREWERS - Bakersfield

c/o Mike Shue
9118 Leslie Deann Ct.
Bakersfield, CA 93312
(805) 399-8936

MAD BREWERS - Napa/Sonoma

c/o Mark Ruhe
5226 Walnut Rd.
Vacaville, CA 95687
(707) 448-8926
mtruhe@ucdavis.edu

Maltose Falcons Homebrewing Society

c/o Brian Vessa
22836 Ventura Blvd. #2
Woodland Hills, CA 91364
(310) 558-8458
bav@earthlink.net
<http://www.westval.com/mfalcons>

Marin Home Brewers Club

c/o Scott McMartin
1809 Larkspur Landing Cir.
Larkspur, CA 94939
(415) 332-8804

MARin Society of Homebrewers (MASH)

c/o Mike Riddle
2 Mt. Rainier Dr.
San Rafael, CA 94903
(415) 472-3390
mjri@chevron.com

Mike Bier

c/o Mike Smith
137 N. 13th St.
San Jose, CA 95112
(408) 998-5029

Monterey Beer Nuts

c/o Jim Morrison
511 Grand Ave.
Pacific Grove, CA 93950
(408) 375-0950

Mountain Mashers

228 Commercial St., #192
Nevada City, CA 95959

The Odd Grogs

c/o Gregor
1641 El Camino Real
Palo Alto, CA 94306
gregor@ndesign.com

Pacific Gravity

c/o Culver City Home Brewing Supply
4358 1/2 Sepulveda Blvd.
Culver City, CA 90230
(310) 397-3453
pg@brewsupply.com
<http://www3.ios.com/~cchbs/pg.html>

Parrots Ferry Homebrew Club

c/o Al Lemke
19326 Grand View Ct.
Sonoma, CA 95370
(209) 533-3497

Pescadero Ale & Lager Enjoyment Society (PALES)

c/o Ken Groves
21 Preuss Rd.
Pescadero, CA 94060
(415) 879-9726
kenneth_groves@fmc.com

Quality Ale & Fermentation Fraternity (QUAEF)

c/o Dion Hollenbeck
516 Forward St.
La Jolla, CA 92037
(619) 459-8724
hollen@vigra.com
<http://www.acs.ucsd.edu/~sescorza/quaaff.html>

Redwood Coast Brewers Association

c/o Ken Sommers
445 La Fonda Ave.
Santa Cruz, CA 95065
(408) 423-7183

Riverside Homebrew Crew

c/o John Walker
6212 Tarragona Dr.
Riverside, CA 92509
(909) 683-5050

San Andreas Malts

c/o Russ Wigglesworth
PO Box 884661
San Francisco, CA 94188-4661
(415) 885-1878
rad_equipment@radmac1.ucsf.edu

San Joaquin Worthogs

c/o Tom Pope
5702 W. Wathen
Fresno, CA 93722

San Luis Obispo Brewing Society (SLOBS)

c/o Howard Gootkin
1568 Frambuesa Dr.
San Luis Obispo, CA 93405
(805) 541-0713

Santa Barbara Co. Home Brewers Association

c/o Kyle Carrell
PO Box 597
Los Olivos, CA 93441-0597
(805) 686-0730
73160.1441@compuserve.com

Santa Clara Valley Brewers Association

c/o Bob Hight
433 California St.
Santa Clara, CA 95050
(408) 247-6853

Shasta County Sudsers

c/o Raymond Ault
4621 Balls Ferry Rd.
Anderson, CA 96007
(916) 365-6284

Society of Barley Engineers

c/o Andy Gamelin
1218 Melrose Way
Vista, CA 92083
(619) 631-8210

Some of Upland's Diversified Zymurgists (SUDZ)

c/o Steve Ernst
1009 College Ave.
Claremont, CA 91711

Sonoma Beerocrats

c/o Nancy Vineyard
840 Piner Rd., #14
Santa Rosa, CA 95403
(707) 544-2520

Sons O' Beaches Brewers

c/o Jeffrey L. Lee
2301 Valley Dr.
Hermosa Beach, CA 90254
(310) 222-3791
jefflee@harbor3.humc.edu

South San Diego Brewers and Vintners Club

c/o Jarrod Bell
661 Gretchen Rd.
Chula Vista, CA 91910
(619) 427-2474

Stanislaus Area Association of Zymurgists

c/o Micah Millspaw
309 S. 6th Ave.
Oakdale, CA 95361-4032
(209) 847-9706

Stanislaus Hoppy Cappers

c/o Wayne Baker
1907 Central Ave.
Ceres, CA 95307
(209) 538-2739

Strand Brewers Club

c/o Steve Fafard
21726 Eyalyn Ave.
Torrance, CA 90503
75654.3055@compuserve.com

Susanville Homebrew Institute of Technology

c/o Larry Anthony
PO Box 524
Janesville, CA 96114-0524

Tahoe Homebrewer's Club (THC)

PO Box 624337
S. Lake Tahoe, CA 96154-4337

Temecula Valley Homebrewers Association

c/o Brian Baber
31677 Courte Padraera
Temecula, CA 92592
(909) 676-6270

Terminal Gravity

c/o Acton Home Brewing Supply Co.
39553 Sierra Hwy., #B
Palmdale, CA 93550
(805) 265-7837
<http://www.p2000.com/brewkit/club/index.html>

Underground Spirits Association (USA)

c/o The Coddfish
8343 Quartz Ave.
Winnetka, CA 91306
(818) 998-1637

Wild Yeast Culture

c/o Gareth Gordon
641 Paloma Ave.
Oakland, CA 94612
(510) 893-0385

Worts of Wisdom

c/o Jeremy Ballard Bergsman
1838 Drew Ave.
Mountain View, CA 94043
(415) 988-0118
jeremybb@leland.stanford.edu
<http://www.leland.stanford.edu/~jeremybb/beerstuff/wow.html>

Yolo County Homebrewers

c/o Vern Wolff
PO Box 538
Esparto, CA 95627
(916) 787-3615

COLORADO**Bierewolves of Loveland**

c/o Bob Green
PO Box 411
Loveland, CO 80537

Brewnion Colony

c/o Beth D.@Brew Ha Ha
708-8th St.
Greeley, CO 80631
(303) 356-1566

Colorado Beer Club

c/o John Myers
5500 S. Forest Ln.
Greenwood Village, CO 80121

Crested Butte Brewskiers

c/o Graham Ullrich
PO Box 2045
Crested Butte, CO 81224-2045
(303) 349-5969

Deep Wort Brew Club

c/o Duane Lujan
1822 Dominion Way
Colorado Springs, CO 80918
(719) 528-1651

Fermentations of Aurora Mashers (FOAM)

c/o Jesse Boone
3700 E. Jewel Ave., #B-526
Denver, CO 80210
(303) 782-0993
jboone@du.edu

Foam on the Range

c/o George Schamel
11162 Conifer Mountain Rd.
Conifer, CO 80433
(303) 838-5902
george.schamel@ast.lmco.com

Grateful Head Homebrew Club

c/o West Slope Homebrewing
111 S. 6th St.
Grand Junction, CO 81501
(303) 244-8947

Hop Barley & The Alers

c/o Bob Kauffman, President
PO Box 17935
Boulder, CO 80308-0935
(303) 828-1237

Hops Around the Rock

c/o Bob Burns
45587 Summit Rd.
Parker, CO 80134
(303) 841-8853

Keg Ran Out Club (KROC)

PO Box 1162
Broomfield, CO 80020
(303) 465-1776

Louthan Street Deadbeats

c/o Jezebel Swartzensterne
6547 S. Louthan St.
Littleton, CO 80120
(303) 798-2953
mcaprara@awwarf.com
<http://www.dimensional.com/~godbey/louthan.html>

Mash Tongues

c/o Scott Mills
7512 Leslie Dr.
Fort Collins, CO 80537
(970) 669-6088
smills@webaccess.net
<http://www.fortnet.org/~smills/masht.html>

Moffat County Outlaws

c/o Jim Abney
709 E. 9th St.
Craig, CO 81625
(970) 824-6138

One Brew Over the Cuckoos Nest (O.B.O.C.N.)

c/o Dave Lipitz
1614 E. Orman
Pueblo, CO 81004
(719) 564-1611

Rainbrewers

c/o Russ Staska
433 E. Baylor St.
Fort Collins, CO 98525

The TRIBE

c/o Roger Grow
524 Pebble Beach Ave.
Johnstown, CO 80534
(970) 587-4993
grow@sumatra.mcae.stortek.com
<http://www.csd.net/~hophead/tribe.html>

Unfermentables

c/o Chris Galvin, Wine and Hop Shop
705 E. 6th Ave.
Denver, CO 80203
(303) 831-7229

The Weissenheimers

c/o Herschal
4422 1/2 Delaware St.
Denver, CO 80216
BREWHERSCH@aol.com

Weiz Guys B. C.

c/o Kevin Irwin
502 Sherri Dr.
Loveland, CO 80537
(970) 669-1838

Yampa Valley Yeast Ranchers

c/o Tom Williams
PO Box 775868
Steamboat Springs, CO 80477

CONNECTICUT**Beer Brewers of Central Connecticut**

c/o Judy Lawrence
1550 Randolph Rd.
Middletown, CT 06457
(203) 346-5440

Connecticut Beernutts

c/o Steve Henry
14 Waverly Ave., #2
Portland, CT 06480-1842

Hop River Brewers

c/o Richard Rosen
265 Rte. 6
Andover, CT 06232
(203) 742-5465

Millstone Mashers

c/o Bill Rigby
72 Richard Brown Dr.
Uncasville, CT 06382
(860) 848-1752
rigbywe@gwsmt.pnu.com

Sanderflohansontappanberg Brew Club

c/o Mark Floberg
27 Bonita Dr.
Huntington, CT 06484

Shoreline Sudsers

c/o Jim Leitch
53 Wellsweep Dr.
Madison, CT 06443
(203) 245-4321

Stratford Union of Dedicated Zymologists (SUDZ)

c/o Jim Miklos
55 Kings College Pl.
Stratford, CT 06497
(203) 377-7777

Those Crazy Brewers - (a bunch of guys & a couple' wenches)

c/o Elizabeth Pryor
34 Sachem Rd.
Southbury, CT 06488
(203) 264-4958

UConn Zymurgy Club

c/o Robert Vieth
University of Connecticut, Box U-139
Storrs, CT 06269

Underground Brewers of Conn.

c/o Tom Miklinevich
17 Patmar Terrace
Monroe, CT 06468
(203) 261-7453

Whale of an Ale Brewers Association

c/o Samira Hakki
68 Ridge Hill Rd.
Oakdale, CT 06370

DELAWARE**First State Brewers**

c/o Scott Bieber
407 Pheasant Cir.
Bear, DE 19701
(302) 834-8747
<http://triton.cms.udel.edu/~oliver/firststate/firststate.html>

Southern and Nearby Delaware Ale and Lager Society (SANDALS)

c/o Doug Griffith
Rte. 3, Box 190
Millsboro, DE 19966
(302) 934-8588

Tri-State Brewers

c/o Mark Warrington
PO Box 334
Rockland, DE 19732-0334
warringt@esvax.dnet.dupont.com; CIS
76322,2102

FLORIDA**2 Dudes That Brew**

c/o Peter Coleman
317 Citrus Dr.
Nokomis, FL 34275
(912) 876-0556

Bradenton Brewski's

c/o Chet Kedzierski
PO Box 51
Bradenton, FL 34206
(813) 747-2437

Bull Brewing Company

2225 E. 131st Ave., #3102
Tampa, FL 33612
ccampbel@sunflash.eng.usf.edu

Caloosa Hop Heads

c/o Gary Coucher
826 S.E. 41st St.
Cape Coral, FL 33904
(813) 549-7567

Central Florida Homebrewers

c/o Ronald C. Bach
1190 Trotwood Blvd.
Winter Springs, FL 32708
(407) 696-2738

Escambia Bay Brewers

c/o Ron Gray
8319 Wilde Lake
Pensacola, FL 32526
(904) 944-1450
nmxz71a@prodigy.com

Florida Suncoast ThunderBrewers
c/o Matthew Wiseman
16326 Gulf Blvd., #D-14
Redington Beach, FL 33708
(813) 867-3693
71543.763@compuserve.com

HBu (HomeBrewers Underground)
c/o Dan Showalter
1112B S. Cedar Ave.
Niceville, FL 32578-3108
(904) 678-2491
hbufwb@emcst.com

Hogtowne Brewers
c/o Ray Badowski
21 S.W. 2nd St.
Gainesville, FL 32601-6237
(904) 375-7949

Malt Aficanados Society of Hernando (MASH)
c/o Joe Johnston
416 S. Broad St.
Brooksville, FL 34601
(904) 799-3004

Miami Area Society of Homebrewers
c/o Darryl Hickey
6200 S.W. 37th St.
Miami, FL 33157
(305) 854-0505
djhbrew@aol.com

North Florida Brewers League
c/o Sarah Bridegroom
PO Box 3325
Tallahassee, FL 32315-3325
(904) 386-3480

Northeast Florida Society of Brewers
c/o Bob Davis
7 Park Terrace Dr.
St. Augustine, FL 32084
(904) 824-5252

Nude Brewers
c/o The Hogtown Brewer
21 S.W. 2nd St.
Gainesville, FL 32601
(904) 375-3772

Palm Beach Draughtsmen
c/o Stephan Vernet
4734 Okeechobee Blvd., #F5
W. Palm Beach, FL 33417-4626
(407) 686-4019

River City Brewers of Jacksonville
c/o Jason Hosch
7703 Indian Ave., Suite 129
Jacksonville, FL 32211
(904) 766-1802
http://www.hosch.net/brewshop

South Florida Homebrewers
c/o Lauren or Bryan Hemedinger
441 S. State Rd. 7
Margate, FL 33068-1934
(305) 968-3709/f968-3591

Spacecoast Associates for the Advancement of Zymurgy (SAAZ)
c/o Billy (Gizmo) Kendrick
6450 Banks Ave.
Cocoa, FL 32927-3178

Tampa Bay BEERS (Beer Enthusiasts Enjoying Real Suds)
c/o Mark Stober
PO Box 24691
Tampa, FL 33623-4691
(813) 977-0141

Treasure Coast Brewmasters
c/o Ron Polzin
4446 S.E. Federal Hwy.
Stuart, FL 34997-5746
(407) 546-9108

GEORGIA

Ale Atlanta
c/o Coby Glass
1852 Aaron Ct.
Powder Springs, GA 30073
(404) 943-5583

Brew-52's
c/o John J. Gayer
140 Best Dr.
Athens, GA 30606
(706) 354-4466

Chicken City Ale Raisers
6252 Brookfield Dr.
Murrayville, GA 30564

Clergy of Zymurgy of the Golden Isles
c/o Steve Pechin
800 Howe St.
Brunswick, GA 31520-7340
(912) 267-6911

Covert Hops Society
c/o Peter Keilm and Deborah Brons
(Co-directors)
3401 King Arthur Dr.
Marietta, GA 30068

Hoochee Brewskis
c/o John Szymanski
3709 Gentian, #4
Columbus, GA 31907
(706) 568-7772

Lagerheads von Atlanta (LAVA)
c/o Dan Cheney
4845 Hwy. 78
Lilburn, GA 30247
(770) 985-5655

The Rolling Pils of Georgia
c/o Jack McKeen
512 Russell Pkwy.
Warner Robins, GA 31088
(912) 923-8777

Savannah Brewers' League
c/o Klugh Kennedy
105 Lagoon View Crossing
Savannah, GA 31410
(912) 897-3619

South Atlanta Association of Zymurgists (SAAZ)
c/o Just Brew It!
PO Box 142248
Fayetteville, GA 30214
(770) 719-0222

HAWAII

Haleakala Homebrew Hui
c/o John Andrews
108 Mikalee Pl.
Kula, HI 96790
(808) 878-6516

Hawaiian Homebrewers Association
41-610 Nonokio St.
Waimanalo, HI 96795
(808) 259-6884
brew@lava.net
http://www.lava.net/~brew

IDAHO

Hell's Canyon Homebrewers
PO Box 931
Lewiston, ID 83501
(208) 743-7691

High Desert Brewers Assoc.
c/o Carrie Getty
2845 Holly Pl.
Idaho Falls, ID 83402-4631
(208) 524-0970

Ida-Quaffer Homebrewers Association
c/o Editor
3894 W. State St.
Boise, ID 83703
(208) 344-5141

Magic Valley Brew Crüe (MVBC)
c/o Quay Marshall
PO Box 128
Buhl, ID 83316

Panhandle U Brew Society (PUBS)
c/o Linda Hetrick
2116 James Crowe Dr.
Coeur d'Alene, ID 83814
(208) 772-7019

ILLINOIS

Association of Bloomington/Normal Brewers (ABNORMAL)
c/o Tony McCauley
RR 9, Box 42
Normal, IL 61761
(309) 452-1084
dbeedle@ilstu.edu

Beer Nuts
c/o Eric Dallman
4516 Stonewall Ave.
Downers Grove, IL 60515
(708) 271-0843
ericd@prairienet.org

Boneyard Union of Zymurgical Zealots (BUZZ)
c/o Joe Formanek
512 Dogwood
Champaign, IL 61821
(217) 328-6858
http://starfire.ne.uiuc.edu/buzz/home.html

Brewers of South Suburbia (BOSS)
c/o Steve Kamp
PO Box 461
Monee, IL 60449
(708) KEG-BEER

Brewers On the Bluff
c/o Lake Bluff Park Dist./Steve Howard
PO Box 73
Lake Bluff, IL 60044-0073
(847) 615-0605
RECMES@AOL.COM

Central Illinois Brewer's Association
c/o Mark Kellums
335 N. Main
Mt. Zion, IL 62549
(217) 864-4216

Chicago Beer Society
PO Box 1057
La Grange Park, IL 60526
(847) 692-BEER
cbsbeer@aol.com
http://www.mcs.com/~shamburg/cbs/cbshome.html

Club Wort
c/o Jim Thommes
5504 Deerfield Ln.
Rolling Meadows, IL 60008
(708) 397-7648

Egyptian Zymotic (EZ) Brewers
c/o Doug Diggle
514 S. Illinois Ave.
Carbondale, IL 62901
(618) 457-3513

Fermenters at Large
c/o Mike Hennessy
1359 Portsmouth Ct.
Carol Stream, IL 60188
(708) 830-1210

Forest City Brewers
c/o Roger Hosfeld
801 N. Rockford Ave.
Rockford, IL 61107
(815) 397-3767

Headhunters Brewing Club
c/o Greg Lawrence
4 S. 245 Wiltshire Ln.
Sugar Grove, IL 60554
(708) 557-2523

Home Beers Racketeers
c/o Gary Burns
PO Box 203
Kansas, IL 61933
(217) 948-5365

Homebrewers' Pride of the Southside (HOPS)
c/o Jim Kube
2953 S. Emerald Ave.
Chicago, IL 60616
(312) 842-2337
ZQMP47A@prodigy.com

Kankakee Area Beireaucrats
c/o Steve Bell
4 Old Farm S. Ct.
Bradley, IL 60915
(815) 937-0974

Lagerhead Brew Club
c/o Chuck Aleshire
102 Yale Ct.
Shorewood, IL 60436
(815) 729-2295

The Midnight Carboys
c/o Jim Brady
220 S. Cross Trail
McHenry, IL 60050
(847) 937-9758
robtseto@mc.net

Mississippi Unquenchable Grail Zymurgists (MUGZ)
c/o Jeff Grillo
1422 32nd St.
Rock Island, IL 61201
(309) 786-2546
72064.1256@compuserve.com

Northern Illinois Better Brewers
c/o Jon Huettel
2316 Oak St.
Northbrook, IL 60062-5220
(708) 498-6154

Northwest Amateur Wine and Beermakers Guild
c/o Roy J. Horton
1419 Redwood Dr.
Mt. Prospect, IL 60056
(708) 439-4525

Prairie Schooners
c/o Karl Menninger
PO Box 10082
Springfield, IL 62791-0082
(217) 522-1906

Quincy Braumeisters
c/o Paul Kurjanski
11 E. Country Club Dr.
Quincy, IL 62301
kurjan@bcl.net

Silverado Homebrew Club
c/o Terry Richardson
405 S. 12th Ave.
St. Charles, IL 60174
(708) 584-8254

Urban Knaves of Grain (UKG)
c/o Chris Campanelli
ON545 Willow Rd.
Wheaton, IL 60187
(630) 668-8081

Weinkeller Beer Enthusiasts
c/o Bob Ward
9114 W. 140th St. N.E., Suite 3
Orland Park, IL 60462
(708) 403-6666

The Weisse Guys
c/o Samantha Lynn's
117 W. Washington St.
Washington, IL 60450
(815) 941-0366

Wort-Mongers of Eastern Illinois
c/o Ken Knoop/The Grape N Grain Gourmet
623 Monroe St.
Charleston, IL 61920
(217) 348-8077

INDIANA

Bull and Stump Brew Club
c/o Rob Reed
1420 W. 350 North
Kokomo, IN 46901
(317) 452-6371

Duneland Homebrewers Association - The Retentive Head Society
c/o Alonso Villarreal, President
430 E. U.S. Hwy 6
Valparaiso, IN 46383
(219) 947-7802

Fermenters Of Special Southern Indiana Libations Society (FOSSILS)
c/o Roger Baylor
PO Box 6880
New Albany, IN 47151-6880
(812) 923-2804
http://www.sitesonthe.net/fossils/

Foam Blowers of Indiana (FBI)

c/o Paul Edwards
1310 E. Kessler Blvd.
Indianapolis, IN 46220-2745
pedwards@iquest.net

Lafayette Brewing Bovinophiles

c/o Russel H. Stwalley
512 Main St.
Lafayette, IN 47901
(317) 742-2696

Muncie Malt Mashers

c/o Brian Pickerill
3508 W. Johnson Cir.
Muncie, IN 47304
(317) 282-6721
00bkpickeril@bsu.edu

St. Gambrinus Benevolence Society

c/o Marvin Keenan
3241 W. Lanam Ridge Rd.
Nashville, IN 47448

St. Joe Valley Brewers

c/o Jim Herter
122 N. Saint Peter St., Apt. 2
South Bend, IN 46617
(219) 287-4599
sjvbrew@raptor.lmc.cc.mi.us

Strange Brewers

c/o Jim Kirk
3848 S. Sherman Dr.
Indianapolis, IN 46237
(317) 786-0464
captain@iquest.net

Tippecanoe Homebrewers Circle

c/o Bill Friday
103 E. Oak St.
West Lafayette, IN 47906-2733
(317) 743-0634
mpoling@mdn.com

Wabash Valley Vintners' & Homebrewers' Club

c/o Neil Platter
913 7th Ave.
Terre Haute, IN 47807-1109
(812) 235-2682

Wells County Homebrewers Club (WELCOME)

c/o Jim Craig, Secretary/Treasurer
1121 Honeysuckle
Bluffton, IN 46714
(219) 824-0387

IOWA**Brew Bobs**

c/o Scott Lage
414 S. Moore St.
Algona, IA 50511
(515) 295-7392

Cedar Rapids Association of Zymurgy, Yeastology, and Homebrewers (CRAZY Homebrewers)

c/o Mike Snyder, Vice President
PO Box 5922
Cedar Rapids, IA 52406-5922
(319) 393-1219
spsbeer@netins.net
http://www.beerstuff.com/crazy

Central Iowa Homebrew Club

c/o Dan A. Morey
4008 Bruce Rd.
Marion, IA 52302-5925
(512) 292-8207

Heartland Homebrew Club

c/o Gary Porter
RR 4, Box 112
Grinnell, IA 50112-9143
(515) 236-7487

The Honorable Iowa River Society of Talented Yeastmasters (THIRSTY)

c/o Mike Hansen
1748 Park Ridge Dr.
Coralville, IA 52241
(319) 351-3049
micahel-d-hansen@uiowa.edu

M.U.G.Z.

c/o Jan Van Ommen
502 W. Garfield St.
Davenport, IA 52803-1417

North Iowa Wine Club

c/o Laurence Fredricksen
24 Bayside Ave., Rte. 1, Box 174E
Clear Lake, IA 50428
(515) 357-2290

Raccoon River Brewers Association

c/o Mark Opsal
400 Jordan Dr.
West Des Moines, IA 50265

KANSAS**Derby Brew Club**

c/o Robert Wikstrom
PO Box 643
Derby, KS 67037-0643
(316) 788-4058; (316) 526-0118
brw952@unixmail.ks.boeing.com

Greater Topeka Hall of Foamers

c/o Kevin Foga
6411 S.W. 29th St.
Topeka, KS 66614-4337

Kansas City Beer Meisters

c/o Alberta Rager
8206 Bell Rd.
Lenexa, KS 66219-1631
(913) 894-9131

Krausen Boys

c/o Patrick Kennedy
9117 W. 116th St.
Overland Park, KS 66210
(913) 441-0353

Lawrence Brewers Guild

c/o Dwight Burnham
1051 Wellington Rd.
Lawrence, KS 66049
(913) 843-4341

Little Apple Brew Crew

c/o Brent L. Benkelman
3202 Willowpond Ln.
Manhattan, KS 66502
(913) 539-4762

Rapscallions of Wichita

c/o Michael A. Romine
548 Redbarn
Wichita, KS 67212
(316) 729-5882

S.E. Kansas Homebrewers Association

c/o Ben Fox
611 N. Mulberry
Eureka, KS 67045
(316) 583-7256

Salina Original Tasting Society Homebrew Club

c/o Jim Huskey
319 Russell Ave.
Salina, KS 67401

Verdigris Valley Homebrewers Association

c/o Mark Taylor
824 S. 5th
Independence, KS 67301

Weiss Squad Homebrew of Liberal

c/o Jim Ashton
2441 Lilac Dr.
Liberal, KS 67901
jashton@brightok.net

KENTUCKY**Brewers of Central Kentucky (BOCK)**

c/o Mike Christensen
3500 Warwick Dr., #42
Lexington, KY 40517
(606) 272-6348
zapata@uky.campus.mci.net

LAGERS, Ltd.

PO Box 5384
Louisville, KY 40255-0384

Lone Wolf Brewers

c/o Michael Berheide
120 Delwood Ave.
Berea, KY 40403
(606) 986-2647

LOUISIANA**Baton Rouge Enzyme Wrights (BREW)**

c/o Jim Waits
1818 Wooddale Blvd., #18
Baton Rouge, LA 70806
(504) 926-BEER

Crescent City Homebrewers

c/o Louie Marino
2001 Neyrey Dr.
Metairie, LA 70001
(504) 831-2026

Dead Yeast Society

c/o Jim Boudreaux
204 Montrose Ave.
Lafayette, LA 70503-3822
(318) 981-4072
OLXEWHH@region.unocal.com

Mystic Krewe of Brew

c/o Jeff Hagess
13 Laurelwood Dr.
Covington, LA 70433
(504) 626-1021
jazzophile@aol.com
http://www.neosoft.com/~dosequis/hom
epage.html

No name nO Blame homebrew Society (No B.S.)

c/o Karl Menzer
402 W. 3rd St.
Thibodaux, LA 70301-3014
(504) 446-6774

Redstick Brewmasters

c/o Erick Swenson
628 Centenary St.
Baton Rouge, LA 70808
(504) 769-2177
bcornell@tyrell.net
http://www.tyrell.net/~bcornell/rsb.html

Shreveport Urban Diastatic Spargers (SUDS)

c/o Bob Carbone
3956 Fire Tower Rd.
Grand Cane, LA 71032
(318) 858-2219

MAINE**BrewSpeak**

c/o Stephen Hodgdon
297 Rte. 236
Beverly, ME 03901
(207) 384-3278

The Down Yeasters

c/o Dr. John B. Macauley
600 Main St.
Bar Harbor, ME 04609
(207) 288-3371 x1523
jbm@aretha.jax.org

Maine Ale & Lager Tasters (MALT)

c/o Ron Bouffard
PO Box 464
Topsham, ME 04086-0464
(207) 666-8888

Raymond Ale Taster's Society (RATS)

c/o Craig Stephenson, Raymond
Homebrew and Zymurgy Shop
22 Haven St.
Windham, ME 04062-4315
(207) 655-3719

Worthog Homebrewing Club

c/o Greg Blanchette
Box 4255
Dresden, ME 04342
(207) 737-8174

MARYLAND**The Aleing Sailors Homebrew Club**

c/o Dan or Kelly, Chesapeake Brewing Co.
1930 Lincoln Dr., Unit C
Annapolis, MD 21401
(410) 268-0450

Bay Country Brewers

c/o Reid Woolford
243 Bynum Ridge Rd.
Forest Hill, MD 21050
(410) 485-4854

Brewers Utilizing Refreshments

Normally Toxic (BURN'T)
c/o Tracy Roche
6 Queens Bridge Ct. Apt. C
Cockeysville, MD 21030
(410) 628-2314

Chesapeake Real Ale Brewers (CRABS)

c/o David Nesbitt
5408 White Mane
Columbia, MD 21045
(410) 997-3454

Cross Street Irregulars

c/o Tom Salles
36 E. Cross St.
Baltimore, MD 21230
(410) 426-3019
tomkhpc@postoffice.worldnet.att.net

Frederick Original Ale Makers (FOAM)

c/o 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
http://www.custom-web.com/gabs/

The Killer Ales of Maryland

c/o Alfred May
329 N. Beaumont Ave.
Catonsville, MD 21228
(410) 719-7968
maya@grc.nia.nih.gov

Libation Association of Northern Maryland

c/o Jay Delaney, President
1960 Millington Sq.
Bel Air, MD 21015
(410) 893-7851
jgd@roadnet.ups.com

Maryland Ale and Lager Technicians (MALT)

c/o Tim Hardman
2200 Notely Ln.
Crofton, MD 21114
(410) 721-7462

Midnight Homebrewers' League

c/o Stephen M. Kranz
741 Windsor Dr.
Westminster, MD 21158
(410) 840-9244

Northern Arundel Beer Brewers (NABBS)

c/o Paul Coffelt
1142 Annis Squam Harbour
Pasadena, MD 21122
(410) 360-9478
b1j2x08@bell-atl.com

People's Ale and Lager Society (PALS)

c/o Ben Schwalb
1609 Manning Rd.
Glen Burnie, MD 21061

Southern Maryland Association of Superior Homebrewers (SMASH)

c/o Gerald Elder
47 Airport View Dr.
Hollywood, MD 20636-9760

Suds & Ciphers

c/o Eric Marzewski
1463 Graham Farm Cir.
Severn, MD 21144

Summer Hill Brewers

c/o Bert Belote
222 Little New York Rd.
Rising Sun, MD 21911
(410) 658-2865

Wort Dogs

c/o Brent Talbot
3305 Pinefield Ln.
Waldorf, MD 20601

The Yeastern Shore Brewers of Delmarva
c/o Stephen L. Pratt
27834 Chesterfield Ln.
Salisbury, MD 21801
(410) 341-0787

MASSACHUSETTS

Ana-Lagers
c/o Steve Robinson
89 Bruin Hill Rd.
North Andover, MA 01845
(508) 691-5238
steve.robinson@analog.com

Attleboro Suds Suckers
c/o Tony Iannarelli
493 Central Ave.
Seekonk, MA 02771
(508) 761-6615

Barleyhoppers Brewing Club
c/o Mark Larrow
154 King St.
Northampton, MA 01060
(413) 586-0150

Berkshire Headhunters
c/o Daniel Stansfield
49 Davenport St.
North Adams, MA 01247
(413) 663-8988

Boston Brew-Ins
c/o George Curran
16 Cutter Ave., #3
Somerville, MA 02144

Boston Wort Processors
c/o John Dittman
PO Box 397198
Cambridge, MA 02139-7198
(617) 547-5113 x900
jason@world.std.com
http://www.rsi.com/wort/

Cape Cod Lager and Ale Makers (CCLAM)
c/o Carl Laman
11 Pleasant Park Rd.
Harwich, MA 02645
(508) 432-9524

Colonial Brewers
c/o Bill Lytle
Box 229
Brookfield, MA 01506

Fitchburg Order of Ale Makers (FOAM)
c/o Joe Zadrozny
PO Box 829
Ashburnham, MA 01430
(508) 534-9681
joez@net1plus.com

Gambrinus Society
c/o Herbert Holmes
92 Marsh Rd.
Barre, MA 01005
(508) 355-2753

Hampshire Brewing Collective
c/o Rob Young
Hampshire College, PO Box 1527
Amherst, MA 01002
(413) 549-7604

IBIS
c/o Wade Krull
32A Cherry Hill Dr.
Danvers, MA 01923
(508) 777-4247

Merrimack Valley Brewers
c/o Fred Lomas
42 Boston Rd.
Lowell, MA 01852

Missile Mashers
c/o Edward Bardsley
38 Hillside Ave.
Lawrence, MA 01841
(508) 681-9064

North Shore Brewers
c/o Robert B. Murphy
9 1/2 Bisson St.
Beverly, MA 01915
(508) 921-7352

South Shore Brew Club
c/o Randy Reed
32 Copperwood Dr.
Stoughton, MA 02072
(617) 341-8170

Spinal Taps
c/o Dr. Michael Biblyk
252 Auburndale Ave.
Auburndale, MA 02166-1619
(617) 527-4255

Trubadours
c/o James N. Athearn
229 Burlingame Rd.
Palmer, MA 01069

Valley Fermenters
c/o Charlie Olchowski
PO Box 988
Greenfield, MA 01302-0988
(413) 773-5920

