Brew Your Own®

SUMMER 2000, VOL.6, NO.6

LABEL CONTEST WINNERS!

THE HOW-TO HOMEBREW BEER MAGAZINE

Hello Dolly!

FOUR CLASSIC BRITISH CLONES
(minus the wool)

Put A Spigot In Your Brew Kettle

Fix A Bad Batch With Your Nose

Summer Grilling With Beer



U.S. $3.95 (CANADA $5.95)
(Display until August 22)

06
0 74470 87481 2

Spagnol's Wine Kits:
When Only the Best Will Do.



Distributed in the US by:
(wholesale inquiries and retailer referrals only)

CROSBY & BAKER LTD
We Serve the Winemaker

1-800-999-2440

Some of the great retailers stocking the superb Spagnol's wine kits:

Beer & Wine Hobby
Woburn, MA
800-523-5423
www.beer-wine.com

Brew Your Own Beverages (BYOB)
Atlanta, GA
404-350-9171
www.byob.com

Allen Biermakins
Knoxville, TN
800-873-6258
865-577-2430

U-Brew
Jacksonville, FL
800-845-4441
www.ubrewit.com

Alternative Beverage
Charlotte, NC
800-365-2739
www.ebrew.com

Double Springs Homebrew
Valley Springs, CA
888-499-2739
www.doublesprings.com

Contents

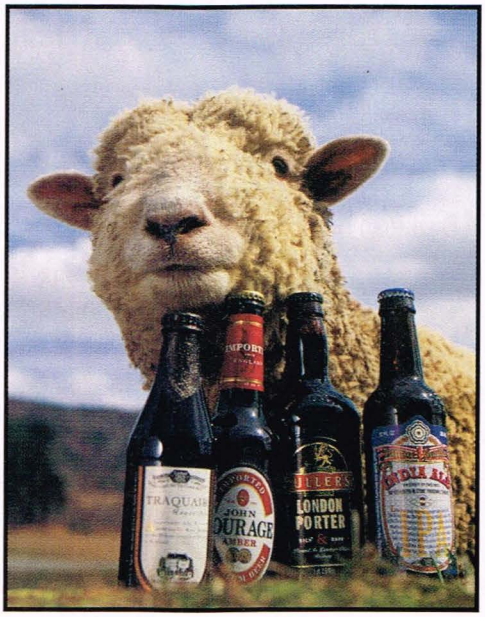
Features

22 **The Big Stink** *Ashton Lewis*
The nose always knows ... and if it doesn't, it should. Here's how to identify — and eliminate — six common off-aromas.

26 **Four Classic Clones of Great Britain** *Scott Russell*
While the Brits are busy cloning sheep, you can copy their beers. Sure-fire recipes for recreating Fuller's London Porter, Traquair House Ale, John Courage Amber and Samuel Smith's India Ale.

32 **Label Contest 2000!**
BYO proudly presents the winners of the biggest and best homebrew label contest in the galaxy.

40 **Beer Meets Meat** *Lucy Saunders*
Your homebrew can make a tasty mop, marinade or barbecue sauce. Summer's here, so fire up the grill!



Hello, Dolly! British Clones: page 26

Departments

2 **Editor's Note**

4 **Mail**
How much hops? How much grain?

5 **Pot Shots**
My big, beautiful brewery: the converted carport, a brew barn and an electric option.

9 **Recipe Exchange**
Great Grain Ale: Is it beer, or is it müesli?

11 **Help Me, Mr. Wizard!**
The great foam debate, priming with wort and other zymur-logic.

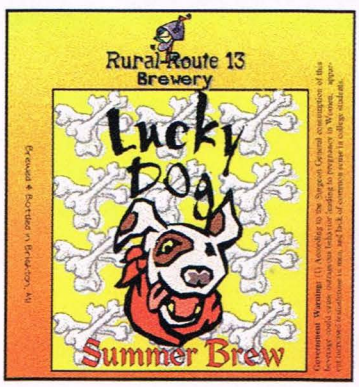
17 **Style of the Month**
Brew now for Oktoberfest! Plus: golden ale.

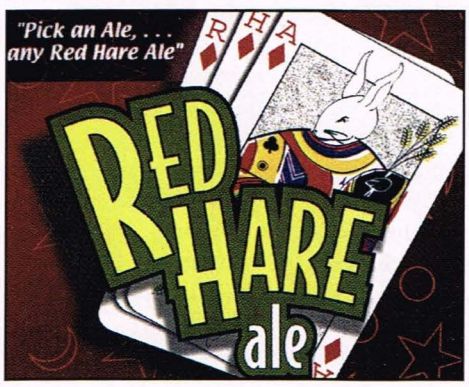
45 **Projects**
How to put a spigot in your brew kettle.

51 **Techniques**
Wait, shake or inject: three foolproof ways to carbonate your beer in the keg.

55 **Meadmaking**
Use fruit and honey to make a melomel.

64 **Last Call**
A lament to lame brewing notes.





Label Contest 2000! And the Winners Are ... on page 32

Where to Find it

58 **Advertiser Index**

60 **Homebrew Directory**

63 **Classifieds**

Cover photo: Charles Parker
Cover sheep: Courtesy of Marsh-Billings Rockefeller National Historic Park in Woodstock, Vermont

Editor's Note

The Story Behind That Sheep

DECIDING WHICH ARTICLE to put on this month's cover was a snap. The cover shoot was anything but. Ever tried to take a picture of a 250-pound sheep peering over a quartet of fragile glass beer bottles? I didn't think so.

The concept was simple, or so it seemed when we were sitting around the office. We were planning an article on British beers, with recipes for "cloning" such tasty ales as Fuller's London Porter. Classic British clones. Hhhmm. What British clone could be more classic than Dolly, the test-tube sheep?

On a windy afternoon, we headed to an historic farm in the nearby town of Woodstock. With brave photographer Charles Parker, we proceeded to arrange the bottles on a low stone outcrop and lead our woolly subject into position.

Several hours and smashed beer bottles later, we had our cover shot. (Sheep 402 is especially fond of Samuel Smith's India Ale). The part you can't see are the two helpful fellows on either side — one of them lying on the ground behind the stones — holding the frisky sheep in position with stout leashes. Speaking of stout, after that afternoon, we all needed a pint or two.

The cover shoot set the tone for the rest of the issue, which, if I do say so myself, involved a lot of hard work by our energetic staff. As always, the Gnomes convened from around the galaxy to judge the Annual BYO Label Contest. Meanwhile, technical editor Ashton Lewis was investigating awful odors to write "The Big Stink," a guide to common off-aromas. And freelance writer Thom Cannell was donning protective eyewear to demonstrate three ways you can put a spigot in your brew kettle: by silver soldering, silver brazing or TIG welding.

What I'm saying is, we need a little vacation. So have a great summer, and see the box below!

KATHLEEN

Summer is traditionally a slow time for homebrewing. Reader and homebrew-shop feedback reinforces the fact that most people would rather crack open a homebrew than stand over a boiling kettle. With that in mind, we decided late last year to discontinue the July and August issues of *BYO*. We didn't make the decision lightly. We believe the new schedule will allow each issue of *BYO* to contain more information than ever, like the new departments and special features that we'll debut in the fall. Plus, we have a special resource guide in the works — essentially an eleventh issue — that'll arrive at the end of the year. All *BYO* readers who signed up for an annual subscription of 12 issues will still receive all 12 issues they paid for (don't worry, we've already extended those files in our computer). And for hardcore types who brew no matter how high the mercury climbs, we'll be posting special "Web-only" installments of our **"Style of the Month"** column in July and August at www.byo.com. We'll see you in September with our fifth anniversary issue. We're already working on it!

Brew Your Own
THE HOW-TO HOMEBREW BEER MAGAZINE

EDITOR
Kathleen James Ring

CREATIVE DIRECTOR
Coleen Heingartner

TECHNICAL EDITOR
Ashton Lewis

CONTRIBUTING WRITERS
Alison Crowe, John Oliver, Scott Russell, Mikoli Weaver

CONTRIBUTING ARTISTS
Shawn Turner, Jim Woodward, Don Martin

CONTRIBUTING PHOTOGRAPHER
Kent Lacin, Charles Parker

PUBLISHER
Brad Ring

ADVERTISING DIRECTOR
Kiev Rattee

NEWSSTAND DIRECTOR
Carl Kopf

ACCOUNTING MANAGER
Colette Erbe

WEB MASTER
Heidi Larson

EDITORIAL REVIEW BOARD
Fal Allen • Brewing Consultant
Matt Cole • Rocky River (Ohio) Brewing Co.
Tom Flores • Brewer's Alley
Mark Garetz • HopTech
Herbert L. Grant • Yakima Brewing Co.
Denise Jones • Third Street Aleworks
Larry Lesterud • Humboldt Brewing Co.
Mark Lupa • Tabernash Brewing Co.
John Maier • Rogue Ales
Kirby Nelson • Capital Brewing Co.
Ralph Olson • Hopunion USA Inc.
Mark Szamatulski • Maltose Express
Tess Szamatulski • Maltose Express
Artie Tafoya • Appalachian Brewing Co.
Mikoli Weaver • Brewing Consultant
Randy Whisler • Smuttynose Brewery
Chris White • White Labs

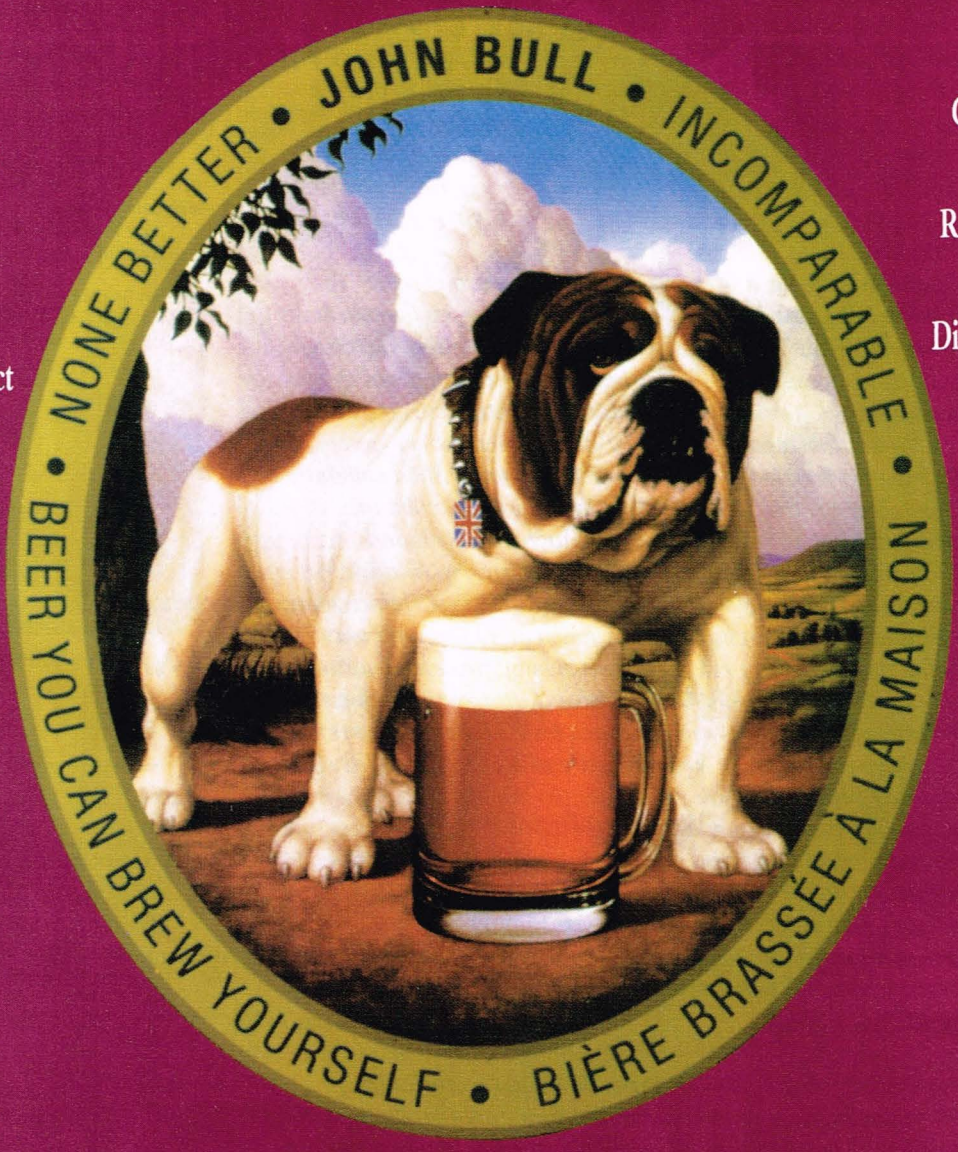
WHO SAID YOU CAN'T TEACH AN OLD DOG NEW TRICKS.

PLAIN & HOP FLAVOURED

Light Malt Extract

Dark Malt Extract

Amber Malt Extract



PLAIN

Crystal Malt Extract

Roasted Malt Extract

Diastatic Malt Extract

Wheat Syrup

~ YOU CAN! ~

At John Bull we have retained the very best of the old added some exciting new qualities to bring to you:-

JOHN BULL

Bulldog Blends

Distributors in U.S.A

L.d. Carlson Co Ltd.
463 Portage Boulevard
Kent

Crosby & Baker
999 Main Road
Westport

Brewmaster
2315 Verna Court
San Leandro

F.H. Steinbart
234 S.E. 12th Ave.
Portland

Canadian Distributors

Lindstrom Beer & Wine Making Supplies Ltd.
190 Brockley Drive
Hamilton

Divin Distribution
3220 Lére Rue
St Hubert

W.H. Brown
105 Akerley Blvd.
Dartmouth

MaiL

About That Hopback

I read the fascinating article about hopbacks *("Homemade Hopbacks," April BYO)* and plan to use one of the methods on my next batch, but I have a few questions. First, when using a hopback should I reduce the amount of hops in the recipe? Also, the Mason jar method sounds like the most effective, but given the heat and the placement of the "in" and "out" tubes, wouldn't it be almost impossible to keep the stopper in?

Bryce Eddings
Cape Girardeau, Missouri

Author Craig Hartinger says: "Even though I have a strong bias toward lots of hop nose (and lots of hop bitterness, for that matter), I recommend reducing the finishing hops in the first batch you brew with the hopback. Start by cutting the finishing hops in half, and putting the other half in the hopback. Keep notes! If you rebrew that batch, you can adjust the finishing hops if you'd like.

As for the Mason jar: It's not impossible to keep the stopper in, but an equipment failure in any brew session would never surprise me! I've had siphon lines pop off, leaks occur, thermometers break ... you name it. Once I even melted a plastic malt-extract container into my wort. I called it 'Drastic Plastic Ale.' For peace of mind, you could tape the stopper in (run the tape over and under the jar vertically). Some brewers have built a similar hopback and used a regular threaded-on Mason jar lid, tightly screwed down. The drawback is that it's hard to get an airtight seal around the 'in' and 'out' lines bored through the lid."

It Doesn't Add Up

I'm wondering something about the "Three Great Brewers" article in the March 2000 issue. As I was entering Teri Fahrendorf's French Pete Porter recipe into my database, I started adding up the ingredients. The percentages of malt add up to 102 percent! Is there a mistake in the numbers?



Harley Nilsen
Kearney, Nebraska

Harley, you are correct! To make it easier for homebrewers to duplicate her recipe, Fahrendorf rounded up the malt percentages. Here are the ultra-accurate numbers: pale malt (69.9%), caramel 80° Lovibond (6.65%), caramel 60° Lovibond (6.65%), Munich 10° Lovibond (6.65%), chocolate (9.98%) and roasted barley (0.133%). Before you haul out your calculator, one note: We realize these figures add up to 99.963 percent. But some of these percentages had zillions of digits, so let's just call it close enough!

We Need Proof Positive

When the alcohol content of beer is listed at five percent ABV (alcohol by volume), what proof alcohol is being described?

"Anne and Charlie"
via e-mail

Proof is equal to alcohol by volume multiplied by two. Beer that is five percent alcohol by volume is technically ten proof. However, beer and wine are never described in terms of proof.

Proof is a carryover from the past. Distilled spirits were said to be "proofed" if gun powder could burn on top of the liquor. A liquor with an alcohol content greater than or equal to 50 percent (100 proof) would pass the proof test. As time passed, better laboratory methods were developed to accurately measure alcohol. But the distilled-spirits industry held onto this interesting piece of history. ■

How To Reach

Brew Your Own

Editorial and Advertising Office:
Brew Your Own
5053 Main Street, Suite A
Manchester Center, VT 05255

Tel: (802) 362-3981
Fax: (802) 362-2377
E-Mail: BYO@byo.com

Advertising Contact:
Kiev Rattee
kiev@byo.com

Editorial Contact:
Kathleen James Ring
kath@byo.com

Subscriptions Only:
Brew Your Own
P.O. Box 469121
Escondido, CA 92046

Tel: 1-800-900-7594
E-mail: byo@pcspublink.com
Fax: (760) 738-4805

Special Subscription Offer:
10 issues for $29.95

Web Site:
www.byo.com

Brew Your Own (ISSN 1081-826X) is published monthly except July and August for $44.95 per year by Battenkill Communications, 5053 Main Street, Suite A, Manchester Center, VT 05255; tel: (802) 362-3981; fax: (802) 362-2377; e-mail: BYO@byo.com. Periodicals postage rate paid at Manchester Center, VT and additional mailing offices. Canada Post International Publications Mail Product Sales Agreement No. 1250469. Canadian Mail Distributor information: Express Messenger International, P.O. Box 25058, London BC, Ontario, Canada N6C6A8. POSTMASTER: Send address changes to ***Brew Your Own***, P.O. Box 469121, Escondido, CA 92046-9121. Customer Service: For subscription orders call 1-800-900-7594. For subscription inquiries or address changes, write ***Brew Your Own***, P.O. Box 469121, Escondido, CA 92046-9121. Tel: (800) 900-7594. Fax: (760) 738-4805. Foreign and Canadian orders must be payable in U.S. dollars plus postage. The subscription rate to Canada and Mexico is $55; for all other countries the subscription rate is $70.

All contents of ***Brew Your Own*** are Copyright © 2000 by Battenkill Communications, unless otherwise noted. ***Brew Your Own*** is a registered trademark owned by Battenkill Communications, a Vermont LLP.