Worcester Incorporated Zymurgists Advancing Real Draughts (WIZARDS)
c/o Phil Tatro
16 Potter Hill Rd.
Grafton, MA 01519-1116
(508) 839-2320
WizBrew@aol.com
http://members.aol.com/WizBrew/index.html

Worry Worts
c/o Glen Habel
80 Jones Rd.
Hopedale, MA 01747
greg_habel@dg.com
http://www.zipnet.net/users/riehl/wor-ry-worts.html

MICHIGAN

Ann Arbor Brewers Guild
c/o Rolf Wucherer
1942 Steere Pl.
Ann Arbor, MI 48104
(313) 662-8476
spencer@umich.edu
http://realbeer.com/spencer/AABG/

Brew Monkees
c/o Paul May
904 Adams Rd.
Farmington, MI 49635
(616) 352-5210

Brewers on the Lake
c/o Bob Schneider
6382 127th Ave.
Farmington, MI 49408
(616) 857-1283

Capital City Brew Crew
c/o Jim Booth
412 Everett Dr.
Lansing, MI 48915
(517) 371-1754

Cass River Home Brewers Club
c/o John Jackson
14098 Landings Way
Fenton, MI 48430
(810) 629-4804

Choir Boys
c/o David G. Reneaud
219 N. Saginaw St.
Byron, MI 48418-9119
(810) 266-6166

Clinton River Association of Fermenting Trendsetters (CRAFT)
c/o Ken Schmidt
26111 Fairwood Dr.
Chesterfield, MI 48051
(810) 949-5382

Computerized Homebrew Avocation and Obsession Society (CHAOS)
c/o Pat Babcock
2478 Cabot St.
Canton Township, MI 48188-1825
(313) 397-9758
pbabcock@oeonline.com

Crash Test Brewers
c/o Scott Clark, President
26100 Bryan
Roseville, MI 48066
(810) 848-2784
Scott_Clark@asl-tk.com

Detroit Car Boys
c/o Ed Marsh
PO Box 92418
Warren, MI 48092-0418
(810) 399-4186

Downriver Brewers Guild
c/o The Brew-It Yourself Center
13262 Northline Rd.
Southgate, MI 48195

Fermental Order of Renaissance Draughtsmen
c/o Rich Byrnes
30972 Cousino
Warren, MI 48092-1916
(810) 558-9844
75113.411@compuserve.com
http://oeonline.com/~pbabcock/ford.html

Firkin Homerackers Guild
c/o Michael J. Fila
2628 Linden St.
East Lansing, MI 48823
(517) 332-5347

Gitche Gume South Shore Brewers
c/o Grant Ian Lyke
757 Elliott St.
Ishpeming, MI 49849
(906) 486-8324

Great Lakes Brewers, Michigan Chapter No. 1
c/o Joe Gedmen
34632 Hivley
Westland, MI 48185
(313) 721-6288

Hogshead Brewers
c/o D.J. Downs
1994 A Woodward Ave., #215
Bloomfield, MI 48304
(313) 362-4466

Kalamazoo Libation Organization of Brewers (KLOB)
1608 Jefferson Ave.
Kalamazoo, MI 49006-3136
(616) 381-3266
tomf775202@aol.com

Keweenaw Real Ale Enthusiasts United for Serious Experimentation in Naturally-Effervescent Refreshment Science (KRAEUSENERS)
c/o Daniel Butler-Ehle
Rte. 1, Box 27
Calumet, MI 49913
(906) 337-3525

Michiana Omnifarious Nomadic Kraeuseners & Spargers (MONKS)
c/o Todd Keller
1350 Ferry St.
Niles, MI 49120
(616) 683-9162

Mid-Michigan Brewers Union
c/o Martin Woods
1404 Westerrace Dr.
Flint, MI 48532
(810) 733-1870

Pontiac Brewing Tribe
c/o Craig Spicer
5620 Hillsboro Rd.
Davisburg, MI 48350
(810) 625-6093
kegg@usa.pipeline.com

Port Elizabeth Brewers Guild
c/o Mike Kelly
PO Box 1452
Caseville, MI 48725

Prime Time Brewers
419 Michigan St. N.E.
Grand Rapids, MI 49503
crcope@i2k.com

Upper Peninsula Brewer's Guild (UPBG)
c/o Brian Murphy
8041 Donovan Rd.
Dexter, MI 48130-9695
(906) 482-4708
brmurphy@mtu.edu

MINNESOTA

Boreal Bottlers
c/o Jerry Bourbonnais
Rte. 6, Box 236
Bemidji, MN 56601
(218) 586-2488

Cloudy Town Brewers
c/o Bruce LeBlanc
1190 Flamewood Dr.
Sauk Rapids, MN 56379
(612) 251-0229

Grin and Brew It
c/o Mark Olson
502 6th St. S.W.
Willmar, MN 56201
(612) 235-3345

Headwaters Homebrew Club
c/o Randall Thompson
3648 37th Ave. S.
Minneapolis, MN 55406
(612) 624-0906
thomp013@maroon.tc.umn.edu

Minnesota homeBrewers Association (MhBA)
c/o Michael Valentiner
17735 2nd Ave. N.
Minneapolis, MN 55447
mvalentiner@vinternet.com
http://www.vinternet.com/~mpv/

Minnesota Mashers
c/o Rex Houserman
14912 Summit Oaks Cir.
Burnsville, MN 55337

Minnesota Timberworts
c/o Ron Elshaug
904 Glacier Ln. N.E.
Rochester, MN 55906
(507) 285-00468
worf@vnet.ibm.com

Mobius Microbrewers
c/o Mark W. Peery
400 Wilshire Dr. S.
Minnetonka, MN 55305-1560
(612) 591-1602

Northern Ale Stars Homebrewers Guild
c/o Bill Clark
417 N. 23rd Ave. E.
Duluth, MN 55812
(218) 729-6302

Northern Lagers
c/o Dan Meyer
2670 Scenic River Dr. S.
Baxter, MN 56425
dan@fed.k12.mn.us

The Redwing Homebrew Club - Northern Lights and Stouts
c/o Art McLeran
1622 W. 5th St.
Redwing, MN 55066
(612) 388-4984

Rum River Wort Hogs
c/o Tim Curran
17640 Eaton St. N.W.
Ramsey, MN 55303
(612) 441-4533

South Metro Wort Mongers
c/o Deb Nelson
14386 Embury Ct.
Apple Valley, MN 55124
(612) 893-6502

We Are: Men of Our Wort
c/o Dave Ziegler
RR1, Box 118
Kasson, MN 55944

Yeasty Boy Homebrew Club
c/o Yeasty Boy Homebrew
3912 Sibley Memorial Hwy.
Eagan, MN 55122
(612) 687-0121

MISSISSIPPI**Culinary Liquid Arts and Science Society (CLASS)**

c/o Charles Gutberlet, III
1761 Warrenton Rd.
Vicksburg, MS 39180
(601) 638-2144

Gulf Coast Brews Brothers

c/o Wade Wallinger
801 Swordfish St.
Pascagoula, MS 39581
(601) 762-0226
<http://www.he.tdl.com/~murray/gcbb.html>

MISSOURI**Brew Your Own Beer Club of Central**

Missouri (BYOB)
c/o Chris Koetting
1613 Honeysuckle Rd.
Sedalia, MO 65301
(816) 827-1083

K. C. Cú Mheadha

c/o David L. Strange
4311 Charlotte
Kansas City, MO 64110
(816) 531-7240

Missouri Association of Serious Homebrewers (MASH)

c/o Micheal Muller
1316 Eastwood
Rolla, MO 65401
(314) 364-6422

Missouri Winemaking Society

c/o Paul Hendricks
2018 Norma Ln.
St. Louis, MO 63138

St. Louis Brews

c/o Jerry S. Dahl
9 Adams Ln.
Kirkwood, MO 63122
(314) 822-8039
staffoba@maritz.com

ZZHops

c/o Richard G. Weiss
R17 Lakeshore Dr.
Lake Lotawana, MO 64086

MONTANA**Big Sky Basement Brewers and Blues Revival Society**

c/o Jim Hunter
614 S. Cottage
Miles City, MT 59301
(406) 232-4378

Bozeman's Official Zymurgy Organization (BOZO)

c/o Hellroaring Homebrew
517 E. Aspen St.
Bozeman, MT 59715
(406) 585-0090
hellroar@aol.com

Exalted Brewers of Great Falls

c/o Caroline Carter
1124 4th Ave. N.
Great Falls, MT 59401
(406) 454-3514

Flat Heads Brew Society

c/o Pat Cross
1220 3rd Ave. E.
Kalispell, MT 59901
(406) 756-8195

Hopping Anarchists

c/o Kirk Astroth
7359 Raven Dr.
Belgrade, MT 59714
(406) 388-1232

MT Bocks Society

c/o Donald Weber
5900 Elysian Rd.
Billings, MT 59101
(406) 256-9841

Pour Bastards of Northeast Montana

c/o Paul Pence
PO Box 281
Fort Peck, MT 59223
(406) 526-3636

Zoo City Zymurgists

c/o James Pelland
108 Northview Dr.
Missoula, MT 59803

NEBRASKA**Barley Pops and Alewives**

c/o Marilyn Kielniarz
1402 S. 52 St.
Omaha, NE 68106

Cops & Hops

c/o Doug Phillips
13630 Guildford
Waverly, NE 68462

Kearney Area Brewers

c/o Jerry Schram, President
PO Box 784
Kearney, NE 68847-0784
(308) 236-8268
harlan_e_nilsen@kfn.org

Lincoln Lagers

c/o Dave Barnes
330 N. Coddington Ave.
Lincoln, NE 68528
(402) 477-5382

OmaHOPS

c/o Steve Nasr
2412 S. 153rd St.
Omaha, NE 68144
(402) 333-0668

Platte River Brew Crew

c/o John Michaels
PO Box 99
Columbus, NE 68602-0099

NEVADA**Southern Nevada Ale Fermenters Union (SNAFU)**

c/o Mr. Radz Homebrew Supply Shop
4972 S. Maryland Pkwy., Suite 4
Las Vegas, NV 89119
(702) 736-8504
GAJoe@AOL.com

Washoe Zephyr Zymurgists

c/o Eric McClary
6185 Franktown Rd.
Carson City, NV 89704
(702) 883-7187

NEW HAMPSHIRE**Brew Free or Die**

c/o Dan Hall
PO Box 1274
Merrimack, NH 03054-1274
(603) 778-1231
bfd@bfd.org
<http://www.bfd.org/index.shtml>

Dartmouth College Graduate Brewing Club

c/o Simon Shepard
HB6127 Dartmouth College
Hanover, NH 03755
(603) 646-1394
simon@einstein.dartmouth.edu

Fermenting Minds

c/o Bill Toothaker
150 Portland St.
Rochester, NH 03867
(603) 335-7012

Lakes Region Homebrewers

c/o Jon Scanlon
RFD1, Box 388B
Northfield, NH 03276
(603) 286-8149
brewmaster@cyberportal.net

New Hampshire Biernuts

c/o Dave Weisberg
PO Box 624
Peterborough, NH 03458
(603) 827-3502

Northern Brewers

c/o The Wine Cellar
650 Amherst St.
Nashua, NH 03063
(603) 883-4114

Postal Brewers Club

c/o Robert Zeigler
934 Lake Shore Rd.
Manchester, NH 03109-5709

Seacoast Homebrewers Club

c/o Scott Kaplan
2 Broadway, Apt. 4
Dover, NH 03820
(603) 743-6469
grtscott@nh.ultranet.com

Seacoast Union of Maltsters

c/o Bill Rucker
3 Jessica Ct.
Somersworth, NH 03878-2300
(603) 692-3609

Slaves of Hathor

c/o David Page
10 N. Main St., PO Box 1118
Ashland, NH 03217

Stagger Inn Brewers

c/o Scott Dean
219 N. River Rd.
Epping, NH 03042
(603) 679-1045

Twin State Brewers

c/o Paul White
RR1, Box 106A
Orford, NH 03777
(603) 353-4564

NEW JERSEY**BEERS-R-US (BRU)**

c/o Matt Mehalick
974 Linwood Pl.
N. Brunswick, NJ 08902
BeersRUs29@aol.com

Bell Hops

c/o Dave Ballard
599 Putnam Ave.
Piscataway, NJ 08854
(908) 752-7347

Blackwater Brewers

c/o Frank Bossi
1445 Linden Blvd.
Vineland, NJ 08360
(609) 696-7379

Brunswick Brew Club

c/o Brian Conger
4302 Hana Rd.
Edison, NJ 08817-2569
(908) 248-1559

Gloucester County Homebrewers

c/o Chuck Wine, Secretary
137 Pitman Downer St.
Sewell, NJ 08080
(609) 2BREWIT

Hanson House Hoppers/3-H Club

c/o Phil Yuhas
7 Roselle Ave.
Cranford, NJ 07016
(908) 271-5371

Hophedz

c/o Kerry Bendel
38 Kirschner Ave.
Lincoln Park, NJ 07035
(201) 633-7679

Jersey Shore Homebrewers

c/o Mike Kilkenny
607 Larkspur Ln.
Jackson, NJ 08527
(908) 842-7507

Jersey Shore Homebrewers Association

c/o Paul Veber
16 Myrtle Ave. E.
Woodbine, NJ 08270
(609) 861-1421
veber@acy.digex.net

Millburn Ale & Lager Testing Society (MALTS)

c/o U-Brew Corp.
319 1/2 Millburn Ave.
Millburn, NJ 07041
(201) 376-0973
djbrew@aol.com
www.kzed.com/ubrew

Morristown Mashers

c/o Hop & Vine
11 DeHart St.
Morristown, NJ 07960
(201) 993-3191
jules@gti.net

Pine Barrens Brewers

c/o Eric G. Cummings
7 First St.
Barnegat, NJ 08005
ecumming@injersey.com

Princeton And Local Environs Ale and Lager Enjoyment Society (PALE ALES)

c/o Joe Bair
82 Nassau St.
Princeton, NJ 08542
(609) 252-1800
schd@pluto.njcc.com

South Jersey Fermenters

c/o Bruce Hammell
868 Quinton Ave.
Trenton, NJ 08629
(609) 393-2946

NEW MEXICO**Block 50 Brewers**

c/o Raybon Phillips
1713 Corte Alegre
Alamogordo, NM 88310

Bock To Best

c/o Dave Porter
615 Hwy. 544
Aztec, NM 87410
(505) 334-8622

Borderline Brewers

c/o Glen Schultz
PO Box 1725
Santa Teresa, NM 88008
(505) 589-3087
petro@hntel.com

Desert Quenchers

c/o Mark McClure
Box 670
Mesilla, NM 88046
(505) 523-6649

Dukes of Ale

c/o Guy Ruth
11524 Manitoba N.E.
Albuquerque, NM 87111
(505) 294-0302

The Grainful Heads

c/o Alewife Homebrew Supply
1314 Rufina Cir., Suite A6
Santa Fe, NM 87505
(505) 474-8046

Homebrew SIG (MENSA)

c/o Ross Goeres
719 Carlisle S.E.
Albuquerque, NM 87106

The Los Alamos Atom Mashers

c/o Michael Hall
1325 43rd St.
Los Alamos, NM 87544
(505) 662-2130
am_president@galt.c3.lanl.gov
<http://www.alpha.rolanet.org/~tamhc/>

Silver City Beer Brewing Guild

c/o Desert Bloom Herbs
506 N. Bullard
Silver City, NM 88061
(505) 388-3542

NEW YORK**Adirondack Homebrewers**

c/o Dick Cummings
5 Highland Pl.
Lake Placid, NY 12946
(518) 523-1557
adkbrewski@aol.com

Albany Barley Converters

c/o Cindy Hill
132 Salisbury Rd.
Delmar, NY 12054-1219
(518) 439-0923

The ALERS (Allegany Libation Education and Recreation Society)

c/o Jim Lee
146 N. 9th St.
Olean, NY 14753
(716) 373-0927

Borderline Yeast Infectors

c/o Gary (Doc) Dougherty
449 Court St.
Binghamton, NY 13904
(607) 722-2476

Brewbonic Plague

c/o Vance Conway
PO Box 632
Buffalo, NY 14207-0632
(716) 884-8099

Brewers Aligned to Keep Everyone Drinking (BAKED)

c/o Patrick Higgins and Maura Kilgore
271 E. 10th St., #10
New York, NY 10009
(212) 995-BEER
maurapat@aol.com

Brewers East End Revival (B.E.E.R.)

c/o Mike Deinhardt
PO Box 291
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(516) 737-2178
mikeBEER@aol.com

Brewers in Endicott Region (BIER)

c/o John Therriault
1221 Chesnut Ridge
Apalachin, NY 13732
(607) 751-5872
johntherr@aol.com

Brewers United for Real Pilsner (BURP)

c/o Robert Decker
RD#1, Box 354
Livingston Manor, NY 12758
(914) 439-4367

Broome County Fermenters Association

c/o Brice Feal
2601 Grandview Pl.
Endicott, NY 13760
(607) 757-0634

Catskill Mountain Homebrewers Club

c/o Bill & Sue Norotny
RR 3, Box 14B
Hudson, NY 12534-9535

Corning Brew Crew

c/o David Tennent
4748 Clawson Dr.
Campbell, NY 14821
(607) 974-3417 D; (607) 527-4111
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Greene's Ale House Society of Homebrewers

c/o Robert Perry
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Malibu@reddragon.com

Homebrewers of Staten Island

c/o Ken Johnsen
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Staten Island, NY 10306
(718) 667-6659
kbjohns@escape.com

The Honourable Company of Fermenters of The Baroncy of Concordia of the Snows

c/o Ari Fisher
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Albany, NY 12208
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Hudson Valley Homebrewers

c/o Ray Sykes, Editor
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Hyde Park, NY 12538
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http://alpha.rollanet.org/~hvhb

Keuka Brewers Association

c/o Michael Cook
8319 Pleasant Valley Rd.
Hammondport, NY 14840
(607) 569-2451

Last of the Brewhicans

c/o Dave Jasnau
51 Hamilton Rd.
Corinth, NY 12822
(518) 654-6378

Libatious Anarchistic Mashers of Buffalo's Inner City (LAMBIC)

c/o David M. Heftka
25 Mercer Ave.
Buffalo, NY 14214
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nigott@localnet.com

Long Island Brewers Assoc.

c/o Mark Burford
20 Bell Ave.
Blue Point, NY 11715
(516) 363-2713

Long Islanders for Fermentation

Enjoyment (LIFE)
c/o Marc Arkind
PO Box 712
Hicksville, NY 11802-0712
(516) 932-1090 x201
alpine82@ix.netcom.com

Malted Barley Appreciation Society

c/o James Simpson
58-07 Metropolitan Ave.
Ridgewood, NY 11385
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Mohawk Valley Friends of Beer

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Leonardsville, NY 13364-0220
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Mutually United Grain & Grape

Zymurgists (MUGGZ)
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c/o Bill Luchkiw
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New York City Homebrewers Guild

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New York Notorious Brewers - Dutchess/Orange Chapter

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Newburgh, NY 12550
(914) 457-5827

New York Notorious Brewers - Ulster Chapter

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Kingston, NY 12401
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North Chautauqua Homebrewers

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Kenmore, NY 14217
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North Yeast Fellowship Of Ale and Mead (NY FOAM)

c/o Joe Burke, McGonigles
9 W. Main St.
Washingtonville, NY 10992
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North Yeast Homebrew Club

c/o Michael J. Bauer
120 Fairmont Ave.
Watertown, NY 13601

Northern Westchester Home Brewers Association

c/o Bob Trombetta
151 Oakridge Cir.
Mahopac, NY 10541
(914) 621-2520

Salt City Brew Club

c/o Kieran O'Connor
PO Box 1935
Syracuse, NY 13201
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Saratoga Thoroughbrews

c/o Wolfgang Kurth, The Hoppy Troll
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Saratoga Springs, NY 12866-3104
(518) 581-8160

Seven Valley Brew Club

c/o John Buterbaugh
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Cortland, NY 13045

Sultans of Swig

c/o Timothy Herzog
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Buffalo, NY 14225
(716) 837-7658

Upstate New York Homebrewers Association

PO Box 23541
Rochester, NY 14692
(716) 242-9626
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http://www.frontiernet.net/~pnystrom/un
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Wort Ever Ales You

c/o Andrew Schmidt
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NORTH CAROLINA

Cape Fear Homebrewers Association

c/o David Holesovsky
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Carolina Brewmasters

c/o John Mitchell
2358-H Pineview Ln.
Gastonia, NC 28054
(704) 864-3450
http://www.wp.com/@your.service/cbm/
brewmast.html

Cary-Apex-Raleigh Brewer's of Yore (CARBOY)

c/o Larry M. Matthews
5412 Dutchman Dr.
Raleigh, NC 27606-9794
(919) 362-9407
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Green Beret Homebrew Club

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624 Northampton Rd.
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gbbrew.htm

Outer Banks Grain and Yeast Necromancers (OBYGN)

c/o Susan O'Brien
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Corolla, NC 27927

Piedmont Institute of Sud Sippers (PISS)

c/o Phil Ridge
309 Concord St., #203C
Greensboro, NC 27406
(910) 273-6856

Triangle Unabashed Homebrewers (TRUB)

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Virtual Village Homebrew Society

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Winston-Salem Wort Hawgs

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Aurora Breweraltis/Northern Lights Brew Club

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Buffalo Brewers

c/o Curt Saylor
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Jamestown, ND 58401-3734
(701) 252-4358

Prairie Homebrewing Companions

c/o Marty Draper
1130 Oak St.
 Fargo, ND 58102
(701) 280-1892

Society of Brewing Scientists (SOBS)

c/o James MacArthur
1814 Ryan Dr.
Bismarck, ND 58501
(701) 222-0991

OHIO

Bloatarian Brewing League

c/o Larry Gray
7012 Mt. Vernon Ave.
Cincinnati, OH 45227
(513) 271-2672
http://ourworld.compuserve.com/home
pages/Robert_Pinkerton/bloat.htm

Cincinnati Malt Infusers

c/o Jeff Seeley
1025 Maycliffe Pl.
Cincinnati, OH 45230
(513) 231-6062

Columbus Homebrewers Understand Good Stout (C.H.U.G.S.)

c/o Walter den Haan
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Dayton Regional Amateur Fermentation Technologists (DRAFT)

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King Cookers

c/o Tom Wolak
5874 Buckeye Ln.
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Salacious Homebrewers In Toledo

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9413 Stitt Rd.
Whitehouse, OH 43571-9762
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lacious.htm

Scioto, Olentangy and Darby Zymurgists (SODZ)

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Society of Akron Area Zymurgists (SAAZ)

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Medina, OH 44256
(216) 725-1917

Society of Northeast Ohio Brewers (SNOBS)

c/o Fred Dockus
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Wadsworth, OH 44281
(216) 336-9262

Youngstown Area Homebrewers Organization of Ohio (YAHOO)

c/o Bob Bero
528 Pasadena Ave.
Youngstown, OH 44502-2248
(419) 525-9858

OKLAHOMA**Fellowship of Oklahoma Ale Makers (FOAM)**

c/o Tony Brown
326 S. 8th St.
Broken Arrow, OK 74120

High Plains Draughts

c/o Joe Bocock
513 N.W. 38th St.
Oklahoma City, OK 73118
(405) 525-9858

Just Brew It!

c/o Fred Wenzel
PO Box 3082
Bartlesville, OK 74006
(918) 335-2740
fvenzel@AAL-OK.MHS.compuserve.com

Southwest Oklahoma Brewing Society

c/o Peter Galie
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(405) 529-5250

OREGON**Capitol Brewers**

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Cascade Brewers Society

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Eugene, OR 97402
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GEne Users Zymurgy Lodge (GUZL)

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Portland, OR 97210
(503) 241-1856/GEne page 1152;1

Good Heathens

c/o Randy Reid
1285 Criteser Loop
Toledo, OR 97391
(503) 336-2458

Grateful Deaf Homebrew Society

c/o Scott Martin
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Portland, OR 97201
(503) 224-0337

Heart of the Valley Homebrewers

c/o Jerry Marshall
2151 Windsor Pl. N.W.
Corvallis, OR 97330-3173
taratoot@peak.org

Helles Canyon Quaffers

c/o Ken Hohmann
69796 Jimtown Rd.
Wallowa, OR 97885
(503) 886-3501

Hopheads Anonymous

c/o Founder 2
1757 S.E. Kane St.
Roseburg, OR 97470
(541) 672-3185

Mary's Peak Lagers

c/o Dean Bautz
995 N.W. Garfield Ave.
Corvallis, OR 97330-2115
(541) 745-5865

MOHOPS, Newport Brew Club

c/o Duane Cooke
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Newport, OR 97365
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Oregon Brew Crew

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72714.3316@compuserve.com

Saccharomyces First!

c/o David L. Murray
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Klamath Falls, OR 97601
(503) 883-3070

Society for Upgrading Drinkable Spirits (SUDS)

c/o Kerry Carpenter
PO Box 921
Baker City, OR 97814

Southern Oregon Beer Farmers

c/o Ross Litton
5204 Dobrot Way
Central Point, OR 97502-1612

Southern Oregon Brewers Society

c/o Larry Cosby
4501 Azalea Dr.
Grants Pass, OR 97526
(503) 479-3243

Stout-hearted Brewers of the**Umpqua Valley**

c/o Paul Moon
PO Box 503
Glide, OR 97443
(503) 496-0119

Strange Brew

c/o Cliff Rice
606 Vermillion
Newberg, OR 97132
(503) 538-6072

Tillamook Brewer's Guild

c/o Quackenbush Homebrew Supply
2002 3rd St.
Tillamook, OR 97141
(503) 842-5331

Western Oregon Regional Tasters Society (WORTS)

c/o Tom Rhodes
2459 S.E. Tualatin Valley, Hwy. #167
Hillsboro, OR 97123

PENNSYLVANIA**Beer Unlimited Zany Zymurgists (BUZZ)**

c/o Jim McHale
81 Lancaster Ave., Store 35
Malvern, PA 19355
(215) 889-0905

Berks United Zymurgists (B.U.Z.)

c/o Terry Ripple
1010 Lancaster Ave.
Reading, PA 19607
(215) 777-5520

Boys from Brew Ha Ha

Rte. 222, RD2, Box 2519-1
Fleetwood, PA 19522
(610) 944-0500

Brewing Excellence in the Erie Region (BEER)

c/o Sharryn & Bill Campbell
1631 N. Pearl St.
North East, PA 16428
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Carlisle Regional Association of Zymurgists (C.R.A.Z.Y.)

c/o Jim Schally, Secretary
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Boiling Springs, PA 17007
jschally@epix.net

Danville Area Malt Nuts United for Tastier Suds (DAMNUTS)

c/o Pete Cera
303 Water St.
Danville, PA 17821
(717) 275-1282

Delaware Valley Draughtsmen

c/o Creative Flair
9730 Easton Rd.
Kintnersville, PA 18930
(908) 996-6008

Happy Valley Happy Hoppers

c/o Russ Meyers
630 Stoneledge Rd.
State College, PA 16803
(814) 234-3785
rvn@cf.hrb.com

Harrisburg Area Homebrewers Association (HAHA)

c/o Tom Scotzin
65 N. 5th St., #C
Lemoyne, PA 17043-1611
(717) 737-0483

HOPS: Homebrewers of Philadelphia and Suburbs

c/o Toast Konger
303 St. Laurence Rd.
Upper Darby, PA 19082
(610) 446-1099
Ktoast@netaxs.com

Indiana Homebrewers Association

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Indiana, PA 15701-1678
(412) 463-1899
welchc@mail.microserve.net

Keystone HOPS

c/o Jason Harris
Montgomery Farmer's Market, Rte. 63
Montgomeryville, PA 18936
(215) 641-HOPS

Keystone Keggers

c/o Andrew Kovalchick
124 N. 12th St.
Allentown, PA 18102
(215) 821-4808

Lancaster County Brewers

c/o Bo Meier
1143 Hermosa Ave.
Lancaster, PA 17601
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Northeast Pennswoods Homebrewers Guild

c/o Mike Reigle
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South-Central Pennsylvania Zymurgists Association

c/o Steve Stoppard
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Manchester, PA 17345
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State College Underground Maltsters (SCUM)

c/o Curt Speaker
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Boalsburg, PA 16827
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Three Rivers Alliance of Serious Homebrewers (TRASH)

c/o Nathaniel Lansing
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http://ralph.pair.com/trash.html

Wyoming Valley Homebrewers

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Wyoming, PA 18644
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York Area Homebrewers Association (YAHA)

c/o Mike Knaub, Starview Brew
51 Codorus Furnace Rd.
Mt. Wolf, PA 17347-9723
(717) 266-5091

RHODE ISLAND**Rhody Bloviates**

c/o Leon Dudley
199 Mesa Dr.
North Kingstown, RI 02852
(401) 884-1349

SOUTH CAROLINA**Electric City Homebrewers**

c/o Wes Ballard
404 Ballard Rd.
Pelzer, SC 29669
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Hopportunity of Clemson

c/o Brad Purinton
597 Lakeside Dr.
Six Mile, SC 29682
(803) 868-2859

Low Country Libations

c/o Josh Quigley
845 D Savannah Hwy.
Charleston, SC 29407
(803) 571-4748

Palmetto State Brewers

c/o Jim Griggers
408 Timber Ridge Dr.
West Columbia, SC 29169
(803) 739-1813
brew@devine.columbiacsc.ncr.com
http://www.scsn.net/~psbrewer

Sandy Bottom Brew Crew of the Coastal Carolinas

c/o Steve Nay, U-Brew
1207 Hwy. 17 S.
North Myrtle Beach, SC 29582
(803) 361-0092

South Carolina Homebrewers Of Lagers, Ales and Real Suds (SCHOLARS)

c/o Ted Eyraud
6413 Greenfield Dr.
Spartanburg, SC 29301
(864) 587-9544
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SOUTH DAKOTA**The Ale Riders**

c/o The Beer Barrel LLC
301 E. Saint Patrick St.
Rapid City, SD 57701-5415
(605) 348-8878

Buffalo Ridge Homebrewers

c/o Bruce Pengra
1413 3rd St.
Brookings, SD 57006
(605) 692-8579

TENNESSEE**Bluff City Brewers**

c/o Jim Gosney
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Cordova, TN 38018
(901) 756-5298

Chattanooga Brew Club

c/o Eddie Scoggins
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Cleveland, TN 37311
(615) 478-3184

East Tennessee Brewers Guild

c/o Bernie Riemer
107 Westwind Dr.
Oak Ridge, TN 37830

Mashville Brews

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The Music City Brewers

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13465 Wetmore Rd.
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(210) 545-2289

Bock 'n' Ale-ians
c/o Dr. Paul Farnsworth
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San Antonio, TX 78255
(512) 695-2547

Brew Bayou
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(409) 798-0235
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Brewed "66" Wort Hogs
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Deja Brew Homebrew Club
c/o Jon Grow
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Denton Fermented Brewers Society
c/o Pat Towner Morrison
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Foam Rangers Homebrew Club
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2415 Robin Hood
Houston, TX 77005
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The Killer Ales
c/o Martin Stalnakar
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Houston, TX 77096
(713) 840-0510
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The Knights of the Brown Bottle
c/o Jim Case
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Kuykendahl Gran Brewers
c/o John Donaldson
4214 Sparkling Spings Dr.
Houston, TX 77095
(713) 855-2415
http://www.sccsi.com/varassoc/

Lager-Rythmics
c/o Steve Moninger
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San Antonio, TX 78201
(210) 737-6604

MaltHoppers Beer Club
c/o George Ashley
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North Texas Homebrewers Association
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Red River Brewers Union
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Whitesboro, TX 76273

Texoma Brews
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Tyler, TX 75701
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Zymurgic Enthusiasts of Austin
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Austin, TX 78704
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UTAH

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Ogden, UT 84414
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Northern Utah Militia of Brewers (NUMB)
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Zion Zymurgists Hops (ZZ HOPS)
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Salt Lake City, UT 84109
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c/o Tom Coleman
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Ludlow, VT 05149
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Central Vermont Homebrewers
c/o Dr. Phil Zunder
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Montpelier, VT 05602
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The VLS Homebrewer's Club
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Dulles Regional Brewing Society (DReBS)
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Hampton Roads Brewing & Tasting Society
c/o Kevin Oliver
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Herndon Hard Times Wort Hogs
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What is Yeast?