Unsolicited manuscripts will not be returned, and no responsibility can be assumed for such material. All "Letters to the Editor" should be sent to the editor at the Vermont office address. All rights in letters sent to ***Brew Your Own*** will be treated as unconditionally assigned for publication and copyright purposes and subject to ***Brew Your Own***'s unrestricted right to edit.

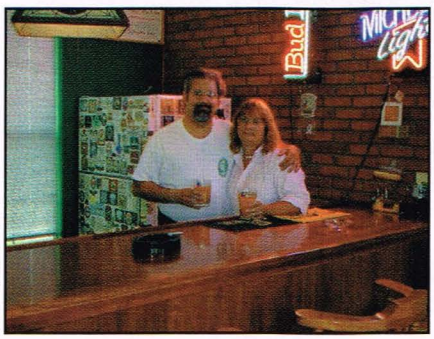
Although all reasonable attempts are made to ensure accuracy, the publisher does not assume any liability for errors or omissions anywhere in the publication.

All rights reserved. Reproduction in part or in whole without written permission is strictly prohibited. Printed in the United States of America.

Our Big Beautiful Brewery

All we wanted were walls. We wound up with a brewpub.

Sharon and Ron Montefusco
Dothan, Alabama



RON MONTEFUSCO

Who needs a carport? *Ron and Sharon hoist a pint of homebrew in the fabulous Biohazard Brewpub.*

THE BIOHAZARD BREWPUB was born on a hot summer day in south Alabama. We were brewing outside, underneath the carport, when a thunderstorm rolled in. The wind snuffed the propane flame, the boil stopped, and we had to cover the kettle and wait an hour for the weather to settle. It was during the storm that the head brewer (Ron) explained to the assistant brewer and money manager (Sharon) that walls were needed.

All the brewer wanted were walls ... and maybe a window and a door. If witnessed, the conversation might have looked a little like a fight.

This was in early July 1998. A week later, a contractor started work on the walls ... along with a few windows and a door. In late July, we held another brew session in our all-new, walled-in room. Another disaster! The burners on our two-tiered system heated the room to a dangerous level in the Alabama summer, even with the windows open and a fan blowing. This led to phase two: air conditioning and a restaurant exhaust fan.

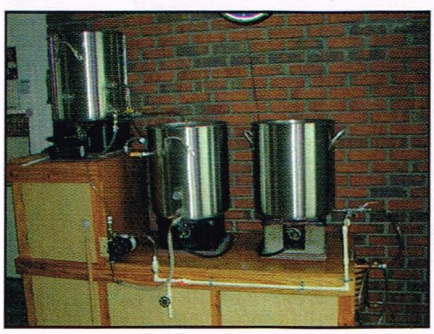
Meanwhile, we had started painting. The room looked awful — just like a closed-in carport. We spent the next four months painting the walls, laying down a ceramic-tile floor and building the bar Ron had secretly been plotting since the project began. Cherry wood, of course. And we bought a pool table. Oh, and a few other things: three neon signs, a neon clock, eleven flourescent box signs, six decorative trays and other sundry items hanging from the walls. By February 1999, the Biohazard Brewpub was complete and we were $11,000 poorer, not including the $2,000, 15-gallon, customized PBS brewing system that started it all.

It must be said: We had no intention of doing all this when we started. We just wanted some walls. But at some point, probably around the ceramic tiles, the money manager just gave up and went along with whatever the head brewer wanted.

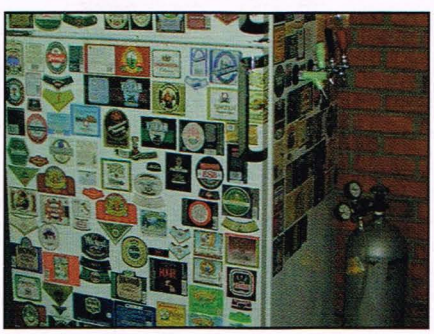
The brewpub had its official debut in March 1999, when some friends got married. We hosted the reception and served plenty of homebrew to the guests. We've brewed about 25 batches in the pub so far. Right now, we're tinkering with a recipe we call Schwarz Bier Lager. By the way, the old laundry room, right off the brewpub, has been converted to a lagering room with one extra refrigerator and more fridges on the way. We also make fruit wines and have planted a muscadine arbor in the backyard.

We only wanted some walls.

Ron is a pharmacist, Sharon is a homemaker and both are devoted brewers. Check out their highly entertaining Website at www.graceba.net/~biohazrd.



The system that started it all: *Such a fine, customized brewing set-up deserved a fitting home.*



A trio of taps: *The fridge holds three kegs and displays labels from as far as the UK and the Ukraine.*



The brewers'-eye view: *Surveying the pub (and pool table) from the cherry bar and brewing corner.*

NATIONAL BREWPUB CONFERENCE & TRADESHOW

Portland, Maine • Civic Center
October 21-23, 2000

LEARN BREWPUB MANAGEMENT FROM THE EXPERTS

Industry Experts



Gary Fish
President
Deschutes Brewery & Public House



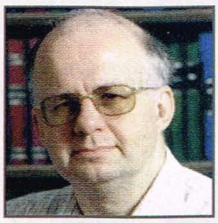
Ken Turow
Associate Dean
Culinary Institute of America



Ned Lidvall
Executive VP/COO
Rock Bottom Restaurants



John Hickenlooper
Owner
Wynkoop Brewing Company



Charles Bamforth
Prof. of Brewing Science
University of California, Davis



Steve Parkes
Owner & Lead Instructor
American Brewers Guild

Conference Topics

Start-ups
- Effective Kitchen Design
- Staffing for Start-ups
- Site Selection
- Developing a Marketing Plan I: Evaluating the Market
- Marketing Plan II: Turning Raw Data into Strategy
- Start-up Strategy: Building for the Long-term
- 10 Critical Tips for Start-ups

Executive Management
- Finding Focus: Goal Setting for Established Brewpubs
- Competition I: Creating Your Brewpub Brand
- Competition II: Responding to Market Changes
- How to Get the Maximum Marketing from Limited Resources
- 12 Keys to Increasing Distribution
- Surviving the Success Syndrome
- Effective Accounting for Brewpubs

Brewery
- Nature, Formation, and Prevention of Beer Hazes
- Batch to Batch Consistency
- Cleaning in Place
- The Role of Oxygen in Beer Staling
- Sensory Testing: Beer Flavors
- Optimizing Draft Dispense
- Raw Materials Review

Kitchen Management
- Flavors & Pairing for Brewpubs
- Cooking with Beer
- Recipe Exchange
- Menu Planning Ideas

Restaurant Management
- Restaurant Cost Controls
- Organiational Behavior
- Practical Management
- Negotiating with Vendors
- Building Guest Loyalty

And lots more . . .

Bring an Extra Note Pad!

The National Brewpub Conference & Tradeshow features three days of intensive workshops, seminars, and special events. Presented by the top minds in the business: owners and managers, brewers, professors, and consultants.

- 40+ Speakers and Sessions
- Multi-part, in-depth sessions
- Hands-on Workshops
- Interactive Panel Discussions
- Tradeshow of Top Suppliers
- Three Days: Free Lunches
- Demonstration Booths
- Beer Garden with over 20 Maine beers
- Customize Your Class Schedule
- No Overlapping of Sessions & Tradeshow Hours

Don't Miss:
- Welcome Reception
- Lobster Dinner
- Taste of Maine Beer Sampling
- Brewie Awards Party

October 21-23, 2000
Portland, Maine

Yes! I'm interested in the only conference for the brewpub industry.

❑ Send me a complete conference brochure.
❑ Send me information on exhibiting.

NAME _____

COMPANY (if applicable) _____

MAILING ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE _____ FAX _____

E-MAIL _____

Send or fax to:
National Brewpub Conference & Tradeshow
216 F Street, Suite 160, Davis, CA 95616
Tel: (530) 758-4596 Fax: (530) 758-7477

For the latest NBC News, visit www.brewpubmag.com!

Organized by:
BrewPub
Successful Brewpub Management Strategies

Media Partner:
BrewYour Own™
The How-To Homebrew Beer Magazine

Beer Barn

A Home Brewery Plan That Got Completely Out Of Hand

Sean Royston
Eagle, Michigan



PHOTOS BY THOM CANNELL

Work well done (from left): *Jon, Todd and Sean Royston toast the brewery with Gene David.*

ALL I WANTED WAS A PLACE to brew beer. Then everyone else got involved and the whole thing got a little out of hand. Not that I'm disappointed with the results! But the "brew barn" is definitely more than I expected.

Actually, it was a BYO cover story on "The Ultimate Garage Brewery" that got my brother Todd and I started on "The R Brothers Brewery" *(September 1998).* Up until then, we'd mostly seen pictures of guys brewing in their backyards. Gosh, that was some step-up! The sparge system was unbelievable and the ventilation system ... I was drooling over that article.

Plans for modifying my backyard pole barn got roughed out on the back of an envelope. We partitioned it off, super-insulated the walls and ceiling, and added windows. My father Jon, a retired electrician, did the wiring.

We wanted to brew year-round, but we were worried the pipes would freeze in our unheated barn when winter rolled around. (We live in rural Eagle, Michigan, and the winters get pretty nasty.) The solution? A friend who has a backhoe dug a trench from our well to the barn, so our water line is buried almost eight feet deep, well under the frost line.

We came up underneath the barn—with a lot of hand shoveling—and set in a "frost free hydrant" that self-drains into pea stone and gravel we filled in. Then we hauled wheelbarrows full of dirt to fill the hole inside. All water goes into the brew house from the frost-free; then we heat the water with a propane-fired RV water heater.

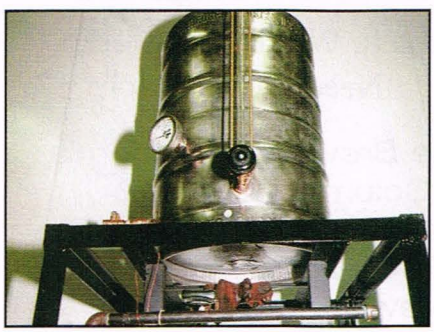
Dad built the cabinets and laid in the counter tops. Our sink came from Michigan State University Salvage, from the old chemistry lab. It was completely black from decades of chemical spills. It took lots of elbow grease to clean but cost only $50. We kept the high spigot for filling carboys.

Todd built the brew system with my brother-in-law, Gary. We were going to start with a three-tier system, then decided on RIMS. Friends from Hogs Head Brewery in nearby Ionia piped the gas lines for us. Gary salvaged our burners from a defunct commercial stove in his union hall. One feature is a moveable burner for the boil keg.

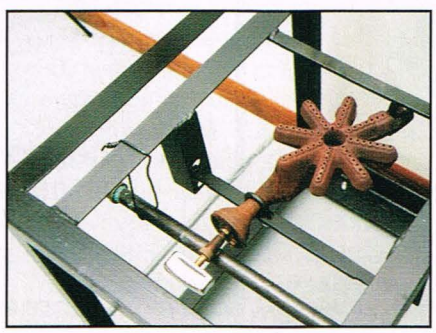
Our friend Gene David, a steam hobbyist, offered to modify our kegs. He cut the tops with a plasma cutter and did all the machining and silver soldering. Gene used steam site glass kits, cutting longer glass tubes and hand-building protective brass rods because standard parts were too short. We were really lucky; we had a craftsman as a friend and we used him! Gene gets free beer for a really long time.

We've done a few five-gallon batches, so the "The R Brothers Brewery" is up and running. It all started with a story in BYO, and now we're the story! Cool. Hey, how come we didn't make the cover?

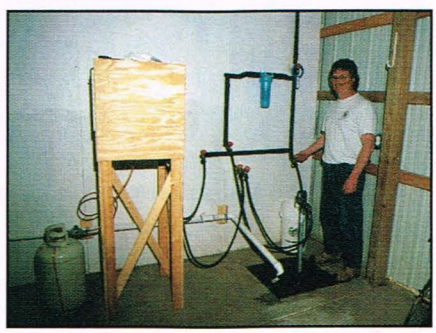
Sean Royston, a third-year homebrewer, is a power dispatcher for the Board of Water and Light in Lansing, Michigan.



Kettle up close: *RIMS brewing system with pump location TBA. Check out the converted keg.*



Stove top: *Our burners were all salvaged from a commercial stove; the boil keg burner is moveable.*



Pipe dream: *Water comes up from the frost-free well; a propane-fired heater is inside the plywood box.*

Plugged In

The all-electric brew room

Tom Snyder
Overland Park, Kansas

It used to be a spare bedroom in the basement. Now it's a brew-room in the basement; a much better use of space, if I do say so myself. Plus, it's the cleanest room in the house!

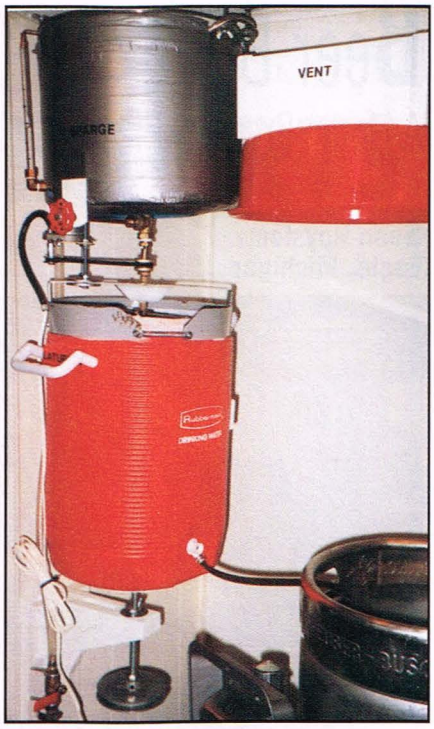
I spent eight months converting the room and designing all the equipment, and I'm really proud of it. To start with, my brewstove is electric; I made it from an old kitchen stove. It's very safe and boils five gallons in 45 minutes. (I described how to build it in the May 1999 issue of BYO).

My latest innovation is a motorized sparge arm. It's driven by a belt and turns at about 4 rpms. I also built a motorized wort chiller. It turns at 8 rpms and lets all the cold-break crud settle to the bottom of the boil kettle while keeping the brew moving around the chiller. The shaft and propeller are both made of stainless steel.

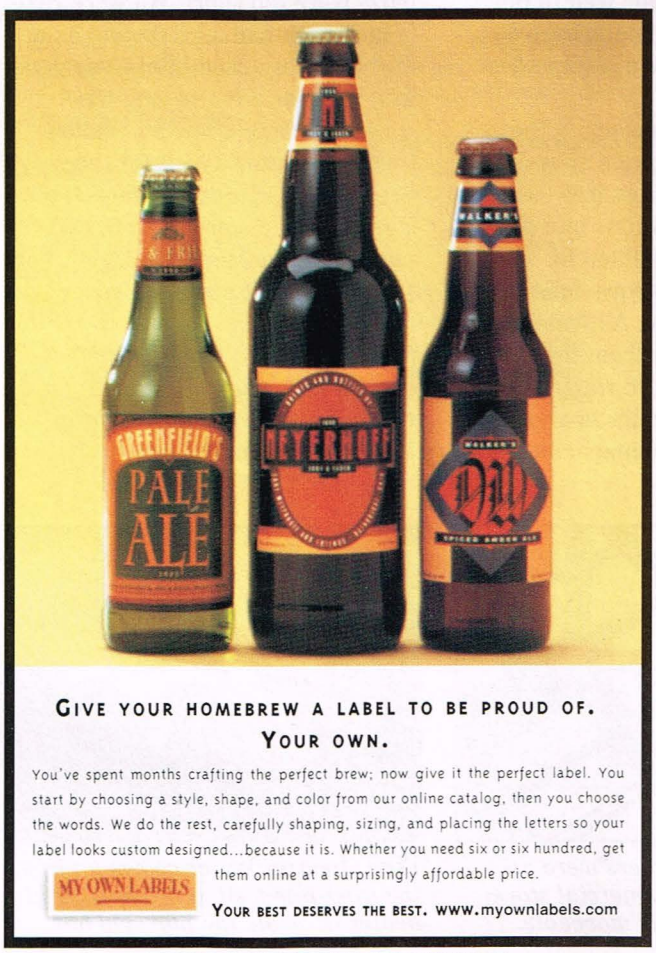
I'm an all-grainer brewer and make ten batches a year. Right now I'm into Scottish stuff, mostly wee heavy ales. Brew on! ■



Bedroom to brewroom: *The brew stove is at left, with the chiller in the kettle. A filter is next to the sink.*



It's automatic: *The belt-driven sparge arm is under the sparge tank and above the mash tun.*



GIVE YOUR HOMEBREW A LABEL TO BE PROUD OF. YOUR OWN.

You've spent months crafting the perfect brew; now give it the perfect label. You start by choosing a style, shape, and color from our online catalog, then you choose the words. We do the rest, carefully shaping, sizing, and placing the letters so your label looks custom designed...because it is. Whether you need six or six hundred, get them online at a surprisingly affordable price.

MY OWN LABELS

YOUR BEST DESERVES THE BEST. WWW.myownlabels.com

CIRCLE 10 ON READER SERVICE CARD

THE HOME BREWERY
Trade Mark
RIVERSIDE CALIFORNIA

If You Need it, We Have it...
Need We Say More?

The Home Brewery of California
1506 Columbia Ave. #12
Riverside, CA 92507
1-800-62BREWER
acmebrew@empirenet.com
www.homebrewery.net

Of course we have a Free Catalog, doesn't everyone!

CIRCLE 15 ON READER SERVICE CARD

Not Just for Breakfast

Quinoa, rye, oats and maize. Is it müesli or is it beer?

by Scott R. Russell



At a beer-tasting seminar I gave a few years ago, the discussion went off on a tangent, as discussions tend to at that kind of event, and led to the question "Are all beers made from barley?" I referred the audience to an article I had written for BYO on brewing multi-grain beers and we talked about traditional wheat beers, rye beers and oatmeal stouts.

There are some wheat beers, I said, made from 100 percent wheat. But not many. "Why?" they asked. Because most grains, wheat included, lack the enzymes with which barley is loaded. These enyzmes enhance starch to sugar conversion, aid in efficient mashing, and even enable fermentation to happen at all. Wheat can be used, I told them, but to my knowledge no other beers are made with a grain bill of 100 percent something else.

I'm sure I was wrong. My answer was a bit of a bluff, because I didn't know for certain. And I still don't have the whole answer. I know there are alcoholic beverages made around the world from many other ingredients besides barley. But are they beer?

At any rate, this presented an obvious challenge. I decided to play with grains and see what would happen. I brewed several different test batches over a few weeks, and had a variety of results. Mostly bad. Some very bad. I decided that, for my purposes as a more or less average homebrewer, it was neither easy nor worthwhile to brew exclusively with these non-barley grains. But I still wanted to play with the grains I had, so I began to mix other grains with my barley malt. In the end, I did hit on one excellent recipe, using about 25 percent barley and the rest "others." It reminded me of what I'd always thought medieval beer must have been like — brown, muddy, under-carbonated, spicy and rich. Nobody liked it but me, which was actually OK because it lasted me two months. Still, I tweaked the recipe and came up with a lighter, clearer and more mainstream version that used about 50 percent barley. It got much better reviews and was gone within three weeks.

GREAT GRAIN ALE
(5 GALLONS, PARTIAL MASH)

Ingredients

- 1 lb. quinoa (precooked)
- 5 lb. spelt (precooked)
- 5 lb. light malt (30° Lovibond)
- 1 lb. malted wheat
- 0.5 lb. malted rye
- 0.5 lb. flaked oats
- 0.5 lb. flaked maize
- 3 lbs. light dry malt extract (DME)
- 1 oz. of 6% alpha-acid Cascade hops (6 AAUs)
- 1 oz. of 4.5% alpha-acid Willamette hops (4.5 AAUs)
- American ale yeast (Wyeast 1056 or equivalent)
- 3/4 cup corn sugar for priming

Step by Step

Precook the quinoa and spelt by boiling the grains in about a quart of water for 20 minutes. Crush crystal, wheat and rye. Heat 8 quarts water to 164° F. Add crushed and flaked grains along with cooked spelt and quinoa (and any remaining cooking water).

Hold mash at 152° F for 75 minutes. Collect runoff and sparge with 10 quarts. Add DME to kettle and bring to a boil. Add Cascade hops, boil 5 minutes. Add Willamette hops, boil 15 minutes. Remove from heat, add to fermenter along with enough water to make 5.25 gallons. Cool to 68° F, pitch yeast. Ferment at 65° F for two weeks, transfer to secondary and condition at 60° F for three more weeks. Prime with corn sugar and bottle. Age in bottles for three weeks.

OG = 1.050
FG = 1.012
Bitterness = 30 IBUs

Notes

All-grain version: Omit the DME and add 4.5 lbs. of pale malt to the mash, increasing mash water to 14 quarts and the sparge water to 16 quarts. Proceed from boiling, timing boil and hop additions to end with 5.25 gallons.

Reader Recipes

Old Swill: Mike's House Beer

(5 gallons, all-grain with adjunct)

Old Swill is my interpretation of pre-Prohibition American beer. I've been working on it since 1993. BrewTek CL-630 (American Microbrewery Lager) is supposedly an old strain that was used by pre-Prohibition U.S. breweries. It finishes clean and clear, and it only needs two weeks of cold lagering.

Michael W. Martin
Canton, Texas

Ingredients

- 1 lb. yellow corn meal
- 5.5 lbs. pale two-row malt
- 6 oz. carapils malt
- 0.75 oz. of 6.5% alpha-acid Cluster hop pellets (4.9 AAUs)
- 0.75 oz. of 6% alpha-acid Cascade hop pellets (4.5 AAUs)
- 1/2 tsp. Irish moss
- BrewTek CL-630 yeast, two-stage starter
- 7/8 cup corn sugar for priming

Step by Step

Stir corn meal into 1 gal. of warm (120° F) water. Bring to a boil, turn off heat, cover pot, and let sit for 45 min. Add 7.5 qt. of 110° F water to adjust temperature to 130° F. Stir in crushed grain and hold for 30 min. Raise temperature to 135° F and hold for 15 min. Raise temperature to 150° F and hold until conversion is complete, 30 to 45 min. Raise temperature to 175° F and hold for 5 min. Sparge grain with 5 gal. of 160° F water.

Total boil is 60 min. Bring to a boil, add Cluster hop pellets, and boil for 45 min. Add Irish moss and boil for 10 min. Add Cascade hop pellets and boil for 5 min. more. Turn off heat, cover pot, and let sit for 20 min. Cool to 60° F and pitch yeast starter.

Ferment at 50° F for 30 days. Prime and bottle. Age at room temperature (65° F) for one week. Then cold lager at 38° F for two weeks.

OG = 1.042
FG = 1.008
Bitterness = 27 IBUs

Summer Soother

(5 gallons, extract with specialty grains)

This is a fantastic brew with great residual sweetness due to the cinnamon and orange. Yet it still maintains its light body and thirst-quenching ability. It's the brew I plan to share with my friends many a night on the back porch, while I deal a few hands of stud poker.

Kevin Kolano
North Babylon, New York

Ingredients

- 1/2 lb. wheat malt
- 1/2 lb. pale malt
- 1/4 lb. cara-Vienne malt
- 1 tbsp. chocolate malt
- 4 lbs. Alexander Sun wheat malt extract
- 1.4 lbs. Alexander Sun "Kicker"
- 1 lb. Muntons Wheat dry malt extract (DME)
- 2 oz. of 4% alpha-acid Crystal hops (8 AAUs)
- 3 oranges, quartered
- 6 cinnamon sticks
- 1 tbsp. Irish moss
- 2 packs Muntons ale yeast
- 3/4 cup priming sugar

Step by Step

Add grains to 2 gal. water, raise temperature to 150° to 160° F, and hold for 20 min. Remove grains, add the malt extracts, top up kettle to 5.5 gal. and bring to a boil. Total boil is 60 min. At the boil, add 1 oz. Crystal hops. Boil 30 min. and add 1 oz. Crystal hops. Boil 15 more min. and squeeze the oranges into the wort, discarding the peels. Add the Irish Moss. Boil 15 min. more and remove from heat. Chill the wort to 60° to 80° F and pitch the yeast.

After eight to nine days, transfer into secondary fermenter for two weeks to a month. If bottling, let condition for at least two weeks.

OG = 1.052
FG = 1.012
Bitterness = 25 IBUs

"John Dear" Lawnmower Beer

(5 gallons, extract with specialty grains)

My customers complained that they could not fulfill their lawnmowing duties (this is the reason for the "John Dear" part) because one homebrew on a hot day would make them too groggy to finish. Here is my stab at a light, low alcohol, refreshing summertime beer.

Dawn Letner
The Home Brew Shop
Chico, California

Ingredients

- 5 or 6 lbs. light malt extract (I recommend Alexander's or Telford extra pale malt)
- 0.5 lb. Munich or Victory malt
- 2 oz. of 5% alpha-acid Cascade hops (10 AAUs)
- 1 tsp. gypsum
- 1 tsp. sea salt
- 1 tsp. Irish moss
- Superior lager yeast (if brewing in cooler weather) or Coopers ale yeast (in warmer weather)
- 1 cup corn sugar for priming

Step by Step

Steep grains in 2 gal. of water at 150 to 170° F for 20 min. Remove, sparge, add extract, top kettle up to 5.5 gallons and bring to a boil. Total boil is 60 min. Add 1 oz. Cascade hops, sea salt, and gypsum, and boil for 30 min. Add Irish moss and boil for 20 min. Add 1 oz. Cascade hops and boil for 10 min. Cool down the wort to pitching temperature, below 90° F. Add yeast.

Ferment at 68° F for seven to 10 days. Allow time for the yeast to settle after fermentation stops before bottling. Prime and bottle. Let the brew age a couple of weeks. Enjoy.

OG= 1.046
FG= 1.008
Bitterness = 32 IBUs ■

Is your beer worthy?

Then send us your recipe ASAP! If we publish it, you'll get 15 minutes of fame and a free BYO T-shirt. Snail mail to Recipe Exchange, c/o *Brew Your Own*, 5053 Main Street, Suite A, Manchester Center, VT 05255. Or e-mail edit@byo.com. Be sure to include your address and phone number.

A Case of the Nasties

Priming with wort, the foam fight and more wisdom from Mr. Wiz

Mr. Wizard

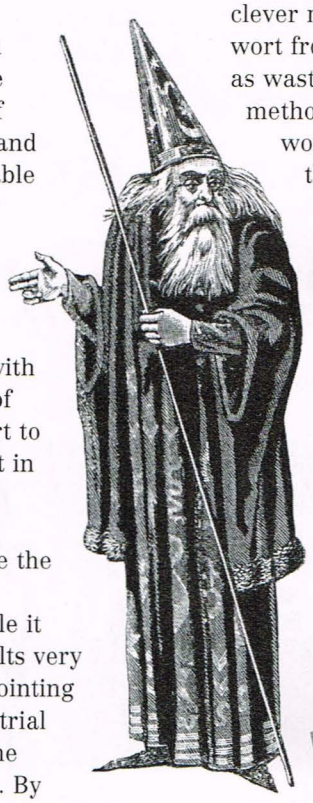
I have been an all-grain brewer for the past two years. In the bottom of my boiling kettle, I always find a fair amount of hop trub mixed with wort, which I separate from the main primary. Just for grins, I dumped all but the thickest of this "mud" into a sanitized half-gallon growler and loosely put on the cap. By the next day, all of the trub had settled to the bottom of the growler and there was about a quart of clean wort on top. I siphoned this into sanitized bottles, then placed the bottles in 180° F water and held it there for 20 minutes. I then capped the bottles, let them cool and stuck them in the fridge.

The sterile wort has a gravity of 1.113. I would like to use this wort to prime my latest batch of barleywine, but I don't know how much to use. I don't want bottle bombs, nor do I want undercarbonated brew. How much should I add in a 4.5-gallon batch to give the proper carbonation level? The specific gravity of the barleywine is 1.018, if that makes a difference.

Also, is there any reason to not use the "nasties" from the boiling kettle in the way I have described? I have done this for the past few batches, so I now have a growing supply of this wort for yeast starters and for the occasional bottling that I do.

Ken Durigan
Hainesville, Illinois

Priming with wort is very tricky, because wort is not completely fermentable and its fermentability varies from batch to batch. Breweries that bottle-condition with wort determine the fermentability of each lot before use and have tables that enable them to consistently carbonate with it.



If you want your barleywine to be its best and want to carbonate with wort, add one liter of the high-gravity wort to the beer, condition it in a keg, and carefully bleed off the excess pressure to fine-tune the carbonation level.

If you try to bottle it using wort, the results very likely will be disappointing unless you do some trial runs to determine the right amount to add. By using a series of voodoo calculations, I estimate that there is about 190 grams of fermentable sugar in one liter of your 1.113 SG wort. These 190 grams of sugar will produce about 95 grams of carbon dioxide. A good carbonation level is five grams of carbon dioxide per liter of beer; therefore, to carbonate 4.5 gallons of beer you will need 900 ml (30 ounces) of your 1.113 SG wort. This sounds convincing, but I don't have much faith in bottle conditioning unless I run some trials. So condition it in a keg or use plain old corn sugar for the priming.

As far as using the "nasties," it sounds like you are employing a clever method of squeezing out good wort from what most people discard as waste. I don't agree with your method used to "sterilize" the wort, however. Cold wort from the refrigerator transferred to a bottle and submerged in an 180° F water bath for 20 minutes is not the same as heating the wort to 180° F (or higher) and holding for 20 minutes. Your method might not even heat the wort to 180° F after 20 minutes. I recommend putting the loosely capped bottles in boiling water for 30 minutes to ensure sterilization of the wort. Other than that, I think your method is very slick!

Mr. Wizard

I went out to have a drink last Saturday and had a quarrel with one of my friends about the usefulness of foam. I said that the foam helps to retain the cool temperature of the beer, but no one believed me. I felt like an idiot. Can you tell me the usefulness of foam? Please reply as soon as possible, or I will never go out drinking with my friends again.

Eddie Chan
via e-mail

I really like beer foam — in fact, I'm kind of obsessive when it comes to beer foam. Any argument about foam is positive in my book, so you shouldn't feel like an idiot.

In a controlled environment, you

JUST WHEN YOU THOUGHT A CARBOY WAS THE VALET AT A RESTAURANT, WE CHANGED THE RULES!

HOMEBREW ADVENTURES
THE BEER & WINE MAKING RESOURCE
EST. 19 95

Brewing supplies and recipes for everyone!

1109-A Central Ave • Charlotte, N.C. 28204
704•342•3400 888•785•7766

www.homebrew.com

CIRCLE 18 ON READER SERVICE CARD

northern BREWER

www.northernbrewer.com
(800) 681-2739



Now Stocking
BEESTON'S MALT



Call or write for our free catalog

WHITE LABS

WYEAST LABORATORIES
BREWER'S CHOICE™

Northern Brewer - 1150 Grand Avenue - Saint Paul MN 55105

CIRCLE 28 ON READER SERVICE CARD

could probably demonstrate an insulating effect at the surface of beer. But in the hand of the consumer, the beer will be warmed by the temperature of the drinker's hand.

The drinking vessel itself has more to do with insulation than foam. Aluminum cans conduct heat very well and are good for rapidly chilling beer as well as rapidly warming it. Heavy glass or clay mugs are good insulators, as is the wonderfully American "cup cozy."

Beer foam affects the mouthfeel of beer and increases the creamy sensation of beer when consumed. It also has a very appealing appearance on a freshly poured beer. If it leaves a nice lacy pattern on the glass, it's considered truly superior foam. Most brewers like foam for these reasons; they want to produce a beer that has a nice foam volume with good stability and lacing.

To many consumers, however, foam occupies space in their glass that could be filled with beer. This is where the brewer and the beer consumer often run into arguments. I explain to people who drink my beer that the foam is a gift from me. It makes the beer visually appealing and improves the mouthfeel. I like to use beer glasses with a fill line to establish the volume where the beer stops and the foam begins. And the next time I'm in a debate about the usefulness of foam, I'll add the bit about preventing heat loss from the top of the beer. If nothing else, it makes for a nice story!

Mr. Wizard

Is sanitation important during mashing and sparging? The wort I collected for a pale ale was very dark and cloudy, rather than the light copper color I expected. It never became clear, even after boiling and cooling. Also, during a boilover the stuff overflowing from the pot was an ugly brownish-gray. The recipe was simple: 11 pounds pale ale malt, two ounces crystal malt, two ounces carapils malt, and one ounce chocolate malt. My equipment was clean, but I have never taken care

about sanitation during mashing, reasoning it would all get boiled later. This was the fourth all-grain brew I've tried. The first three were all good; in fact, the first was excellent. The current brew is still in the fermenter, so I don't know the final outcome.

Dave Cogswell
Bellevue, Nebraska

Sanitation is very important in every part of the brewing process, just as it is important in cooking. A sanitary process depends on the risks of contamination during that particular process step.

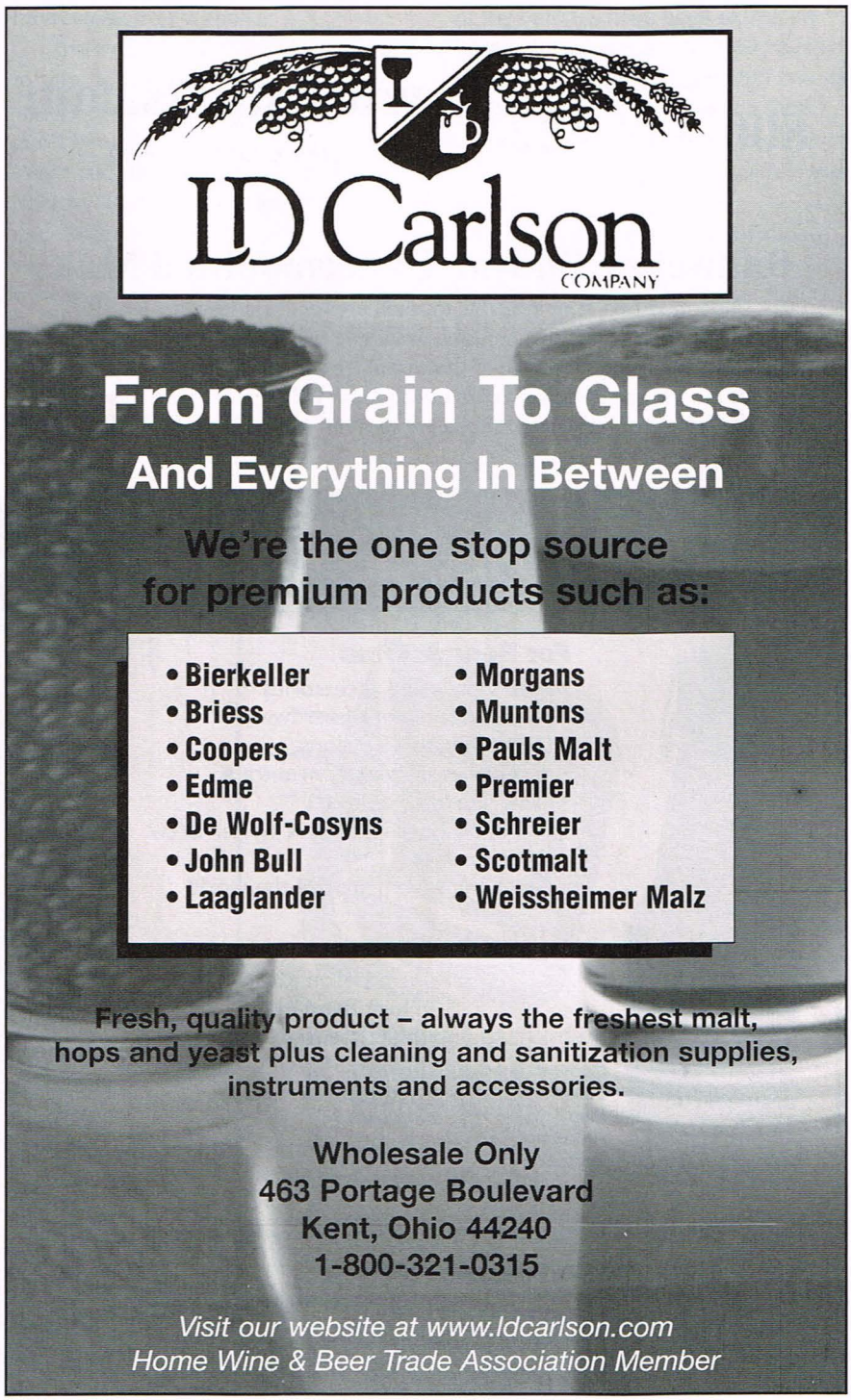
During wort production, it is important that your homebrewing equipment starts off clean, like plates stored in your cupboard. The only time microorganisms really cause problems in the brewhouse is when wort sits around long enough and starts to grow bacteria. This is uncommon at home but happens in commercial breweries where cleaning is more challenging. Although I read many recipes stressing the importance of sanitizing all brewpots, mash tuns and tools (such as spoons used to stir the kettle), these steps really are not needed. What is needed is for these brewing implements to be clean.