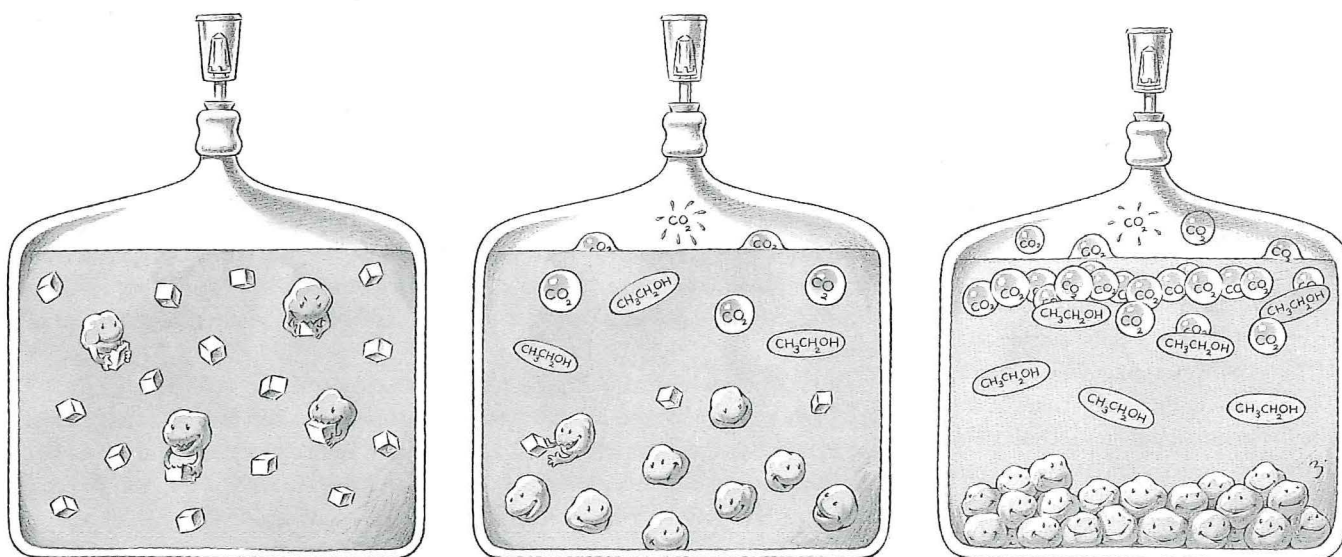
Yeast cells are tiny, about 5 to 10 μm (that's micrometer – one millionth of a meter

or 10^{-6} meter) in diameter or 50 to 100 femtoliter (10^{-15} liter) in volume. That means about one million cells would fit on the nail of your pinkie finger. You probably use more than a billion yeast cells for your typical starter culture.

Yeast cells are composed mainly of protein and carbohydrates. Although yeast has DNA as its genetic material, a large fraction (10 percent of the dry weight) of a yeast cell is RNA. In the 1950s, RNA was called yeast nucleic acid for this reason. This also explains why beer is bad for those of you with gout because it is a rich source of purines derived from all that RNA. Yeast also is a rich source of B vitamins, which makes beer a nutritious as well as delicious beverage.

The Journey to Beer

Wort basically is a little ecosystem. Those yeast creatures discover food is available for consumption. Biochemical signals are sent from the outside to the inside of the cell that tell the yeast to make the necessary enzymes for degrading, or eating, the sugars and nutrients present in wort. (By the way, the word enzyme means “in yeast” in Greek because enzymes were first discovered in yeast.) Yeast cells have sensor-like protein molecules on the cell surface that can detect the sugars and signal the inside of the cell to take the appropriate actions. Biochemists refer to this phenomenon as “signal transduction.”



More fun than sea monkeys, the yeast in your fermenter consume sugar and produce CO_2 and alcohol. You can see the results as bubbles in the airlock. Once the sugar is consumed the yeast settle out of suspension.

Lag, Respiration and Fermentation



Now it gets a bit complex. Three steps will occur in sequence, but they partially overlap: the lag, respiration and fermentation steps. Think of these steps as an investment scheme: saving money for a rainy day (lag), making money (respiration) and spending money (fermentation). You can do any of these three steps at the same time. During the lag step the cells don't divide very much but respond to signals sent by the sugars. They also begin to accumulate and store glycogen, a carbohydrate they can eat later. Remember the steps are overlapping, so respiration also will occur, producing a lot of yeast and increasing the glycogen reserves. Glycogen is especially important during the fermentation step when oxygen is low and growth is anaerobic.

Respiration needs oxygen and is the most efficient way of making yeast. In other words, you get more yeast for your dollar's worth of wort. This is why a well-aerated wort is especially important in the beginning when you want to make lots of yeast as in your starter culture. During this step yeast cells are actively dividing and growing exponentially. This means one yeast cell makes two cells, then four cells, then eight cells, and so on. You go from millions to billions in no time.

Only during the respiration step can the yeast make sterols. Sterols are biochemicals important for many biosynthetic reactions in

the cell, especially for the synthesis of cell membranes, the "walls" that make up the cellular compartments such as the nucleus and the outside of the cell. You would not even have a

cell without these molecules. You've probably heard about sterol cholesterol, which has gotten a bad rap lately, but is actually required for all life. It is only bad when you have too much (OK, stay away from that 11th hot dog at the barbecue). By the way, yeast does not have cholesterol but makes a related compound called ergosterol.



Either respiration or fermentation can produce CO₂, but only fermentation produces ethanol. Fermentation will actually be somewhat inhibited at this point by the oxygen. This is referred to as the Pasteur effect (Old Louie was right after all). Your dollar's worth of wort will primarily be used to make energy in the form of ATP, adenosine triphosphate, nature's source of energy. You need lots of ATP to make more yeast, your goal with a starter culture, but not as much to make ethanol in the fermenter. Respiration is more efficient and produces more ATP than does fermentation for each dollar of wort.

In most worts with greater than 1 percent glucose, respiration is inhibited. This process is known as Crabtree or reverse Pasteur effect (Reverse Louie!). By adding glucose to your starter culture, you can do the Reverse Louie and make yeast without worrying about oxygen.

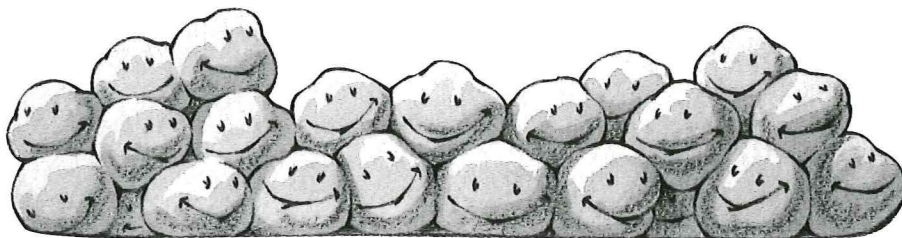
Remember all three steps can overlap. For example, you can have some fermentation going on while the yeast is respiring, thereby producing sterols, yeast, ethanol and CO₂ simultaneously. What a deal! Now, if I can only get them to make gasoline.



Time to Make Beer

OK, you now have lots of yeast that is full of glycogen and ATP. So what? Now the beautiful part begins. Respiration produces yeast cells but very little ethanol. However, when the oxygen runs out they switch to fermentation. Now all the yeast you made can start making beer. You still make some yeast, although not as much. Sterol synthesis does not occur, but you're OK because the glycogen reserve is used to make sterols. See, it pays to save!

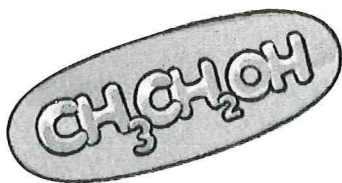
ATP and CO₂ are not the only biochemicals made by your respiring yeast. Other compounds are produced and secreted into the wort. Some of these chemicals are undesirable, such as diacetyl and acetaldehyde. During the long conditioning process these chemicals are removed by fermentation to give you that smooth flavor (Oh boy!). For example, acetaldehyde is converted to ethanol and diacetyl is converted to butanediol. Both of these processes are reductional, therefore they are inhibited by oxygen. Of course, your yeast has used up all the oxygen by this point and you are sure not to introduce any if you're using your trusty airlock.



Why use a starter culture?

Fresh pitching yeast from a starter culture has lots of glycogen reserves. However, if you store this culture for a period of time in your refrigerator or use dried yeast, the yeast will lose these reserves and may not perform well in the wort. Why? Because if the oxygen supply is low or the sugar content of the solution is high, you may end up with a stuck fermentation. No glycogen means you can't make the sterols needed for cell membranes, and division will be inhibited.

You may get some help because there are some sterols in wort, but if the sugar levels are too high, like in a high-gravity wort, these sterols will be unable to get inside the cells. The high sugar concentration results in wort with high osmotic pressure. Osmosis is a process by which water moves from a lower sugar concentration in the yeast cell to the higher sugar concentration in the wort. The wort will literally suck the water out of your yeast. When water is coming out of the yeast it is difficult to get things to go in, such as essential nutrients like sterols. This results in nutrient deprivation, shock and lack of yeast growth. You end up with no fermentation and, alas, no beer. This compound effect of low oxygen and high sugar is disastrous. Always remember to use fresh starter cultures and oxygenate your wort, especially those of high-gravity.

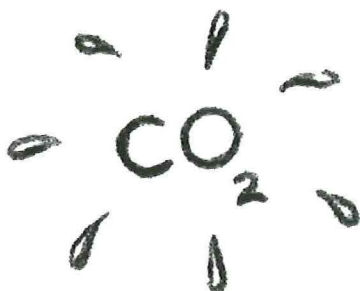


All's Well That Ends Well

All good things must come to an end, so eventually the fermentable sugars in the wort will be eaten up, thus fermentation and the production of ethanol and CO_2 cease. This is easily observed by the disappearance of CO_2 bubbles in the beer. Fear not, the yeast cells are not dead. These amazing biochemical machines are merely resting and waiting for more fermentable sugars. You will help them out by adding priming sugar or fresh wort to carbonate the beer.

Now what happens? You just want to make some CO_2 . The yeast will ferment your priming solution and produce ethanol and CO_2 . No respiration will occur because oxygen is absent and you won't add oxygen because it will destroy your beer by oxidizing those wonderful flavor compounds you waited for so patiently. Acetaldehyde can also be produced by exposure to oxygen at this point. Because oxygen is absent you can't make sterols, so very little yeast growth will occur. This is important because you wouldn't want your beer to fill up with yeast. In the bottle there is no way for CO_2 to escape, so it stays dissolved in solution and you see it as those beautiful bubbles when you pour a homebrew.

Understanding how yeast cells work will enable you to provide the most hospitable environment for them, and the rewards will be delicious.



References

- Stryer, L. *Biochemistry*, Fourth Edition, W.H. Freeman and Co., New York, 1995.
- Fix, G. *Principles of Brewing Science*, Brewers Publications, 1989.
- Miller, D. *Dave Miller's Homebrewing Guide*, Storey Publishing, 1995.
- If you want to keep up with yeast research and the yeast genome project you can look on the Internet at <http://genome-www.stanford.edu/Saccharomyces/>.

Robert A. Sclafani has a Ph.D. in molecular biology and is a professor of biochemistry, biophysics and genetics at the University of Colorado Health Sciences Center in Denver. His laboratory studies the yeast cell division cycle and lung cancer. The study of yeast is giving us information in finding the cure for cancer, once again helping society, he notes. Sclafani has been homebrewing for more than 15 years and enjoys a good IPA.

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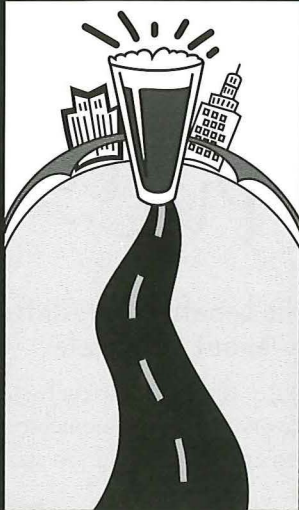
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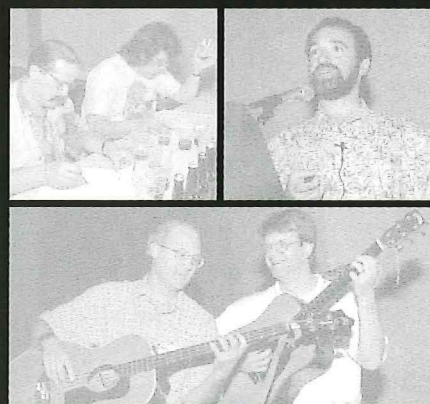
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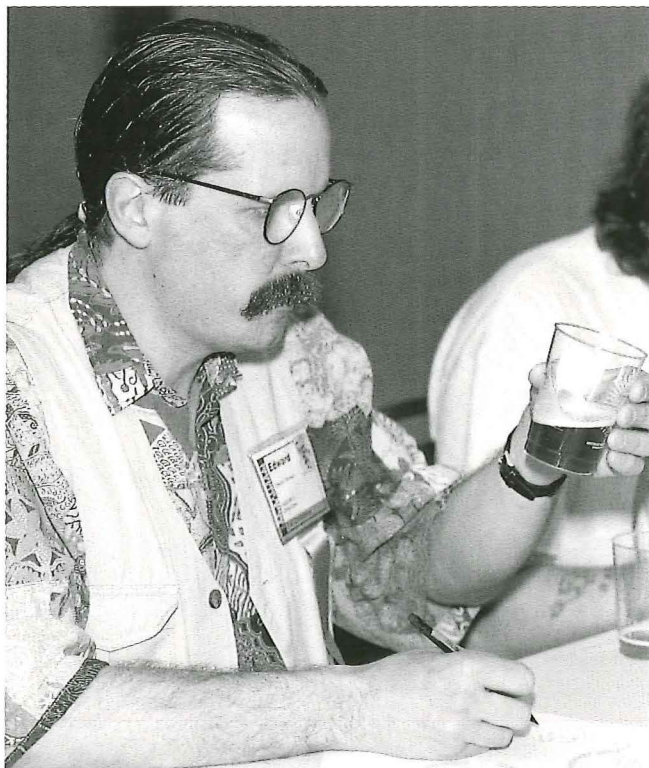
WINNERS

C I R C L E

Caroline Duncker

The AHA 1997 National Homebrew Competition is right around the corner and we've got just the ticket for your next winning entry. The Nationals take place around the country at seven regional sites plus one in Canada. The locations are Portland, Ore.; Fresno, Calif.; Thornton, Colo.; Kansas City, Kan.; Chicago, Ill.; Atlanta, Ga.; Fleetwood, Pa.; and Mississauga, Ontario. More than likely there is a site near you so you can get involved as a competitor, judge or steward. The competition is an educational process: enter and you'll receive judges' remarks and impressions of your beer. Or serve as an apprentice judge or steward to learn more about the intricacies of flavor and aroma profiles, color parameters for different beer styles and judging nuances.

Whether you enter or not, it is time to fire up your brew kettle and make some summer beers. The following recipes are AHA 1996 National Homebrew Competition silver and bronze medal winners.



Ed Bronson judged the beer best-of-show round at the 1996 AHA National Homebrew Competition in New Orleans, La.

ENGLISH AND SCOTTISH STRONG ALE



SILVER MEDAL
AHA 1996 NATIONAL HOMEBREW COMPETITION
Larry Scharff
Friendswood, Texas
English Old Ale/English Strong Ale

Ingredients for 5 U.S. gal (19 L)

- 16 lb two-row English malt (7.25 kg)
- 1 lb 20 °L crystal malt (0.45 kg)
- 4 lb light dried malt extract (1.81 kg)
- 2 oz Centennial hop pellets, 9% alpha acid (57 g) (60 min.)
- 1 oz Centennial hop pellets, 9% alpha acid (28 g) (40 min.)
- 1 oz Northern Brewer whole hops, 7.5% alpha acid (28 g) (10 min.)

Wyeast No. 1968 English Special Bitter liquid yeast culture
 force carbonate in keg

- Original specific gravity: 1.080
- Final specific gravity: not given
- Boiling time: four hours
- Primary fermentation: 14 days at 53 degrees F (12 degrees C) in glass
- Secondary fermentation: 20 days at 53 degrees F (12 degrees C) in glass
- Age when judged (since bottling): four months

Brewer's specifics

Mash grains at 153 degrees F (67 degrees C) for two hours.

Judges' comments

"Very nice beer. Everything blends together very well with few, if any, flaws. Perhaps a little too much alcohol. Aroma and flavor dominate. Cut back on bittering hops as opposed to malt sweetness."

"Very good attempt. Reduce peat character a bit, but a fine beer — very representative of style."

"Very good effort."

ENGLISH STYLE PALE ALE



SILVER MEDAL
AHA 1996 NATIONAL HOMEBREW COMPETITION
Chuck Jones
Roswell, Georgia
"Cattail Ale"
Classic Style Pale Ale

Ingredients for 5 U.S. gal (19 L)

- 7 3/4 lb Munton and Fison pale ale malt (3.52 kg)
- 1 lb 40 °L Hugh Baird crystal malt (0.45 kg)
- 1/2 lb wheat malt (0.23 kg)
- 1 1/2 oz Kent Goldings whole hops, 5.5% alpha acid (43 g) (90 min.)
- 3/4 oz Kent Goldings whole hops, 5.5% alpha acid (21 g) (60 min.)
- 3/4 oz Fuggles whole hops, 4.5% alpha acid (21 g) (20 min.)
- 1/2 oz Kent Goldings whole hops, 5.5% alpha acid (14 g) (finish)
- 3/4 oz Kent Goldings whole hops, 5.5% alpha acid (21 g) (dry-hopped 14 days)
- Wyeast No. 1968 English Special Bitter liquid yeast culture
- 3/4 cup corn sugar (177 mL) (to prime)

- Original specific gravity: 1.056
- Final specific gravity: 1.014
- Boiling time: 90 min.
- Primary fermentation: six days at 70 degrees F (21 degrees C) in glass
- Secondary fermentation: 17 days at 68 degrees F (20 degrees C) in glass
- Age when judged (since bottling): five months

Brewer's specifics

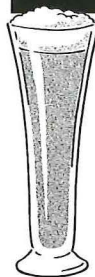
Mash grains for 75 minutes at 150 to 153 degrees F (66 to 67 degrees C). Sparge with 172-degree-F (78-degree-C) water.

Judges' comments

"Lacking in hop aroma and flavor. Very drinkable, but it is a little too low in body for style."

"Thin for style. Add CaraPils or raise mash temperature."

CLASSIC PILSENER



BRONZE MEDAL
AHA 1996 NATIONAL HOMEBREW COMPETITION
Alvis Hurd, Wayne Mark, Kevin
Mitchell, Jerry Kissick, Mike
Sheehan, Tom Luibrand
Kingsport, Tennessee
German Style Pilsener

Ingredients for 10 U.S. gal (38 L)

- 12 lb pale ale (5.44 kg)
- 3 lb flaked maize (1.36 kg)
- 2 oz Hallertauer whole hops (57 g) (60 min.)
- 2 oz Hallertauer whole hops (57 g) (30 min.)
- 1 1/2 oz Hallertauer whole hops (43 g) (dry)
- Wyeast No. 2124 Bohemian lager liquid yeast culture
- 1 1/2 cup corn sugar (355 mL) (to prime)
- Original specific gravity: 1.046
- Final specific gravity: 1.010
- Boiling time: 90 min.
- Primary fermentation: two weeks at 45 to 48 degrees F (7 to 9 degrees C) in glass
- Secondary fermentation: 10 weeks at 33 to 35 degrees F (1 to 2 degrees C) in glass
- Age when judged (since bottling): three weeks

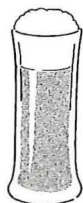
Brewers' specifics

Mash grains at 148 degrees F (64 degrees C) for two hours.

Judges' comments

"Nice job. Change the hops — use Saaz, Tettnanger or Hallertauer to get more 'noble-type' hop aroma and flavor. Use a bit of very light caramel malt."

GERMAN-STYLE ALE



BRONZE MEDAL

AHA 1996 NATIONAL HOMEBREW COMPETITION

Charles Liedtke, Jr.

Aurora, Illinois

"Liedtkebräu Kölsch"

Kölsch

Ingredients for 13 U.S. gal (49 L)

- 22 lb Durst Pilsener malt (9.97 kg)
- 3 lb Durst Munich malt (1.36 kg)
- 1 lb wheat malt (0.45 kg)
- 6 1/2 oz Hallertauer Mittelfrüh hop pellets, 2.8% alpha acid (184 g) (60 min.)
- 4 oz Tettnanger whole hops, 5.5% alpha acid (113 g) (30 min.)
- 1 oz Tettnanger whole hops, 5.5% alpha acid (28 g) (five min.)

Wyeast No. 1007 German ale liquid yeast culture
force carbonate in keg

- Original specific gravity: 1.040
- Final specific gravity: not given
- Boiling time: 60 min.
- Primary fermentation: 10 days at 68 degrees F (20 degrees C) in plastic
- Secondary fermentation: three weeks at 40 degrees F (4 degrees C) in glass
- Age when judged (since bottling): nine weeks

Brewer's specifics

Mash grains at 150 degrees F (66 degrees C) for two hours.

Judges' comments

"Great job!"

"Very good example of style, but needs lower hop bitterness for better balance."

"I picked up a very slight wine aroma. Excellent brew for style."

SMOKED BEER



SILVER MEDAL

AHA 1996 NATIONAL HOMEBREW COMPETITION

Carlos Kelley

Fort Worth, Texas

"On Top With Ol' Smokey"

Bamberg-Style Rauchbier

Ingredients for 10 U.S. gal (38 L)

- 12 lb DeWolf-Cosyns two-row malt (5.44 kg)
 - 5 lb DeWolf-Cosyns Munich malt (2.27 kg)
 - 5 lb smoked DeWolf-Cosyns two-row malt (2.27 kg)
 - 3 oz Hersbrucker hop plugs, 4.5% alpha acid (85 g) (60 min.)
 - 1 oz Hersbrucker hop plugs, 4.5% alpha acid (28 g) (10 min.)
- Wyeast No. 2112 California lager liquid yeast culture
- 1 1/2 cup corn sugar (355 mL) (to prime)

- Original specific gravity: 1.056
- Final specific gravity: 1.012
- Boiling time: 60 min.
- Primary fermentation: four days at 65 degrees F (18 degrees C) in glass
- Secondary fermentation: 26 days at 65 degrees F (18 degrees C) in glass
- Age when judged (since bottling): 12 weeks

Brewer's specifics

Mash grains at 152 degrees F (67 degrees C) for 60 minutes.

Judges' comments

"Needs more smoke character throughout. The toastiness is really good, though."

"Could use more smoked malt."

SPECIALTY BEER



BRONZE MEDAL

AHA 1996 NATIONAL HOMEBREW COMPETITION

Gregor Nelson

Palo Alto, California

"Honey Wheat Woodruff Lager"

Classic-Style Specialty Beer

Ingredients for 5 U.S. gal (19 L)

- 1 lb 10 °L Munich malt (0.45 kg)
- 4 lb Alexander's wheat malt extract (60% wheat, 40% Klages light malt extract) (1.81 kg)
- 1 lb Edme light dried malt extract (0.45 kg)
- 3 cups clover honey (710 mL)
- 2 oz fresh woodruff leaves (57 g)
- 1 oz Hallertauer whole hops, 3.2% alpha acid (28 g) (90 min.)
- Wyeast No. 2206 Bavarian lager liquid yeast culture
- 3/4 cup corn sugar (177 mL) (to prime)

- Original specific gravity: not given
- Final specific gravity: not given
- Boiling time: 90 min.
- Primary fermentation: three days at 60 degrees F (16 degrees C) in glass
- Secondary fermentation: four months at 38 to 40 degrees F (3 to 4 degrees C) in glass
- Age when judged (since bottling): seven months

Brewer's specifics

Steep Munich malt for one-half hour at 180 degrees F (82 degrees C). Boil honey and malt for 90 minutes. Simmer woodruff at end of boil.

Judges' comments

"Fresh, delicate, sweet (honey character) and well-presented. Outstanding effort. Very good honey and woodruff expression. Next time indicate the classic style you want the beer judged as."

"This was my reintroduction to woodruff (1978 in Berlin was the last). I hope all my other encounters are as pleasant. Beauty of a beer."

FRUIT AND VEGETABLE MEAD



BRONZE MEDAL

AHA 1996 NATIONAL HOMEBREW COMPETITION

John A. Carlson Jr.

Boulder, Colorado

"Attack of the Killer Limes"

Still Melomel

Ingredients for 3 U.S. gallons (11.4 L)

- 18 lb orange blossom honey (8.16 kg)
- 16 oz fresh lime juice (473 mL)
- Lalvin D-47 yeast culture

- Original specific gravity: 1.175
- Final specific gravity: 1.060
- Primary fermentation: one month at 70 degrees F (21 degrees C) in glass
- Secondary fermentation: two months at 70 degrees F (21 degrees C) in glass
- Tertiary fermentation: three months at 70 degrees F (21 degrees C) in glass
- Age when judged (since bottling): one month

Judges' comments

"A well-made mead, but it should have been entered as a sparkling mead. The lime/citrus also comes across more winelike, though the acid/tannin sweetness balance is nice."

"Good mead! The problem is it was entered as still."



Every gold-medal-winning recipe from the AHA 1996 National Homebrew Competition was printed in *Zymurgy* Special Issue 1996 (Vol. 19, No. 4) "Winners Circle."



BELGIAN BLOCKBUSTER

CLUB-ONLY COMPETITION WINNER



Tom Wolf
Representing the Maltose Falcons
Woodland Hills, California
"Saison Falcon"

Recipe for 5 U.S. gal (19 L)

- 12 lb Belgian Pilsener malt (5.44 kg)
- 1 oz Belgian Special "B" malt (28 g)
- 1 lb Candi sugar (0.45 kg)
- 4/5 oz Styrian Goldings hop pellets, 3.7% alpha acid (23 g) (90 min.)
- 1/2 oz Hersbrucker hop pellets, 2.3% alpha acid (14 g) (60 min.)
- 1/2 oz Mittlefrüh hop pellets, 3.6% alpha acid (14 g) (60 min.)
- 1/2 oz Saaz hop pellets, 2.6% alpha acid (14 g) (60 min.)
- 3/5 oz coriander (17 g) (aroma)

Wyeast No. 1388 Strong Belgian ale liquid yeast culture
force carbonate in keg

- Original specific gravity: 1.077
- Final specific gravity: 1.015
- Boiling time: 90 minutes
- Primary fermentation: seven days at 70 degrees F (21 degrees C) in glass
- Secondary fermentation: 23 days at 70 degrees F (21 degrees C) in glass
- Age when judged: six months

Brewer's Specifics

Mash grains at 150 degrees F (66 degrees C) for 90 minutes.

Judges' Comments

"Very nice beer. Add more spices. Need higher starting gravity."

"Clear as a bell. Excellent head retention. A bit thin for a Belgian strong. Very drinkable."



BEST OF FEST

CLUB-ONLY COMPETITION WINNER



Scott Bulcock and Mike Deinhardt
Patchogue, New York
Representing Brewers East End
Revival
"Scottoberfest"
Märzen/Okttoberfest

Ingredients for 5 U.S. gal (19 L)

- 6 lb Briess pale two-row malt (2.72 kg)
- 3 lb Munton and Fison Munich malt (1.36 kg)
- 3/4 lb CaraPils malt (0.34 kg)
- 1/4 lb 40 °L crystal malt (0.11 kg)
- 1/4 oz black malt (7 g)
- 2 oz Hallertauer hop pellets, 3.7% alpha acid (57 g) (90 min.)

Wyeast No. 2308 Munich lager yeast culture
force carbonate in keg

- Original specific gravity: 1.054
- Final specific gravity: 1.012
- Boiling time: 90 min.
- Primary fermentation: 21 days at 46 degrees F (8 degrees C) in glass
- Secondary fermentation: 21 days at 46 degrees F (8 degrees C) in glass
- Tertiary fermentation: 21 days at 32 degrees F (0 degrees C)
- Age when judged (since bottling): one month

Brewers' specifics

Mash grains at 154 degrees F (68 degrees C) for 70 minutes.

Judges' comments

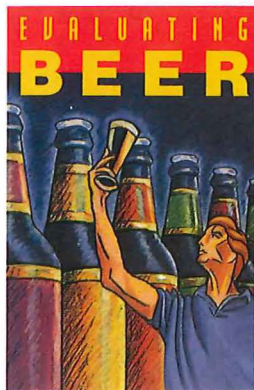
"Good full flavor, very drinkable."

"Very clean, good taste. Slightly overstated in hops."

"Excellent."

Caroline Duncker, AHA project coordinator, has been home-brewing since 1992 and is a member of Hop, Barley and the Ales of Boulder, Colo.

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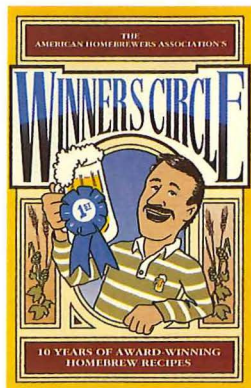


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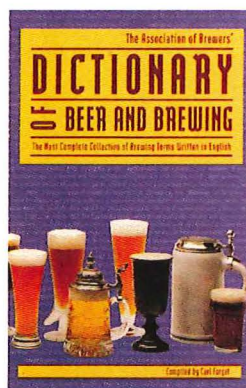
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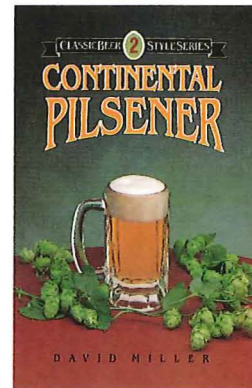
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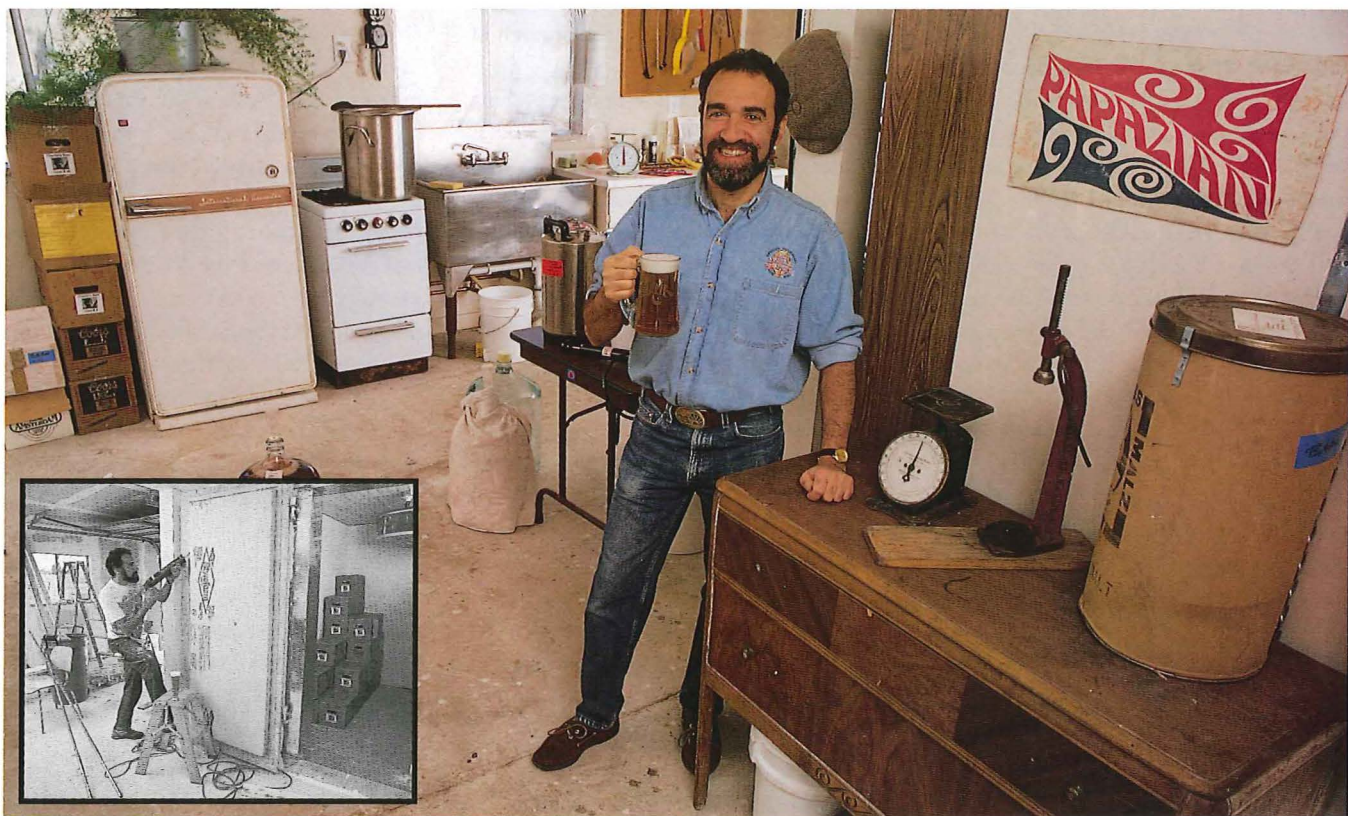
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WORLD OF WORTS

Charlie Papazian

Turn-of-the-Century Chokecherry Charlie Barley Wine



Building a new homebrewery inspired Charlie to brew a series of batches including one to commemorate the millennium.

Writing about beer as much as I do, I can't help getting into a funk about the amount of time that had passed since I brewed a batch. Between April and August 1996 there was no beer brewed at my Log Boom Brewery (a name that originated in my college days and has stuck). It had been a choice born of necessity. I knew I'd miss the sweet smell of boiling wort and the comfort of fermentations faithfully promising improvement with every new day.

My carboys of mead were another matter. Two-, three- and four-year-old carboys dwell on my shelves inconspicuously, their fermentations complete, their haze slowly settling to the bottom, awaiting the joy they will impart many years from now. My mead is more a long-term capital gain, an investment one cannot visualize or really know of until, for me at least, the turn of the century.

My stash of homebrew had been steadily diminishing, though. The only beers left

to enjoy were five-, six-, seven- and nine-year-old classic barley wines, lambic mimics, honeyed fruit ales and remnant year-old batches that had seen better days. Sympathetic friends provided me with great micros or specialty beers, but it wasn't the same. My newly fitted homebrewery awaited the inaugural brew.