As soon as the kettle boil is over and wort cooling begins, the rules change. This is because wort is a nutrient-rich liquid that can support the growth of just about anything that falls in. Sanitizers (such as hot water, idophor and bleach) actively kill anything on your equipment to ensure it doesn't make it into your wort and spoil your beer.

The problems you describe did not arise because of poor sanitation. Most likely they are a byproduct of technique. Clear wort is a function of proper milling, false bottom design and smooth, uninterrupted wort collection. Malt milled too fine is a frequent cause of cloudy wort that no amount of recirculation will completely rectify. Fine milling bashes up the husk so much that it loses its ability to serve as a filter.

Some brewers start with properly milled malt and have problems because the holes or slots in the false bottom are too large. The slots used in commercial lauter tuns are usually 0.7 to one millimeter wide; these narrow slots produce the brilliantly clear worts frequently referred to in recipes. Larger holes or slots will naturally let more solids through the grain bed. This is okay if the amount of solids passing into the wort is not excessive.

Sporadic wort flow can also lead to cloudy wort because the pressure differential across the grain bed goes up and down as the flow changes. Every time the flow rate slows and the pressure differential decreases, the grain filter bed "coughs" up bits of fine particles. If you want clear wort, controlling wort flow rate is another technique



Customers in 66 countries and 50 states.

St. Patrick's of Texas

America's Largest Homebrew Supply

free catalog
800-448-4224
512-989-9727

www.stpats.com
with on-line ordering

Budweiser Budvar Undermodified Malt

Only Undermodified Malt available to small brewers in at least the past 10 years. It is the only malt that *requires* a multiple temperature mash. Made from Moravian barley, regarded as the world's finest, this malt is used to produce the "original Budweiser" in Czech Rep. We genuinely feel this is the most important new product for homebrewers and micros in the past decade.

VINOTHÈQUE U.S.A.



For Beer & Wine
- Filters, pads and accessories
- Huge assortment of hardware
- Demijohns to 15 gallons
- #1 supplier of wine concentrate
- New Hard Cider kits
- E-Z Brew Beer Recipes & Better Brew Beer Recipes
- Great hops from around the world

Grains:
- Harrington (Canada)
- Hugh Baird (U.K.)
- Ireks (Germany)
- DeWolf-Cosyns (Belgium)
- ***Scotmalt*** (Scotland)
- ***Briess*** (U.S.)
- ***Golden Promise, Chariot, Specialties and Organic***

Amber & Cobalt Blue Flexicap Bottles

Belgian items also available!

Fresh Malt Extracts from over 12 sources!

Sales to licensed retailers and breweries only!

Check our website — our stores are the best!

VINOTHÈQUE U.S.A.
email: vinous19@idt.net • web: www.vinotheque.net
1-800-481-VINO (8466) • FAX: 1-800-635-0035 • Marlboro, MA

CIRCLE 34 ON READER SERVICE CARD

that you can work to improve.

Finally, the brown-gray stuff floating in the foam of your wort was trub. Although the brews you have brewed in the past had trub, it sounds like this brew was a bit different. Since cloudy wort has more stuff that comes out in the boil, it makes sense the wort foam had a different appearance. The "dough" that forms in the mash tun has a distinctive brown-gray pasty appearance. Dough transferred to the kettle (when you're dealing with very cloudy wort) will rise to the surface and look funky. Beers brewed with a proportion of wheat frequently have a similar appearance in the kettle because of the higher protein content of wheat malts.

Mr. Wizard

People keep recommending thorough aeration of the wort to assure strong fermentation. I thought that in the presence of oxygen, yeast will break down the sugars all the way to H2O. So are those people who aerate their wort just making fast-fermenting but low-alcohol beer?

Jim Bellevue
via e-mail

Most questions about brewing techniques do not lend themselves to cut-and-dried answers. However, the answer to your question is singular and, unless biochemists discover new evidence, will not change during your homebrewing career!

For starters, yeast can operate under two main metabolic systems called aerobic (also referred to as respiration) and anaerobic metabolism. When yeast respire they use glucose to produce carbon dioxide, water, and lots of energy in the form of adenosine triphosphate (ATP). In biochemical terms, oxygen is used as the terminal electron acceptor in respiration, and a principle byproduct is water. The only time yeast cells respire is when they have developed mitochondria (intracellular organelles that hold the bio-

chemical machinery required for respiration) and when the wort specific gravity is less than 0.4 percent by weight or about 1.002. Because brewing yeast does not contain developed mitochondria and wort always has an original gravity greater than 1.002, yeast cells don't respire in a brewery fermentation.

When yeast cells are tossed into wort with an OG around 1.048, they survey the land (probably by using a sophisticated on-board sugar analyzer) and switch into anaerobic mode. In this mode the yeast cells use glucose to produce carbon dioxide, alcohol, and much less ATP than is generated through respiration. Oxygen is not the terminal electron acceptor; instead a compound called acetaldehyde is, and the byproduct is ethanol. The message is that you can give yeast all the oxygen you want but, as long as the wort OG is higher than 1.002, they will not add hydrogen (electrons) to oxygen to create water.

The reason that brewers should oxygenate wort is that yeast requires oxygen for more than one reason. Whether using aerobic or anaerobic modes of metabolism, yeast needs oxygen to synthesize essential cell-wall components. If yeast cells are starved of oxygen, they will not sufficiently increase in number to give a good fermentation and the cells that are generated will have weak cell walls.

Brewers want yeast to increase in population during the early stages of fermentation to produce good beer and healthy offspring. Yeast requires oxygen to produce healthy offspring, so brewers must aerate their wort.

If you are not aerating wort, you will be amazed at the vigor of your fermentations once you begin aeration. One thing you will not notice, however, is any loss of potency in your homebrew.

Mr. Wizard

As a new homebrewer, I'm a bit confused about how to handle hops. Some folks recommend cheesecloth "hop socks." Yet catalogs rarely mention socks; one even says the hops will settle out in the boiler, which doesn't help since I use a converted keg with a spigot that siphons the settled hops first and the floating ones last! Some of my batches have been extremely bitter, almost grapefruity, and I suspect it's caused by all the hops that end up in the fermenter. What do you think?

Dave Owens
via e-mail

Handling hops is one of those topics lightly dealt with in homebrewing literature because almost any hop type, be it pellets, cones, or extracts, can be used on a small scale without too much hassle. Some homebrewers who have

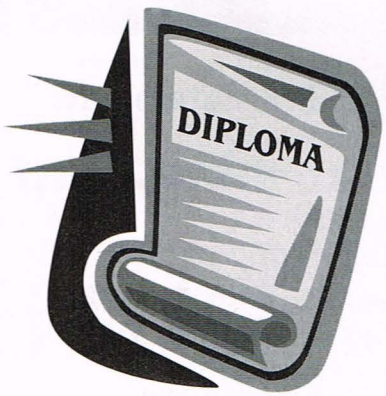
BREW SOURCE.COM
Enjoy Your Brew
Online Supplies



Always Open, Convenient and Easy
Your BrewSource For :
• Varieties of Hops • Varieties of Grains
• Varieties of Malts • Varieties of Spices
• Varieties of Yeast • Kettles • Steins
• Taps • Brew Kits • Fruit Flavorings
• Fermentors • CO2 Equipment
• Pub Glasses • Strainers • Additives
• Oxygenators • Paddles • Spoons
• Adjuncts • Sugars • Spargers
• Etc. • Etc. • Etc.
1-888-404-BREW(2739)
www.BrewSource.com

CIRCLE 7 ON READER SERVICE CARD

WHO WANTS TO BE A
$BREWMASTER$



The American Brewers Guild Diploma Program provides the following benefits:

A. Distance Learning
B. Videotaped Lectures
C. Internships
D. Job Assistance
E. Alumni Website

AMERICAN BREWERS GUILD BREWING SCHOOL

My final answer is F. All of the above

Two classes a year starting in February and June

(800)636-1331 • email: abgbrew@mother.com
908 Ross Drive • Woodland CA 95776
www.abgbrew.com

CIRCLE 2 ON READER SERVICE CARD

crossed the ranks to professional brewing have been surprised to discover that very few small brewing setups are designed to use whole hops. Small breweries use hop pellets because cone hops require special equipment for separation.

The hop sock is a simple device that enables the homebrewer to get the hops out of the wort before cooling. If you are using multiple additions of hops you might have two or three hop socks floating about in the kettle. The advantage of this technique is that it's really easy to remove the hops at the end of the boil. The disadvantage is that hop utilization (the conversion of alpha acids to iso-alpha acids) can significantly drop because the hops are bundled up too tightly.

An alternate method is to place a perforated stainless-steel screen in the bottom of your brew kettle. Simply toss whole hops into the wort and the screen will strain them out at the end (assuming you're draining the wort from a point below the screen). The hops also act as a natural filter bed and will remove much of the trub.

For brewers using pellet hops, socks and screens are not required because pellet hops settle to the bottom of the wort along with trub. Commercial brewers use whirlpool vessels for this task and no extra equipment is required.

Homebrewers can whirlpool wort containing pellet hops by stirring the wort after the boil is completed. The objective is to get the wort spinning at a fast clip. Once the wort is spinning, quickly remove the spoon to ensure that the wort keeps spinning. The wort is allowed to stand for 20 minutes, during which time the pellets and trub settle into a pile at the center of the kettle. Hop-free wort can then be transferred to the cooler, as long as the wort is drained from the side of the kettle, away from the trub pile.

Leaving hops in the wort during fermentation will not lend much more bitterness to the beer because heat is required to transform the insoluble alpha-acids into the soluble iso-alpha acids. This is why dry hopping adds aroma but not bitterness. Some of the grapefruit aroma might be due to hop solids in your fermenter, but the root cause is hop variety. Certain varieties, especially Chinook and Cascade, have a pronounced grapefruit aroma. In general, American varieties have more of these aromas than do the Noble varieties from Europe such as Saaz, Hallertauer and Tettnanger. ■

Mr. Wizard is a leading authority in homebrewing whose identity, like the identity of all superheroes, must be kept confidential. Send your questions care of BYO; in every issue, he'll answer as many as we can cram into our pages.

Beer and Wine Hobby

Visit our on-line catalog at:

www.beer-wine.com

One Stop Shopping For Homebrewing, Winemaking, Cordial, Cider & Vinegar Making

155T New Boston Street,
Woburn, MA (Retail Outlet)
(2 minutes from Woburn Mall)

(800) 523-5423 (orders)
781-933-8818 (consulting)

Beer & Winemaking Equipment & Supplies

CIRCLE 5 ON READER SERVICE CARD

Great Service

Low, Low Prices

No Order too Small

taphandles.com



We have a large selection of standard tap handles which are ideal for small craft brewers. We also make great custom tap handles!

Toll Free: 1-877-855-6383
sales@taphandles.com

CIRCLE 33 ON READER SERVICE CARD

Beat the Heat!

Crisp golden ale and Oktoberfest on ice

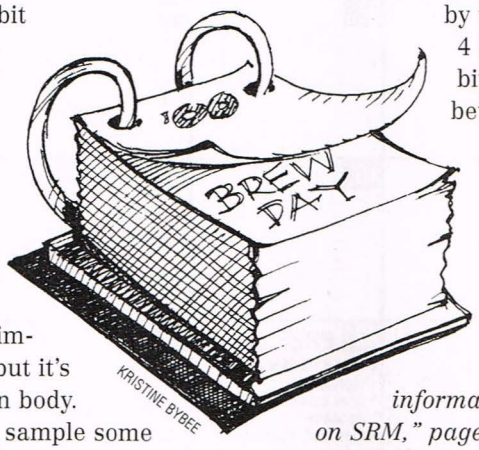
by Mikoli Weaver

NO MATTER WHERE YOU live, it's probably getting hot out there. So you'll need a nice, light beer to beat the heat. Our first style is a golden ale, a crisp, pale-colored beer with a moderate amount of hop bitterness and alcohol. We'll also brew an Oktoberfest, which we'll condition until mid-September by traditional lagering at cold temperatures.

The pilsner we brewed in March and the IPA from May are ready to drink this month. So you'll have no shortage of homebrews for the summer barbecue scene.

Golden Ale: The Story

Golden ale, blonde ale, Canadian ale. No matter what you call it, you're describing the beer we're brewing in June. The name may be a bit fuzzy, but the beer is usually an all-malt ale that's light and dry. It resembles a light lager, with greater bitterness and hop flavor. It's also similar to pale ale, but it's lighter in color in body.



For starters, sample some commercial golden ales to get a feel for the style. Goose Island Blonde, made by Goose Island Brewing in Chicago, won a gold medal at last year's Great American Beer Festival. It's a great one to try; Goose Island beers are gods, in my opinion. Still, my favorite American golden is probably Full Sail Golden Ale, brewed by Full Sail Brewing Company in Hood River, Oregon. It has a nice clear appearance, mild hopping and a dry finish.

From Canada, try Warthog Ale from the Big Rock Brewing Company in Calgary, Alberta. And even though it's brewed Down Under, Cooper's Sparkling Ale, made by Cooper's Brewery in South Australia, is another prime example of a Canadian golden. It's a classic light ale, pale and crisp with a subdued hops presence. It's highly carbonated and tastes great ice-cold.

By the numbers, here's how golden ales come together. The original gravity ranges from 1.044 to 1.056 (11° to 14° Plato); the alcohol by volume is between 4 and 5 percent; the bitterness falls between 15 to 30 IBUs; and the color is 3 to 10 SRM. By way of commercial comparison, Foster's Lager is approximately 4 SRM *(for more information, see "The 411 on SRM," page 21).*

To brew this month's golden ale, we'll use a standard two-row malt and a little bit of crystal malt (10° Lovibond or as light as you can get). The mash will be a standard single infusion, at 149° F.

2000 Style Calendar

January: Barleywine and Roggenbier
A barleywine to age until the New Year's celebration and a flavorful German rye beer to balance out the dark season.

February: Cream Ale and Dublin Stout
This is black-and-tan brewing month: A light, slightly sweet cream ale and a traditional Irish stout for St. Patrick's Day.

March: Belgian Dubbel and Pilsner
Belgian Brewing 101 (a Chimay Red Cap clone) followed by Lager Brewing 101 (a traditional Czech pilsner).

April: Maibock and Scotch Strong Ale
Maibock for celebrating next month and a bold, peated Scotch ale high in both gravity and flavor.

May: IPA and Mild Ale
An old standby—a highly hopped American-style IPA—and an English beer that's new to the lineup, a mild brown ale.

June: Golden Ale and Oktoberfest
A "lawnmower" beer for the start of summer. And a tasty Oktoberfest that will be aged until early September.

September: Dortmunder and Oatmeal Stout
Dort is a light European export lager. Plus a new stout for this year's schedule — an English oatmeal.

October: ESB and Weizenbock
A deep amber, caramel-laden ESB and a gigantic German winter seasonal weizenbock to age until early January.

November: Bavarian Dunkel and Belgian Tripel
This month has two warming beers to fight the cold winter nights: a dark, chocolate dunkel and a high-gravity Belgian tripel.

December: Christmas Ale and Spiced Ale
A new version of our annual Christmas ale. Plus a lightly spiced dark ale with a distinctly festive edge to end the year.

Many brewers mash at temperatures higher than the 149° or 150° F that I recommend. It's well known that the alpha-amylase enzyme works best at slightly higher temperatures, sometimes known as the "conversion temperature." This varies depending on the source consulted, but is usually between 158° and 161° F. That's too hot for beta amylase activity, a very important step in breaking down complex starches during the mash. The beta amylase enzyme is most effective from 140° to 149° F.

At 149° F, the alpha is not in its optimum range and the beta is at the high end of its optimum range. Still, both enzymes are active at this compromise temperature.

Also, beta amylase is a much stronger maltose producer than alpha amylase. This means that the 149° F temperature produces the most converted mash, and subsequently the most fermentable wort. Higher temperatures tend to produce a more dextrous wort, higher in body but lower in overall fermentability. So I always include a bit of dextrin malt, like carapils, for good measure.

Dr. Michael Lewis, a renowned (and now retired) professor from the University of California at Davis, described this "compromise" mash to me when I happened to meet him a few years back. I've stuck with it ever since,with great results.

Mildly bittering, aromatic, American hop varieties work well for this refreshing style of beer. Cascade, Mount Hood, Willamette and Liberty are great choices. You could also try Crystal, a great aroma variety with about 4 percent alpha acid. The timing for the hop additions are 90 minutes (beginning of boil), 30 minutes and 0 minutes (end of boil). Flower hops are best for this particular beer. They add a freshness that can't be denied.

The fermentation schedule is standard, with a seven-day primary and secondary. This beer should not be estery, or fruity, so watch your fermentation temperature. Try to keep it at 68° F, because higher temperatures mean more esters.

Golden ale

(5 gallons, all grain)

Ingredients

- 7.5 lbs. pale malt
- 0.5 lbs. carapils
- 1.0 lb. crystal malt (10° Lovibond)
- 1.0 oz. of 4.5% alpha-acid Liberty hops (4.5 AAUs)
- 0.75 oz. of 4.5% alpha-acid Liberty hops (3.4 AAUs)
- 0.75 oz. of 4.5% alpha-acid Liberty hops (3.4 AAUs)
- 1 pt. starter of American ale yeast (Wyeast 1056 or equivalent)
- 2/3 cup corn sugar for priming

Step by Step

Mash grain in 3 gal. of water at 150° F for 60 minutes. Sparge with 168 to 170° F water to collect 5.75 gallons of wort. Total boil time is 90 minutes. At beginning of boil add first Liberty hops and boil 60 min-

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
June 2000				1 PREP DAY • Assemble golden ale ingredients • Soak equipment in sanitizer • Start 1 pt. yeast starter	2	3 BREW DAY • Brew golden ale • Primary fermentation begins • Check original gravity and record • IPA ready to drink today!
4	5	6	7	8	9	10 TRANSFER • Rack golden to secondary • Check and record gravity • Check for off flavors • Continue fermenting for 7 more days
11	12	13	14	15	16	17 BOTTLE DAY • Sanitize bottles and bottling vessel • Record final gravity • Rack golden ale, prime and bottle • Condition two to three weeks at 45° F
18	19	20	21	22 PREP DAY • Assemble Oktoberfest ingredients • Soak equipment in sanitizer • Start 1 pt. yeast starter	23	24 BREW DAY • Brew Oktoberfest • Primary fermentation starts • Check gravity and record • Start fermentation at 50° to 55° F • Pilsner ready today!
25	26	27	28	29	30	

utes. Add the second Liberty, boil 30 more minutes. At end of boil, add final Liberty hops. Whirlpool and cool to 68° F to pitch starter. Oxygenate-aerate well.

Ferment at 68° F for 7 days, transfer to secondary and ferment at 68° F for 7 more days or until gravity is about 1.008 (2° Plato) and fermentation stops. Rack, prime and bottle. Condition at 45° F (in the refrigerator) for two to three weeks. If the carbonation is insufficient, due to inactive yeast at the cooler temperature, leave the beer at room temperature for a day, then rechill before drinking.

Extract with grain option:

Substitute the pale malt with 6.5 lbs. pale malt extract syrup. Increase the first hop addition to 1.25 oz. Liberty.

Start with 5 gallons of 150° F water. Steep crushed grain for 30 minutes. Sparge grains with enough 170° F water to make 5.5 gallons. Heat to boiling and add extract syrup. Total boil will be 60 minutes. At beginning of boil add Liberty hops and boil 30 minutes. Add the second Liberty, boil 30 more minutes and add final Liberty. Whirlpool and cool to 68° F to pitch starter. Oxygenate-aerate well. Follow fermentation schedule for all-grain version.

OG = 1.052
FG = 1.012
Color = 6 SRM
Bitterness = 30 IBUs

Oktoberfest: The Story

The first Oktoberfest was brewed to celebrate the wedding of King Ludwig I to Princess Maria Therese in 1810. Ever since, the beer has been brewed to commemorate the annual event that takes place on the same Munich village green, known as Theresienwiese, or "Therese's Meadow." The original one-day celebration has expanded to a sixteen-day festival attended by some six million visitors.

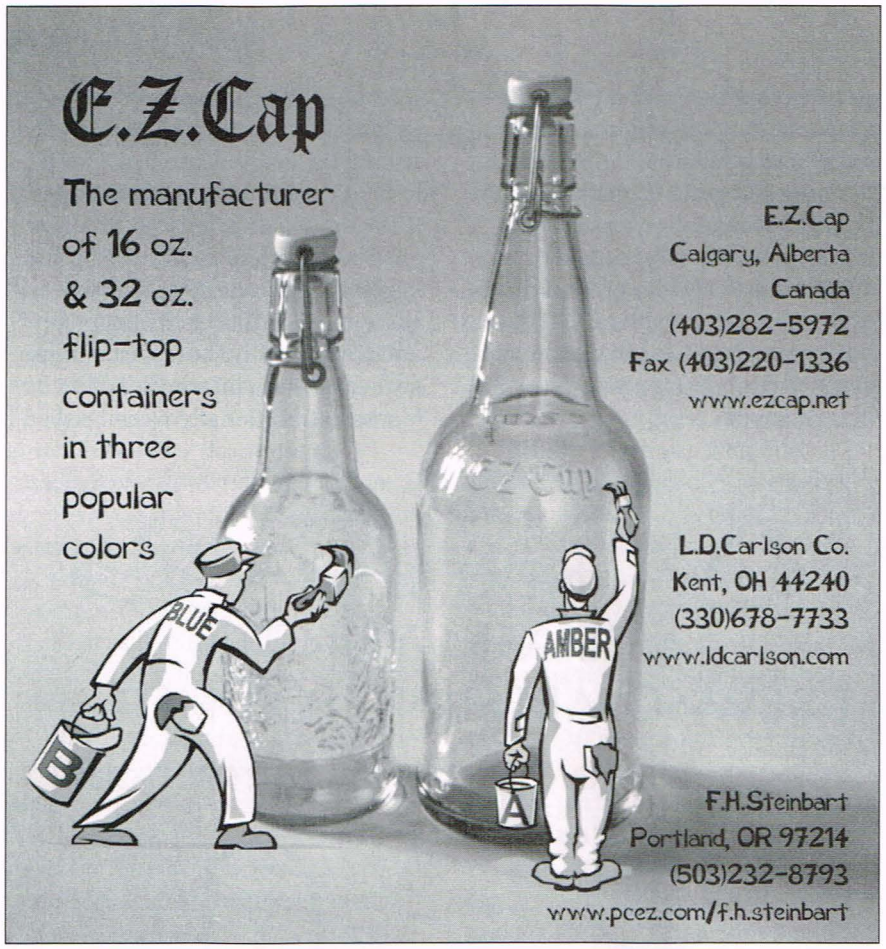
The Oktoberfest style is regulated by Munich Brewer's Guild law. It specifies that the beer must be filtered and that the original gravity must be at least 1.052 (13° Plato). The brewer's guild is comprised of the eight Munich breweries; those that brew Oktoberfest outside Munich must create a product that's lower than the mandated 13° Plato. This results in a beer that's slightly lower in alcohol than the traditional Munich beers.

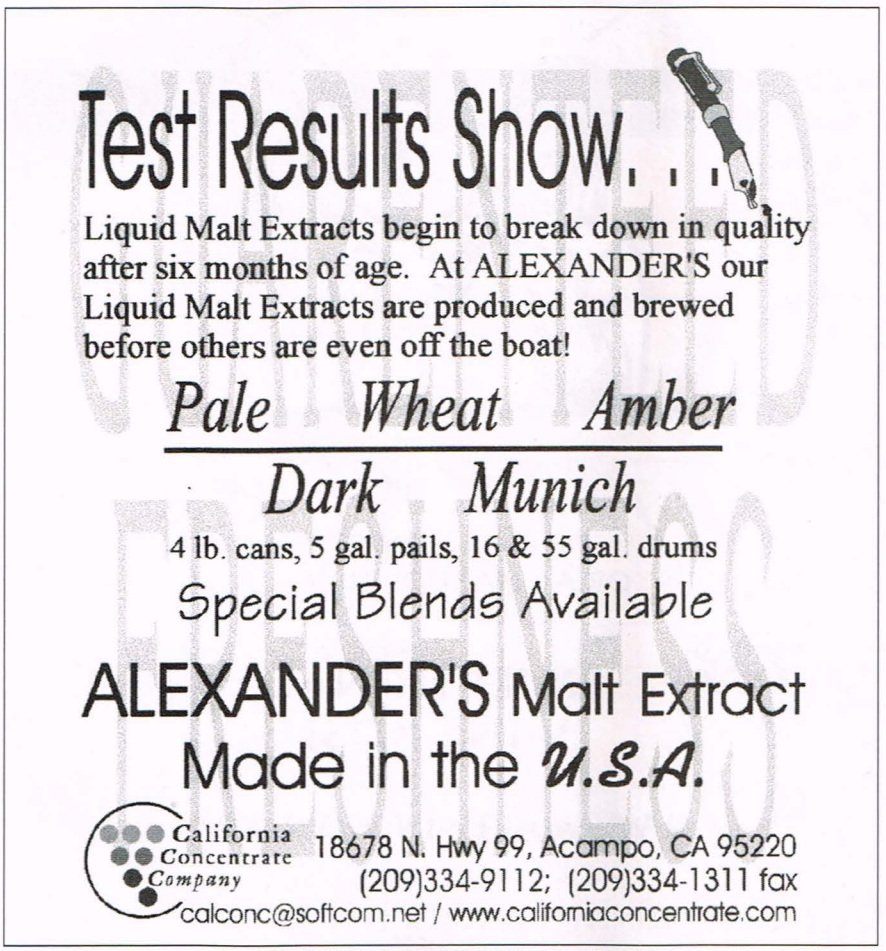
The style guidelines for Oktoberfest are OG of 1.052 to 1.056 (13° to 14° Plato); ABV of 5.3 to 5.9 percent; bitterness of 18 to 25 IBUs; and color of 4 to 15 SRM.

The term Märzen is often used in place of Oktoberfest, and the guidelines for the World Beer Cup and GABF list the beers as a single style. The only difference is that Märzens traditionally were brewed



CIRCLE 9 ON READER SERVICE CARD





CIRCLE 8 ON READER SERVICE CARD

in the spring ("Marz" is the German word for March) and conditioned until late summer.

From Germany, classic examples come from Spaten, Paulaner, Augustiner and Andeks. From the United States, some of the better brews are created by New Glarus Brewing (New Glarus, Wisconsin), Full Sail (Hood River, Oregon), Abita Brewing (New Orleans, Louisiana) and Boston Beer Company - Sam Adams (Boston, Massachusetts).

For our version, we'll keep the grain and mash simple: Chariot pilsner, dextrin and Munich crystal malt (40° Lovibond) mashed in a single infusion at 150° F.

You can use American and English malts. Or if you prefer, German malting companies like Weyermann and Durst make very good and widely available products. If you're a purist, you could conduct a decoction or step mash. But besides respect for the German decoction tradition, there's really no need for it. All of the malt in this recipe is highly modified.

Generally I recommend an accelerated lagering technique. But this time, we'll try a slow, cold lagering process. If you have a spare refrigerator, great. For the rest of us, there are a few options. First, you could split the beer into small containers (a gallon) and cram it into your normal refrigerator. The second option is to immerse your lagers in an ice-water bath.

In a carboy or Cornelius keg, the beer can sit in a garbage can or similar container. It should be just big enough to hold the carboy and ice, with six inches of headspace above. This way, you can loosely cover the can, which will help insulate the ice. The ice water should rise to a level just below that of the beer. Don't let the water get too high or the carboy will float around, disturbing the contents. I drilled a hole in my garbage can three-fourths of the way up. The hole drained water and also vented carbon dioxide.

The beer will ferment for 7 to 10 days at 50° to 55° F and seven more

days at 40° F. At that point, cool the beer as close as possible to 32° F for another week. When the gravity is constant, rack to a secondary and continue at 32° F until September.

Keeping beer on ice for three months isn't as hard as it sounds, especially if you have a cool basement. Once the beer is chilled to 32° F and the yeast has slowed, the temperature should hold steady. And the ice should last a few days before you need to replace it.

Oktoberfest

(5 gallons, all grain)

Ingredients

- 6.5 lbs. Chariot pilsner malt
- 2.25 lbs. cara-Munich (40° Lovibond)
- 1 lbs. carapils or other dextrin-type malt
- 0.75 oz. of 4.5% alpha-acid Tettnang hops (3.4 AAUs)
- 1.0 oz. of 4.5% alpha-acid Tettnang hops (4.5 AAUs)
- 2 pt. starter of Bavarian lager yeast (Wyeast 2206 or equivalent)
- 2/3 cup corn sugar for priming

Step by Step:

Mash grain in 3 gallons of water for 60 minutes at 150° F. Sparge with enough 168° F water to yield 5.75 gallons of wort. Total boil time is 90 minutes. At beginning of the boil add first Tettnang hops and continue for 75 minutes. Add second Tettnang and boil for 15 minutes. Whirlpool and cool to 40° F to pitch starter.

Ferment the beer at 50° to 55° F for 7 to 10 days. Cool to 40° F over 7 more days, then begin cooling to 32° F. Continue fermentation at 32° F for approximately one more week. Lager will then age at 32° F for the next eight weeks.

Extract with grain option:

Substitute the pilsner for 6 lbs. malt extract syrup and increase first Tettnang addition to 1 oz.

Start with 5 gallons of water in the boil kettle. Steep the crushed grains at 150° F for 30 minutes. Remove the grain bag and rinse with enough 168° F water to make 5.5 gallons. Add extract. Total boil time is 60 minutes. At beginning of boil add first Tettnang hops and continue for 45 minutes. Add second Tettnang hops and boil for remaining 15 minutes. Whirlpool and cool to 45° F to pitch starter. Ferment and condition as described above.

OG = 1.052
FG = 1.012
Color = 14 SRM
Bitterness = 23 IBUs ■

Mikoli Weaver has been BYO's "Style of the Month" columnist since January 1999. A former pro brewer, he currently works at Belmont Station in Portland, Oregon.

The 411 on SRM

SRM stands for Standard Reference Method. It's the scale that American brewers most often use to describe the color of beer. Like the older Lovibond scale, SRM is also applied to the color of malts. Lovibond is gauged with an "optical comparitor" (you match the color of the beer or malt against colored glass disks). SRM, a newer method designed to remove human error, uses a light-meter type of device called a "spectrophotometer." In theory, SRM and degrees Lovibond should be the same number.

When it comes to beer color, Foster's Lager is about 4 SRM, Saint Pauli Girl Dark is 22 and Guinness Stout is 70+. SRM colors for malt range from 1.5 for pale and wheat malt to 500+ for highly roasted malts and barley.

SRM RATINGS FOR BEER COLOR

COLOR	SRM NUMBER
Clear	0
Light straw	1 to 2.5
Pale straw	2.5 to 3.5
Dark straw	3.5 to 5.5
Light amber	5.5 to 10
Pale amber	10 to 18
Dark amber or copper	18 to 26
Very dark amber	26 to 40
Black	60+

BREW NAKED!
Or wear the Original
primal brewer™
Brand Clothing for Homebrewers.
Either way, you're Brewing in STYLE!
We now ship FREE* to
any continental USA address.
www.primalbrewer.com
*Shipped FREE via USPS Parcel Post. Priority and Express Mail extra.
PRIMAL BREWER PO BOX 1881 SHINGLE SPRINGS, CA 95682
FOR A CATALOG CALL 888-676-1551 OR CHECK OUT
OUR SECURE ONLINE ORDER FORM AT
WWW.PRIMALBREWER.COM
CIRCLE 29 ON READER SERVICE CARD

the big stink

The nose always knows ... and if it doesn't, it should. Here's how to identify — and eliminate — six common off-aromas.

by Ashton Lewis

TASTING A NEW BREW is like solving a mystery. Color relates to grist bill and then to flavor. Foam and bubble formation are the product of carbonation. Aroma is a function of almost everything: malt, hops, yeast, fermentation, aeration, aging, contamination and yeast strain. The time between the first whiff and the first sip is the time that counts when beer is evaluated.

Flavor is comprised of two factors, taste and aroma. Taste is what you sense with your tongue; aroma is what you sense with your nose. Aroma comprises 80 percent of the perception of flavor. This is why little kids hold their noses when eating something they don't like.

Brewers need a good mental library of the odors classified as "off-aromas." They also should know how to control them. It's fairly easy to identify off-aromas and to understand why these aromas are present in beer. The real challenge is to intentionally brew beers with detectable levels of compounds that are objectionable in high concentrations but pleasant at levels right above the threshold of detection.

Acetaldehyde

THE AROMA: Green apples, latex paint

THE ORIGIN: Acetaldehyde is an intermediate compound in the biochemical transformation of glucose into alcohol, carbon dioxide and energy (ATP). This process is called "glycolysis." The last step in the glycolytic pathway is the conversion of acetaldehyde to ethanol (alcohol). Some acetaldehyde "leaks" from the yeast cell during fermentation but can later be absorbed and converted to ethanol during aging. This step regenerates NAD+ by adding hydrogen atoms to acetaldehyde to form ethanol. (For more information on NAD+, read on!)

A less common source of acetaldehyde is microbiological contaminants, namely *Acetobacter* and *Zymomonas*. *Acetobacter* is not normally found in bottled beers because it requires oxygen to grow, but it can spoil cask-conditioned beers. *Zymomonas* spoilage is usually associated with sugar-primed beers because *Zymomonas* can use glucose, fructose and sucrose for growth, but not maltose. A strong hydrogen sulfide aroma usually accompanies *Zymomonas* spoilage.

Acetaldehyde can also arise from oxidation of ethanol; this occurs during beer staling. Other alcohols also oxidize during beer oxidation. The aroma of this mixture of aldehydes is often described as resembling sherry.

THE SOLUTION: The most common cause of elevated acetaldehyde levels is either a short aging time or insufficient yeast activity during aging. These problems are solved by pitching healthy yeast and not rushing through fermentation and aging.

Acetaldehyde can be detected in some beers even after a long aging period with healthy yeast because of the qualities of that yeast strain. Coors beers have a distinct acetaldehyde aroma; it's pleasant and subtle and is associated with their particular strain.

Zinc deficiency is another cause of elevated acetaldehyde in finished beer. Zinc, among other nutrient roles, is a co-factor for the enzyme that converts acetaldehyde to ethanol. Many commercial brewers

add zinc to wort because of its importance to yeast health. The easiest way for homebrewers to add zinc to wort is by using a yeast nutrient blend and following the recommended dose.

Zinc can be added in tablet form but the desired level in wort is so low, about 0.15 mg/liter, that weighing becomes a limitation. Take note that high levels of zinc can cause severe fermentation problems.

Diacetyl

THE AROMA: Butterscotch, buttermilk, artificial butter, toffee

THE ORIGIN: Diacetyl (2,3-butane dione) is related to the synthesis of the amino acid valine. During the normal coarse of fermentation, alpha-aceto-lactate (a precursor to diacetyl) is formed and excreted from the yeast cell. This precursor is then converted through an oxidation reaction to diacetyl outside of the yeast cell. Elevated temperature and exposure to oxidizing compounds, especially oxygen, accelerate the conversion from precursor to diacetyl. If the precursor is not converted to diacetyl during fermentation and aging, it can convert during racking, bottling or kegging.

Diacetyl is also associated with the lactic acid bacteria *Pediococcus* and *Lactobacillus*. Most brewers are taught to detect diacetyl at very low levels because of its association with bacterial spoilage.

THE SOLUTION: Although some brewers with fancy labs and very specific knowledge about their beers can fine-tune the valine content of their worts to control diacetyl, most brewers rely on aging. The key to diacetyl control is to understand how it is formed and later reduced.