Brew day arrived sometime in late August. I trundled boxes of supplies and essential equipment 200 feet from the



storage barn to the brewery garage. Any amount of concern about whether I had everything present would have scuttled my attempt. I ignored all cautions and simply put two gallons of water on the stove to begin my first batch, Plateau Pale Ale, by bringing water to a boil. Then the search began. Where was the malt extract? The funnel? Damn it, it wasn't in the box labeled funnel. My enameled saucepan used only for ladling hot wort was in a sealed plastic bucket along with assorted hoses and two strainers. The thermometer? The thermometer. Where was the thermometer? It was probably with the hydrometer.

The essentials were beginning to reappear. It wasn't until I had measured and emptied five pounds of extra light dried malt extract into the steaming water and added the magic of hops that I really felt like I was brewing again. The aromas inspired, and I began wondering, "What took me so long?" My homebrewery had been inaugurated. Every day that week as I drove down the driveway after work, the whole house and environs took on a new glow. Beer was fermenting once again.

Plateau Pale Ale is a simple beer: five pounds malt extract, hops and yeast. Designed as an ale yet cold aged for four weeks at 40 degrees F (4 degrees C), some was bottled and some kegged. My well water, laden with more minerals than I had been used to, proved adequate for this first batch. Now as I enjoy it I compare it to pale ale classics such as Sierra Nevada. Same same but different, if you know what I mean.

The best thing, I realized once again, was that Plateau Pale Ale provided the

inspiration for the next few batches: an amber-hued Münchner-style slightly smoked Pils-Helles, fermented at 50 degrees F (10 degrees C) and lagered extensively at 38 degrees F (3 degrees C). Then came 1.060 stout, intended to be a 1.044 (11 °B) stout, but I miscalculated the grain yield in my mash-extract formulation. It has slowly been completing fermentation at 50 degrees F (10 degrees C) and tastes so good I struggle with the decision to dilute it with one gallon of cold deaerated water when bottling.

Meanwhile, I procrastinated by brewing Turn-of-the-Century Chokecherry Charlie Barley Wine, a brew that embodies the spirit of this past summer, the cold winter days of late November and the anticipation of Jan. 1, 2000.

It was 10 degrees below zero the evening I brewed this five gallons of special beer. Twelve pounds of hand-picked ripe chokecherries were defrosted, crushed and added with great anticipation. At 1.090, the secondary fermentation continues to evolve slowly at 65 degrees F (18 degrees C). It tasted wonderful and rich and cherrylike at racking, though an expected tannic astringency came through. I anticipate it will mellow to wonderful complexity by the year 2000. I have renewed faith in new formulations. Plateau Pale Ale helped in that respect.

The year 2000 is three years away. On another frigid evening I formulated a German-style Pilsener with the addition of one cup of smoked Bavarian malt. The sight of

billowing clouds of steam emerging from the garage and condensing in the frigid air was mystical. I really felt like I was brewing. It's one thing to brew inside my home, which I do occasionally to experience the wonderfully comforting aroma of boiling wort throughout the house. But it's another experience altogether to brew in a setting built to accommodate my hobby brewing endeavors. Both are inspiring. I realize now I have two choices. While these nuances may seem trivial to some, they are not to me. And, like any homebrewer, I brew for my own reasons.

I can't possibly consume all the beer I make. Oh, I suppose I could, but then there wouldn't be much time to brew. With these first four batches brewed after a long hiatus, I realized I still really enjoy the process of making beer. It's almost mystical; transforming a notion, an idea, a thought into beer to be enjoyed by myself and friends. To be sure, I relish the quality of my own brews, but I think I relish the process of making beer even more. It's time apart from so many other interferences. It's a total immersion into art, science, craft and fun. It's neither chore nor hassle.

There's a bald eagle soaring above the meadows in my back yard. I could watch him a long time, but there's a fourth batch, prickly pear cactus fruit mead, I'm about to make. That one might be ready in the year 2001. The eagle has soared beyond the bare trees, but 100 wild Canada geese honk noisily on their way to a neighbor's lake. It is the first day of 1997. It's an unusually

HOME BREW BITTERING UNITS (HBUs) 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 (IBUs) 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:

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

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:

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

METRIC BITTERNESS UNITS (MBUs) are equal to the number of grams of hops multiplied by the percent alpha acid.

warm 70 degrees F (21 degrees C). Tomorrow it might snow. Some things change quickly day to day, but I know I have some great brews that are getting better with each passing second.

It's time, I think, to make a dark Münchner-style beer in the next few days. I'll culture up some yeast in preparation. Preparing the yeast always seems to be a commitment to do the wonderful deed. After that my mind races ahead to a light-bodied porter, an IPA, a classic English bitter ...

My brewery still is not totally unpacked and set up the way I envision it, but I can't let that stop me from brewing. Maybe that's what I'll do after starting my yeast culture. I'll see what's in all of those neatly labeled boxes so carefully packed months ago in preparation for my move.

Meanwhile, here's my still-fermenting recipe for a greatly anticipated Turn-of-the-Century Chokecherry Charlie Barley Wine that you might want to try yourself. Remember, you can substitute your favorite or available fruits for that moment when we all begin the next century together as homebrewers.

So let's cut the shuck and jive and get on with the recipe.



Mash-extract recipe for 6 U.S. gal (23 L) and a final 5 gal (19 L) yield.

For the mash:

- 3 lb two-row pale malt (1.36 kg)
- 2 lb Munich malt (0.91 kg)
- 1 lb wheat malt (0.45 kg)
- 1 lb 120 °L crystal or caramel malt (0.45 kg)

Add to the mash runoff:

- 4 3/4 lb extra light dried malt extract (2.15 kg)
- 3 lb light honey (1.36 kg)
- 12 lb crushed chokecherries added at the end of the boil (5.44 kg) (see procedure below)

And boil with hops:

- 10 HBUs (284 MBUs) American Nugget whole hops, 10% alpha acid. I used 1 oz (28 g) for bittering. (120 min.)
- 4.5 HBUs (128 MBUs) American Hersbrucker hop pellets, 4.5% alpha acid. I used 1 oz (28 g) for bittering. (60 min.)
- 4 HBUs (113 MBUs) American whole "Kent" Goldings, 4% alpha acid. I used 1 oz (28 g). (45 min.)
- 1/4 tsp Irish moss (1.2 mL) (10 min.)

- 1 oz American Tettnanger whole hops (28 g) (three min.)
- 1 oz American Cascade whole hops (28 g) (three min.)
- ale yeast
- 3/4 cup corn sugar (177 mL) (to prime)

- Original specific gravity: 1.088 to 1.092 (22 to 23 °B)
- Final specific gravity: 1.026 to 1.030 (6.5 to 7.5 °B)
- IBUs: between 45 and 49

(continued on page 102)

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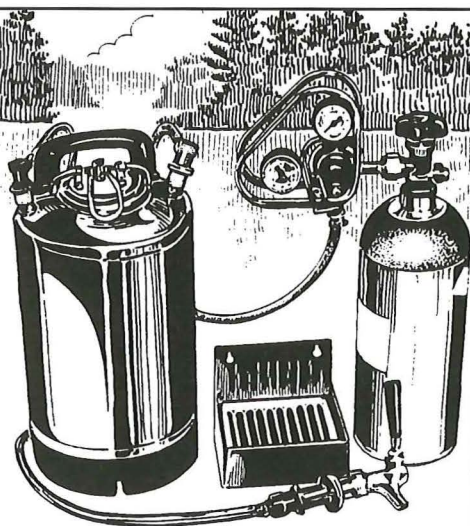


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DEAR

P R O F E S S O R

Fermenting in Technicolor

Dear Professor Surfeit,

I have been brewing intermittently for the past two years. I am fascinated by the brewing process and always trying to learn more about the chemical and physical changes that take place in the fermenter. One detail I have noticed while brewing is how the color of beer changes during the course of fermentation. It appears that, regardless of the final color of the beer, they all start relatively dark. The beer then lightens progressively as yeast populate the wort. As fermentation subsides, the wort becomes yet another color. Several batches have even changed color day-to-day during fermentation. Finally, as yeast drops out of suspension, the beer's terminal color is revealed. The final color has rarely been as dark as the unfermented wort. I guess the inactive yeast settling to the bottom is cause for the last color change, but I can't figure out why the beer would change colors during fermentation. What is actually causing the beer to phase through so many colors? Is there any way to predict the final beer color based on a measurement of the raw wort color?

Aloha,
Jeff Helms
Mililani, Hawaii

Dear Jeff,

How many different colors did you say you were seeing in your beers? I once had

a terrific barley wine and afterwards thought I was seeing purple beer, then it changed to red, then gold, then blue, then silver, wbeew, you should have been there, my friend. Man oh man was I seeing colors.

Now about your beers and the "colors" you're seemingly seeing. Professorially, I don't figure the color of beer will change much from wort to bottle. What's happening is that during various phases of wort evolution — fermentation through sedimentation — light is coming into the carboy and

trying to get through. If there is stuff floating around in the wort or beer, then the light is reflected back to you. If the beer or wort becomes clear, then the light goes deeper into your beer and less of it comes back out. In the beginning you have unfermented wort with a lot of protein and trub floating around. The light hits this and reflects light that is not absorbed by the trub. Perhaps it's kind of tan colored with hints of green (maybe you used hop pellets and there's some green hop residue floating around). The trub settles out and the wort becomes clearer. It looks darker because particulates aren't kicking back the light. As the yeast grows in population the wort becomes cloudy and reflects light of a

lighter color (yeast is very light in color). Yeast along with the combination of trub and hop matter will appear to give off another color. Finally, the yeast settle out. When the beer is really clear it appears dark in the carboy because light has to pass through all that beer and not too much of it does.

For comparison, observe the color of beer in your siphon hose and compare it to your impressions of color in the carboy. Different, right? In the siphon hose light only passes through about one-quarter inch of beer, thus the beer appears a lot lighter. The color of clear beer from a visual standpoint is influenced by the volume of beer the light has to travel through. Different sized glasses of the same beer will appear to have different hues of the same color.

*See you at the end of the rainbow,
The Professor, Hb.D.*



Dry-Hopping How-Tos

Dear Professor Surfeit,

I have been homebrewing for about a year, but I haven't tried dry-hopping. I have, on three or four occasions, made hop tea to add at bottling time. I simply boil a quart of water, let it cool until steam is barely visible, then steep an ounce of hops in a cloth bag for 10 minutes or so. After cooling, I gently stir the tea into the waiting beer in my bottling bucket.

This is a simple process that seems to add a fair amount of hop flavor and aroma to the beer, and it would seem to be less cumbersome than dry-hopping, especially when using a glass carboy.

Are there any drawbacks in using this method? Are the results comparable to actually dry-hopping? Do you have any tips for dry-hopping in a glass fermenter? Can the hop tea method be simplified by steeping hops in the priming sugar water after it's been boiled and cooled, or would this tend to taint the flavor and aroma of the tea?

Hoppingly indecisive,
Don Parisot
Northville, Mich.

Dear Don,

It works. That's the important thing, but you already know that. You know you're getting a decent hop aroma and character in your beer by steeping hops and making a tea. But whenever you subject hops to hot water you lose some of the delicate properties of the hop cone, so you are losing some essential character that only dry-hopping can give. There isn't really a drawback. It's a matter of preference and you personally won't know unless you split your batch in half next time and try a comparison experiment.

When you dry-hop in a carboy there is a perceived problem of having all these loose whole hops floating in the beer. How do you separate them at bottling time? That is a challenge. The easiest way to get around this is to use hop pellets when you dry-hop. They'll eventually settle to the bottom of the carboy, requiring careful siphoning to remove only the clear beer.

If you wish to use whole hops, I'll refer you to your local homebrew shop. Various gadgets have been invented (some have appeared in Zymurgy) to contain the hops in immersible baskets or muslin bags, which can be removed easily after the hops have done their deed.

*Good luck and happy hopping,
The Professor, Hb.D.*

Sanitizing in the Dishwasher

Dear Professor,

I clean my bottles prior to bottling by running them through a dishwasher cycle with heat drying but without detergent. Some people have suggested this method is not appropriate. Does the heat inside the dishwasher reach a temperature high enough to sanitize the bottles? Does this method leave something to be desired in the way of sanitation?

Robert Seay
Dallas, Texas

Dear Robert,

If your bottles are clean, then you're OK with sanitizing the bottles in the dishwasher. But "clean" is the key word here. I don't believe it is possible to really clean bottles in a dishwasher. Many is the time I've seen homebrewers who claim to clean their bottles in such a way, but upon close inspection of the inside glass surface one can detect films and deposits that just won't come off in the dishwasher. How is it possible for water to effectively squirt itself through that little hole and get to all that inside surface area? Think about it. Only a good soak in a bleach or other chemical solution that can break down organic films and deposits will get those bottles clean inside. Once that's done, heat sanitation in the dishwasher is effective. If you do continue to use the dishwasher, be sure not to use any detergent or rinsing agents which could coat the glass and reduce the head in the final beverage.

Another kitchen sanitation option is the oven. Place your clean bottles in an oven preheated to 340 degrees F (170 degrees C) for one hour. This procedure renders your bottles sterilized.

For more information on cleaning and sanitizing, refer to "Ward Off the Wild Things

— A Complete Guide to Cleaning and Sanitation" by James Liddil and John Palmer in Zymurgy Fall 1995 (Vol. 18, No 3).

Me? Once I've soaked my bottles in bleach water to whistle clean, I simply drain and place a piece of aluminum foil over the top.

*There you go.
Keep it simple,
The Professor, Hb.D.*

Home Foam

Dear Professor Surfeit,

I have a basic draft system: CO₂ bottle, two Cornelius kegs (ball lock), quick-disconnects, single-gauge regulator with check valve, picnic faucet and hoses. So far I have kegged two batches of brew, an English-style bitter and a wheat beer. All I managed to get out of the tap was foam!

Naturally, the wheat beer foams more than the bitter, but both foam. I followed the charts found in many publications about how much pressure to apply. I kegged the bitter with 14 pounds of pressure at 50 degrees F (10 degrees C) for about 2.2 volumes of CO₂. I force carbonated by rolling the keg back and forth until I couldn't hear the CO₂ entering the keg, then left it to sit at 50 degrees F (10 degrees C) for a week with the pressure on. Then I vented the pressure in the keg and set the regulator at 10 psi to draw my first pint. Half the glass was foam. I adjusted the pressure in both directions to try to alleviate this problem.

Foam — all I got is foam.

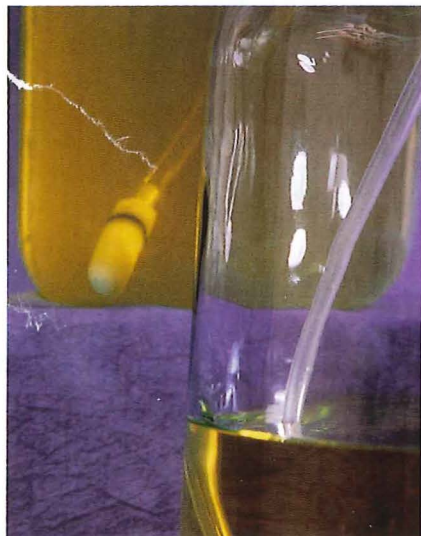
The wheat beer had similar results. The procedure above was followed except I was aiming for 2.9 volumes of CO₂ (23 psi at 50 degrees F or 10 degrees C). I am lucky to get three-quarters glass of, well, you get the idea by now. I figured the wheat beer foamed more because of all the wheat in the mash (50 percent wheat grist). But why did the bitter foam so much?

The beer line originally was one-quarter inch, which I changed to three-sixteenths, but that didn't seem to make a difference on either beer. I even tried a five-sixteenths beer line with no noticeable difference. Both times I figured I would dispense at 10 psi, which I started (continued on page 105)

NEW PRODUCTS

New product descriptions are submitted by manufacturers and distributors and are printed for reader information. These claims are made by manufacturers and/or distributors and do not imply testing by *Zymurgy*. For more information, call (303) 447-0816 for Linda Starck (ext. 109) or Christopher Lowenstein (ext. 108).

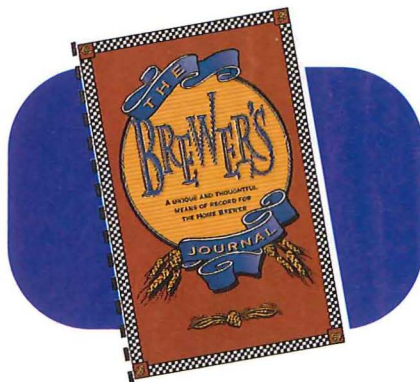
Filtering Siphon



Vino Filtro has developed the Sifone®, the first commercially available transfer tube that filters while racking or bottling beer or wine. The filter is made of food-grade polyethylene and is easy to remove and wash when clogged. The filtering siphon removes yeast deposits, fruit, oak chips and sediment from the bottom of a primary or secondary fermenter. The result is clearer beer or wine.

The Sifone comes in two sizes, available directly from Vino Filtro Inc., 9015 Avon Rd., Montreal West, Quebec H4X 2G8 Canada; (800) 563-6325; FAX (514) 483-1914. The smaller size costs \$12.75 (Canadian); the larger size costs \$17.75 (Canadian). Vino Filtro also offers filtration systems for microbreweries.

Brewer's Journal



Arctic Ideas of Alaska has produced the Brewer's Journal to help homebrewers keep recipe information and track brewing data. Samplers of homebrew often ask what ingredients or processes were used to brew a batch, or perhaps a particularly good batch begs for replication. Unless the brewer can find the piece of paper on which the recipe and method are scribbled, the information may be lost. The Brewer's Journal is designed to provide space to compile this and other useful brewing information. The journal has 40 pages and a coated cover.

The manufacturer's suggested retail price is \$4.95 through homebrew supply shops nationwide. For a retailer near you contact Arctic Ideas, 7130 Beaumont Circle, Anchorage, AK 99502; (907) 243-1096; David Looney at 103157.2002@compuserve.com or Vinotheque at (800) 481-8466.

Microbrew System Kits



Mr. Beer Products has produced two kits in the Microbrewery System line. The Pilot Brewery kit includes a 1.65-gallon Lexan® fermenter, hopped malt extract, six reusable amber one-liter PET plastic bottles with caps and instructions. The Beer Barrel Brewery kit includes the same items except a three-gallon Lexan fermenter is substituted and two additional bottles supplied. The fermenter of the Pilot Brewery kit is shaped like a large picnic jug cooler. The fermenter of the Beer Barrel Brewery model is shaped like a cask. Both are set up with airlock and side spigot.

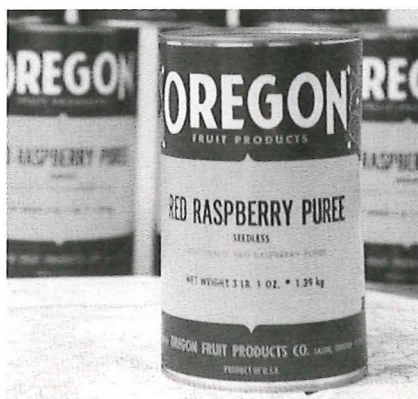
A pale ale mix comes with the kit. Other styles are weizenbier, Irish stout, Vienna, Canadian, nut brown ale, light, red and bock. Replacement mixes are purchased directly from the manufacturer for \$19.95 each in boxes of three kits. Hops, fruits and unhopped malt extracts also are available.

The bottling process involves pouring the beer from the spigot into the bottles after seven days. You may add more water to the

Pilot Brewery kit at this time. The residual sugars carbonate the beer in the bottles. The screw caps require no capper. After bottling, the fermenter is free for the next batch. Homebrewers can make up to two gallons per week using either system.

The manufacturer's suggested retail prices are \$49.95 for the Pilot Brewery kit and \$59.95 for the Beer Barrel Brewery kit. The products are available from selected gift, department or chain stores. For information contact Mr. Beer Products Inc. at 5620 N. Kolb Rd., Suite 230, Tucson, AZ 85750-1384; (800) 852 4263; FAX (520) 529-8542; www.chatlink.com/~gromper/MR.BEER.html.

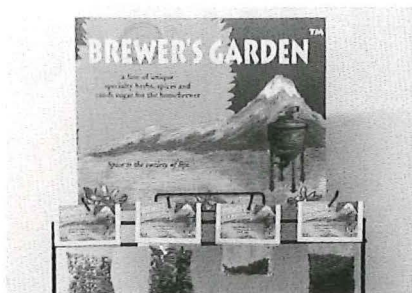
Fruit Purees



Oregon Fruit Products now packages fruit purees for homebrewers in addition to the 44-pound bag-in-a-box containers sold to microbrewers. Founded in 1920, the company produces fruit-based products such as pie fillings. Now Oregon Fruit packages raspberry and dark sweet cherry purees in 3.1-pound cans. The line will include blueberry, peach, blackberry and other fruits in the near future. The purees are seedless and commercially sterile so pulverization or pasteurization are unnecessary. Homebrewers simply open the can and pour the puree into a primary or secondary fermenter. The uncooked purees are real fruit, not concentrates.

Oregon Fruit Products purees are available at homebrew shops nationwide. For a retailer near you contact Fred at Steinbart Wholesale at (800) 735-8793. Prices vary by fruit variety. The suggested retail prices are \$6.25 for dark sweet cherry and \$8.75 for raspberry.

Specialty Herbs, Sugars



Brewer's Garden™ is a new line of specialty brewing herbs and sugars that includes bitter Curaçao orange peel, sweet orange peel, ginger, cardamom, licorice root, sarsaparilla, sweet gale (bog myrtle) and seeds of paradise. Belgian candi sugar is available in clear, amber and dark varieties. The sugar diamonds come without strings so straining is unnecessary. The packaging includes information on how to use the products and recipe ideas.

The herbs and spices retail for less than \$3 for one-half ounce or one-ounce quantities, while the candi sugar retails for about \$5 per pound. Brewer's Garden products are available at homebrew supply shops nationwide. To find a retailer near you contact L.D. Carlson Co. at (216) 678-7733 or Steinbart Wholesale at (800) 735-8793. An Internet site is in the works and e-mail questions can be directed to Fred at f.h.steinbart@pceez.com.

Carboy Hauler



Homebrewers are famous for coming up with creative gadgets to make the brewing process easier and more efficient. Homebrewer Tom Raich struggled with awkward, heavy glass carboys. His solution was to invent the Brew Hauler, a product that takes the worry

out of carboy transport with tubular nylon webbing handles. The Brew Hauler is constructed of climbers webbing that forms an "X" across the bottom of the carboy. The straps have an adjustable belt encircling the carboy with handles attached. The Brew Hauler can support more than 100 pounds and easily be adjusted to fit five- to seven-gallon carboys. Other sizes can be custom ordered.

The manufacturer's suggested retail price is \$10 plus \$1.25 shipping and handling. The Brew Hauler is available from Tom Raich, PO Box 803, Portage, MI 49081-0803; (616) 327-5177.

Home Winemaking Video



Bacchus Film Productions has released a comprehensive how-to video for home winemakers called "Making Wine." Created for beginners and more experienced winemakers, the 45-minute video guides the viewer step-by-step through the process of making wine from grape juice concentrate or from fresh grapes.

General topics include basic and advanced equipment, cleaning and sanitizing, preparing must, checking and adjusting acid and sugar levels, yeast starters, racking, filtering, bottling and aging. For the beginner the video demonstrates making wine with concentrates, choosing equipment and ingredients, and proper bottling techniques. For the experienced home winemaker, "Making Wine" covers using fresh grapes, advanced equipment, taking acid titrations, adjusting acid and blending varietals.

Suggested retail price is \$19.95 from homebrew and home winemaking supply shops or from Bacchus Film Productions Inc., 2 Bloor St. W., Suite 100-370, Toronto, Ontario, Canada M4W 3R6; (416) 429-3050; FAX (416) 429-3050; www.sentex.net/~bacchus.

Compiled by Paul Gatzka, homebrewer, part owner and manager of What's Brewin' Homebrew Supply in Boulder, Colo., and Hop Barley and the Alers president of vice.

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T H E B E S T F R O M KITS

James Slaton

Cider – An Appealing Alternative

I suppose like most avid beer drinkers I had never really thought much about cider. I knew a few women who liked to drink it because it didn't taste like beer but came in a beerlike bottle. I knew a couple of men who drank it for the same reason.

It wasn't until a cold December evening at an Irish pub in New Orleans that it piqued my curiosity enough for me to reexamine my indifference.

A friend had joined my fiancée and me for a couple of pints at a French Quarter pub called O'Flaherty's. We pushed our way up to the bar and I offered to buy him a beer when he told me he wanted a Cider Jack instead. I told him he had to have a Guinness or I wasn't buying, but he insisted on the cider.

Fair enough, I said, ordered a Guinness for my lady friend and myself and let him at the bar to order his own. I ribbed him for a little while afterwards about his choice. Finally he suggested I try it, which I did.

To my surprise, it was not the wimpy wine-cooler taste I had remembered. It had a well-balanced flavor that began with the tart taste of apple and ended fairly dry back in the throat somewhere. The taste of alcohol was evident, but not overpowering. The drink was crisp, but not thin.

Granted, it was not beer. It didn't have the complexity of three different strains of hops or four types of grains. But no matter, it was good. And that's what cider is: simple, unpretentious and good.

The apple has had a checkered history, but it has consistently been a major player



in the story of humankind. A golden one triggered the Trojan War when Eris, the Greek goddess of discord, tossed it into the wedding of Peleus and Thetis; one accelerating at 9.8 meters per second squared allegedly helped Newton make one of the most significant discoveries in physics; and arguably the most famous one caused the fall of man and original sin.

Whether or not any of these stories is true is immaterial; what it clearly demonstrates is that the apple figures highly in our collective consciousness. And cider is no exception.

While the apple's fermented byproduct does not date back to Adam and Eve or even Paris and Helen, Paul Correnty, author of *The Art of Cidermaking* (Brewers Publica-

tions, 1995), estimates it has been around since about 700 A.D. He believes the Arab Moors were the first to produce cider on a large scale during their occupation of Spain, which the Moors invaded in 711 A.D. The Arabs had translated agricultural texts of the Greeks and Romans and cultivated apples. When the European Christians conquered the Moors, they took the information and the apples and, as Correnty puts it, "A European cider enterprise was born."

Cider remains a popular drink on the Continent and in England. When the American colonies were founded, cider was brought to the New World as well. Here it flourished, helped out to no small degree by the apple-friendly soil and environment of New England. Orchards flourished and so did cider.

But 1918 hit the cider industry hard. Prohibition put many cideries out of business, just as it did many of the country's smaller regional breweries.

For many Americans growing up in the latter part of this century, cider has meant "sweet cider," an American creation meaning non-alcoholic, unfermented apple juice. "Hard cider" is the term given for the fermented, alcoholic cider.

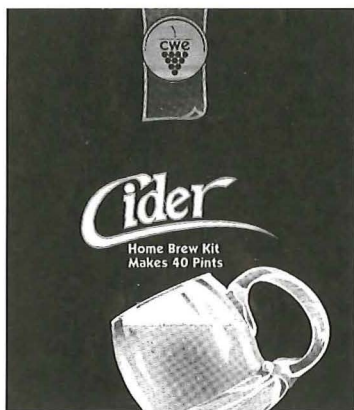
Like craft beers and homebrewing, however, cider is regaining some of its pre-Prohibition steam. Cideries are coming back, hard cider is available in many pubs and cider kits are available for the homebrewer.

Making cider is to brewing beer as making toast is to baking bread. With cider, most of the work is already done for you; the

juice has been pressed and it's only up to you to get the fermentation going and maybe tweak the taste a bit. It is an easy process that still gives its creator freedom for experimenting with flavors and styles.

For this column, I tried three different routes: the prepackaged kit, a set of recommended ingredients from a homebrew store and a hodge-podge of ingredients that can be found at any grocery store.

CWE Cider



The kit is from CWE Ltd. of England, imported by Zymotic Imports in Mount Holly, N.J.

Ingredients for 5 U.S. gal (19 L)

- 1 lb CWE cider kit (0.45 kg)
- 3 lb cane sugar (1.36 kg)
- 1 packet yeast (included)

- Original specific gravity: 1.044
- Final specific gravity: 1.002

Following the instructions on the can for "extra strong cider," I mixed the can of extract with refined cane sugar boiled in a gallon of water. I put the mixture in a plastic fermenter and topped it off to five gallons. I then added a yeast starter made with the packet of yeast supplied with the kit and one tablespoon each of yeast nutrient and corn sugar.

The starting gravity was lower than I expected for an "extra strong cider," especially considering Correnty's note that juice from North American apples typically has an original gravity ranging from 1.040 to 1.050. I stuck an airlock on it and bottled in 10 days when fermentation appeared complete.

St. Patrick's Honey Cider

St. Patrick's of Texas

The second batch was made with ingredients recommended by St. Patrick's of Texas Brewers Supply.

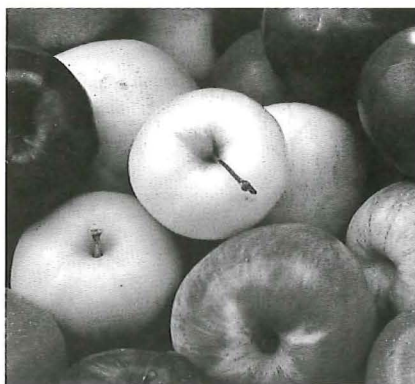
Ingredients for 5 U.S. gal (19 L)

- 5 gal sweet apple cider (19 L)
- 1 lb honey (0.45 kg)
- 4 tbsp acid blend (59 mL)
- 1/2 oz yeast nutrient (14 g)
- Wyeast No. 3184 sweet mead liquid yeast culture

- Original specific gravity: 1.054
- Final specific gravity: 1.002

The intent, according to an employee, was to mix what they sent me — acid blend, yeast nutrient and sweet mead liquid yeast — with five gallons of sweet cider, which is what I did. I also added a pound of honey, which I felt compelled to do because it seemed like a natural fit with the mead yeast and because I had it in the kitchen cabinet. The acid blend was provided to slightly increase the acidity of the cider and offset some of its sweetness. I used half an ounce of the yeast nutrient to help out the yeast because cider, like mead, does not have the naturally occurring yeast nutrients found in wort.

I made this one in 28 minutes, from unscrewing the first top on a jug of apple cider to plugging up my five-gallon carboy with a blowoff tube. I left it in a dark closet to ferment.



Sugar and Spice Cider

The final batch was made entirely with ingredients readily found in a grocery store.

Ingredients for 5 U.S. gal (19 L)

- 14 12-oz cans Seneca apple juice concentrate (5 L)
- 3 cups corn sugar (710 mL)
- 2 tsp cinnamon (10 mL)
- 1 tsp nutmeg (5 mL)
- 1 cup molasses (237 mL)
- 2 packets Champagne yeast

- Original specific gravity: 1.068
- Final specific gravity: 1.002

I mixed the Seneca apple juice concentrate with three cups of corn sugar and 3 3/4 gallons of water. But that wasn't enough. The day I was brewing happened to be the day my fiancée and I were trimming our Christmas tree so I felt compelled to spice it up with some Yuletide cheer. I added two teaspoons of cinnamon and a teaspoon of nutmeg and threw in a cup of molasses for good measure, and to add some sweetness to what I knew would eventually be a very dry cider.

I boiled all the ingredients together for fear that the spices or other additions might have carried some hitchhiking wild yeast or other microscopic beasts that would spoil my cider. I pitched a yeast starter made with two packets of Champagne yeast and a tablespoon each of corn sugar and yeast nutrient. I let it ferment for two weeks then primed with one-half cup of corn sugar and bottled.

All three ciders came out well, although my favorite was the one made from the grocery store ingredients. The Champagne yeast made a dramatic difference; the cider was very dry and refreshing with a slightly sour start and a clean finish. It is best served cold as the tartness becomes a bit too sharp (at least for my taste) at warmer temperatures.

The other two ciders were very similar. They were both much sweeter than the grocery store cider and more reminiscent of commercially available brands. They also tasted more like apples than the other, just as wine tastes more like grapes than Champagne. The honey cider had a thinner body than the kit



CooperSmith's "Apple Beer"

Brad Page, brewtron at CooperSmith's Pub and Brewing in Fort Collins, Colo., shares a five-gallon version of the brewery's apple beer. Although they prefer to think of it as cider, the Bureau of Alcohol, Tobacco and Firearms requires 25 percent of the original gravity to be derived from malted barley, hence the malt extract. Hops also are required to qualify the beverage as beer, so they use a token amount of hops. Page advises homebrewers not to hop their apple beer in order to fully enjoy the apple qualities.

Ingredients for 5 U.S. gal (19 L)

- 4 to 5 gal unfiltered, unpasteurized apple juice (15 to 19 L)
- 5 lb light malt extract (2.27 kg)
- 1/4 tsp grape tannin (1.2 mL)
- 1 tsp acid blend (1.2 mL)
- 1/2 tsp yeast nutrient (2.5 mL)
- 2 tsp pectic enzyme (10 mL)
- ale yeast (a flocculant strain)

"We boil our juice to guard against the introduction of unwanted wild yeast that may be present in the juice," Page says. "We add our wine additives in the boil. Most homebrew stores have these basic wine-making additives and they are common in most cider recipes. Our juice is shipped fresh from Colorado's western slope and typically has a beginning gravity of 11 to 12 °Plato (1.044 to 1.048), which we then raise by 25 percent to 15 or 16 °Plato with the addition of the malt extract. We have used two different ale yeasts. Each works quite well and finishes quite dry, sometimes as low as 1 °Plato (1.004). Characteristics of the 'apple beer' vary depending on the blend of apples and the terminal gravity. We have customers who like it dry and others who prefer it sweet," Page says.

cider. The only complaint I had about any of the brews was the fact that the honey was almost unnoticeable in the honey cider. I think I'll use an additional two pounds next time.