In the late stages of fermentation yeast cells have a large supply of a biochemical carrier molecule called NADH2. The counterpart to NADH2 is NAD+ and the difference between the two compounds is two hydrogen atoms. NAD+ is important in metabolism because it keeps the glycolytic pathway moving by transferring hydrogen; when NAD+ picks up two hydrogen atoms it becomes NADH2. As it so happens, diacetyl is a compound that the yeast cell can dump hydrogen atoms onto and regenerate NAD+ molecules. When hydrogen is added to diacetyl the compound 2,3-butane diol is formed. The lingo for this reaction is a "diacetyl reduction" (a reduction reaction is one where hydrogen is added to a molecule). 2,3-butane diol has virtually no detectable aroma.

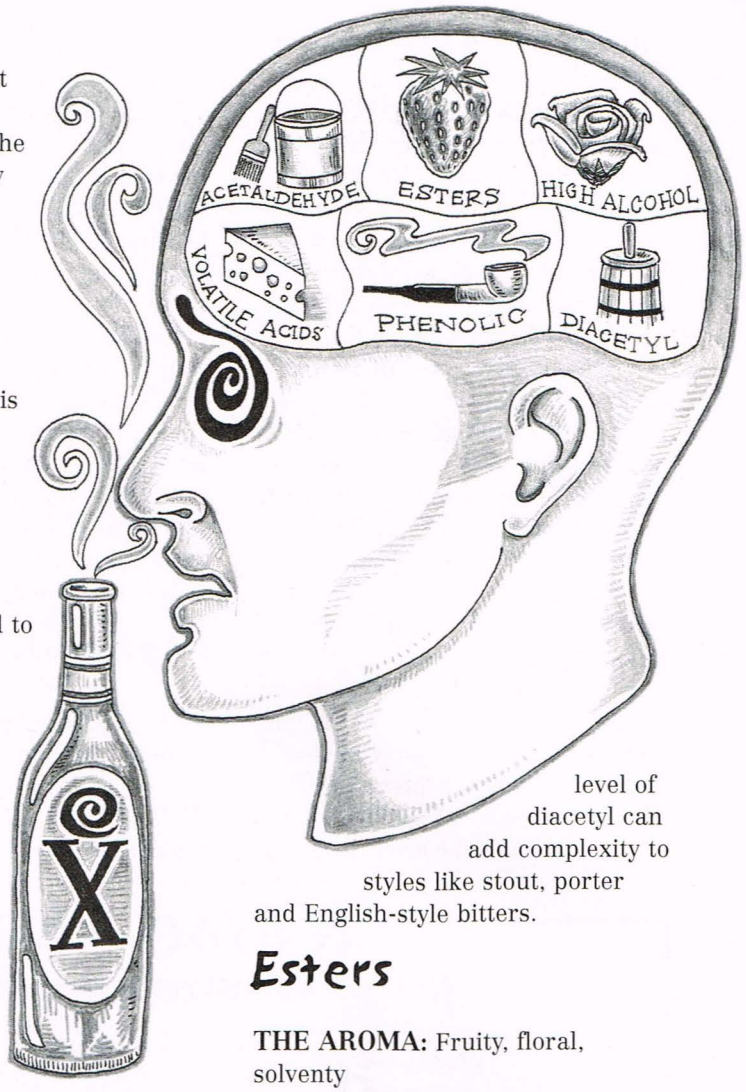


ILLUSTRATION BY JIM WOODWARD

In order to effectively brew a beer with little to no diacetyl it is critical to allow the diacetyl precursor to convert to diacetyl. The so-called "diacetyl rest," when beer is held at fermentation temperatures for a period following fermentation, provides enough time for the precursor to convert to diacetyl and for yeast to reduce diacetyl. Ales do well with a 2- to 4-day diacetyl rest at 70° F following fermentation. Lagers need between 7 to 14 days at about 50° F.

If you want a bit of diacetyl in your beer, then a rapid fermentation followed by quick cooling to stop yeast activity is a sure-fire way to get a healthy dose of diacetyl. Certain yeast strains — for example, many English ale strains — are also known to leave detectable levels behind. A detectable but controlled level of diacetyl can add complexity to styles like stout, porter and English-style bitters.

Esters

THE AROMA: Fruity, floral, solventy

THE ORIGIN: Esters are a wide range of compounds that are formed in fermentation when an alcohol combines with a biochemical intermediate called an acyl-CoA (carbon chains carried by coenzyme-A). Acyl-CoA compounds and oxygen are involved in the synthesis of unsaturated fatty acids essential for membrane development during yeast growth. The most common alcohol in fermentation is ethanol and the most common acyl-CoA compound is acetyl-CoA. When these two molecules are combined the resulting ester is ethyl acetate.

Esters can also be formed in reactions between organic acids and alcohols that are not catalyzed by enzymes. These reactions take a very long time to occur and are not a significant source of ester compounds in finished beer.

THE SOLUTION: Ester levels increase whenever the concentration of alcohols or acyl-CoA compounds increase. Alcohol levels increase with wort specific gravity. This means that high-gravity beers, such as bocks, barleywines and Belgian strong ales, have more esters than their lower gravity counterparts. Acyl-CoA compounds are related to wort amino acid levels and cell growth. Anything that increases wort amino-acid levels (such as high gravity and all-malt worts) or restricts cell growth (such as low wort aeration) will increase the level of acyl-CoA compounds.

Wort aeration and the presence of oxygen in solution during fermentation is key to ester control. Normal-gravity worts hold more oxygen than high-gravity worts, but high-gravity worts usually have a higher amino-acid content. This means the yeast cell has more acyl-CoA compounds to convert to unsaturated fatty acids but are limited by oxygen content.

High temperature (above 72° F for ales, above 55° F for lagers) and under-pitched fermentations also increase ester levels. Thorough wort aeration, proper temperature and a healthy pitching rate keep ester levels in check. A smack pack stepped up to one quart is a good pitching rate for a five-gallon batch.

Moderate ester levels do not equate to a defect; brewing higher-gravity beers and fermenting them at elevated temperatures with certain yeast strains (like Belgian strains) is one way to create more aromatic or fruity beer.

Higher Alcohol

THE AROMA: Spicy, floral, vinous, alcoholic

THE ORIGIN: Higher alcohol production is directly related to amino acid metabolism. Yeast cells transport amino acids into the cell, remove the amino group and form compounds known as oxo-acids. Some oxo-acids are used to synthesize amino acids and others are reduced to an alcohol and excreted from the cell. The most common oxo-acid in metabolism is pyruvate and its corresponding alcohol is ethanol. Ethanol has two carbon atoms; higher alcohols are so named because they are heavier than ethanol and have more than two carbon atoms.

THE SOLUTION: Higher alcohol production is affected by many of the factors influencing ester levels. Elevated amino-acid levels (in high-gravity and all-malt worts), low wort aeration, high fermentation temperatures and large amounts of yeast growth (due to under-pitching) are all conditions that increase the level of alcohols in beer.

Name that Smell!

Here's a handy little guide to six odd homebrew odors. Sadly, we were unable to include a "scratch-and-sniff" feature.






Compound	Smell	Origin	Solution
acetaldehyde	green apples, latex paint	*Acetobacter*, *Zymomonas*, oxidation, fermentation byproduct	healthy yeast, sufficient aging
diacetyl	butterscotch, buttermilk, artificial butter, toffee	*Pediococcus*, *Lactobacillus*, rapid fermentation, short aging	diacetyl rest, sanitation
esters	fruity, floral, solventy	high-gravity or all-malt wort, low wort aeration, high fermentation temperatures, under-pitched wort	thorough wort aeration, cool fermentation, healthy yeast-pitching rate
high alcohol	spicy, floral, vinous, alcoholic	high-gravity or all-malt wort, low wort aeration, high fermentation temperatures, under-pitched wort	thorough wort aeration, cool fermentation, healthy yeast-pitching rate
volatile acids	vinegar, sour, cheesy, soapy, goaty, rancid	microbiological spoilage, oxidized hops	good sanitation, fresh hops
phenols	clove, medicinal, musty, pitch, smoky	wild yeast, certain yeast strains, bacteria, chlorinated water	good sanitation, high-quality yeast, yeast strain selection, avoid chlorine

Although higher alcohols lend complexity to beer aroma, they are well-known for their ability to give consumers skull-splitting headaches. Traditional distilled spirits such as scotch, cognac and armagnac owe much of their rich aroma profile to higher alcohols. This is why one too many of these tipples usually results in a very unpleasant hangover. Most brewers try to minimize higher alcohol levels, with the exception of strong beers in which they're significant to the aroma profile, such as Eldridge Pope's Thomas Hardy Ale or Sierra Nevada's Bigfoot Barleywine.

Volatile Acids

THE AROMA: Vinegar, sour, cheesy, soapy, goaty and rancid

THE ORIGIN: The two main sources of volatile acids — such as acetic, lactic, valeric, butyric and propionic acid — are microbiological spoilage and oxidized or "cheesy" hops. Bacteria that convert ethanol to acetic acid are collectively called acetic acid bacteria. The species most notable in beer spoilage is *Acetobacter*. All acetic acid bacteria require oxygen for growth. Acetic acid is associated with beer exposed to air, for example, cask beers and beer taps.

Beer spoilage from lactic acid bacteria can also lead to a sour smell in beer. Although the term sour strictly refers to a taste sensation, soured products, such as sauerkraut, have a distinctive aroma tipping us off about the pending taste. Lactic spoilage of beer is almost always a severe defect, except for intentionally soured beers like Berliner weisse and lambics.

Oxidized hops also give rise to volatile acidity in beer. Old hops have a particularly foul aroma. When an alpha-acid oxidizes, a fatty acid splits off the alpha-acid molecule. The aroma of fatty acids can be best described as cheesy, rancid or goaty. The characteristic smell of goats and goat cheese come from caprylic acid; parmesan cheese gets it distinctive aroma from propionic acid. These aromas are almost never desirable in beer. Lambics are one style that typically and "normally" contain such aromas.

THE SOLUTION: Volatile acids can be controlled through good sanitation practices, keeping kegged beer under a carbon dioxide blanket and by evaluating hops for freshness prior to use. Hop evaluation is best conducted by rubbing pellets or cones to warm and release the compounds contained in the yellow lupulin glands. This method makes it fairly easy to detect the signs of hop oxidation. Most brewers avoid using hops with any cheesy, rancid or goaty aromas.

Phenolic

THE AROMA: Clove, medicinal, musty, pitch, smoky

THE ORIGIN: Phenolic aromas are usually due to wild yeast contamination, certain brewing yeast (such as weizen and certain Belgian ale strains), wort spoilage bacteria and chlorinated water, although some phenolic aromas come from roasted and smoked malts. Certain wild and brewing yeast strains are able to convert phenolic acids, like ferrulic acid, from malt to phenols. The aroma typically associated with phenols from yeast is clove. *Brettanomyces* is a yeast used in the production of lambics and produces a phenolic aroma described as horsy or wet-blanket.

Homebrewers don't have many problems with wort spoilage bacteria, but these bugs can cause problems in commercial breweries because they can quickly grow in wort lines, heat exchangers and lauter tuns.

Chlorophenols are formed when phenols react with chlorine. Chlorophenols have a much lower threshold of detection than phenols and can be detected at only a few parts per billion, or about one thousand times lower than the threshold of phenols such as 4-vinyl-guaicol (the clove aroma in weizen). Trichloranisol (TCA) is a chlorophenol formed when corks are exposed to chlorine and has a distinctive musty aroma. TCA causes the "corked" defect usually associated with wine, but can also show up in beer bottles sealed with a cork.

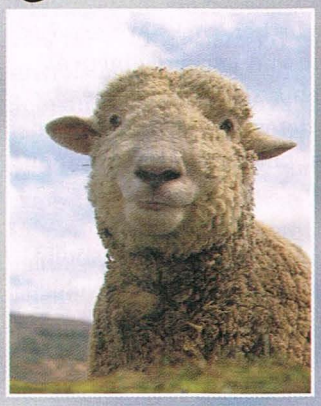
THE SOLUTION: Many phenolic compounds in beer can be avoided with good sanitation practices. Sanitation is the best way to keep contaminating organisms out of wort and beer. This is a double-edged sword since chlorine sanitizers intensify phenolic aromas. Chlorophenols can be avoided by never exposing beer to chlorine. Phenols from yeast can be easily controlled by yeast strain selection and by buying a good quality brewing yeast (poor quality yeast can contain wild yeast neatly stored in the packet).

For example, weizen and certain Belgian wheat and Trappist strains produce phenolic aromas. Most suppliers include this in the yeast-strain description. Avoid the temptation to use baking yeast in beer! Wild yeast poses no problem in baking, and baking yeast frequently carries "wild" yeast strains.

Some beer styles, like weizen, should have a pronounced phenolic aroma. 4-vinyl-guaicol is formed by the action of weizen yeast on ferrulic acid. Wort ferrulic acid levels can be augmented by using a higher portion of wheat malt (wheat malt contains more ferrulic acid than barley malt) and using a low temperature mash rest at about 115°F to boost the release of ferrulic acid into wort. If you are brewing lambic and want an authentic aroma profile, use a lambic yeast that contains *Brettanomyces* and let the horses run wild! ■

Ashton Lewis is BYO's technical editor and Master Brewer at Paul Mueller Co. in Springfield, Missouri.

Hello, Dolly!



FOUR CLASSIC CLONES OF GREAT BRITAIN

While the Brits are busy cloning sheep, you can copy their beers.

By Scott Russell



PHOTOGRAPHY BY CHARLES PARKER

TO A BEER DRINKER, certain areas of the world are sacred. Cities like Munich, Vienna and Prague. Valleys like the Senne, Tettnang and Willamette. Even entire countries, like Germany and Belgium, conjure rich images of excellent beer, world-class ingredients and memorable evenings in pubs.

Speaking of pubs, perhaps no place evokes more images than Great Britain. Many classic ale styles — such as mild, bitter, brown and pale — originated in England, while Scotland is renowned for strong ales that are dark and malty. Around the globe, any region that was ever colonized or settled by the British retains, to this day, a lasting tradition of British brewing.

Here in North America, we had until recently forgotten our British beer heritage. We had forsaken the ales of the Old Country for the new-



fangled lagers created by German and Dutch settlers. These beers are worthy, make no mistake. But until the craft-brewing renaissance of the 1980s, there were very few commercial ales produced in the United States or Canada. My, how things have changed!

So let's go back to our roots. Below we offer recipes to reproduce four classic beers from the United Kingdom — two from England and two from Scotland. They're presented as all-grain recipes with notes on converting them to partial mash and all-extract versions.

Before you get started, a few notes on successful cloning. First and foremost, use the right ingredients! Pale malt is the base grain in most English beers. The most traditional barley variety is Maris Otter; many British brewers firmly believe it makes beer with superior flavor. If you're really a stickler, look for Maris Otter that's been "floor malted." During this old-fashioned process, the barley is spread a foot thick on a stone floor and turned by hand, with a shovel, during germination. (If you're looking for it, Beeston Malting and Crisp Malting both make floor-malted Maris Otter; ask at your local homebrew shop. If they don't stock that variety, they can probably order it.) If you're using malt extract, be sure to buy brands produced with authentic British grains, such as UK-based Muntons or John Bull.

Fuggles and Goldings are the finest British hop varieties for both bittering and aroma. And, of course, choose an appropriate yeast strain. In most cases (the John Courage clone is an exception), you'll want a top-fermenting ale strain such as Wyeast 1028 (English Ale) or White Labs WLP-002 (English Ale).

FULLER'S LONDON PORTER

Griffin Brewery: Chiswick, London, England

This is London's oldest brewery, in operation since 1654. John Fuller took the helm in 1845, joined by partners Henry Smith and John Turner, and descendants of that original trio still sit on the brewery's board of directors.

Porter had its heyday in London almost 200 years ago, during the height of England's industrial era. The style had all but disappeared by the 1950s, but was revived a few decades ago during the country's successful consumer-driven, grassroots "real ale" campaign.

London Porter is a reddish-brown color, nearly black. It has a rich, dark caramel flavor and a roasty, bitter-coffee aroma.

Ingredients

- 7.75 lbs. pale malt
- 0.5 lb. black malt
- 0.5 lb. dark (120°L) crystal malt
- 0.25 lb. roasted barley
- 0.5 lb. chocolate malt
- 2 oz. of 4% alpha-acid Fuggles hops (8 AAUs)
- 1 oz. of 4% Goldings hops (4 AAUs)
- 1 pt. starter of English ale yeast (Wyeast 1028 or equivalent)
- 7/8 cup dark dry malt extract (DME)

Step by Step

Heat 12.5 quarts water to 164° F, crush grains, mix into liquor. Hold at 152° F for 90 minutes. Begin runoff, sparge with 16 quarts water at 168° F. Bring wort to boil, add 1.5 oz. Fuggles hops (6 AAUs), boil 15 minutes. Add Goldings hops, boil 15 more minutes. Add rest of Fuggles hops, boil 30 minutes. Total boil is 60 minutes.

Time your boiling and hop additions to end with 5.25 gallons (add a little water to kettle during boil if necessary to keep volume up).

Remove from heat, cool to 68° F and pitch yeast. Ferment 8 to 10 days at 65° F, transfer to secondary and condition at 50° F for two weeks. Prime with dried malt extract and bottle. Age in bottles for three weeks.

Partial mash version:

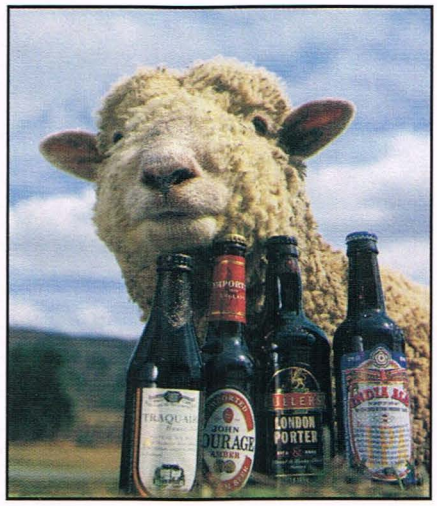
Reduce pale malt to 4.75 lbs., mash in 8.5 quarts, sparge with 10 quarts. Add 2 lbs. amber unhopped dry malt extract, proceed from boiling. Top up kettle as necessary to make 5.25 gallons.

All-extract version:

Steep black, crystal, chocolate and roasted barley as above (omit the pale malt) in 3 gallons water at 150° F for 45 minutes. Add 5.5 lbs. amber dried malt extract, proceed from boiling. Top up kettle as necessary to make 5.25 gallons.

OG =1.055
FG = 1.015
Bitterness = 36 IBUs

FOUR CLASSIC CLONES



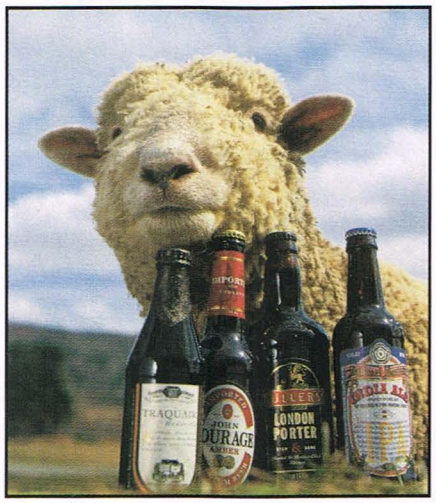
JOHN COURAGE AMBER

Scottish Courage Brewing Ltd.: Edinburgh, Scotland

We'll spare you the corporate details, but various mergers and buyouts over the last four decades have made Scottish and Newcastle PLC one of the largest brewing companies in Great Britain. According to "The Good Beer Guide to Great Britain" *(see "Brew Like the Brits" on page 30)*, Scottish and Newcastle now operates more than 2,600 pubs nationwide and produces such brands as Courage, McEwan, Younger, Theakston and Newcastle.

John Courage has an unusual twist for a British beer: It used to be labeled "amber lager" and is still brewed as a lager. It is malty and sweet, with a dry grainy aftertaste.

FOUR CLASSIC CLONES



Ingredients

- 6.5 lbs. pale malt
- 0.5 lb. biscuit malt
- 0.75 lb. light (30° Lovibond) crystal malt
- 2/3 oz. of 9% alpha-acid Northern Brewer hops (6 AAUs)
- 1 oz. of 4% alpha-acid Fuggles hops (4 AAUs)
- 1 pt. starter of Wyeast 1338 (European lager) or 1742 (Danish lager)
- 1 cup light dried malt extract

Step by Step

Heat 10 quarts water to 164° F, crush the grains and mix into liquor. Hold at 152° F for 75 minutes. Begin runoff, sparge with 16 quarts of water at 168° F. Bring the wort to a boil, boil 10 minutes and add the Northern Brewer hops. Boil for 40 minutes. Add the Fuggles hops, boil for 5 additional minutes. Try to time the boil and the hop additions to end with 5.25 gallons (add a little water to the brew kettle during the boil, if necessary, to keep the volume up).

Remove from heat, cool to 55° F and pitch yeast. Ferment 8 to 10 days at 40° F, transfer to secondary and condition at 40° F for three weeks. Prime with dried malt extract and bottle. Age in bottles for four weeks.

Partial mash version:

Reduce pale malt to 3.5 lbs., mash in 10 quarts, sparge with 12 quarts. Add 2 lbs. amber unhopped dry malt extract, proceed from boiling. Top up kettle as necessary to make 5.25 gallons.

All-extract version:

Steep biscuit and crystal malts as above (omit the pale malt) in 3 gallons of water at 150° F for 45 minutes. Add 4.5 lbs. light dried malt extract, proceed from boiling. Top up kettle as necessary to make 5.25 gallons.

OG = 1.045
TG = 1.010
Bitterness = 18 IBUs

BREW LIKE THE BRITS

IF YOU WANT MORE DOPE on brewing British beers, here are a few good resources.

"Brew Your Own British Real Ale" by Graham Wheeler and Roger Protz (CAMRA/Storey Books, 1998). This info-packed resource includes an overview of British brewing techniques, plus recipes for recreating more than 100 brand-name ales.

"Pale Ale" by Terry Foster (Brewers' Publications, 1999). This book is part of the "Classic Beer Style" series, which also includes "Mild Ale" by David Sutula, "Brown Ale" by Ray Daniels and Jim Parker and "Scotch Ale" by Gregory Noonan.

"The Good Beer Guide to Great Britain" by Jon Preece (CAMRA/Storey Books, 1998). This 575-page tome gives the rundown on thousands of pubs that serve good beer. CAMRA, the Campaign for Real Ale, is a grassroots group that was founded in the 1970s to save Britain's traditional cask-conditioned ales and community pubs.

SAMUEL SMITH'S INDIA ALE

Samuel Smith Old Brewery: Tadcaster, North Yorkshire, England

Founded in 1758, Samuel Smith's is the oldest brewery in Yorkshire. It's in Tadcaster, a small village nicknamed the "Burton of the North" for its distinctive water and the ales produced by the town's three breweries.

India Ale is an amber ale with an explosive hop aroma and a deep, long, buttery malt flavor. The diacetyl (butterscotch and toffee) aroma and flavor is a by-product of the yeast strain. This beer is complex, yet smooth.

Ingredients

- 8 lbs. pale malt
- 1 lb. toasted pale malt (350° F for 15 minutes)
- 0.75 lb. medium (60° Lovibond) crystal malt
- 0.5 lb. malted wheat
- 2/3 oz. of 9% alpha-acid Northdown hops (6 AAUs)
- 1.5 oz. of 4% alpha-acid Kent Goldings hops (6 AAUs)
- 1 oz. of 4% alpha-acid Bramling Cross hops (4 AAUs)
- 1 oz. of 4% alpha-acid Fuggles hops (4 AAUs)
- 1 pt. starter of English ale yeast (Wyeast 1098 or equivalent)
- 3/4 cup light dry malt extract for priming

Step by Step

Heat 13.5 quarts water to 164° F, crush grains, mix into liquor. Hold at 152° F for 90 minutes. Begin runoff, sparge with 16 quarts water at 168° F. Bring wort to boil, add Northdown hops, boil 30 minutes. Add Kent Goldings hops, boil 15 minutes. Add Bramling Cross hops, boil 15 minutes. Try to time boil and hop additions to end with 5.25 gallons (add a little water to kettle during boil if necessary to keep volume up).

Remove from heat, cool to 68° F and pitch the yeast. Ferment 8 to 10 days at 65° F, transfer to secondary, add Fuggles hops (for dry hopping)

and condition at 50° F for two weeks. Remove Fuggles, prime with dried malt extract and bottle. Age in bottles for 4 to 6 weeks.

Partial mash version:

Reduce the pale malt to 5 lbs., mash in 10 quarts of water, sparge with 12 quarts of water. Add 2 lbs. light unhopped dry malt extract, proceed from boiling as above. Top up brew kettle as necessary to make 5.25 gallons.

All-extract version:

Steep toasted pale, crystal and wheat malts as above (omit the pale malt) in 3 gallons water at 150° F for 45 minutes. Add 5.5 lbs. amber dried malt extract, proceed from boiling. Top up kettle as necessary to make 5.25 gallons.

OG = 1.060
FG = 1.018
Bitterness = 50 IBUs

TRAQUAIR HOUSE ALE

Traquair House Brewery: Innerleithen, Peeblesshire, The Borders, Scotland.

Built in the early 12th century and billed as the "oldest inhabited house in Scotland," Traquair House is actually a castle in the beautiful Scottish border country. According to "Michael Jackson's Beer Companion," the first written account of Traquair estate beer dates to 1566, during a visit by Mary, Queen of Scots.

The historic brewery was revived in 1965 by Peter Maxwell Stuart, the 20th Laird of Traquair. While exploring the castle's fifty-odd rooms, he found the old brewery and restored it, using some of the original equipment that had been sitting idle for a century. His daughter, Lady Catherine, took over the brewery after his 1990 death.

Traquair House Ale is a deep reddish, full-bodied and richly-flavored ale. It carries an alcoholic warmth, hop bitterness and smoky malty flavor that is unmatched by any other beer.

Ingredients

- 13 lbs. pale malt
- 0.5 lb. dark crystal malt
- 0.25 lb. roasted barley
- 1.5 oz. of 4% alpha-acid Kent Goldings hops (6 AAUs)
- 1.25 oz. of 4% alpha-acid Kent Goldings hops (5 AAUs)
- 1 pt. starter of Scottish Ale yeast (Wyeast 1728 or equivalent)
- 1/2 cup amber dry malt extract for priming

Step by Step

Heat 18 quarts water to 164° F, crush grains, mix into liquor. Hold at 152° F for 90 minutes. Begin runoff, put the first gallon into a heavy pot and boil 30 minutes. Sparge the mash with 12 quarts water at 168° F. Add boiled (and hopefully partially caramelized) first runnings back to kettle, bring wort to boil, add 6 AAUs Kent Goldings hops, boil 60 minutes. Add remaining Goldings, boil 30 minutes. The boil should end with 5.25 gallons.

Remove from heat, cool to 68° F and pitch yeast. Ferment 8 to 10 days at 65° F, transfer to secondary and condition at 50° F for two weeks. Prime with DME and bottle. Age in bottles for 8 to 10 weeks.

Partial mash version:

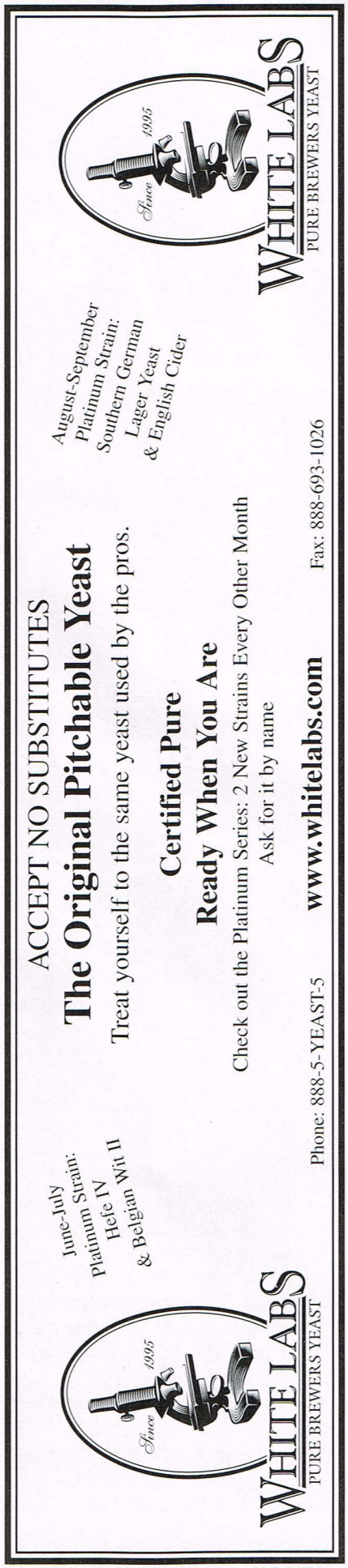
Reduce pale malt to 7 lbs., mash in 10 quarts, sparge with 12 quarts. Add 4 lbs. amber unhopped dry malt extract, proceed from boiling. Top up kettle as necessary to make 5.25 gallons.

All-extract version:

Steep crystal and roasted barley as above (omit pale malt) in 3 gallons water at 150° F for 45 minutes. Add 9 lbs. amber DME, proceed from boiling. Top up kettle as necessary to make 5.25 gallons.

OG = 1.080
FG = 1.015
Bitterness = 40 IBUs ■

Scott Russell is author of "North American Clonebrews," due out this summer from Storey Books. He's also BYO's longtime "Recipe Exchange" columnist. He lives in Thetford, Vermont.



CIRCLE 35 ON READER SERVICE CARD

Labels 2000

BYO presents the winners of the biggest and best homebrew label contest in the galaxy

The first package arrived several weeks before the deadline and was treated with great reverence. The Label Gnomes, who convene to judge the contest every year, gathered around to watch. Inside the box was a silver bottle rocket.

More accurately, it was a bottle of homebrew wrapped entirely in tinfoil, complete with stabilizer fins. "Märzen to Mars!" screamed the label. "Warning! Consumption of the alcohol in this rocket can alter the space in your mind!" The gnomes cheered wildly. The fifth annual BYO Gonzo Label Contest was off to an explosive start.

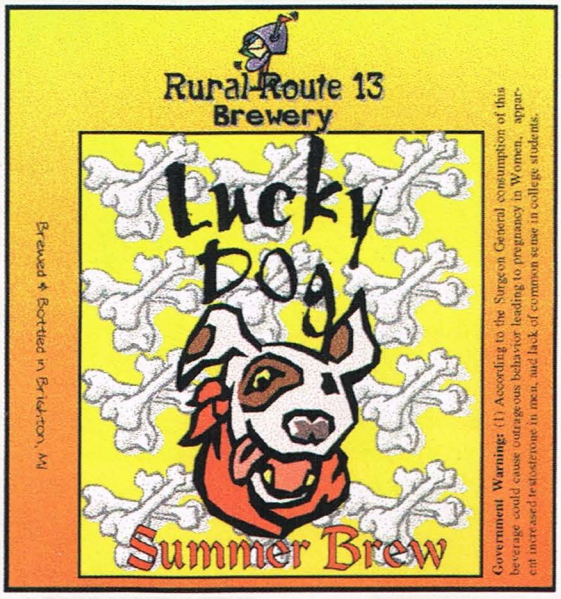
Over the next month, thousands of labels, submitted by homebrewers from all across the country, arrived at BYO world headquarters. On judgment day, the gnomes took time to appreciate each and every one. This is an enviable task: In the collective sense, our readers are an amusing (and creative) bunch.

In the end, after a few nasty beard-pulling squabbles, the gnomes gave top honors to seven contestants in each of the two major categories, professional and amateur. They also awarded "Editors' Choice" prizes to labels that deserved ... something (we're not quite sure what). And for readers who wonder how we pick the winners, rest assured that the strictest standards are applied. (Typical gnome exchange: "That one is awesome." "For sure. Absolutely. I totally agree.")

To each and every homebrewer who took time to send us a label, a sincere thanks. We wish we could publish all of them. Since we can't, we're establishing the all-new National Archives of Homebrew Labels in our office. It's a filing cabinet, but what the heck. If you find yourself in Manchester, Vermont, stop by to check it out. We'll also post lots of labels on our website (www.byo.com).

A hearty homebrew toast to everyone who made the contest, as always, a huge success.

Amateur, n. 1. A person who engages in a study, sport or other activity for pleasure rather than for financial benefit or professional reasons. 2. Anyone who checked "amateur" on the Label Contest entry form.



1st PRIZE

Gary Shewchuk

Brighton, Michigan

Persistence pays. After walking away with peripheral prizes in years past — the 1999 "Fine Art" award for Picasso Pale Ale and the 1998 "Everybody's A Comedian" medal for Weizenguy Weiss — Shewchuk is bringing home the first-place hardware. A partial-mash brewer, Shewchuk named his Rural Route 13 Brewery after the country road he lives on. When Gary's not brewing, he's an instrumentation technologist. ("That means I work with electronics in a lab," he explains.)

Prize: Mash-and-lauter tun with false bottom and sparge arm from Brew Your Own Brew. Plus: 50-pound bag of malt from Briess; a year's supply of yeast (12 vials) and a T-shirt from White Labs.

3rd PRIZE

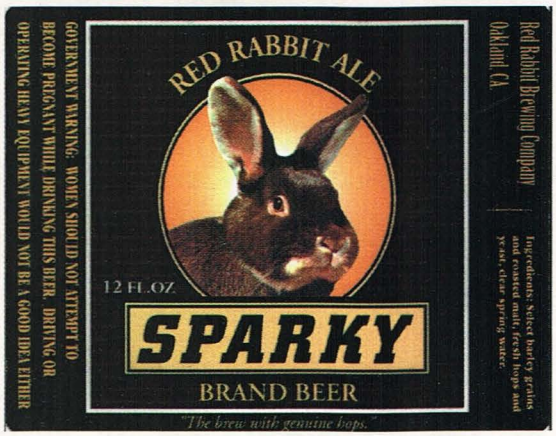
Mark Wedge

Fort Worth, Texas

Mark Wedge is a mystery man, which is to say, he doesn't return our calls. Ever. So I'm afraid we can't tell you very much about his seriously disturbing Mental Disorder Porter, beyond saying we thought it was cool. Scary cool. The part you can't see proclaims that "just one taste will make you lose your mind." Obviously.

Prize: $75 gift certificate from Beer and Wine Hobby. Plus: a year's supply of yeast and T-shirt from White Labs.





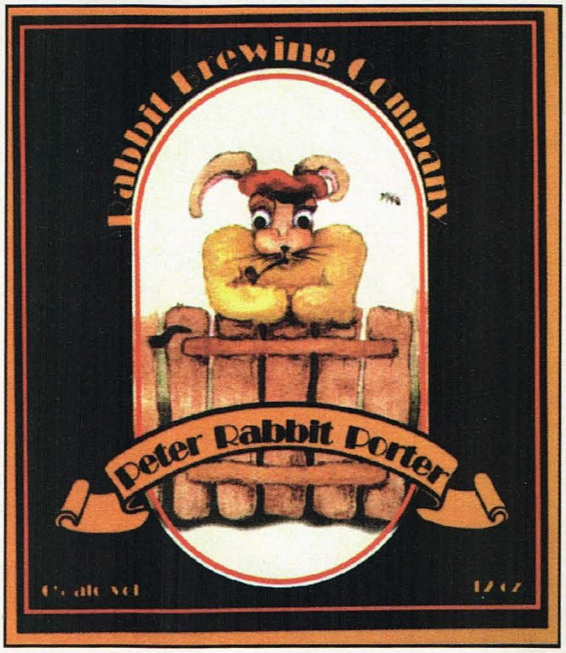
2nd PRIZE

Louis Pappalardo

Oakland, California

Pappalardo, who owns a computer-imaging business, designed this label with his teenage son, Zack. It commemorates their dear departed pet. In the spirit of honesty, it must be revealed that the bunny in the photo is not actually the late Sparky. "This guy was a lot cuter," admits Lou. "Sparky was a lop-ear rabbit, so on the bottle, he looked like a dog."

Prize: Counter-pressure bottle-filler and tubing kit from Brew By You. Plus: $75 gift certificate from Northern Brewer, Ltd.