Although the brewing process was easy and almost identical to beer, I did learn an important lesson about cider. It needs time

to age. Pop open a bottle too early and you'll get a whiff of a sour noxious gas that will make you wonder why you thought it would taste any better than it smelled. After a two-week, two-stage fermentation, allow at least two weeks for the cider to condition in the bottle. Your nose and tongue will thank you.

My ciders turned out to be real crowd pleasers. I served them to everyone from hard-core gourmet beer drinkers to wine fanciers to tea totalers and got the same (sometimes almost incredulous) reaction from everyone, "It's good. It's really, really good."

It is good and best of all, it's easy. You'll use the same techniques you already know and the same equipment you already own. So take your nose out of the grain mill, give yourself a break from hops and malts and expand your brewing horizons this summer. Make a cider — you'll be in for a pleasant surprise.

James Slaton is a professional journalist who lives and works in the New Orleans area. In addition to regularly covering the brewing industry for a New Orleans business journal, Slaton is a free-lancer for various brewing publications.

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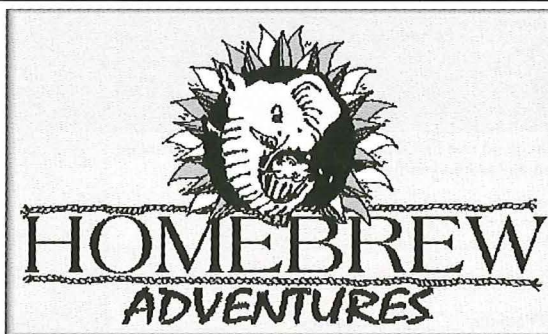
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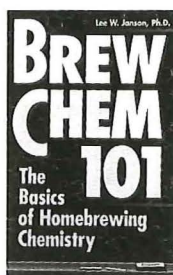
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Brew Chem 101



Brew Chem 101: The Basics of Homebrewing Chemistry by Lee Janson is a clearly written short book aimed at the beginner/intermediate homebrewer who wants to understand the fundamental brewing processes and how these can be controlled to improve beer quality. The book is not intended to compete with George Fix's *Principles of Brewing Science* (Brewers Publications, 1989), and is considerably more accessible, especially to the nonscientist. The format is pleasant and easy on the eye. The strongest section of the book is Chapter 5, which describes off-flavors, discusses the chemistry of the culprit compounds and makes practical recommendations for their avoidance. The beginner can finally understand what is being tasted and why it tastes that way. For this reason, the book would be an excellent resource for anyone studying for the Beer Judge Certification Program exam.

Some brewing tips surface throughout the book that are helpful to any brewer. While some items covered are useful for the advanced brewer, such as the thorough

explanation of the iodine test for starch conversion, the bulk of the material does not lend itself to those who have already read the more advanced texts by Dave Miller and Greg Noonan.

This book contains some misinformation. The glossary, for example, has several errors: lagers are not necessarily light bodied, and there are more meanings of the word "kraeusen" than those given. More unusual is the author's inclusion of Fuggles and Goldings among the "noble-type" hops.

The author has not been entirely successful in explaining the basic chemistry of the brewing process in Chapters 1 through 4. Perhaps the most frustrating aspect is that, in several places, he abruptly drops a subject with a phrase like "we won't go into that here."

To be fair, Janson does not set out to provide a textbook on brewing. His intention seems instead to whet the appetite of beginning homebrewers for more advanced, thorough and exact texts. In a number of places he refers the reader to *Dave Miller's Homebrewing Guide* (Storey Publishing, 1995) or Noonan's *New Brewing Lager Beer* (Brewers Publications, 1996) for a more complete discussion of some aspect of the brewing process. Those who already own these books will not need to buy *Brew Chem 101*, nor will those who have mastered Fix's book.

Brew Chem 101 is a creditable effort that could have benefited from more thought on the part of the author, and perhaps from more careful editing. It will be most useful for the extract or partial-mash

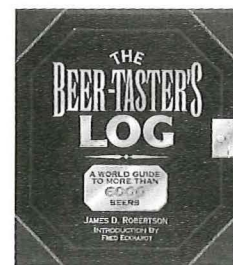
brewer wishing to move beyond a cook-book approach to brewing. Those with aspirations to become all-grain brewers would be well advised to purchase Miller and/or Noonan.

Brew Chem 101: The Basics of Homebrewing Chemistry by L.W. Janson, Ph.D., is published by Storey Publishing, 1996, 117 pages. Publisher's suggested retail price is \$12.95.

Reviewed by John Kessel and John Wolff. A city planner in Arlington, Texas, Kessel has been a homebrewer for six years and is a BJCP Certified judge. Wolff is a geology professor at the University of Texas at Arlington who has been homebrewing off and on since 1976. They are members of the Knights of the Brown Bottle homebrew club.

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The Beer-Taster's Log



Author James Robertson is no newcomer to evaluating beer. He has been assembling tasting panels for more than 20 years and logging his own perceptions of the beers those panels rate. It's not surprising his *Beer-Tasters Log: A World Guide to more than 6,000 Beers* is up to 600 eight-by-nine-inch pages, includes notes on more than 6,000 beers and weighs nearly three pounds.

Although the book is designed to be a log of the author's tasting notes with space for readers to enter theirs, Robertson realized at the beginning that beer drinkers like ratings. He recognizes that tasting beer is essentially subjective but, by combining multiple tasters and a numeric scale, he found a system more useful than having a single individual saying "Thumbs up!" Over the years more than 200 people have been involved in ratings, and today about half of the tasters are homebrewers.

No one will agree with all the ratings. Overall, though, it's hard to argue with most of the log's 90-plus scores. It would be nice if every log entry included a tasting date, though.

The ratings could be improved by organizing them into lists. There are indexes for beers and breweries, but anybody buying the book for the ratings would like a list of the highest-ranked beers (I found eight with scores of 100, seven of them German beers from the bock family) and the top-rated beers by style. That way, after a reader discovered the IPA from Flat Branch Pub and Brewing in Columbia, Mo., received a 98, he or she could check out other IPAs. As it is, a homebrewer looking for commercial examples of American pale ales has to flip through 300 pages of North American beers to make comparisons.

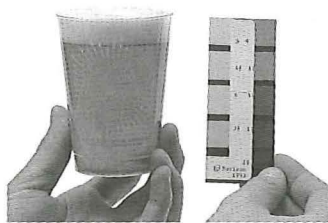
The back cover promises technical information including gravity and alcohol. While some beer descriptions include details about ingredients, seldom is there enough information to use in recipe formulation.

Quite properly, the book is titled a log rather than a rating guide. Lined up beside a growing number of books that rate beers, it fares well enough because of its completeness. However, its best use is as a reference book, and you should add it to your library only if you plan to use it that way.

The Beer-Taster's Log by James D. Robertson, with a foreword by Fred Eckhardt, is published by Storey Publishing, 1996, 600 pages. Publisher's suggested retail price is \$24.95.

Reviewed by Stan Hieronymus and Daria Labinsky, publishers of the Beer Travelers newsletter, a guide to good places to drink beer. Stan and Daria are members of the Abnormal Brewers homebrew club in Illinois.
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Homebrew Color Guide



In 1994 a friend gave me a Homebrew Color Guide produced by Davison Mfg. Immediately wanting to use my new toy, I took the guide home and matched it to a pale ale I had just brewed. Wow, I thought, finally I have an easy way to determine the color of my homebrew without having to dilute a bottle of Michelob Dark. The guide provided useful information quickly and easily.

The next time I used the guide was at a local homebrew competition I was judging. When the other judges saw my brand new guide in action most of them probably thought, "what a beer geek." Thus evolved a new name for my guide. The judges at the next table whispered, "Hey, John, can I borrow your geek gauge for a minute?" A few months later, at another judging event, I noticed a number of judges with their very own guides.

A few years have passed and now it appears the Davison Homebrew Color Guide has become standard gear for the well-prepared judge, almost as important as a mechanical pencil or flashlight.

The guide is easy to use and provides a reasonably accurate result quickly and with little effort. To use simply pour one to two inches of beer into a clear cup or glass. Hold the cup up next to the guide in front of a diffuse light source – daylight is best. Match the beer sample to one of the guide's 10 color panels, each representing different degrees Lovibond. Though not exactly the same as Standard Reference Method units (SRM), the Lovibond scale is very close. The technical data included with the guide documents this and is easy to read. The degrees Lovibond on the guide are 3, 5, 6, 7, 8, 9, 11, 14, 17 and 19.

I spoke to the Siebel Institute of Technology in Chicago regarding the calibration of the Davison Color Guide. The results of a com-

parison of color data by spectrophotometer method (ASBC Beer Method 10A) versus a visual inspection using the guide showed that as beer color darkens the two measurements begin to disagree. In other words, the guide is not as accurate with darker beer. Visual inspection with the guide begins to fall below the spectrophotometer method data at approximately 9 SRM. A spectrophotometer reading of 12.9 SRM compared to a reading of 9 SRM on the color guide. This trend continues throughout the higher end of the color scale.

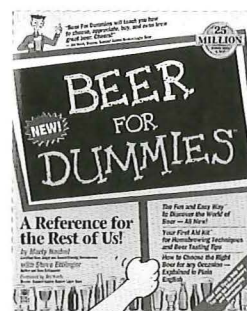
The Davison guide is an easy-to-use tool that provides a reasonably accurate method to determine the color of any beer. Despite its divergence from the spectrophotometer method with darker beer, I recommend the product as a guide in estimating the color of your homebrew.

The Davison Homebrew Color Guide is available at homebrew supply shops nationwide. Manufacturer's suggested retail price is \$9.95.

Reviewed by John Carlson, a BJCP National judge and executive director of the Colorado Brewers Guild, a nonprofit corporation for the common business interests of the Colorado craft brewer.

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Beer For Dummies



Anyone who is remotely connected with computers and the after-market documentation available for software has seen the ... *For Dummies*™ line of manuals. The books offer shortcuts and tips based on experience gained by actually using the software in question in terms the average noncomputer geek can understand. The language is straightforward and as nontechnical as the subject matter allows. The tone is generally light, sometimes comic and often irreverent.

Coincidentally, many of us who write about beer and the craft-brewing renaissance do so with a decided (though I hope unintentional) bias that our audience already knows a bit about the subject of beer and brewing. Enter *Beer For Dummies*. By following the standard series format right down to the distinctive yellow cover, blackboard motif and Rich Tennant's "The 5th Wave" cartoons, Marty Nachel and Steve Ettlinger have created an in-depth beer guide for the nonbeer geek. The book covers the subject from basic definitions of ale and lager through the brewing process and ingredients to tasting and serving tips. The authors include information on labels and packaging choices, overview of homebrewing (and mention of the BJCP, thank you very much), an outline of worldwide beer festivals and list of beer-based organizations. All are accompanied by ample references to additional information.

The book is written in an easy-to-read narrative dotted with little asides of trivia, helpful hints, tips, warnings, meaty technical bits and the occasional dig at some classic beer myths and images. The whole thing is geared for the curious but perhaps uninitiated beer consumer who wants to learn more but may be intimidated by the apparent complexity of the subject.

Like other books in the series, *Beer For Dummies* accomplishes its goal with ease and elegance. No doubt it will open the door to a whole new wave of beer enthusiasts. I can certainly recommend *Beer For Dummies* as the perfect gift for curious friends, spouses and relatives of avid homebrewers and beer fanatics. The book will provide a gentle but thorough introduction to the world we have come to love so much. I might even go so far as to suggest that every brewpub and beer bar keep a copy handy to be passed among the patrons to further their education while other study materials are within easy reach. And I am sure that many hale and hardy homebrewers will appreciate a copy as well if only to have an easy-to-read diversion while waiting for the sparge to finish or the kettle to boil.

Beer For Dummies by Marty Nachel and Steve Ettlinger, IDG Books Worldwide, 1996, 334 pages. Publisher's suggested retail price is \$19.95.

Reviewed by Russ Wigglesworth, BJCP program administrator.

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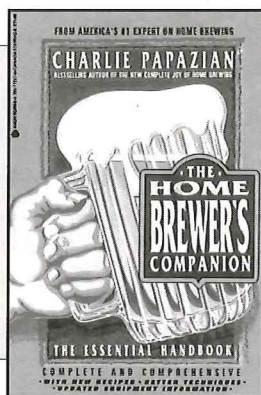
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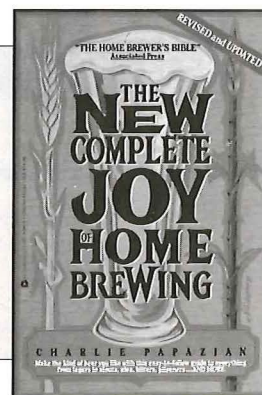
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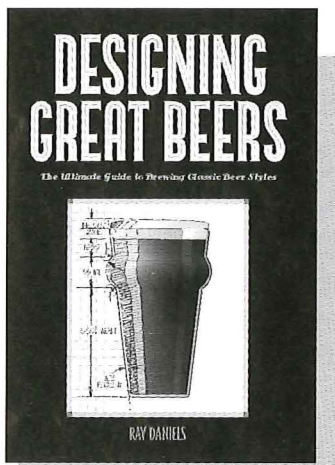
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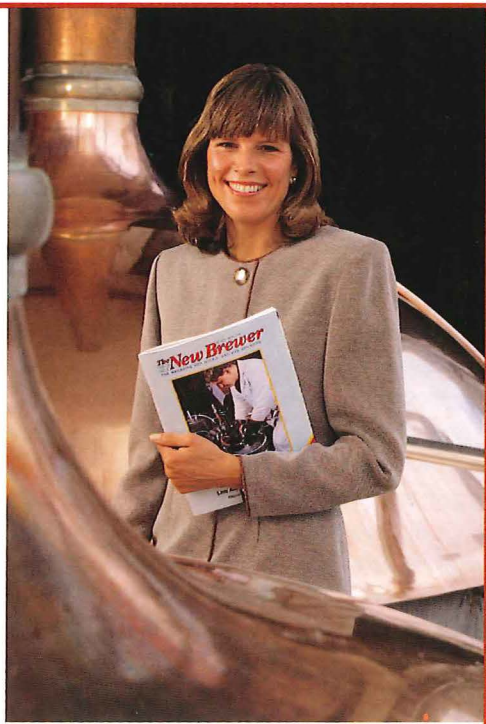
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Highlander Home Brew Inc.
1822 Dominion Way
Colorado Springs, CO 80918
(719) 528-1651; FAX (719) 528-1651

The Homebrew Hut
555 I Hwy. 287
Broomfield, CO 80020
(303) 460-1776

The Home Brewery
4697 E. Evans (At Evans & I-25)
Denver, CO 80222
(303) 639-5332; (888) 288-BREW
(Toll Free); FAX (303) 639-5328;
brewdog@ix.netcom.com;
http://www.homebrewery.com

Liquor Mart Inc.
1750 15th St.
Boulder, CO 80302
(303) 449-3374; (800) 597-4440

Old West Homebrew Supply
303 E. Pikes Peak Ave.
Colorado Springs, CO 80903
(719) 635-2443; (800) ILV-BREW;
FAX (719) 635-7004
Oldwest@Internetmci.com;
http://oldwestbrew.com

Rocky Mountain Homebrew
7292 N. Federal Blvd.
Westminster, CO 80030
(303) 427-5076;
rmhbrew@ix.netcom.com;
http://www2@csn.net/~vsabbe/rmh
_beer_page.html

What's Brewin'
2886 Bluff St.
Boulder, CO 80301
(303) 444-9433

The Wine Works
5175 W. Alameda Ave.
Denver, CO 80219
(303) 936-4422

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Appy's Homebrew Supply
7 Marion Dr.
East Lyme, CT 06333
(860) 691-1473

The Brews Brothers of Mystic
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Mystic, CT 06355
(888) 313-BREW (2739);
(860) 536-2739;
BrewsBros@worldnet.att.net

Great American Home Brew Supplies at Geremia Gardens
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Southington, CT 06489
(860) 620-0332; (800) 94-LIBREW

Wine and Beer Art
1501 E. Main St., Route 202
Torrington, CT 06790
(860) 489-4560

Yankee Brewer
26 Broadway
Norwich, CT 06360
(860) 886-7676;
BrewerGuy@aol.com

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Delmarva Brewing Craft
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Millsboro, DE 19966
(302) 934-8588

Wine Hobby USA
2306 W. Newport Pike
Stanton, DE 19804
(302) 998-8303; (800) 847-HOPS

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(Waterside Plaza)
Tampa, FL 33614
(813) 889-9495; (800) 646-BREW

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Melbourne, FL 32935
(407) 752-1105; (888) BREWSLF
(273-9753)

BrewCrafters
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Sarasota, FL 34232
(941) 925-9499; (800) HOT-WORT
<http://www.brewcrafters.com/hotwort>

Heart's Home Beer and Wine Making Supply
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Orlando, FL 32810
(800) 392-8322; FAX (407) 298-4109

The Home Brewery
416 S. Broad St.
Brooksville, FL 34601
(904) 799-3004; (800) 245-BREW;
chinsegt@atlantic.net

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4402 N. 56th St.
Tampa, FL 33610
(813) 621-1792; (800) 283-9676

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Brew Your Own Beverages Inc.
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(404) 365-0420; (800) 477-BYOB;
<http://www.OnlineSU.com/BYOB>

Wine Craft of Atlanta
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Parkside Shopping Center
Atlanta, GA 30328
(404) 252-5606

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Maui Natural Foods
Maui Mall
Kahului, HI 96732
(808) 877-3018

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Winfield, IL 60190
(708) 690-8150; (800) 506-BREW;
beerinab@mcs.com;
<http://www.mcs.com/~beerinab/beerhome.html>

Bev Art Homebrew & Wine Making Supply
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Chicago, IL 60643
(312) 233-7579; (312) BEER579

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Chicago, IL 60622
(773) 395-1500; FAX (773) 395-2204

Brew & Grow
2379 Bode Rd.
Schaumburg, IL 60194
(847) 885-8282; FAX (847) 885-8634

The Brewer's Coop
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Naperville, IL 60563
(800) 451-6348;
TheCoop@Netwave.net;
<http://www.thebrewerscoop.com>

Chicagoland Winemakers Inc.
689 W. North Ave.
Elmhurst, IL 60126-2132
(708) 834-0507; (800) 226-BREW

Crystal Lake Health Food Store
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Crystal Lake, IL 60014
(815) 459-7942

Evanston First Liquors Homebrewing
1019 W. Davis St.
Evanston, IL 60201
(708) 328-9651; FAX (708) 328-9664

Home Brew Shop
307 W. Main St.
St. Charles, IL 60174
(630) 377-1338

Lil' Olde Winemaking Shoppe Inc.
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Sugar Grove, IL 60554
(630) 557-2523

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(888) 420-BREW (Free Delivery);
(847) 520-9451;
<http://www.mcs.net/~maltnhop/home.html>; maltnhop@mcs.net

Old Town Liquors
514 S. Illinois Ave.
Carbondale, IL 62901
(618) 457-3513

River City Homebrewers
802 State St.
Quincy, IL 62301
217-222-9813; (888) LETS BREW;
<http://www.letsbrew.com>

Sheaf & Vine Brewing Supply
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Countryside, IL 60525
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Great Fermentations of Indiana
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In the Northview Mall
Indianapolis, IN 46240-2360
(317) 848-6218

The Gourmet Brewer
PO Box 20688
Indianapolis, IN 46220-0688
(317) 924-0747; (800) 860-1200
(ext. 166739); gbrewer@iquest.net

Worm's Way Indiana
7850 N. Highway 37
Bloomington, IN 47401-9477
(800) 316-1261; FAX (800) 316-1264

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Shawnee, KS 66203
(913) 962-2501; FAX (913) 962-0008;
<http://www.bacchus-barleycorn.com>

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The Home Brewery
153 Mulberry
Bardstown, KY 40004
(800) 992-2739; (502) 349-1001;
103204.2322@compuserve.com

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9810 Taylorsville Rd.
Louisville, KY 40299
(502) 261-0005; (800) 462-5953;
HYDROBREW@aol.com

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9477 Westport Rd.
Westport Plaza
Louisville, KY 40241
(502) 425-1692

LOUISIANA

Alfred's Brewing Supply
PO Box 5070
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Slidell, LA 70469
(800) 641-3757; (504) 641-2545;
beer@gs.net; <http://www.slidell.com/beer>

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(318) 747-7151; (800) 363-6482
(Mail Order)
homebrew@softdisk.com

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Swanville, ME 04915
(207) 338-2012

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(301) 984-9557; (800) 466-9557

Brew Masters, LTD. (Store #2)
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Baltimore, MD 21236
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Annapolis, MD 21401
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FAX (410) 268-3705

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Finksburg, MD 21048
(410) 833-6787

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(301) 663-4491

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Salisbury, MD 21804
(410) 543-9616

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Columbia, MD 21045
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(toll free order line);
FAX (410) 290-6795;
<http://www.mdhb.com>

Midnight Homebrew Supply
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(888) 905-BREW (2739)
Midnighthb@aol.com;
<http://www.qis.net/~midnight>

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oths@soho.ios.com;
<http://www.custom-web.com/oths/>

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Newton, MA 02161
(800) 666-7026; <http://www.bm-v.com>

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Woburn, MA 01801
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Jamaica Plain, MA 02130
(617) 983-1710

The Keg & Vine
697 Main St.
Holden, MA 01520
(508) 829-6717

The Modern Brewer Co.
Dover Plaza
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Somerville, MA 02144
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(508) 840-1955; FAX (508) 840-1955

Stella Brew Homebrew Supply
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(508) 949-0398; (800) 248-6823

Stella Brew Homebrew Supply
197 Main St.
Marlboro, MA 01752
(508) 460-5050; (800) 248-6823

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Worcester, MA 01607
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Livonia, MI 48150
(313) 522-9463

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FAX (612) 884-1065

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Fridley, MN 55432
(612) 780-8191

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Eden Prairie, MN 55344
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FAX (612) 942-0635

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St. Louis, MO 63117
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FAX (314) 726-1130;
letters@custombrew.com;
http://www.custombrew.com

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South Old Highway 65
PO Box 730
Ozark, MO 65721
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(2739); FAX (417) 485-0965;
homebrew@dialnet.net

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Crossroads West Shopping Center
2101 W. Broadway
Columbia, MO 65203
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jbrew2101@aol.com

St. Louis Wine & Beermaking
251 Lamp & Lantern Village
St. Louis, MO 63017
(314) 230-8277; FAX (314) 527-5413

Winemaker's Market
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Springfield, MO 65803
(417) 833-4145

Witt Wort Works
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Rolla, MO 65401
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(402) 562-6266;
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Lincoln, NE 68521
(402) 476-7414

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465-4723; FAX (702) 736-7942;
mrradz@b@aol.com

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(609) 825-0040

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(609) 586-7837

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http://www.altitude.com/hop&vine

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Forked River, NJ 08731
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aleman@webspan.net

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Red Bank, NJ 07701
(908) 842-7507

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Millburn, NJ 07041
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(201) 584-0333

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Smithtown, NY 11787
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brewshop@cornells.com;
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http://www.clover.net/jcbrew/home.htm;

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(800) 418-6493;
portage@ix.netcom.com;
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Malvern, PA 19355
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Country Wines

3333 Babcock Blvd., Suite 2
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http://www.ontv.com/pp/ctrywine/in
dex.htm

The Flying Barrel

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(301) 663-4491

The Frothy Shoppe

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(717) 242-8744; FAX (717) 899-7723

Home Sweet Homebrew

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homsweet@voicenet.com

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(215) 855-0100; FAX (215) 855-4567;
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Manchester, PA 17345
(717) 266-5954; (800) 815-9599;
FAX (717) 266-1566;
brewmutt@aol.com;
http://www.netresolve.com/mrsteve

Mr. Steve's Homebrew Supplies**- East**

1027 Dillerville Rd.
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(717) 391-9655;
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http://www.netresolve.com/mrsteve

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Pittsburgh, PA 15222
(412) 434-8333; FAX (412) 434-8330;
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(615) 859-5330; (800) 982-4769;
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FAX (903) 561-9291

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Homebrew Headquarters — West

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Arlington, TX 76011
(817) 792-3940; (800) 862-7474

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Richardson, TX 75080
(214) 234-5922; (800) 270-5922;
FAX (214) 234-5922;
jmorgan@primaview.com;
http://www.primaview.com/primaview
/homebrew_supply

Lubbock Homebrew Supply

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(800) 742-BREW; (806) 763-7480

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73503.3237@compuserve.com;
http://ourworld.compuserve.com/ho
mepages/D_Wendel/index.htm.

St. Patrick's of Texas Brewers Supply

12922 Staton Dr.
Austin, TX 78727
(512) 832-9045; (800) 448-4224;
FAX (512) 832-8552;
stpats@wixer.bga.com;
http://www.stpats.com

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401A Guadalupe St.
Austin, TX 78701
(512) 499-8544; FAX (512) 499-8621;
stpats@wixer.bga.com;
http://www.stpats.com

The Winemaker Shop

5356 W. Vickery Blvd.
Fort Worth, TX 76107
(817) 377-4488; (800) IT BREWS;
FAX (817) 732-4327;
brewsome@Onramp.NET;
http://winemakershop.com

UTAH**The Beer Nut Inc.**

1200 S. State
Salt Lake City, UT 84111
(801) 531-8182; FAX (801) 531-8605;
(800) 626-2739; sales@beernut.com;
http://www.xmission.com/~beernut

Brew-Yers

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brewyers@aros.net;
http://www.aros.net/~brewyers

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http://home.rica.net/furges

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1313 S. Main St.
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(540) 953-CORK; (800) 672-WINE;
vcellar@nrv.net;
http://www.nrv.net/~vcellar/

The Weekend Brewer
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Chester, VA 23831
(804) 796-9760; FAX (804) 796-9561;
Bequipment@gnn.com;
<http://members.gnn.com/bequipment/wkendbr.htm>

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Alchemy Brew & Wine
104 S. 4th Ave.
Pasco, WA 99301
(509) 545-4605; wesa1@gte.net

The Beer Essentials
15219 Pacific Ave. S.
Tacoma, WA 98444
(206) 536-8840; (800) 685-2739;
robn2beer@aol.com

Brewer's Warehouse
4520 Union Bay Place N.E.
Seattle, WA 98105
(206) 527-5047

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(206) 383-8980; (800) 700-8980;
GreatBrew@aol.com

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14411 Greenwood N.
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(206) 365-7660; (800) 342-1871;
homebrew@aa.net;
<http://www.cellar-homebrew.com/indexr.html>

The Home Brewery
9109 Evergreen Way
Everett, WA 98204
(800) 850-2739;
HmBrewery@aol.com

Kim's Place
Smokey Point Plaza
3405 172 St. N.E.
3405 172nd St. N.E.
Arlington, WA 98223
(360) 658-9577;
FAX (360) 659-2792

Larry's Brewing Supply
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(206) 872-6846; (800) 441-BREW;
<http://www.brewingnw.com/larrys>;
jtrent@aa.net

Liberty Malt Supply Co.
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(6258); FAX (206) 322-5185;
liberty@mdv-beer.com

Northwest Brewers Supply
316 Commercial Ave.
Anacortes, WA 98221
(800) 460-7095;
FAX (360) 293-4904

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FAX (414) 761-7360;
<http://www.execpc.com/~briannbs/index.html>; briannbs@execpc.com

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CALENDAR



APRIL

- 26** Land of Muddy Waters Homebrew Competition, **AHA SCP**, Rock Island, IL. Entries due April 25. Contact Jeff Grillo at (309) 788-3108 or 72064.1256@compuserve.com.
- 26** First Brewers East End Revival (BEER) Brew-Off, **AHA SCP**, Ronkonkoma, N.Y. Entries due April 18. Contact Les Stoddard at (516) 467-3951.
- 26** Iowa City Homebrew Classic, **AHA SCP**, Iowa City, Iowa. Entries due April 19. Contact Bruce Klotz at (319) 626-6159 or bklotz@avalon.net or <http://www.cs.uiowa.edu/~phenning/thirsty/index.html>.
- 26** U.S. Open, **AHA SCP**, Charlotte, N.C. Entries due April 21. Contact Ed Gaston at (704) 333-7458 or zymurgist@eworld.com.
- 26-27** The Great California Brews and Blues Festival, Pasadena, Calif. Contact Steve Whitehead at (310) 328-8448.
- 28-May 9** National Homebrew Competition first-round entries due. Contact Caroline Duncker at (303) 447-0816 ext. 116 or caroline@aob.org.
- 3** St. Vrain Spring Run-Off Homebrew Competition, **AHA SCP**, Longmont, Colo. Entries due April 26. Contact Andrew Schwartz at (303) 772-3734.
- 3** North East Wisconsin Beer Festival, Appleton, Wis. Call (800) 261-2337.
- 3-4** Eighth Annual Sunshine Challenge, **AHA SCP**, Orlando, Fla. Entries due April 28. Contact Ron Bach at (407) 696-2738.
- 3-4** Advanced Homebrewers Weekend Series, Woodland, Calif. Call the American Brewers Guild at (800) 636-1331 or abgbrew@mother.com
- 4** New England Home Brewing Competition, **AHA SCP**, South Norwalk, CT. Entries due April 25. Contact Rodger Wutzl at (203) 866-1339 ext. 106.
- 9** Alliance for the Wild Rockies' Fifth Annual Homebrew Festival, **AHA SCP**, Missoula, Mont. Entries due May 2. Contact Jeff Goin at (406) 721-5420 or awr@igc.apc.org.
- 9** WJCT's Jacksonville Beer & Food Festival, Jacksonville, Fla. Contact Betsy McNeil at (904) 358-6329.
- 10** BJCP Exam, Birmingham, Ala. Contact Ginger Wotring at (205) 320-2887 or wotring@nrc.uab.edu.
- 10** 15th Annual Oregon Homebrew Competition and Festival, **AHA SCP**, Albany, Ore. Entries due May 3. Contact Jennifer Crum at (541) 757-8714 or bennyj@peak.org.
- 16-18** Second Annual Midwest International Beer Exposition, Chicago, Ill. Call (847) 678-0071 or <http://www.pic.net/expo>.
- 16-17** The Great Alaskan Craft Beer and Homebrew Festival, **AHA SCP**, Haines, Alaska. Entries due May 15. Contact Rich Owens at (907) 766-2000.
- 17-18** National Homebrew Competition first-round judging, **AHA SCP**, Portland, Ore.; Fresno, Calif.; Thornton, Colo.; Kansas City, Kansas; Chicago, Ill.; Atlanta, Ga.; Lancaster, Pa.; Salem, Mass.; Ontario, Canada. Contact Caroline Duncker at (303) 447-0816 ext. 116 or caroline@aob.org.
- 18** Belle Grove Plantation Homebrew Competition, **AHA SCP**, Middletown, Va. Entries due May 1-15. Contact John Cole at (703) 494-7929 or barleyhouse@aol.com or <http://www.gotech.com/barley/>.
- 24** Bock is Best Club-Only Competition, **AHA SCP**, Chesterfield, Mo. Entries due May 19. Contact Brian Rezac at (303) 447-0816 ext. 121 or brian@aob.org.
- 24** Knights of the Brown Bottle and Texas Scottish Festival First Celtic Brews Homebrew Competition, **AHA SCP**, Arlington, Texas. Entries due May 24. Contact Steve Wesstrom at (817) 360-4847 or Steph10344@aol.com.
- 31** Nor'wester Brewing Co.'s First Homebrewer's Contest, **AHA SCP**, Portland, Ore. Entries due May 16. Contact Kim Beeler Goetz at (503) 232-9771 or www.norwester.com.

JUNE

- 6-7** 1997 CABA's Annual Great Canadian Homebrew Conference and Great Canadian Homebrew Competition Awards Dinner, Longbranch Legion, Toronto, Ontario, Canada. Contact CABA at (416) 462-9981.
- 7-8** California State Fair Homebrewing Competition, Sacramento, Calif. Entries due May 17. California residents only. Contact JJ Jackson at (916) 483-4512 or 71147.2553@compuserve.com.
- 7** Dominion Cup 1997, **AHA SCP**, Richmond, Va. Entries due May 31. Contact Lindsay Weiford at (804) 537-5228 or weiford@aol.com.
- 7** 1997 Nation's Capital Spirit of Free Beer Homebrew Competition, **AHA SCP**, Washington, D.C. Entries due May 30. Contact Mark Stevens at (540) 822-4537 or stevens@stsci.edu.
- 8** KGB Big Batch Brew Bash, **AHA SCP**, Houston, Texas. Entries due May 31. Contact Ron Hamm at (281) 890-5018 or varassoc@hic.net.
- 9** Essential Microbiology for Brewers, Oregon State University Extension Service, Corvallis, Ore. Contact Sandra Staehlin at (541) 737-3463.
- 11** Aroma and Flavor Defects in Beer: Recognition, Causes and Cures, Oregon State University Extension Service, Corvallis, Ore. Contact Sandra Staehlin at (541) 737-3463.
- 13** Vancouver Brewmaster Festival, Vancouver, B.C. Contact Roger Newton at (604) 290-4268 or newton@direct.ca.
- 14** B.U.Z.Z. Boneyard Brew-Off, **AHA SCP**, Champaign, Ill. Entries due June 7. Contact Joel Plutchak at (217) 333-8132 or joel@bolt.atmos.uiuc.edu.
- 15** San Joaquin County Fair, **AHA SCP**, Stockton, Calif. Entries due May 31. California residents only. Contact Rick Stanton at (209) 957-4549 or RuudRick@juno.com.
- 16-July 18** Intensive Brewing Science and Engineering, Woodland, Calif. Call the American Brewers Guild at (800) 636-1331 or abgbrew@mother.com.
- 16-Aug. 29** Craftbrewers Apprentice Program, Woodland, Calif. Call the American Brewers Guild at (800) 636-1331 or abgbrew@mother.com.
- 21** Heartland Brewfest, **AHA SCP**, Des Moines, Iowa. Entries due June 13. Contact John Busbee at (515) 289-1933, ext. 232.
- 21-22** The Great California Brews and Blues Festival, Long Beach, Calif. Contact Steve Whitehead at (310) 328-8448.
- 22** Buzz-Off, **AHA SCP**, Downingtown, Pa. Entries due June 16. Contact Robert Mattie at (610) 873-6607 or robert.mattie@sb.com.
- 22** 10th Annual Southern California Regional Homebrew Championships, **AHA SCP**, Riverside, Calif. Entries due June 19. Contact John Eichman at (909) 797-6452 or silen@empirenet.com.
- 29** Third Annual Mill Creek Classic, **AHA SCP**, Salem, Ore. Entries due June 21. Contact Mark Norbury at (503) 375-9153 or nickb@teleport.com.

JULY

- 7-11** AHA National Homebrew Competition second-round entries due Cleveland, Ohio. Contact Caroline Duncker at (303) 447-0816 ext. 116 or caroline@aob.org.

MAY

- 1-July 14** Certificate Program in Malt-ing and Brewing Science, Rutgers University, New Brunswick, N.J. Contact Keith Wilson at (908) 932-9271 or ocpe@aesop.rutgers.edu.
- 3** National Homebrew Day. Contact the AHA at (303) 447-0816.
- 3** California Homebrewers Association Fest '97, Lake Skinner, Calif. Contact Terry Hale at (562) 908-9434 or terry@whittiermailing.com. For press calls contact John Thomas at (909) 676-2337 or jthomas@iinet.com.
- 3** 1997 Green Mountain Homebrew Competition, **AHA SCP**, Essex Junction, Vt. Entries due April 18. Contact Dave Gannon at (802) 879-1304 or dgannon@zoo.uvm.edu.
- 3** St. Paul Brewing Competition, **AHA SCP**, St. Paul, Minn. Entries due April 16. Contact Peter Aussenhus at (612) 291-8849.

12 Blues, Brews and Barbeque IV, **AHA SCP**, Lexington, Ky. Entries due July 8. Contact Ira Proctor at (606) 253-3924.

14-18 Short Course in Brewing, Oregon State University Extension Service, Corvallis, Ore. Contact Sandra Staehlin at (541) 737-3463.

17-19 **AHA National Homebrewers Conference and Festival**, The Great Lakes Homebrew Rendezvous, Cleveland, Ohio. Contact the AHA at (303) 447-0816.

20 Lunar Rendezbrew, **AHA SCP**, Seabrook, Texas. Entries due July 5. Contact Denise Livingston at (281) 286-7877 or rlivingston@ghg.net.

26 Ohio State Fair Homebrew Competition, **AHA SCP**, Columbus, Ohio. Entries due June 20. Contact Brett Chance at (614) 644-4126 or ohioexpocenter.com.

26 Oregon State Fair Amateur Beer Competition, **AHA SCP**, Salem, Ore. Entries due July 18. Contact Eric Munger at (503) 362-1728.

26-Aug. 2 Grain to Glass: The Boots-On Brewing Course, Woodland, Calif. Call the American Brewers Guild at (800) 636-1331 or abgbrew@mother.com.

25-27 10th Annual Oregon Brewers Festival, Portland, Ore. Call the hotline at (503) 778-5917 or <http://www.jhw.com/~jhw/brewfest>.

AUGUST

9 Beer & Sweat, **AHA SCP**, Cincinnati, Ohio. Entries due Aug. 9. Contact Robert Pinkerton at (513) 251-9754 or 102126.3315@compuserve.com.

9 Extract Extravaganza Club-Only Competition, **AHA SCP**, Pittsburgh, Pa. Entries due Aug. 4. Contact Brian Rezac at (303) 447-0816 ext. 121 or brian@aob.org.

9 Josephine County Fair Amateur Beers Competition, **AHA SCP**, Grants Pass, Ore. Entries due Aug. 7. Contact Hubert Smith at (541) 597-2142 or brewboy@magick.net.

10 Kentucky State Fair, **AHA SCP**, Louisville, Ky. State Fair entry form due July 5. AHA entry form and beer due Aug. 9. Contact Bob Reed at (502) 222-7439 or tobias@iglou.com.

16 Second Annual Antelope Valley Homebrew Competition, **AHA SCP**, Lancaster, Calif. Entries due July 20. Contact Carl Weyl at (805) 943-8302 or carlsbrew1@qnet.com.

23-24 The Great California Brews and Blues Festival, Santa Monica, Calif. Contact Steve Whitehead at (310) 328-8448.

SEPTEMBER

6 Fourth Annual Microbrewers Expo, Colorado Springs, Colo. Call (719) 473-0241.

19-21 The Greater Milwaukee Brew Festival, Milwaukee, Wis. Contact Glenn Helgeland at (414) 242-4810 or (888) 404-1454.

13 1997 Thunder Mountain Brew-Off, **AHA SCP**, Sierra Vista, Ariz. Entries due Sept. 5. Contact Paul Lachmanek at (520) 378-4290 or paulgl@primenet.com.

13 Second Dayton Beerfest, **AHA SCP**, Dayton, Ohio. Entries due Sept. 6. Contact Mark Schmitt at (937) 236-4857 or DRAFT97@juno.com.

24-29 Octoberfest Tour. Contact Beer Lovers Travel at (888) 277-2379 or 103612.3365@compuserve.com.

OCTOBER

2-4 Great American Beer Festival®, Denver, Colo. Contact the AOB at (303) 447-0816.

4 Minnesota Brewfest '97, **AHA SCP**, Minnetonka, Minn. Entries due Sept. 28. Contact Steve Platz at (612) 452-2444 or platz@cray.com.

11 Arizona State Fair, **AHA SCP**, Phoenix, Ariz. Entries due Sept. 19. Arizona residents only. Contact Sherry Pew at (602) 252-6771 ext. 304.

15-18 14th Annual Dixie Cup Homebrew Competition, Houston, Texas. Entries due Oct. 7. Contact Sean Lamb at (281) 992-5661 or slamb@ghgcorp.com.

18-19 Advanced Homebrewers Weekend Series, Woodland, Calif. Call the American Brewers Guild at (800) 636-1331 or abgbrew@mother.com.

25 Weiss is Nice Club-Only Competition, **AHA SCP**, Warrenville, Ill. Entries due Oct. 20. Contact Brian Rezac at (303) 447-0816 ext. 121 or brian@aob.org.

AHA SCP = American Homebrewers Association Sanctioned Competition Program.

The Calendar of Events is updated weekly and is available from the Association of Brewers: info@aob.org or <http://beertown.org> on the web.

To list events, send information to **Zymurgy** Calendar of Events. To be listed in **Zymurgy** Fall Issue (Vol. 20, No. 3), information must be received by June 23, 1997. Competition organizers wishing to apply for AHA Sanctioning must do so at least two months before the event. Contact Caroline Duncker at caroline@aob.org; (303) 447-0816 ext 116; FAX (303) 447-2825; PO Box 1679 Boulder, CO 80306-1679.

AMERICAN HOMEBREWERS ASSOCIATION • JULY - OCTOBER 1996 KUDOS • SANCTIONED COMPETITION PROGRAM

SECOND ANNUAL ARIZONA SOCIETY OF HOMEBREWERS OKTOBERFEST HOMEBREWING COMPETITION
Phoenix, Ariz., 88 entries. — Tim Thomason of Brandon, Fla., won best of show.

ARIZONA STATE FAIR
Phoenix, Ariz., 47 entries. — Tim Andrews of Flagstaff, Ariz., won best of show.

BENTON-FRANKLIN COUNTY FAIR
Kennewick, Wash., 63 entries — Rudy Prosser of Richland, Wash., won best of show.

BOEING EMPLOYEES WINE AND BEER CLUB OKTOBERFEST
Kent, Wash., 36 entries — Steve Hinkle of Tacoma, Wash., won best of show.

1996 COLORADO STATE FAIR
Colorado Springs, Colo., 86 entries — Mark Groshek of Denver, Colo., won best of show.

COUG HOMEBREW CONTEST
Pullman, Wash., 10 entries — Susan Manthey of Hayden Lake, Idaho, won best of show.

CURE FOR WHAT ALES YOU
Cambridge, Md., 75 entries — Jeff Goyette of New Boston, N.H., won best of show.

1996 ELIZABETHAN HOMEBREWING COMPETITION
Novato, Calif., 48 entries — Glenn Basden of Lodi, Calif., won best of show.

EVERGREEN STATE FAIR
Monroe, Wash., 202 entries — Rich Tremaglio of Marysville, Wash., won best of show.

FIRST DAYTON BEERFEST COMPETITION
Dayton, Ohio, 84 entries — Leo and Linda McNeas of Trotwood, Ohio, won best of show.

FIRST WHEATLAND CHARITY HOMEBREW COMPETITION
Scottsville, N.Y., 33 entries — Chuck and Wendy Bryant of Scottsville, N.Y., won best of show.

GRAND BREW FEST '96
Grandview Heights, Ohio, 48 entries — Ron Phillips of Columbus, Ohio, won best of show.

SECOND ANNUAL GREAT NORTHWEST HOMEBREW COMPETITION
Seattle, Wash., 168 entries — Alex and Andy Gross of Seattle, Wash., won best of show.

1996 HARVEST MOON BEER FESTIVAL
Regina, Saskatchewan, Canada, 88 entries — Remi Cote of Regina, Saskatchewan, Canada won best of show.

HOMEBREWERS OUTLET PALE ALE COMPETITION
West Palm Beach, Fla., 40 entries — Mel Thompson of West Palm Beach, Fla., won best of show.

HOPS-BOPS
Cherry Hill, N.J., 132 entries — Bob Grossman of Haddonfield, N.J., won best of show.

JERSEY JIM'S HOMEBREW CONTEST
Hillsborough, N.J., 21 entries — Brian Beckmann of Andover, N.J., won best of show.

MID-SOUTH FAIR
Memphis, Tenn., 85 entries — Doran Moranville of Memphis, Tenn., won best of show.

MINNESOTA BREWFEST 1996
Minnetonka, Minn., 327 entries — Brian Johnson and David Weiler of Fargo, N.D., won best of show.

MINNESOTA RENAISSANCE FESTIVAL
Shakopee, Minn., 106 entries — First-place winners: Mark Glewe of Prior Lake, Minn., for mead; Gary Sinnen of Victoria, Minn., for cider; Herb Bromenshenkel of Bemidji, Minn., for continental beers; Dave Norman of Waseca, Minn., for assertive and eclectic ales; Steve and Joy Martin of Owatonna, Minn., for ambers; Wayne Theuer of Blooming Prairie, Minn., for dark beers

MONTGOMERY COUNTY FAIR HOMEBREW COMPETITION
Gaithersburg, Md., 184 entries — Christopher Redlack of Rockville, Md., won best of show.

MUSIC CITY BREW OFF
Nashville, Tenn., 115 entries — Richard Mayer of Hazelhurst, Wis., won best of show.

OREGON STATE FAIR
Salem, Ore., 115 entries — Mark Norbury of Salem, Ore., won best of show.

PALM BEACH DRAUGHTSMEN VIENNA FEST
West Palm Beach, Fla., 10 entries — Dan Oliver of West Palm Beach, Fla., won best of show.

SECOND ANNUAL HIGH DESERT BREWERS ASSOCIATION & EASTERN IDAHO STATE FAIR HOMEBREW COMPETITION 1996
Blackfoot, Idaho, 84 entries — Mark Langlois of Idaho Falls, Idaho, won best of show.

THIRD ANNUAL SIN CITY SUDZERS HOMEBREW COMPETITION
Sheboygan, Wis., 74 entries. — Bob Hoffman of Sheboygan, Wis., won best of show.

TAMPA BAY BEERS ULTIMATE ALTBIEER COMPETITION
Tampa, Fla., 19 entries — Tim Thompson of Brandon, Fla., won best of show.

1996 THUNDER MOUNTAIN BREW-OFF
Sierra Vista, Ariz., 96 entries — Mike Keers of Hereford, Ariz., won best of show.

WESTERN WASHINGTON FAIR BEER COMPETITION
Puyallup, Wash., 217 entries — Tom Strand of Tacoma, Wash., won best of show.

WINFIELD BEER IN A BOX HOMEBREWING COMPETITION
Winfield, Ill., 81 entries — Marc Kullberg of Lisle, Ill., won best of show.

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You Call Yourself a Craft Brewer?

According to a report by Institute for Brewing Studies Director David Edgar, there has been confusion over the years as to what distinguishes the term "craft brewer." In 1993, the "craft-brewing industry" encompassed all companies selling all-malt or micro-style beer as their flagship product, including micro-breweries, regional specialty breweries, brewpubs and contract brewing companies. Since then, however, a more specific definition has been established by the Institute.

Craft brewers must:

- ✓ possess a Federal Brewer's Notice.
- ✓ brew at least 90 percent of their beer using no more than 10 percent adjunct (rice, corn or refined sugar), except for some styles of strong Belgian ale, which may contain as much as 20 percent adjunct.
- ✓ not use artificial colors, flavors or any processing aids that become a part of the finished product.
- ✓ not be more than one-third owned by another company of greater than \$50 million revenue that is not itself a craft brewer.

Without the rigidity of the German *Reinheitsgebot*, these criteria ensure anyone called a "craft brewer" will be making natural all-malt beer. The last provision is to assure some level of independence in the craft-brewing trade, and that such companies remain relatively small to preserve their own standards of quality.

The former inclusive term "craft brewers" will be replaced with "domestic specialty brewers" to avoid confusion. As for the other terms, they will remain the same: a micro-brewery produces and sells less than 15,000 barrels of beer annually; a brewpub is a combination restaurant and brewery that sells at least 50 percent of its own beer on-site; a regional brewery produces and sells between 15,000 and 2 million barrels annually; a regional specialty brewery is a regional brewery whose flagship brand is an all-malt or specialty beer; and a contract brewing company hires a brewery to produce its beer. (Institute for Brewing Studies, December 1996)

THE BIG WORLD OF BEER

Cannabis Beer Coming Soon?

Swiss brewery Wadu Brau is the first commercial brewer of a beer made from cannabis, or marijuana. The concoction is legal in Switzerland, has 5.8 percent alcohol by volume and is purported to have the

taste of cannabis without its intoxicating effects. This claim is being investigated by U.K. authorities because Wadu Brau is discussing plans to export the product. (*Beverage Alcohol Market Report*, Aug. 26, 1996)

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Contest is for AHA members only. Entries are due by June 1, 1997. Send your entry, complete with your membership number, name, address and phone number to Zymurgy Contest Corner PO Box 1679 Boulder, CO 80306-1679. Watch for the "Ode to Homebrew" Poetry Contest in the Fall issue of *Zymurgy*.



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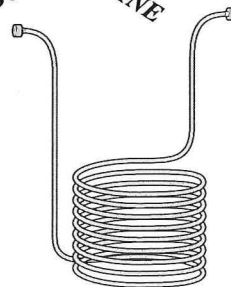
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Brew News world. One million people descend on Munich in the first weekend, usually in the last week of September. They consume about 6 million liters of beer during the event, 807,000 chickens, 510,000 pork sausages, 64,500 knuckles of pork, 80 oxen, 33 venison and 157 tons of fish. Some 12,000 people are employed for the event, a large percentage presumably to clean up. (*Brewer's Guardian*, September 1996)

Hebrew Brew Jug Discovered

Daniel Rothman, a researcher of ancient Jewish culture, reports that archaeologists have found a beer jug in an area just outside Jerusalem dating back about 3,000 years. It has its own built-in filter for separating liquid from solids in the ancient brew. This design is somewhat similar to Egyptian and Sumerian beer vessels that required a long drinking tube, or straw, for that purpose. (Personal communication with Daniel Rothman)

TECHNOTES

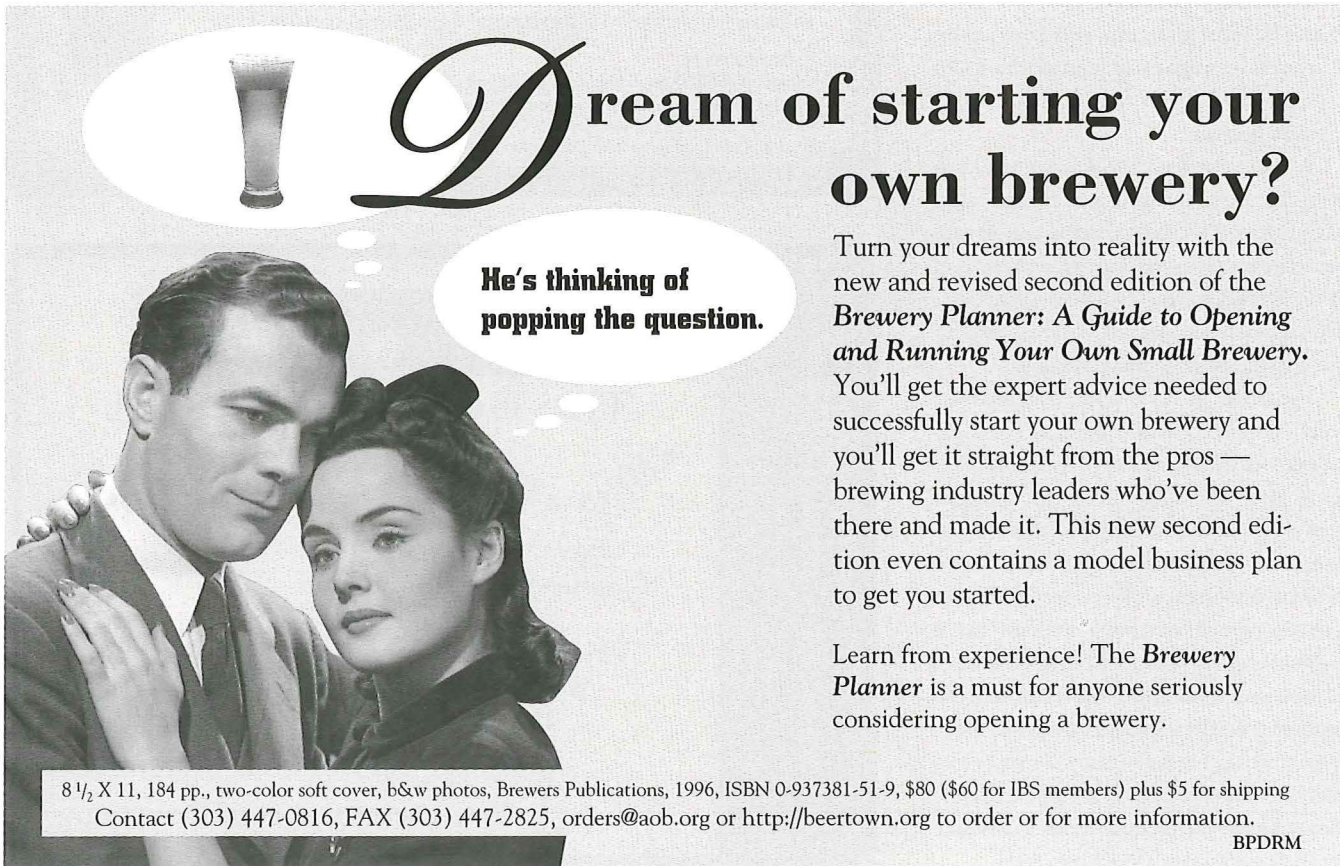
Cooperage Oak Hard to Find

For many styles of beer such as India pale ale where a woody or oaky flavor is desired, brewers often ferment or condition their beers in oak casks. Traditionally used in commercial brewing and distilling, wood casks were not always intended to impart flavor to the beer. In fact, German and British brewers nearly always line their casks with brewer's pitch, or paraffin, to prevent this. While the proper varieties of oak have always been readily available to commercial and homebrewers alike, this may change in the next few years. Coopers, or makers of wooden casks, are having to pay more for the prime raw material. Many cooperages recondition old casks to make new ones, and occasionally these find their way into the hands of a homebrewer, but with recent demand for oak to

brew real ales "from the wood," sources are becoming scarce.

The best source in this country is northeastern American oak, but unfortunately, according to Terry Foster in the *Classic Beer Style Series' Pale Ale* (Brewers Publications, 1990) it is unsuitable for making unlined casks. More resinous than European varieties, it tends to leach undesirable tannin compounds into beer, causing harsh off-flavors. Even after several treatments with a solution of soda ash or some other hot caustic cleanser, American oak gives an astringent flavor to conditioning beer. More suitable, but usually much higher priced casks are made of German, English or Polish oak. Another alternative would simply be to use a small amount of oak chips in glass or steel vessels. This also avoids the problem of casks harboring unwanted microflora in the porous surfaces of the unlined wood.

A recent study found evidence that oak trees which grow more slowly produce better wood for cask making. This makes them highly coveted by the brew-



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8 1/2 X 11, 184 pp., two-color soft cover, b&w photos, Brewers Publications, 1996, ISBN 0-937381-51-9, \$80 (\$60 for IBS members) plus \$5 for shipping
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ing and distilling industries. Natural seasoning of the wood makes it better for brewing than kiln-drying because certain microscopic fungi have a chance to beneficially alter the wood's composition. (*Journal of the Institute of Brewing*, Vol. 102, No. 4, 1996, p.303)

Plastic in My Beer?

Polyclar™, or PVPP, a colloidal clarifier derived from the plastic PVP, may have more uses than you realize. Used by the food and beverage industries as a clarifier, stabilizer and antioxidant, the product works by mechanical action, not by adsorption or electrostatic attraction as is commonly thought. Polyclar requires vigorous and prolonged stirring in the medium being clarified, but works more quickly and efficiently than most available clarifiers. The individual granules of Polyclar have pores, like tiny sponges, into which polyphenols and other haze-causing compounds fit, and then drop out of solution. When used in larger amounts than the standard one to two teaspoons per five gallons, Polyclar can strip away flavor and pigment. It has been used by winemakers to produce "white Zinfandel" simply by removing much of the pigment and heavier flavors from standard Zinfandel.

A similar, larger-grained version of the product is commonly used by German brewers in accordance with the *Reinheitsgebot*, the Bavarian purity law, because the substance is filtered out after use and is therefore not technically an additive. The clarity of the crystal weisse style benefits a great deal from this treatment.

So why not just filter, if you have to filter the Polyclar out anyway? Because beer can still throw a chill haze if it isn't filtered at a low enough temperature. Polyclar assures a haze-free beer before filtering. For homebrewers, if the prospect of putting plastic in your beer is a bit unnerving, the manufacturers claim it is nontoxic. (Ken Fay of the Home Beer, Cheese and Wine Making Shop and Allen Agner of L.D. Carlson. For more information see "The Haze Maze" by Jeff Mellem, *Zymurgy* Winter 1995, Vol. 18, No. 5.)

Eco-Friendly Barley

Recent efforts to clean up barley growing and malting methods have shown the added expense is worth it – minimal use of fungicides, pesticides and processing aids result in better quality barley. The production of malting barley grown under a contract system obliges the farmer to apply no more than the absolute minimum quantities of fertilizer, and to use chemical pesticides only when necessary under the documented supervision of accredited independent

specialists. Also, the use of such barley helps give malting and brewing companies a more environmentally friendly public image, which can bring considerable commercial benefits. Several commercial breweries have produced organic beers, so organic grain is likely to become more accessible to homebrewers. (*Brauindustrie*, 1996, 81(1), pp. 21-22)

Amahl Turczyn of Boulder, Colo., a homebrewer since 1985 and professional brewer since 1995, is finishing his master's in English at the University of Colorado at Boulder.

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Lager (from page 23) grandfather's era died without ever recording and passing along methods they could not be certain would ever again have a commercial use, he said.

Not all of the record was obliterated or kept a closely guarded secret, as with the major brewers. Fix researched texts that had widespread circulation in their day. *American Handy Book of the Brewing, Malting and Auxiliary Trades*, published in 1908 by the Wahl-Henius Institute of Chicago, can be found in the public libraries of many major cities. Less well-known today, but a cornerstone of its time, *Brauerei Betriebslehre*, written by A. Zimmermann and published in Buffalo in 1904, echoed much of what Fix found in Wahl-Henius. A condensation of those texts emerged from Prohibition with the publication in 1933 by the now-defunct National Brewers Academy in New York of *Practical Points For Brewers*.

The Master Brewers Association of the Americas, with headquarters in the Milwaukee area, released *The Practical Brewer* in 1946 and A.L. Nugey followed with *Brewers Manual*, published by Jersey Print Co. in 1948.

Fix pieced together a picture of brewing from what the texts said about the predominant methods of brewing lager beer. Beginning about 1840, German brewers immigrated to the United States in significant numbers. The incoming German population continued to ebb and surge as a result of European upheaval throughout the last half of the century.

The brewers had come with the technique and the yeast cultures for making lager beer and had traveled with what would become their customer base. While it took about a decade for lager to take hold, by the 1870s the style had relegated the ales and porters of the Yankee drinking public to specialty status.

Much as a perfectionist brewer might have liked working with the grains and hops of his native country, practicality and economy dictated using American raw materials. The six-row American barley malt on hand, however, was much higher in protein than its two-row Bavarian cousin, and when brewers attempted to lager their beer they discovered the development of haze and phenols.

★ George Fix's ★ Pre-Prohibition Pale Lager

Ingredients for 5 U.S. gal (19 L)

- 8 lb pale malt (3.63 kg)
- 2 1/3 lb flaked maize (1.06 kg)
- 2 oz Crystal, Liberty, Mt. Hood or Tettnanger hops (57 g) (75 min.)
- 2 oz Hallertauer, Saaz or Mittel-früh hops (57 g) (60 min.)
- American or German lager yeast
- 1/2 oz Hallertauer, Saaz or Mittel-früh hops (14 g) (dry, secondary)

- Original specific gravity: 1.060 (15 °P)
- Final specific gravity: 1.014 (3.4 °P)
- Alcohol: 6.25% by volume (5% by weight)

Bring 3 1/4 gallons (12.3 L) of water and the pale malt to 122 degrees F (50 degrees C) and hold for 30 minutes. Raise the mash temperature to 140 degrees F (60 degrees C) and stir in flaked maize. Hold for 15 minutes. Bring the temperature to 158 degrees F (70 degree C) and hold for 30 minutes.

To sparge, add about 3 1/4 gallons (12.3 L) of water at 176 degrees F (80 degrees C) and recirculate until the wort runs clear. Collect 5 1/2 gallons (20.8 L) in the brew kettle.

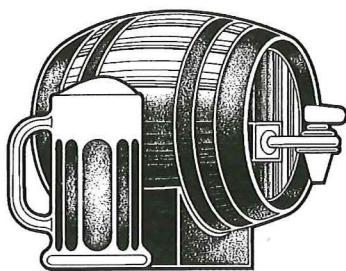
Boil for two hours or until the liquid volume is reduced to five gallons (19 L). Add domestic hops 45 minutes into the boil, "noble-type" hops 60 minutes into the boil.

Use any of the American lager yeast strains. Weihenstephan lager or other German strains also are acceptable. Ferment at 50 degrees F (10 degrees C) for 10 to 12 days or until final gravity is achieved. Dry hop with one-half ounce imported hops in the secondary. Lager at 32 degrees F (0 degrees C) for at least six weeks.

Filter at 3 to 5 microns. Increase dissolved carbon dioxide to 2.5 volumes.

Q: Where can I learn more about the practical & scientific aspects of the brewing process?

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Sessions on industrial yeast biology will also be held Monday, August 4, 1997 at SIM's Annual Meeting, contact the Society for Industrial Microbiology for more details, T: 703/691-3357, F: 703/691-7991, E: info@simhq.org or visit our website at www.simhq.org.

★ Jeff Renner's ★
"Your Father's Mustache"
 Classic American Pilsener

Ingredients for 5 U.S. gal (19 L)

- 7 lb American six-row malt (3.18 kg)
- 1 3/4 lb flaked maize (0.79 kg)
- 1 oz Cluster hop pellets, 7.5%
alpha acid (28 g) (60 min.)
- 1/2 oz Styrian Goldings hop pellets,
5.2% alpha acid (14 g)
- Yeast Culture Kit Co. New Ulm
Lager yeast

- Original specific gravity: 1.048
- Final specific gravity: 1.016
- IBUs: 25

Renner treated nine gallons (34 L) of water to achieve a calcium concentration of 60 ppm.

Dough-in 8 1/2 quarts (8 L) of water at 136 degrees F (58 degrees C) for a 122-degree-F (50-degree-C) protein rest for 30 minutes. Add three quarts (2.84 L) boiling water to raise the temperature to 140 degrees F (60 degrees C) for a 15-minute saccharification rest. (The creation of the body and sweetness profile of this beer will begin here, Renner says.) Raise temperature to 158 degrees F (70 degrees C) for a 45-minute saccharification rest. Raise temperature to 169 degrees F (76 degrees C) for a 10-minute mash-off.

Using an insulated Zapap lauter tun, Renner collected seven gallons (26.5 L) of remarkably clear wort with minimal recirculation.

Add the Clusters for the duration of the boil and half the Styrian Goldings for the last 10 minutes. Renner lets his wort settle for 15 minutes before force cooling during which he adds the remainder of the Styrian Goldings.

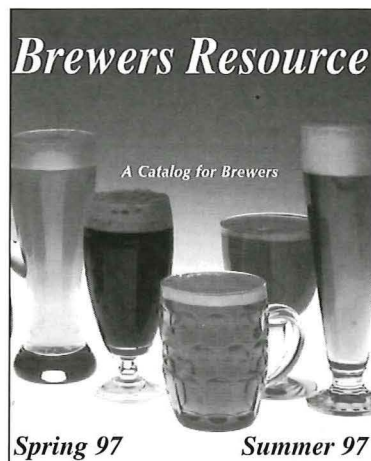
He chilled the wort to 50 degrees F (10 degrees C) in a Michigan snowbank.

Renner fermented between 50 and 52 degrees F (10 and 11 degrees C) for 12 days. Lager in secondary at 33 degrees F (1 degree C) for seven weeks.

Keg and condition at 38 degrees F (3 degrees C) at 10 psi. Dispense between 42 and 44 degrees F (6 and 7 degrees C).

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*"The bitterness of poor quality is remembered
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Lager None of the texts points specifically to how these brewers settled on adjuncts, primarily corn, rice and wheat, but it seems clear they might already have been components in the ale-making cottage industry. Whether by trial or error, brewers worked to find the level of adjuncts that solved their problems without compromising the product.

While rice provides simple sugars for conversion during fermentation, it lends nothing in the way of flavor to the finished beer. The pre-Prohibition brewers found corn lent a distinct, grainy sweetness that could be balanced by the higher Pilsener-style hopping rates. This they achieved by combining imported Hallertauer, Saaz or Mittelfrüh with the blunt bittering of the domestic Cluster hops widely used at the time.

From historical sources, Fix gleaned this became the most popular beer in America, the working model for the major brewers we know today and which, Fix would say, they adulterated. He goes so far as to call the turn-of-the-century America's Golden Age of Lagers.

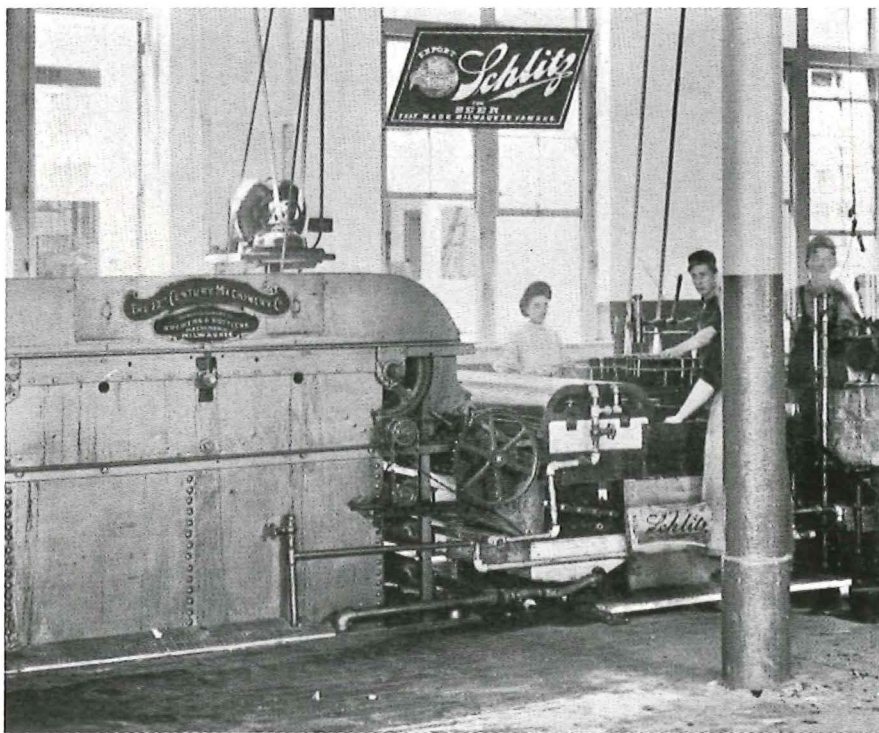
With a college background in history, homebrewer Renner was attracted to the soundness of Fix's scholarship. Renner was

as much a part of the early homebrewing revolution as Fix, having started brewing in 1973 and switching to all-grain in 1980. Renner also had a vivid recollection of the beer he first sampled as a boy growing up in Cincinnati in the 1950s.

Following Fix's published recipe, with a few changes, Renner produced "Your Father's Mustache," what he calls a classic American Pilsener. Renner's batch included a grain bill of 80 percent American six-row malt and 20 percent flaked maize. He hopped with Cluster throughout the boil, Styrian Goldings for the last 10 minutes and a steeping period, and fermented with a lager yeast from Yeast Culture Kit Co.

"My original reason for doing it was to see what the beer was like, to recapture the beer of my youth, but also the romance of the beer my grandfather might have gotten at a tavern with a free lunch," Renner said. "What I got was what I surmised to be the predominant style of the day. More than that, it was a great-tasting beer."

Del Lansing, owner of Triangle Homebrewing Supply in Philadelphia, agreed with Renner. Lansing had come to homebrewing with the pleasant aftertaste of the beers of his



The Jos. Schlitz Brewing Co. in Milwaukee, Wis., was in operation between 1849 and 1981. The interior of the bottlehouse was photographed in 1903.

★ Harry's ★ Prohibition Lager

This beer, from Manayunk Brewing Co. in Philadelphia, is the first known example commercially available. The recipe was formulated by brewers Tom Cizauskas and James Brennan. They've scaled down the recipe for homebrewers.

Ingredients for 5 U.S. gal (19 L)

- 7 lb six-row American lager malt (3.18 kg)
- 1 lb flaked maize (0.45 kg)
- 10 oz dextrin malt (283 g)
- 6 oz caramel malt (170 g)
- 1/4 oz black malt, finely ground (7 g)
- 4/5 oz Spalt hops, 2.4% alpha acid (23 g) (first wort hop)
- 3/5 oz Liberty hops, 4.5% alpha acid (17 g) (60 min.)
- 1 oz Liberty hops, 4.5% alpha acid (28 g) (20 min.)
- 1 1/2 oz Spalt hops, 2.4% alpha acid (43 g) (five min.)
- 1 oz Spalt hops, 2.4% alpha acid (28 g) (finish)
- Wyeast No. 2206 Bavarian lager liquid yeast culture

- Original specific gravity: 1.050
- Final specific gravity: 1.012
- IBUs: 38 to 42

Boil brewing water the night before to soften. Mash-in at 130 degrees F (54 degrees C) and hold for 30 minutes. Increase temperature to 152 degrees F (67 degrees C) and hold for two hours. Mash-out at 168 degrees F (76 degrees C).

Add the finely ground black malt prior to sparging to retard oxidation in the finished beer. The malt contributes no noticeable color to the finished product. Add the first wort hops while transferring the sweet wort to the boiling kettle.

Ferment at 48 degrees F (9 degrees C) for eight days. Transfer to secondary and ferment another eight days at 48 to 54 degrees F (9 to 12 degrees C). Lager five weeks at 34 degrees F (1 degree C).

★ Del's Classic ★ American Pilsner

Del Lansing so believes in the pre-Prohibition lager style he created an all-extract and a partial-mash recipe for his customers at Triangle Homebrewing Supply.

Ingredients for 5 U.S. gal (19 L)

- 2 4-lb cans Premier Reserve Cream Ale hopped malt extract (3.63 kg)
- 5 1/2 HBUs "noble-type" hops (Hallertauer or Saaz) (30 min.)
- 1/2 oz "noble-type" hops (14 g) (dry) Wyeast No. 2124 Bohemian lager liquid yeast culture
- or
- 3 lb six-row malted American barley (1.36 kg)
- 2 lb flaked maize
- 6 lb light malt extract syrup (2.72 kg)
- 7 1/2 HBUs "noble-type" hops (Hallertauer or Saaz) (60 min.)
- 7 1/2 HBUs "noble-type" hops (30 min.)
- 1/2 oz "noble-type" hops (14 g) (dry) Wyeast No. 2124 Bohemian lager liquid yeast culture

For the all-extract version, boil as much of the five-gallon volume as your equipment allows to minimize wort darkening.

For the partial mash, put barley and flaked maize in a sparging bag in your brew kettle. Add 168-degree-F (76-degree-C) water until mash temperature reaches 158 degrees F (70 degrees C). Maintain temperature until an iodine test indicates starch has been converted to sugar. To do this, place a teaspoon of mash liquid on a white dish then put a drop of iodine on the sample. If iodine turns black, continue mashing. If iodine remains amber, place the grain bag in a colander and sparge with a quart of 165-degree-F (74-degree-C) water. Add malt extract to liquid and proceed with the boil.

Chill wort, pitch lager yeast and ferment at 50 degrees F (10 degrees C) for seven to 10 days. Transfer to a secondary, add hops and maintain 50-degree-F (10-degree-C) temperatures for 10 days. Lager near 32 degrees F (0 degrees C) for six to eight weeks.

youth fixed in his memory. The mistake big brewers made, Lansing said, was not in using but abusing their corn and rice adjuncts.

"This was a beer that was easy to make, pale golden and clear with full body and hop presence that went far beyond what was commercially available," Lansing said. "This was the beer the big brewers could have been making, but didn't."

When Peter Garofalo, a fellow homebrewer and beer judge, tasted Lansing's Classic American Pilsner (Lansing says he

deliberately uses the Americanized spelling of Pilsener) also was reminded of the very first sip of his father's beer in the early 1960s.

Garofalo has, since the beginning of 1996, made five 10-gallon (38-L) batches of what he calls Red, White and Blue Pilsner. Each batch contains 15 pounds of Schreier six-row malt and three pounds of flaked maize. To his good fortune, he said, a local homebrew supplier in Syracuse often has the Mittelfrüh hops Garofalo prefers to pair with Hallertauer. Garofalo

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- DeWolf-Cosyns (Belgium)

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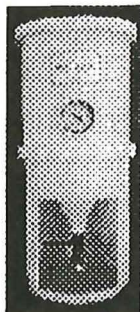
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Lager finishes during the secondary fermentation (with Wyeast No. 2124) by dry hopping with Mittelfrüh.

"I wasn't really after history in brewing this beer," he said. "What I was after was good beer. And I'll tell you something about the style. It's as pale as [light American lagers] so people aren't put off by the color, and then you taste it. It's so fresh and so alive. This is every bit as flavorful as ales with all the advantages of lager. This is the beer that pushed ales out in this country, and with good reason."

Pushing ales out again, in addition to being undesirable, will likely be an impossibility, according to Bill Moeller, a master brewer from Boyertown, Pa. In 50 years of commercial brewing, Moeller has served the two predominant brewing orthodoxies of 20th-century America.

Moeller brewed for Schmidt's and Ortlieb's in Philadelphia, two regional brewers eventually squeezed out by the larger national brands. He recently has turned to brewing and consulting for craft brewers, including Brooklyn Brewing Co.

in New York City, Dock Street in Philadelphia and a handful of others. Those breweries, he said, are no more likely to brew with corn than the major brewers are to revert to their historical recipes. A fourth-generation brewer, Moeller said the overall ignorance of history will cheat people out of good beer.

"You can brew some very fine beers with adjuncts," Moeller said. "We are getting to the point where beers have to be so off the wall to sell. I'm really not impressed with the beers that have the kitchen sink in them. People should realize the Pilsener style is one of the hardest beers to brew."

Rhett Rebold, the AHA 1995 Homebrewer of the Year who lives on Maui, became a soldier for the style after entering his Old Richmond Pre-Prohibition Lager last year in the Capital District Open, a homebrew competition in Washington, D.C.

For want of a category, Rebold entered his lager, made with 22 percent flaked maize in the grist, as a specialty beer. It's a beer he describes as a cross between Carlsberg Elephant and Rolling Rock. One judge praised its clean mouthfeel and its clear German influence.

"The other judge said, 'What is this beer doing in this category?'" "I still ended up taking a third place," Rebold said.

At the AHA Nationals a year ago, Garofalo got as far as first place in the first round of judging after entering his beer in the German Pilsener category. The corn doomed him, he said.

After months of inquiry on the Internet, Renner said he found scant interest among homebrewers and no one who admitted to brewing the style commercially. Renner is disappointed, but not at all surprised.

"People have been homebrewing for nearly 25 years in reaction to [light American lagers]," Renner said. "The last thing they want to do is start making beer that is anything like the kind [the majors] make. But why throw the baby out with the bath water? I really think there would be a market for pre-Prohibition lagers with 50 and 60 original gravities – big, strong, brawny beers."

Cizauskas is the first commercial brewer to bank on it. He has never shied from telling customers his lighter ales, including the sparkling ale, contain a corn component. He

is fond of reminding purists that the Belgians, whom the critics love so much, use sugar, fruit and spices as adjuncts. And British brewers, like Fuller's ESB, that helped launch the homebrewing era have long contained fermented corn syrup. In spite of *Rheinheitsgebot*, the best wheat beers in the world come from Germany.

"What Renner, Fix and, yes, Cizauskas are saying is that corn is a good thing," Cizauskas said. "People started brewing with corn for a reason. Taste is the bottom line."

"When I train our people at the brewery I tell them the least important thing for them to know is how the beer was made. The most important is to describe to customers how the beer tastes. If it tastes good, it's simple."

Garofalo has already brewed his pre-Prohibition Red, White and Blue for the 1997 AHA Nationals in May. Historical significance has won for the style a subcategory in competition, but only brewing it will secure its place, he said.

"I liken it to porter," Garofalo said. "Twenty years ago there were no commercial examples in this country. Now we make many of the best porters in the world. Homebrewers revived porters. I see no reason why homebrewers can't revive pre-Prohibition lagers."

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- Mark Lisheron is a reporter for the Milwaukee Journal-Sentinel. His monthly column in the newspaper, *First Draught*, is a consumer's guide to good beer. Lisheron has been homebrewing for more than three years and has not yet used corn as an adjunct.
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Soda (from page 29) He has also tried carbonating juices – “It’s good with cherry cider, and apple cider is pretty tasty” – but Delano is more interested in water.

We’ve Only Just Begun

With homemade sodas there are no limits. “Anybody can add their own little touch to give it personality,” says Bruner.

Asked how she decides what flavor of soda to make, Goldman responds, “I ask

myself, ‘What kind of spice is in the house?’” If she needs to buy spices, she goes to stores that sell in bulk and move the spices quickly. Not only can one save a lot of money, but the spices will likely be fresher.

Goldman recommends shopping for fruit juice concentrates, such as guava, at Latino markets. “A lot of them have pictures, so you don’t have to read Spanish,” she says. Asian markets also can be good sources of ingredients. And there, it’s even less necessary to know Spanish.

An astonishing amount of experimentation has led Goldman to develop guidelines

Soda Flavor Extracts



The predominant player in soda flavors for homebrewers is Rainbow Flavors of Osage Beach, Mo. The company offers 12 flavors – root beer, birch root beer, sarsaparilla, passion

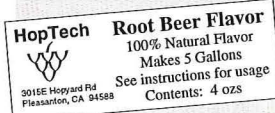
fruit, strawberry, ginger beer, ginger ale, cherry, cream, cola, orange and raspberry – that can be used alone or combined to put the individual’s stamp on soda. Rainbow’s Bob Bruner likes to work with natural flavors, and says every one of his flavors has “got some ‘natural’ in there.”

Sarsaparilla, says Bruner, was “the forerunner of root beer.” Sarsaparilla varies geographically because it’s made from local herbs and spices. Birch beer is an Eastern variation of root beer, and normally contains birch bark.

Root beer historically was made with sassafras root and oil of wintergreen, says Fred Czuba, wholesale manager at F.H. Steinbart Co. Root beer today is made from synthetic sassafras or safrole-free sassafras, which he says is to sassafras as decaf is to real coffee – “it ain’t the same.”

Cream soda is flavored primarily with vanilla.

Cola flavor comes from the kola nut, which grows on trees in Africa and the West Indies. Kola nuts contain 0.7 to 2.0 percent caffeine and small amounts of tannin and theobromine. The seeds are about an inch long, reddish brown or gray and have an aroma similar to nutmeg. Bruner says his cola extract is caffeine free and tastes “more like a Royal Crown.”



HopTech sells two proprietary root beer extracts. A four-ounce (118-mL) bottle of

Original Root Beer extract is designed to make a five-gallon batch. Owner Mark Garetz says his original extract is a fuller flavored, “micro-style” extract, while Root Beer No. 2 makes a “soda pop-type” root beer like Hires. A four-ounce bottle flavors 2 1/2 gallons (9.5 L) of soda. HopTech sells all-natural extracts containing no sassafras and no preservatives.

Brewers can buy small bottles of cola syrup at pharmacy counters. “It quiets nausea,” says Garetz.

In November 1996 the Northwestern Extract Co. started marketing Sprecher Root Beer Concentrate to homebrew shops. A one-gallon (3.8-L) jug is designed to be mixed with four gallons of water and force carbonated in a Cornelius keg. The result should taste just like the Sprecher Root Beer sold in Midwestern grocery stores. Because it contains sodium benzoate, the Sprecher concentrate can’t be carbonated by fermentation.

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Root Beer

This untested recipe is adapted from "Making Your Own Soda Pop" by Caroline Kitchen Riddle in *Early American Life*, August 1975, as discovered by Bob Gorman of Boston, Mass.

Ingredients for 2.5 U.S. gal (9.5 L)

- 3 tbsp ground sarsaparilla (44 mL)
- 1 tbsp sassafras* (14.8 mL)
- 1 heaping tbsp hops (15 mL)
- 1/4 tsp ground coriander (1.2 mL)
- 2 gal water (7.6 L)
- 1 1/2 cups honey (355 mL)
- 1/4 tsp wintergreen extract (1.2 mL)
- 1/4 tsp yeast (brewing, winemaking or baking) (1.2 mL)

*A component of sassafras, safrole, was found by the FDA to be carcinogenic. Safrole-free sassafras is available.

Place the sarsaparilla, sassafras, hops and coriander in an enameled or stainless-steel pot. Cover with water and bring to a boil. Reduce heat and simmer two hours, making sure the water does not all evaporate. Strain out solids and add the liquid to two gallons of water that has been boiled and cooled to lukewarm. Stir in honey, wintergreen extract and the yeast dissolved in two-thirds cup of warm water. Stir the mixture thoroughly and allow it to mellow for several hours. Siphon into a clean container before bottling.

for using new, and usually different, ingredients. "With herbs, boil them with the soda base, it pulls the flavor out. With garlic, it definitely pulls the flavor out," she says. "With peppers, I bring the peppers and soda base to a boil, then let the pepper steep. I don't like a cooked flavor. I like habañeros a lot, they have lots of flavor and aroma." Not to mention a scorching amount of heat. Like any good cook, Goldman uses several varieties of pepper in her pepper soda.

Because she and Feist are self-confessed garlicholics, it was natural for Goldman to make a garlic soda. She makes it the same way she makes ginger ale but uses less garlic than she does ginger — "one head


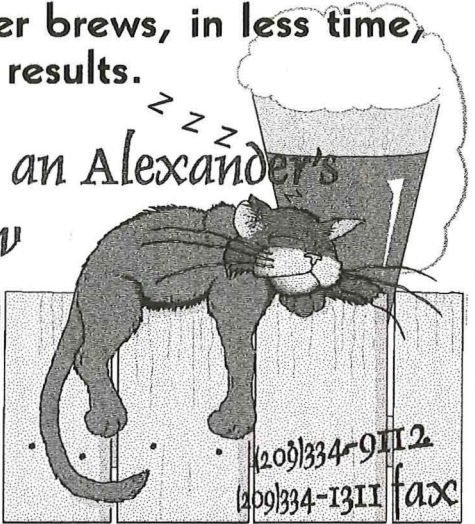
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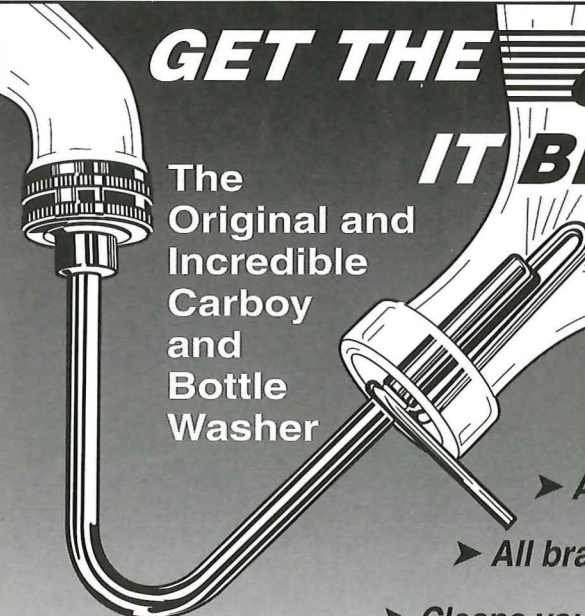



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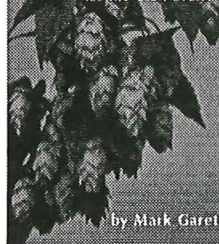
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Soda for five gallons should be plenty," she says. Perhaps less would be plenty for mere mortals.

To make coffee soda, Goldman and Feist made a half gallon (1.89 L) of highly concentrated coffee with at least four ounces (113 g) of beans in a French press, plunger-type coffee maker. They sugared it heavily, then chilled and carbonated it.

When formulating recipes remember that spice flavors often get stronger over time. Perhaps you can avoid an episode like Goldman's "garlic soda from hell," which tasted fine in the pot, but caused her nose to "overload" a few weeks later when she poured herself a glass.

Stuck On You

Soft drink flavors, especially root beer, can cling tenaciously to brewing equipment.

"Rubber and plastic can be a problem. Root beer's pretty potent. Even after cleaning a keg you can smell it," says Alan Beal, former head brewer at the Virginia Beverage Co., a brewpub in Alexandria, Va.

Like many brewers, Maura Conyngham, a brewer at the Frederick Brewing Co. of Frederick, Md., has dedicated hoses to her Blue Ridge Birch Beer. Soda flavors aren't thought to permeate stainless steel, but brewers frequently dedicate tanks to sodas, just in case.

"If you can afford it, dedicate a Corny keg to soda pop," says Rutledge. "All the flavors cling, but root beer is the worst. After

Cherry Cola

George Oberg
Portland, Oregon

Ingredients for 8 U.S. gal (30 L)

- 2 oz Rainbow Flavors cherry flavoring (59 mL)
- 2 oz Rainbow Flavors cola flavoring (59 mL)
- 6 lb sugar (2.72 kg)
- 2 lb honey (0.91 kg)
- 8 gal water (30 L)

Prepare according to basic method for kegged soda (see page 28).

"Hot-n-Chunky" Ginger Ale

Polly Goldman
Alexandria, Virginia

Ingredients for 5 U.S. gal (19 L)

- 1 large "hand" of fresh ginger root*
- 2 tbsp powdered ginger (29.6 mL)
(optional)
- garlic, chopped (optional)
- hot pepper, sliced (optional)
- 2 lb clover honey (0.91 kg)
- 2 lb cane sugar (0.91 kg)
- 6 oz lemon juice (177 mL)
- 5 gal water (19 L)

*Fresh ginger is plump and almost shiny. Old ginger is shriveled and sometimes moldy. Use the freshest ginger you can find and look for a root about the size of an average man's hand.

Peel the ginger and mince it in a blender or food processor. Bring one to five gallons of water to a boil. Add honey and sugar, stir until dissolved. Add fresh and powdered ginger and boil at least 10 minutes. Cool and add lemon juice. Strain soda through cheesecloth and pour into keg. Top off to five gallons. Chill, carbonate, enjoy.

Add a tiny bit of hot pepper water (bring pepper and water to a boil, steep and remove) or garlic (full boil with soda base) to accentuate and sharpen flavor.

This ginger ale tends to be cloudy, has bits of ginger floating in it and a lot more bite and less sugar than most commercial ginger ales. It is necessary to strain while filling the keg to avoid obstructing the dip tube with pieces of ginger.

several washings, there was still an herbal flavor in my keg."

Hot Tips for Cold Soda

Weidner recommends adding a half-pound (0.23 kg) of maltodextrin to a three- to four-gallon (11.36- to 15.14-L) batch of soda to increase its body. Honey is another excellent body and flavor enhancer. Rutledge

has substituted honey for half the sugar in his sodas. "It adds a little body and a different sort of sweetness, and the flavor adds a bit more complexity," he says. Rutledge plans to use two-thirds sugar and one-third honey in his next batch to lighten the flavor slightly.

The first time Lubar made soda, "I got this brilliant idea and used dextrose (corn sugar) instead of cane sugar. It tasted horrible — not too sweet." Lubar later met a brewer who had done the same thing to a five-gallon batch.

Sodamakers can augment extract flavors with fruits, herbs and spices. Rutledge suggests adding vanilla to root beer for a nice nose. Consider adding cinnamon, cloves, cocoa, coriander, fennel, ginger, grains of paradise, hops, lemon, licorice or lime to your next soda.

F.H. Steinbart Co. has developed a collection of spices called Brewer's Garden™. While primarily aimed at homebrewers, some Brewer's Garden items, ginger root, winter-green leaves, licorice root and Indian sarsaparilla, might prove useful in sodamaking.

According to wholesale manager Fred Czuba, the company hopes soon to have

safrole-free extract of sassafras for root beer-making — safrole was pronounced carcinogenic by the Food and Drug Administration in the 1960s — but doesn't recommend it. Nor does he recommend birch bark extract. Both ingredients are hard to work with and have a flat taste. According to Czuba, common sarsaparilla lends a bit of body and little else to root beer. He says the Indian sarsaparilla in the Brewer's Garden collection, while not the traditional sarsaparilla used in soda, has a spicy vanilla aroma.

Microbrewed Sodas

As a testament to the growing popularity of full-flavored, craft-brewed beverages, microbreweries are jumping on the soda bandwagon. According to the Institute for Brewing Studies of Boulder, Colo., about 10 percent of craft breweries that ship their products and 40 percent of brewpubs also manufacture sodas. Root beer, cream soda and birch beer are the most common types produced by craft brewers.

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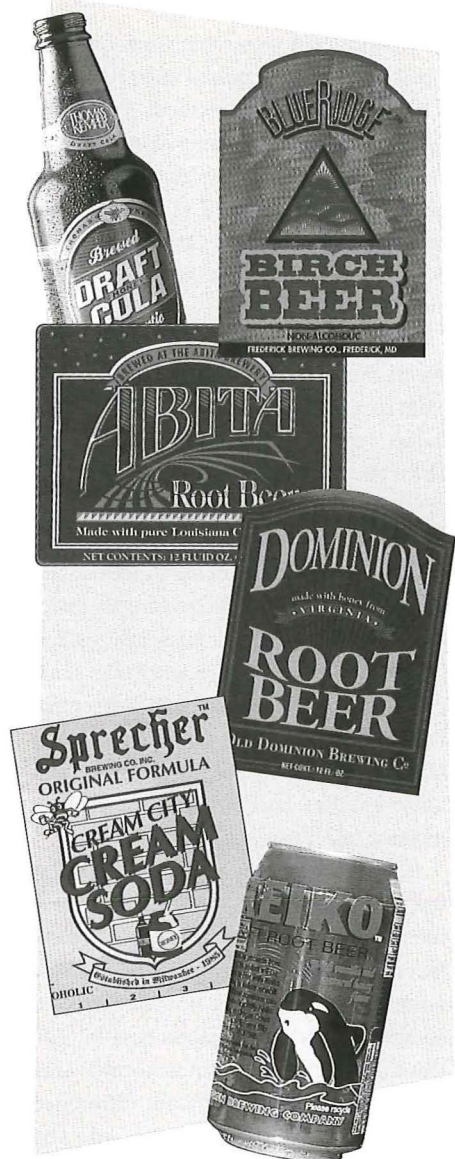
Jerry Bailey, president of Old Dominion Brewing Co. of Ashburn, Va., introduced Dominion Root Beer in August 1991 after reading an article on Sprecher in *The New Brewer*. Dominion Root Beer is made from wintergreen, vanilla and synthetic sassafras extracts. Old Dominion also uses yucca as a foaming agent, sugar, local honey, maltodextrin, cane sugar, sodium benzoate and citric acid.

The Abita Brewing Co. of Abita Springs, La., introduced Abita Root Beer early in 1995 and sells about 5,000 cases a month in an eight-state area. Abita Root Beer is made from flavor extract, sugar, water and a bit of phosphoric acid. Louisiana produces sugar, and president Jim Patton uses the local product to sweeten his soda. "It's seen as supporting the local economy," he says.

The Thomas Kemper Soda Co. spun off from the brewery of the same name in 1991. The Poulsbo, Wash.-based brewery now is a part of Pyramid Breweries in Seattle. Thomas Kemper Root Beer ingredients include honey and safrole-free sassafras bark extract. The company also makes Cream Soda, Birch Soda and Draft Cola.

Conyngham, a brewer at the Frederick Brewing Co. of Frederick, Md., uses a Maryland wildflower honey from a local apiary in her Blue Ridge Birch Beer. The soda's flavor varies slightly with honey deliveries. Honey gives Blue Ridge Birch Beer a hint of yellow color. Conyngham uses an all-natural flavor extract that is colorless except for a slight milkiness. "People are shocked that it doesn't have color, but the taste kind of wins them over," she says. "In Pennsylvania they call it white birch beer, it's very old-fashioned."

At Rogue Ales of Newport, Ore., head brewer John Maier has been making a draft root beer for the brewery's pub since 1992. Ingredients include vanilla and honey. Late in 1995 it was learned that Keiko, the killer whale that starred in the feature film "Free



Willy," would be moving to the Oregon Coast Aquarium right down the street from the brewery.

Rogue arranged for the soda, now called "Keiko Draft Root Beer," to be made and canned at a soda bottler. Part of the profits from the brew, which is sold up and down the West Coast, go to the Free Willy-Keiko Foundation for the rehabilitation of the whale, which suffers from several physical problems caused by living in a tank that was too small and warm.

Jim Dorsch is editor of *American Brewer* and senior editor of Michael Jackson's *Beer Hunter Online* (<http://www.beerhunter.com>). He writes about beer for *The Washington Post*, *Chicago Tribune*, *Drink and Market Watch*.

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Sips Ahoy (from page 33) will remove organic contaminants, especially when coupled with a carbon filter, which is the way most reverse osmosis (RO) systems are set up.

Activated carbon filters are widely available in many different models. Some have silver-treated activated carbon, which is intended to inhibit microbial growth on the filter material. Silver has not been accepted as a safe method for inhibition of microbial growth and, in fact, it is possible that

some of these models will result in unhealthy levels of silver in the outflow. Most activated carbon filter models incorporate some kind of size exclusion filter to reduce particulate material as well, and in some models particles as small as 1 micron are retained. This is smaller than many, but not all, microorganisms that may be living in the water or growing on the filter. The best way at present to limit microbial growth is to change the filter regularly – usually every three months.

A familiar filtration system is the pitcher-type carbon filter where the water runs over a filter as the pitcher is filled. The entire device is kept on the counter or in the refrigerator for drinking. If the pitcher is refrigerated, the filter is refrigerated, possibly slowing the microbial growth on it. Some models hold two or more gallons, but they are still a bit inconvenient for homebrewing purposes.

Faucet filters are almost as common as the pitchers, and are slightly more convenient to use. They mount at the end of your faucet, requiring minimal plumbing skills. The units have a switch, giving you a choice of filtered or unfiltered water. For the filters to work properly they must reduce the flow rate of the water. This increases the contact time with the carbon, increasing its effectiveness. Because of this, filling a five-gallon brewpot may take more patience than some people can muster. In the unfiltered setting, normal flow rate resumes, which is handy for general cleaning purposes. Some filters have a taller carbon unit, which will increase effectiveness.

Counter-top or under-sink units mount inline with your cold water supply and have their own faucet. The filter itself may be a foot tall and contain a much more effective amount of carbon. The flow rate may be somewhat faster than a faucet type, but still less than the maximum of your cold water supply. The only significant difference between the two is the location, size and longevity of the filter unit.

Whole house filtration of any kind treats water as it enters your home and provides several advantages you might want to consider:

- if you want filtered water at more than one sink in your home;
- if volatile organic contamination or fluorine is a concern;
- if your water is hard enough for mineral deposits in appliances to be a problem;
- if your water has a significant amount of iron, which leaves reddish stains on tubs and sinks.

If you use carbon filtration as water enters your home there is a sanitation concern. Chlorine and chloramines are added to the water supply to make sure the microbial counts stay low enough for safety. Before this procedure was implemented

people became ill and died because of water-borne diseases like cholera. This still occurs in third world countries with poor water supplies. If chlorine compounds are removed at the point of entry, it is possible that microorganisms may grow between there and the point of use. If you think you should use point of entry water treatment, ask the system manufacturer or dealer about sanitation. Most vendors recommend putting carbon filters at the sink or suggest a bypass if a whole house carbon filter is installed so chlorinated water can be flushed through the house plumbing.

Water Softeners

Water softeners replace the hard water minerals, calcium and magnesium, with sodium. While softening can reduce the calcium and magnesium content of the water, improve soap and detergent efficiency and washing performance, it probably will raise the sodium content to an undesirable level for homebrewing. These systems need constant additions of sodium salts. A sonic wave device on the market uses electricity to produce sonic pulses that are supposed to keep calcium salts in solution, thus reducing some of the problems associated with hard water. There is a theoretical basis for this method, but it has not been approved by governmental regulatory agencies. It is best to exercise caution with nonstandard treatment devices.

Deionization and Distillation

Many of the inorganic compounds we may want removed are charged molecules called ions. Because they have an electrical charge, they can be separated from water by adsorption to a column of material with the opposite charge. With two of these columns in series (first with one charge, then the opposite charge) most ions can be removed. Uncharged material will remain in the water, but if it also is run through an activated carbon filter many organics can be eliminated. Deionization systems are commonly used in hospitals

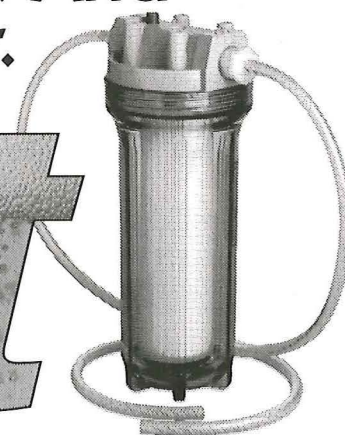
Model Brewing Waters

Brewing Center	Ion Concentration (ppm)					
	Ca ⁺⁺	Mg ⁺⁺	Na ⁺	CO ₃ ⁻⁻	SO ₄ ⁻⁻	Cl ⁻
Pilsen (Plzeň)	7	2	2	14	5	5
Munich	76	18	2	152	10	2
Vienna	200	60	8	120	125	12
Dortmund	225	40	60	180	120	60
London	52	16	99	156	77	?
Dublin	118	4	12	319	54	19
Burton	268	62	54	200	638	36

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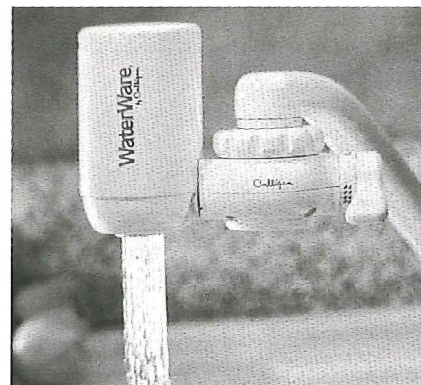
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Sips Ahoy and laboratories, but are essentially unavailable for home use. The relative complexity and expense required to regenerate the columns periodically make these systems unattractive to most people.

You may remember distillation from chemistry class, or your neighborhood bootlegger. Some home models now are available for water purification. These products are very good at separating water from ions and metals. However, because many organic, pesticide and herbicide contaminants have lower boiling temperatures than water,

these will be carried over to the "purified" water. Some devices may have a vent to help eliminate them, but if organics are your primary problem, you don't want to rely on distillation. Distillation could be used in conjunction with an activated carbon filter to help remove organics. Distillation is slow and the heating process uses significant amounts of electricity. Another drawback for homebrewers is the virtual elimination of ions. It may seem that having a clean slate would be wonderful – just add ions to duplicate any water in the world, but in practice

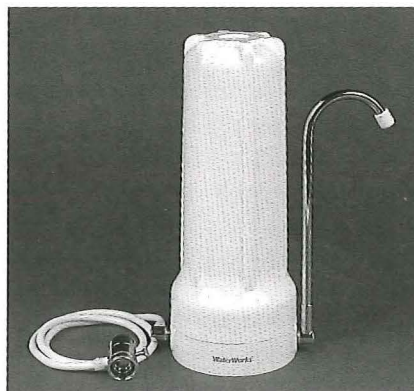


Culligan Water Wave model FM-1

this is difficult. You cannot add ions, you must use salts. Often these salts are not arranged for your convenience. For example, to obtain a desired magnesium concentration you may have to raise sulfate to an unpleasant level because the salt you add is $MgSO_4$, which forms both Mg^{+2} and sulphate ions when solubilized.

Reverse Osmosis

A number of home reverse osmosis systems are available. Most are under-sink arrangements consisting of two or three modules. These may include a prefilter to remove particulates, an activated carbon filter to remove organic and chlorine compounds followed by the reverse osmosis unit itself, which forces water through a semi-permeable membrane through which the salts or contaminants cannot pass. Reverse osmosis units are good at removing most inorganic contaminants, especially metals. Coupled with an activated carbon filter (which most are) they also eliminate chlorine



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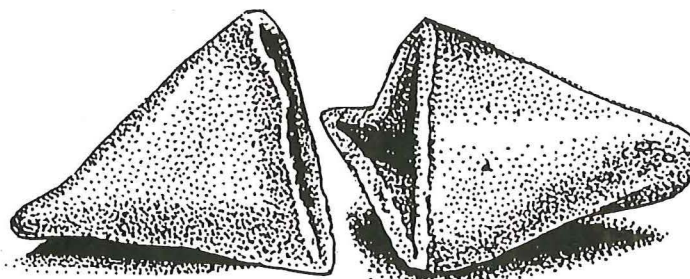
compounds, most organic compounds and trihalomethanes. If your water is significantly contaminated with inorganics (lead or iron), reverse osmosis might be your answer. Production is slow and there is some waste water produced. The water produced may be close to distilled and therefore too pure for brewing, requiring salt additions for good mash efficiency or certain flavor profiles.

Sanitization

Until recently, sanitation was primarily a concern for persons with reduced immune function, but *Cryptosporidium* contamination in municipal water supplies has raised concern for other people as well. Ultraviolet light is used at some municipal treatment plants, and in many purified water vending machines. Low level gamma radiation is used less frequently. Neither of these is very practical for home use. There are size exclusion filters available that claim to eliminate particles as small as one micron, which would eliminate most multicellular organisms and many unicellular organisms. Most yeast and many bacteria would be eliminated. These units are incorporated into the same housing as an activated carbon filter, so the rate of water production would be the same as for the sink-mount carbon unit. This method does not meet NST standards for sanitation. For special applications like yeast culturing, filtration through a 0.22-micron membrane may be done, but this is

Water Purification Systems Summary

FILTER TYPE	SUBSTANCES REMOVED	SUBSTANCES NOT REMOVED	BEST FOR USE WITH
carbon filter	simple organics	minerals (chlorine)	city tap water
distillation	all minerals	pesticides (complex organics)	not recommended for brewing water
reverse osmosis	all organics and minerals if used in conjunction with a carbon filter	—	well water or water not commercially processed



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Sips Ahoy not usually practical for more than one liter at a time. Because distillation involves boiling, it offers some protection from infectious agents, but it is not considered a safe way to routinely sanitize water.

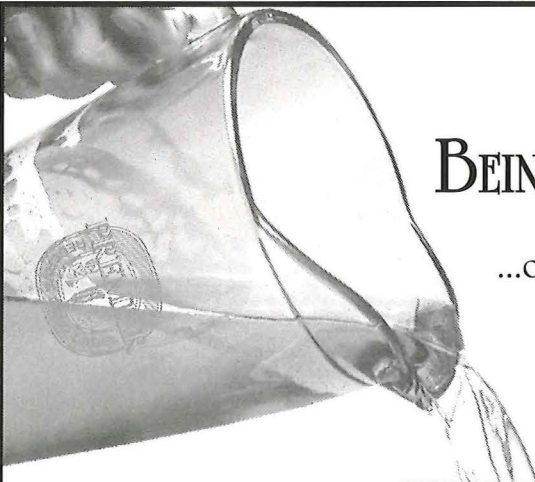
If you buy water for brewing, pay attention to its source. Water you buy may not be better than what comes out of your tap. This includes bottled water and water from vending machines. Check the label for the purification method used or source of the water. You may also want to ask the manufacturer for an analysis.

Try a Test Batch

Before you invest in a water treatment system it may be helpful to try a simple test. Find a source of water – from a friend or a local dealer of the device you're considering. Make two batches of beer using your favorite beer recipe – one you know well. Use your water for one batch and the treated water for the other. Taste them side by side when they are ready. The differences may be very subtle, but can you detect a difference? Try a triangle test – have someone else pour two glasses of one, and a single glass of the other. Taste all three without knowing which is which. If you can't pick out the one that is different, the water treatment may not be worthwhile. Do you prefer the taste of the treated water? If the treated water makes a beer you like better, you probably want to consider using treated water on a regular basis. Many of the treatment devices discussed here can be quickly installed by most do-it-yourselfers for less than \$100. You may find a relatively small investment pays off in better homebrews.

Ginger Wotring has a Ph.D. in neurophysiology and is a BJCP National judge. While finishing her bachelor's in chemistry, she learned water quality chemistry by analyzing samples from Florida bays and rivers. Her research now is on molecules responsible for regulation of brain cell activity. Some of these molecules are affected by homebrew, which she has been making since 1987. Ginger has presided over the North Florida Brewer's League and the St. Louis Brews, but is now trying to avoid such responsibilities in the Birmingham Brewmasters.

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Strong Scotch Ale

Ingredients for 5 U.S. gal (19 L)

- 12 lb English pale ale malt (5.44 kg)
- 1/2 lb English CaraPils malt (0.23 kg)
- 1/2 lb Munich malt (0.23 kg)
- 1/2 lb Victory or biscuit malt (0.23 kg)
- 1/2 lb 1.9 °L two-row malt home-roasted to about 75°L (0.23 kg) (375 degrees F for 30 minutes)
- 2 oz English roasted barley (57 g)
- 2 oz hickory-smoked malt (57 g)
- 3 lb light dry malt extract (1.36 kg)
- 1 oz Northern Brewer hops, 8.4% alpha acid (28 g) (90 min.)
- Wyeast No. 1028 London ale liquid yeast culture

Adjust water to:

- 80 - 120 ppm calcium
- 10 - 25 ppm magnesium
- 10 - 30 ppm sodium
- 70 - 140 ppm sulfate
- 120 - 200 ppm carbonate
- 30 - 60 ppm chloride

- Original specific gravity: 1.090
- Final specific gravity: 1.027
- IBUs: 30

Hold the single infusion mash temperature at 154 degrees F (68 degrees C) with 1 1/3 quarts (1.26 L) water per pound (0.45 kg) of malt. Sparge to collect seven gallons (26.5 L). Boil for 90 minutes. Ferment at 65 degrees F (18 degrees C).

Juggle (from page 40) No. 1 is done and transferred into boiling vessel No. 1 before mashing for brew No. 2 is completed. Brew No. 1's boil, after 50 minutes, has settled down nicely and requires little attention when the lautering for brew No. 2 is started.

As brew No. 2's laut is just under way, mash No. 3 can be started (again in the dedicated mash tun and, again, two hours after mash No. 2 was started). This is where timing begins to get critical. If all is well-timed I'll usually have 15 to 30 minutes between the end of one step and the beginning of another even with three brews going.

As mash No. 3 is progressing, laut No. 2 has ended and the boil for No. 2 (in the second boiling vessel) has begun. During the same period, the boil for No. 1 has come to an end and the chilling has begun. As the chilling is taking place for brew No. 1, brew No. 2 is boiling and brew No. 3 has gone from mash stage to lautering. When brew No. 1 is chilled and the yeast pitched, mash No. 4 can be started.

At this point, the cycle is the same as previously explained, and this can go on forever. However, I can't. A 12-hour brew day is about my limit. I did, however, brew five all-grain brews in one day in a 13 1/2-hour period, giving me a total of 55 gallons of beer – four 10-gallon batches and one 15-gallon brew.

There are some critical points in each step. For instance, the beginning of each boil requires a lot of attention. You wouldn't want to begin transferring the mash in brew No. 2 to the laut tun at the same time the boil starts for brew No. 1. Nor would you want to rush the laut of brew No. 2, only to find it ended at the same time as the beginning of the chill for brew No. 1, or the beginning of mash No. 3.

Still, it's definitely worth the occasional hectic pace. If I'm going to be in my brew house for six hours to brew one batch of beer, why not be in for two more hours and get another complete brew done? As far as that goes, every two hours can be another

brew. The way I see it, I'm only spending two hours to get a batch of all-grain beer done after the first is finished. *That's efficiency!*

Juggling Greater Challenges

For a high-gravity batch, I put 13 1/2 gallons of wort into my 17-gallon boiler and 5 1/2 gallons of the last runnings into my 10-gallon stockpot. At the end of the boil I'm down to 15 gallons total. I add a small amount of extra hops to the larger kettle to make up for the lower hop utilization inherent with high-gravity worts. I also add hops to the smaller stockpot. Now I don't have to keep such a close eye on either brew kettle, but I can still keep a good rolling boil because each pot has such a large head space.

My primary heat sources are two Cajun cookers, and the heat source for the last of the runnings is my trusty kitchen stove. At the end of the boil time I add wort from the 10-gallon stockpot filling the 17-gallon boiler to the rim. This gives me 15 gallons of finished cooled wort, which is five gallons more than I can get when I use one pot. The 10-gallon stockpot, which has just been emptied into the 17-gallon vessel, is now ready to accept the last runnings from the next brew.

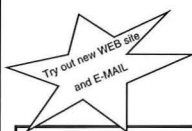
By the time I'm done with all four brews (and since I have the capacity for 20, 15, 20

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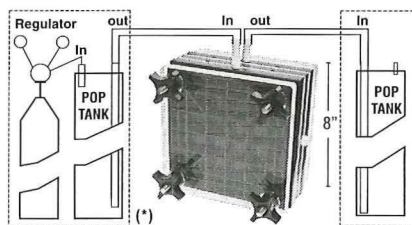
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Munich Helles

Ingredients for 5 U.S. gal (19 L)

- 7 lb 1.8 °L two-row malt (3.18 kg)
- 1 lb Munich malt (0.45 kg)
- 1/2 oz Northern Brewer hops, 8.4% alpha acid (14 g) (90 min.)
- 1/4 oz Saaz hops, 3% alpha acid (7 g) (40 min.)
- 1 oz Saaz hops, 3% alpha acid (28 g) (two min.)
- Wyeast No. 2124 Bohemian lager liquid yeast culture

Adjust water to:

- 50 - 75 ppm calcium
- 0 ppm magnesium
- 5 - 15 ppm sodium
- 20 - 35 ppm sulfate
- 60 ppm carbonate
- 5 - 20 ppm chloride

- Original specific gravity: 1.048
- Final specific gravity: 1.014
- IBUs: 24

Hold single infusion mash temperature at 155 degrees F (68 degrees C) using 1 1/3 quarts (1.26 L) water per pound (0.45 kg) of malt. Sparge to collect seven gallons (26.5 L). Boil for 90 minutes. Ferment at 45 degrees F (7 degrees C).

Juggle and 15 gallons), I have 70 gallons of beer. Because I am able to clean up as brew No. 4 is under way, I'm done, including all cleanup, within 12 hours. That's about six gallons per hour. You would have to have a 45-gallon boiling vessel to achieve those figures in a single brew. Even then, you'd only have one style of beer.

During the whole cycle, I use any other container I can round up to heat sparge water. I need a *lot* of hot sparge water. In fact, my lautering time is limited by the amount of water I am able to heat. This is only one of the many oddities you may encounter in making your own brew schedule that may force you to shorten or lengthen a certain step to do multiple brews. It will help tremendously to know how long it takes certain quantities of water to reach sparge temperature with your particular heat source. Not having the right amount of water at the right temperature at the right time can cause chaos, so planning ahead is crucial.

To make your own brew graph you'll have to start by timing each step of your brewing process. You then graph it as a single brew. Don't rush the brewing procedure and time everything carefully. Graph the same schedule for brew No. 2, but space it out in such a way that no two time-consuming steps occur at the same time. Make your graph for as many brews as you wish. Your own system will let you know which steps are

time-consuming, and which ones can be shortened or lengthened to accommodate multiple-batch brewing.

The next time you brew, imagine the second, third and fourth batches on the graph you charted. You may find a situation conflicting with your plans, so you'll need to adjust your graph accordingly. You may find you will need another thermometer, heat source or a quicker way to do a step in your own process. Take notes and adjust your graphs and equipment accordingly.

You're then ready for the next step, which is a double brew. Be prepared: it is more work but twice the variety of beer. It is a good idea to do a



Kölsch

Ingredients for 5 U.S. gal (19 L)

- 6 lb Belgian Pilsener malt (2.72 kg)
- 1/2 lb wheat malt (0.23 kg)
- 1/2 lb 10 °L caramel malt (0.23 kg)
- 1/2 lb Munich malt (0.23 kg)
- 3/4 oz Northern Brewer hops, 8.4% alpha acid (21 g) (90 min.)
- 1/3 oz Saaz hops, 3% alpha acid (9 g) (two min.)
- 1/3 oz Hallertauer hops, 5.4% alpha acid (9 g) (two min.)
- Wyeast No. 1028 London ale liquid yeast culture

Adjust water to:

- 30 - 45 ppm calcium
- 0 ppm magnesium
- 25 - 30 ppm sodium
- 70 - 110 ppm sulfate
- 0 ppm carbonate
- 40 - 50 ppm chloride

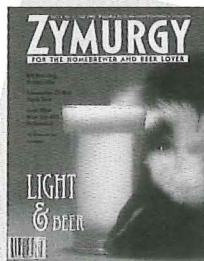
- Original specific gravity: 1.048
- Final specific gravity: 1.009
- IBUs: 30

Rest mash at 149 degrees F (65 degrees C) with 1 1/3 quarts (1.26 L) water per pound (0.45 kg) of grain for the allotted time. Sparge to collect seven gallons (26.5 L). Boil for 90 minutes. Ferment at 70 degrees F (21 degrees C).

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double brew with two easy recipes, using the sample graph. When you feel comfortable with the additional work involved, you can try a triple or a quadruple brew, or possibly ask a friend to help.

Your own system of doing things will determine what you can accomplish. For example, if you mash and lauter in the same vessel, then boil and chill in the same vessel, your second brew could not begin for two to four hours after the first brew.

Accelerate with Extract

If you are a malt-extract brewer, you can do all this in less time. You need two boiling vessels and two heat sources for two concurrent batches. There are fewer elements to coordinate for extract brewing and the various stages are shorter. You may want to stagger the two batches so while batch No. 1 is boiling, batch No. 2 is steeping specialty grains. Chill batch No. 1 with a wort chiller while batch No. 2 is at mid-boil. Rack batch

No. 1 to a primary fermenter, rinse the kettle and begin batch No. 3 while batch No. 2 is chilling and so on. You are only limited by the number of fermenters you own and your brewing stamina.

Be an Expert Juggler

Most brewers find it hard to believe I am able to brew 70 gallons of all-grain beer in one day. It's even harder to believe this 70 gallons is four distinctly different styles of beer. This is much harder if not impossible to achieve with a parti-gyle system (the practice of drawing off the first runnings for a strong ale or barley wine, then using the second runnings for a lower-gravity brew). But to be able to achieve all of this by myself is where the unbelievable meets the ironic.

Because I usually brew by myself, 70 gallons (about 28 cases or 14 five-gallon soda kegs) takes quite a while to drink. I like to have about five different beers on tap all the time, and if I only brew every four months, that means some of the beers aren't as fresh

as I like. To combat this, I usually brew about 10 gallons of each batch. This way, with four 10-gallon batches, I brew every 2 1/2 months, as opposed to the every two weeks. When I tap the ales from the latest batch, my lagers from the previous batch also are ready to tap, crystal clear and unfiltered.

You may find you have all the equipment needed to brew more than one batch in one day, or it may take a small purchase to get you ready. But whether you brew meads or beers, with extract or grain, your time spent can be much more efficient by working on a second brew while you are waiting during another batch. Wouldn't it be nice to brew more than four times the amount of beer you currently brew in only twice as much time? I think so!

Tim Rastetter has been an avid home-brewer since 1984 and an all-grain brewer since 1988. He currently is brewmaster at BrewWorks at the Party Source in Covington, Ky., where he has used his multiple-batch techniques to design a four-vessel brew house for efficient production of the brewery's ales and lagers.

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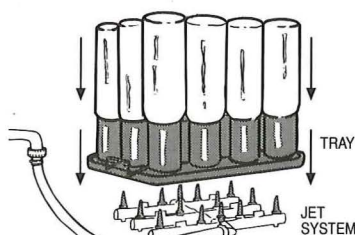
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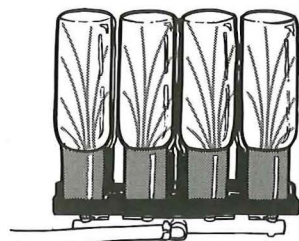
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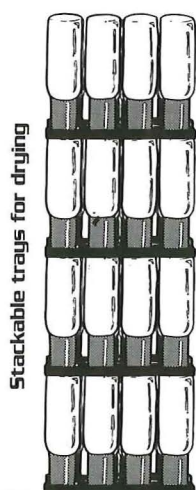
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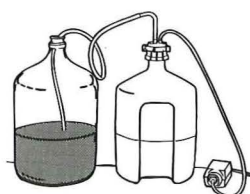
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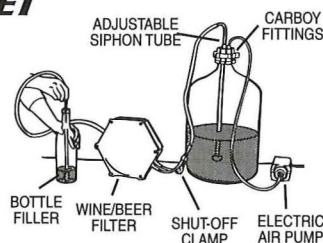
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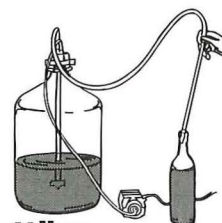
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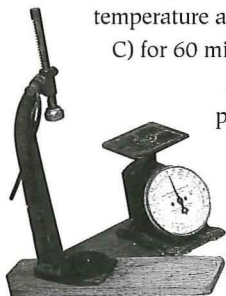
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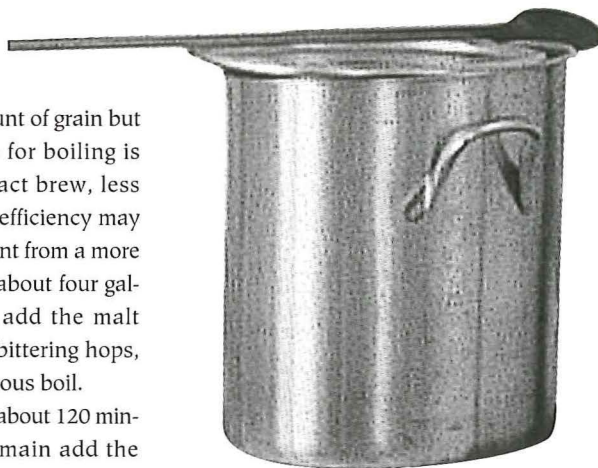
World of Worts (from page 57) A single-step infusion mash is used to mash the grains. Add seven quarts (6.6 L) of 165-degree-F (74-degree-C) water to the crushed grain, stir, stabilize and hold the temperature at 150 degrees F (66 degrees C) for 60 minutes.



After conversion, raise temperature to 167 degrees F (75 degrees C), sparge with 3 1/2 gallons (13.25 L) of 170-degree-F (77-degree-C) water. (Note: This is less than the typical amount

of sparge water for this amount of grain but because a smaller volume for boiling is desired for this mash-extract brew, less sparging is necessary. Your efficiency may be brought down to 70 percent from a more typical 75 percent.) Collect about four gallons (15 L) of runoff and add the malt extract, honey and Nugget bittering hops, then bring to a full and vigorous boil.

The total boil time will be about 120 minutes. When 60 minutes remain add the Hersbrucker bittering hops. When 45 minutes remain add "Kent" Golding flavor hops. When 10 minutes remain add Irish moss.



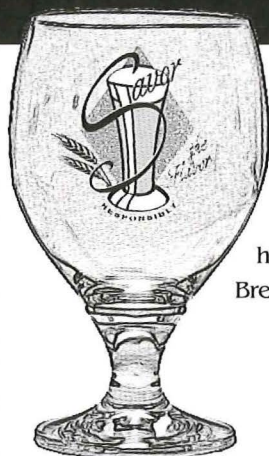
After 120 minutes of boiling are complete, the volume should have been reduced to about three gallons (11.4 L). Strain all of the bittering and flavor hops out of the wort then add aroma hops and 12 pounds of crushed chokecherries. Steep for 15 minutes at about 160 degrees F (71 degrees C). Add all the wort, hops and chokecherries to a 6 1/2- to seven-gallon (25- to 26.5-L) sanitized fermenter to which you've added two gallons (7.6 L) of water. It helps to prechill (to 33 degrees F or 1 degree C) the water added to the fermenter rather than simply adding warmer water. Top off with more cold water to achieve six gallons (22.7 L) total.

Pitch a good dose of healthy, active ale yeast and primary ferment between 65 and 70 degrees F (18 and 21 degrees C) for about one week. Rack fermenting beer to a secondary fermenter, taking care to not siphon chokecherries and hops (some may be floating and some may have settled to the bottom). Continue secondary fermentation until complete. Rack one more time to a third carboy and age for one to three months at temperatures below 60 degrees F (16 degrees C). Prime with corn sugar and bottle the five-gallon yield when aging is complete and beer is clear.

Age until the beginning of the next century, sneaking tastes whenever the mood strikes you.

Charlie Papazian is the founding president of the Association of Brewers and author of *The New Complete Joy of Home Brewing* (Avon 1984, 1991) and *The Home Brewer's Companion* (Avon 1994). Charlie is working on *Home Brewer's Gold*, a book of prize-winning recipes from the 1996 World Beer Cup Competition, to be published by Avon in fall 1997.

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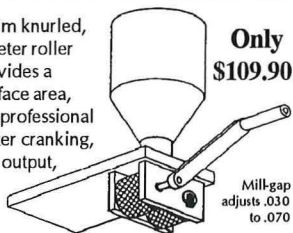
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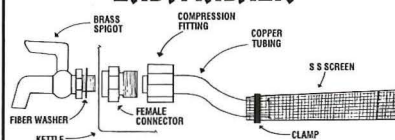
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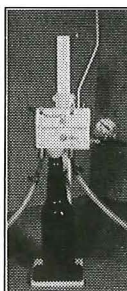
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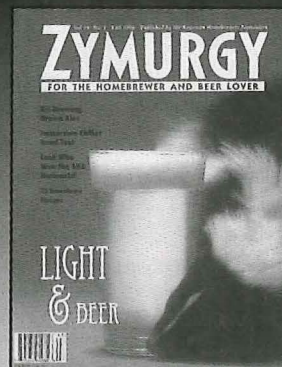
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ZYM 20

Dear Professor (from page 60) at, and adjusted up and down trying to stop the foaming. It made no difference, it seems, if the pressure was anywhere from 2 to 20 psi.

When all the foam subsides in the glass I have nearly flat beer. It is suitable for the bitter, in my opinion, but not the wheat.

Please help. I have been looking forward to a keg system so I could control the carbonation level and adjust it to the style. My theory is the problem lies with the picnic faucet. I'm thinking that a refrigerator with a tap through the wall will solve my problem. Is that on target or am I missing something?

Foaming at the tap,
Less Nadon
Cheyenne, Wyo.

Dear Les,

It seems to me you are overcarbonating your beer by keeping the CO₂ at 14 psi for a week. Your method of applying the appropriate amount of CO₂, based on the reference charts and your beer temperature, and shaking the keg until you don't hear CO₂ entering is right on, but stop there. Your beer is carbonated at this point if no more CO₂ can be forced into solution. Now your beer needs to settle before you serve it, otherwise — you guessed it — foam. The alternative is to apply the proper amount of CO₂ to your keg, don't shake, and let it sit for a few days. A good reference is "A Bottler's Guide to Kegging" by Ed Westemeier in *Zymurgy* Summer 1995 (Vol. 18, No. 2).

Other factors to check are: How cold is your beer? If it is above 50 degrees F (10 degrees C)

then you'll have more difficulties with home foaming. The colder the beer, the less foaming and release of gas. What about your dispensing hose? Is it long and warm? If so, the beer warms up traveling through and you get home foam again. You might try a dispensing hose that has a wider inside diameter. You see, if you are using a hose that is narrow then the beer is more restricted and agitated — home foam.

Good beer dispensing systems take into consideration the temperature of the beer, the pounds of pressure on the beer, the length the beer has to travel and the diameter of the hose. For example, with a three-sixteenths-inch interior diameter hose, expect a 3 psi per foot pressure drop. When deciding what length and diameter of hose, keep that pressure drop in mind as an aim for 0 psi at the tap.

Start out with a short hose (less than one foot) and chill your beer to colder temperatures to get some immediate satisfaction. Once you begin to have some well-dispensed homebrew things will become much clearer.

Now then, how are you holding the nozzle? Are you only opening it partway, effectively spraying the beer out? If so, don't be bashful, you've got to open the system all the way so the beer does not get agitated at the final orifice.

Finally, whenever I naturally carbonate my keg beer I prime with one-third of the normal amount of sugar. I rarely have a problem, but then again, I hate fizzy Bavarian-style wheat beer.

No more fiddling,
The Professor, Hb.D.



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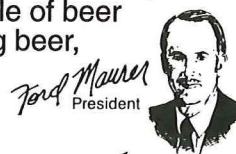
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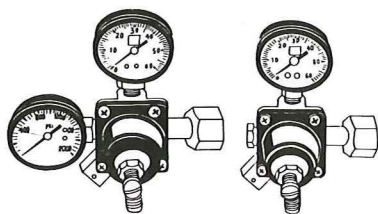
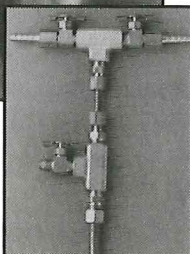
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At Home Warehouse Distributors	96	E.Z. Cap Bottle Distributors	78	New Brewer, The	70
Avon Books	69	Edme Malt Ltd.	11	Northern Brewer	92
Bacchus and Barleycorn Ltd.	65	Elliott Bay Metal Fabricating	96	Northwestern Extract	91
Beverage People, The	79	Extract Extravaganza	69	Oregon Specialty	39
Black Rock Brewing Co.	IFC	F.H. Steinbart Co.	14, 29, 47	Paine's Malt	18
Bock is Best Club-Only Competition	90	Fermentap	87	pico-Brewing Systems Inc.	40
Boston Beer Co.	6	Filter Store	95	Precision Brewing	102
Braukunst	58	Freshops.....	39	Premier Malt Products Inc.....	25, 98
Brew King	12, 24	Foxx Equipment Co.	106	Quoin	92
Brew Your Own	23	Grape and Granary, The.....	58	Registered Homebrew Club Program.....	105
Brew-It Yourself.....	29	Heart's Home Brew Supply	4	Sabco	107
Brewers Publication	41	Heartland Homebrew	40	Sanctioned Competition Program	88
Brewers Resource	83	Hobby Beverage Mfg.	86	Sarnac Software.....	58
Brewers Warehouse	54	Homebrew Adventures	65	Savor the Flavor	102
Brewery Planner.....	80	Homebrew Headquarters	47	Siebel Institute of Technology	57
Brewing Products	87	Homebrew & Draft Beer Store	58	Society for Industrial Microbiology	82
Brewmaster	33	Homebrewers Conference 1997	48	University of California, Davis	93
Briess Malting Co.	90	HomeBrewer's Software	2	Valley Brewing.....	98
California Concentrate Co.....	89	HopTech	44, 90	Vineyard Home Brewers and Vintners Supply, The.....	98
Cellar, The	4	Jet Carboy and Bottle Washer	89	Vinotheque	85
Coopers Brewery	OBC	LD Carlson.....	48	Vintage Shop, The.....	101
Crafty Fox, The	78	Liberty Malt Supply Co.	88	Weyermann, Heinz.....	78
Crosby & Baker Ltd.	97	Listermann Mfg. Co.	78	Weyermann, Mich.	105
Custom Brew Beer Systems	IBC	Malt Products Corp.	4	Wine Hobby USA	83
Custom Brew Haus	23	Marcon Filters	99	Zymurgy.....	54, 79, 100
		Market Basket, The	81		

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Mark Moylan is a free-lance writer in Michigan who has been homebrewing for 10 years. He makes a good glass of beer, bakes a fine loaf and has been spotted attempting the fine art of composting.

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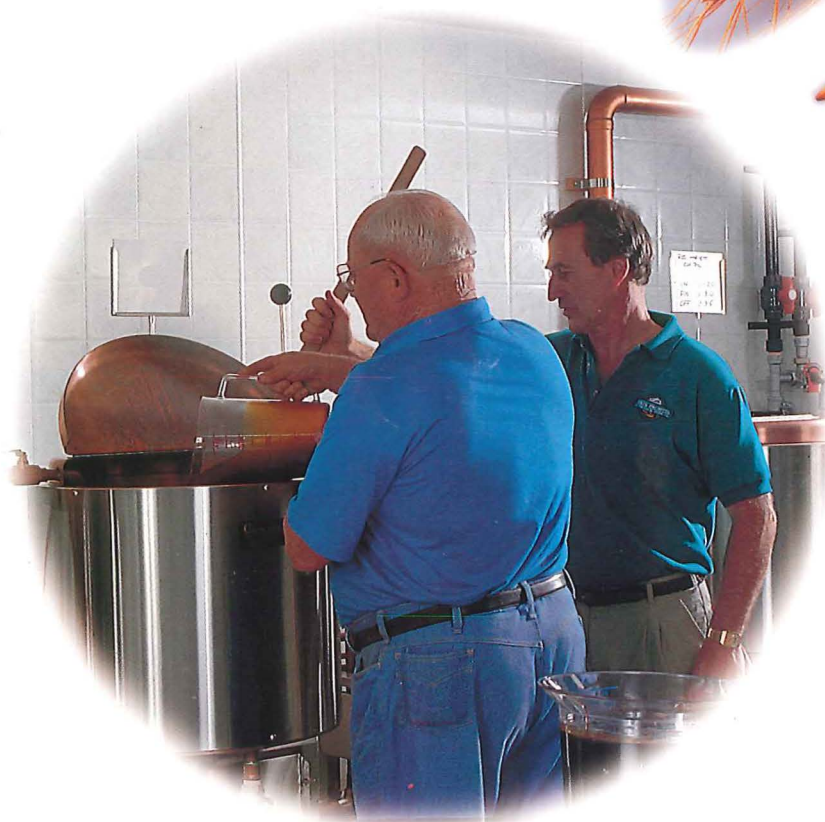
THE BREW ON-PREMISES PEOPLE



Custom Brew Beer Systems is the leading provider of advanced brew on-premises systems, supplies and service.

Contact us for assistance with:

- ▶ Site selection
- ▶ Installation
- ▶ Training
- ▶ Operations
- ▶ Raw Materials
- ▶ BOP Equipment



◀ A brew on-premises (BOP) is a place where ordinary people make extraordinary beer. A BOP is not a brewpub where someone else does the brewing. At a BOP, your customers make great beer for themselves.

It takes more than the world's best BOP equipment to make a brew on-premises work.

At CBBS we provide comprehensive training and support to help ensure your success. ▼

B

OP began in Canada in 1987.

Since that time nearly 300 brew on-premises have opened for business. This exciting, high-growth industry is now expanding to the United States. At CBBS we have developed the most advanced BOP technology available. With our systems, world-class support and quality ingredients we've helped our clients open more on-premise breweries than any other supplier in the industry. If you're an entrepreneur seeking a unique business opportunity, we can help you.

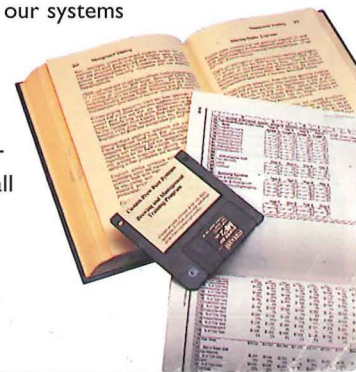
We offer a full range of advanced equipment, supplies and training designed to assist you with site selection,



installation, operations, quality assurance and on-going technical support. Each of the more than 50

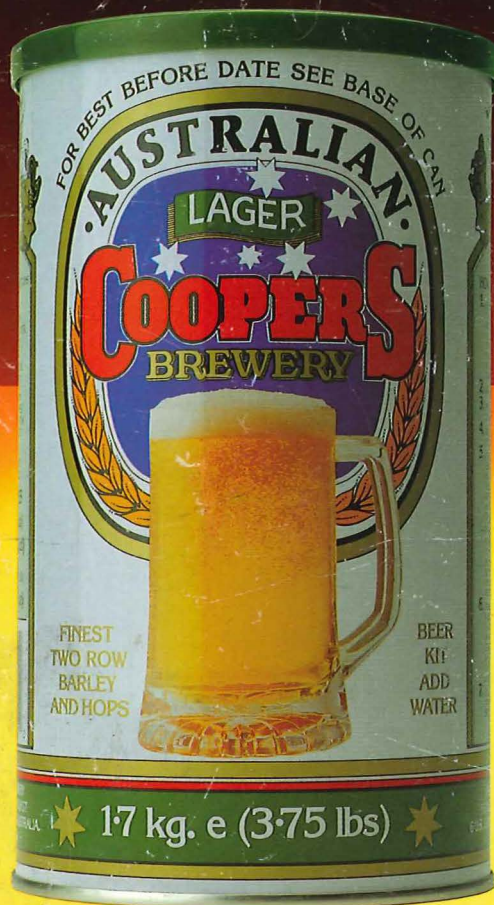
CBBS system installations is a testament to the quality, reliability and support we provide.

With your entrepreneurial ambition and our systems and support you can start your own small business where individuals brew, ferment, filter, carbonate and bottle all natural, hand crafted beer. For information about this business opportunity call Custom Brew Beer Systems at 1-800-363-4119.



Coopers Home Brew

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Kangaroos in the Australian Outback.

Association of Brewers
American Homebrewers Association
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