Chris Whitbeck

Washoe Valley, Nevada

Whitbeck scores again! An avid all-grain brewer and full-time stay-at-home dad, Chris placed third in the amateur category last year for his Cottontail Pale Ale. If you're sensing a hare-brained theme, you're right: Whitbeck named his homebrewery "Rabbit Brewing Company" after the street he lives on, and his submissions this year included Angora Amber, Peter Rabbit Porter and Jack Rabbit Red. Bet he uses a lot of hops. *Prize: 60-foot copper wort chiller with brass hose connection from The Grape and Granary.*



Glenda Crawford and Michael Herron

Englewood, Colorado

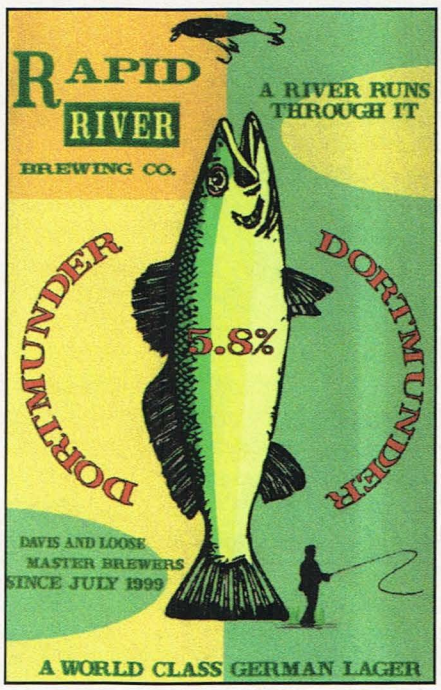
Glenda and Michael designed this label for their office holiday-party beer. Glenda, who has a zoology degree, drew and colored the hawk by hand. Michael brewed the beer, designed the label concept and wrote the label copy. *Prize: 50-foot double-coil copper wort chiller from Alternative Beverage.*



Jan and Connie Hargrove

Duluth, Georgia

It's hard to ignore a beer label plastered with actual grass clippings from the contestants' front yard. It's equally hard to ignore the Hargroves, a happy homebrewing couple who entered the contest for the first time last year and won the amateur category with their "Dirty Bird Brew" label. This year's offering is no less impressive. But the gnomes are allergic to grass. *Prize: two 12-inch tap handles with customized labels from Kestrel Manufacturing Inc.*

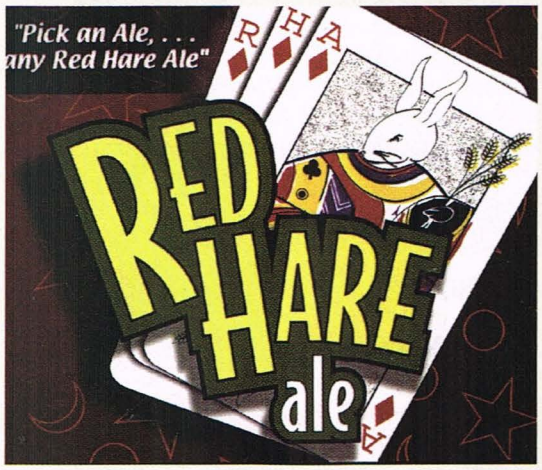


Rusty Loose

Rapid City, Michigan

Loose started homebrewing a year ago and since then "he's done quite a lot of it," his bemused wife reports. He lives in northern Michigan and named his Rapid River Brewing Company after the trout stream that runs across the front of his property. An all-grain brewer, he works as a supervisor at the ANR Pipeline Company in his spare time. *Prize: $50 gift certificate from Crosby and Baker Ltd.*

Professional, n. 1. Following an occupation as a means of livelihood or for gain. 2. Anyone who identified himself as a "graphic designer" or "illustrator" on the contest entry form.



1st PRIZE

Scott Nicely

Bloomington, Minnesota

The gnomes had a tough time judging the hotly contested professional category. But in the end, Red Hare Ale triumphed by a hare. (By the way, what's up with all the rabbit labels this year?) Nicely, a graphic designer at Golden Valley Microwave Foods, is a homebrew neophyte: Red Hare is the first batch he's ever brewed, made from an extract kit he bought in February. The rabbit and cards stem from his other hobby, performance magic. *Prize: 7.5-gallon mash tun from Hobby Beverage Equipment. Plus: $50 gift certificate from Asheville Brewers Supply; complete homebrew cleaning kit from Five Star Products.*

2nd PRIZE

Scott Nichols

Pleasant Prairie, Wisconsin

Red Flag Ale was brewed for the ice-fishing contest that Scott's dad, "Tricky" Dick Nichols, holds every February on Lake Chetac. Scott (a.k.a. Zeke) brewed a red ale for this year's bash, to signify the red flag that pops up when a fish is on. His brother Jeff, an art director in Portland, Oregon, did the label and designed the poster for the Big Mahoski Fishing Contest. ("Big Mahoski" is Wisconsin-speak for "Big Fish.")

Prize: counter-pressure bottle filler from The Beverage People. Plus: 55-pound bag of Bud malt and Budvar yeast from St. Patrick's of Texas; homebrew cleaning kit from Five Star Products.





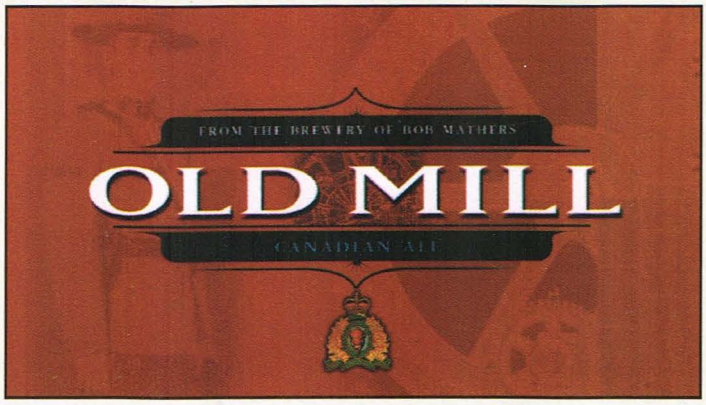
3rd PRIZE

Adam Madison and Andrew Guschl

Greenfield, Indiana and Wilmington, Delaware

Adam Madison is the man behind many labels. He's got it all figured out: He brews the beer, comes up with a label concept and then gets someone else to handle the art. (Slick trick, Adam!) This year, he takes third for Mardi Graz Märzen, with illustration by his cousin Andrew Guschl, a designer in Delaware. Adam's amateur entry, drawn by his stepdad Dave Douglas, is the "Wee Wee Heavy" on page 39. Madison and Douglas also received honorable mention for their labels in 1998 and 1998. So do you share the prizes, or what? (Kidding, Adam. Keep 'em coming!)

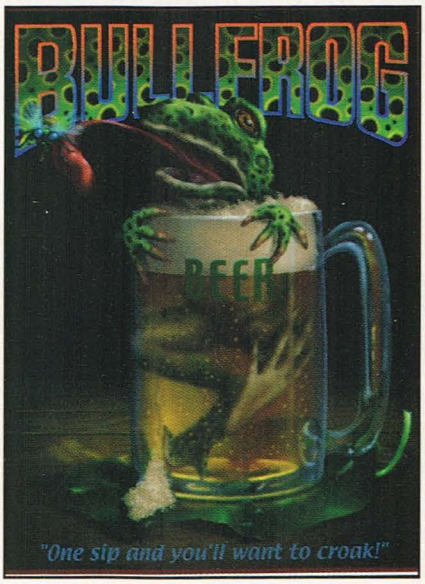
Prize: $75 gift certificate from BrewSource.com; a year's supply of yeast (12 vials) and a T-shirt from White Labs.

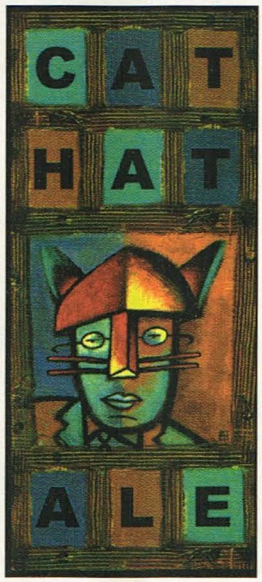


Robert and Andy Mathers

Dover and Wilmington, Delaware

This is one of those times when you really have to be there, because the subtle three-dimensional effect on this label is hard to reproduce. Suffice it to say that the ghostly Mountie hovering behind the logo is most impressive indeed. It's a father-son effort: Robert is the homebrewer; son Andy is a graphic designer with Waypoint, an ad agency in Wilmington. *Prize: two Party Pigs with activation pumps from Quoin Industrial.*





David Miller

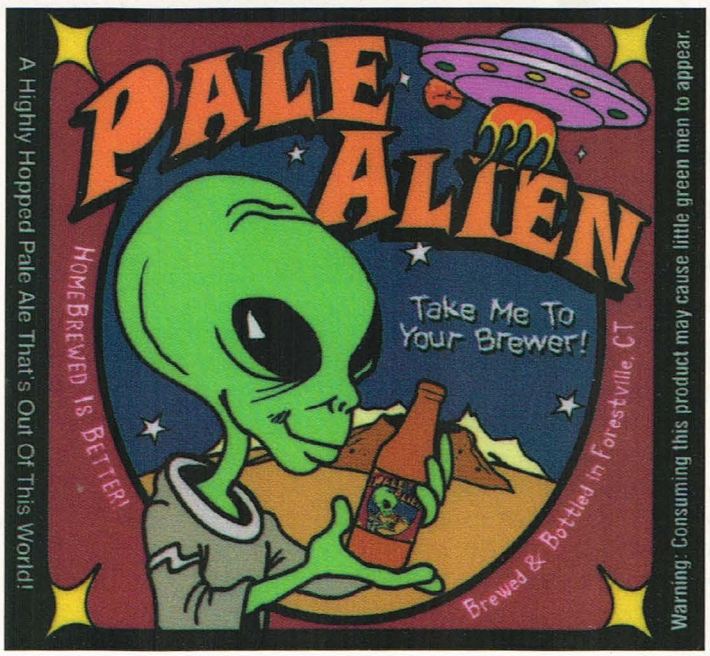
Williamsville, New York

Label on left: By his own admission, Miller's labels are "the result of too much homebrew." Miller, an illustrator, has been homebrewing for six years. He's an extract brewer, we figure: "I get a can of stuff and mix it in the pot. What does that make me?" *Prize: Three beer kits from Muntons PLC.*

Barry Fitzgerald

Lawrence, Kansas

Label on right: Barry's distinctive entries have won an award every year since the competition. In the real world, he's a free-lance illustrator and associate professor at Kansas University. In his spare time, he's an avid partial-mash brewer. *Prize: Two kits from Seven Bridges Organic Homebrewing.*



David Levesque

Forestville, Connecticut

This is not Levesque's first time on the Label Contest podium: He walked away with the "Best Chia Pet Alternative" in 1998 for his "Sea Monkey Brown Ale" and took the coveted "Best Reptile" award in last year's competition for "Dave's Killer Iguana Ale." This year's Honorable Mention is a much more dignified award, befitting a homebrew label as subdued and understated as "Pale Alien: Take Me To Your Brewer!"

An all-grain brewer who's been into the hobby for a decade, Levesque does graphic design and prep work for a screen-printing company near his home in Forestville, Connecticut. A friend came up with the Pale Alien name, then Dave went to work on his computer. *Prize: Kool Keg from The Beer Essentials.*

Editors' Choice

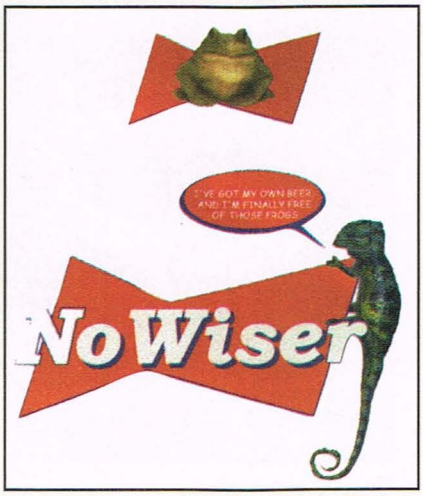
Labels that deserved a prize for overall presentation, use of tinfoil, ingenuity, humor or breathtaking weirdness.



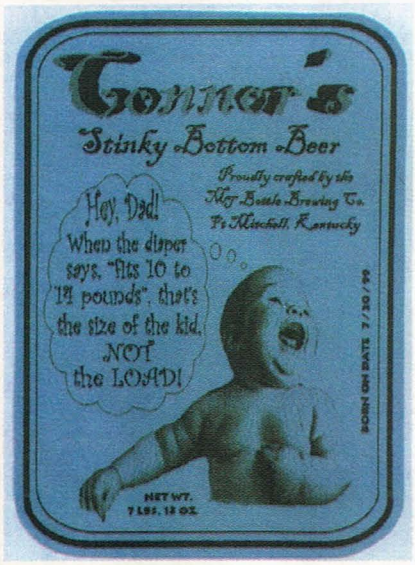
Michael Neuman
Salinas, California
Prize: One beer kit and one wine kit from Brew King.



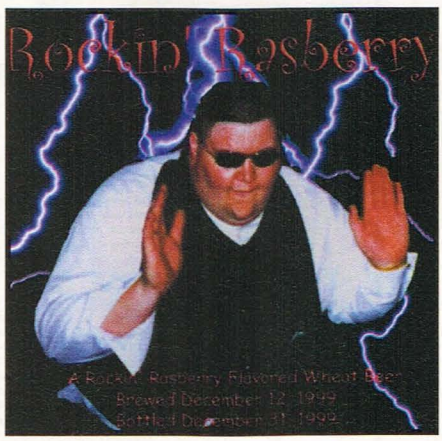
John DiGiorgio
Hicksville, New York
Prize: Six cans of malt extract from California Concentrate Company.



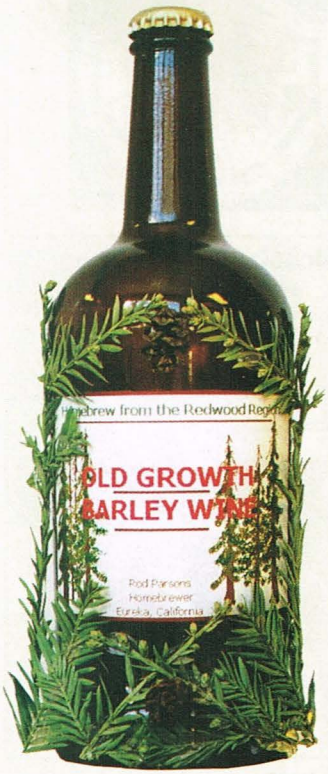
Jeremy Archer
Glendale Heights, Illinois
Prize: One homebrew cleaning kit from Five Star Products.



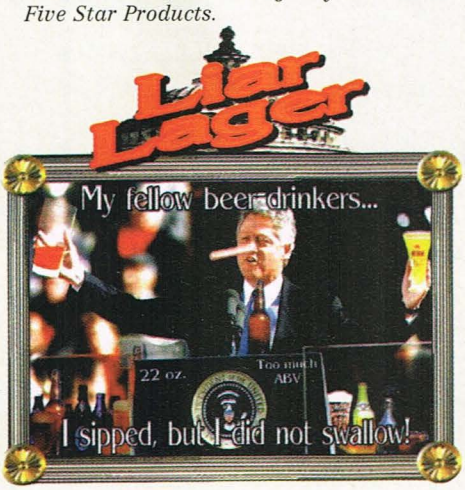
Tim Collins
Fort Mitchell, Kentucky
Prize: Homebrew cleaning kit from Five Star Products.



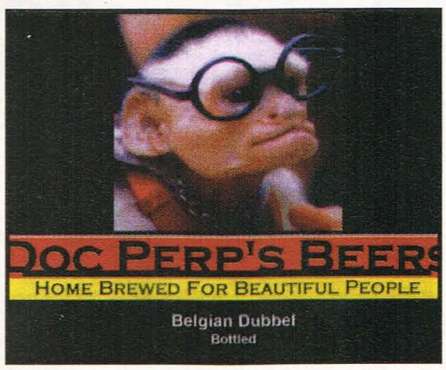
James Girard
DeSmet, South Dakota
Prize: Label-making software and blank labels from F.H. Steinbart.



Rod Parsons
Eureka, California
Prize: A year's supply of yeast (12 vials) and T-shirt from White Labs.

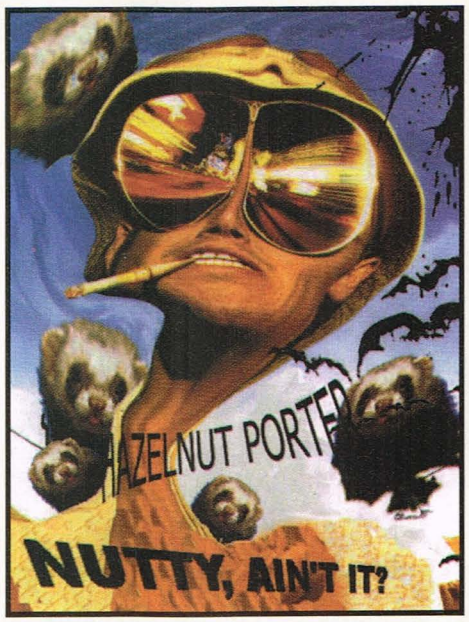


Steve Maringer
Covington, Kentucky
Prize: One beer kit and one wine kit from Mosti Mondiale.

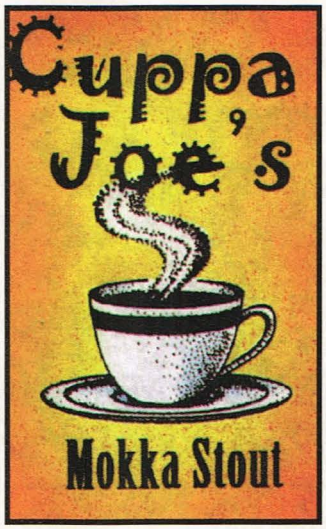


Mike Perpall
Norcross, Georgia
Prize: Digital thermometer, tap handle and book from Larry's Brewing Supply.

EDITORS' CHOICE



Travis Jorgensen
Brunswick, Maine
Prize: Tap handle from Sculpture Concepts.



Andy and Ronda Statz
Madison, Wisconsin
Prize: Two ingredient kits from Vintage Cellar.



William Card
Olympia, Washington
Prize: Homebrew cleaning kit from Five Star Products.



Last Call

Raspberry Orange Sludge Homebrewing for the Gold

by Gary King

Psst. Hey, buddy. Yeah, you, Homebrew Boy. I hear you brew a heck of a beer. All your friends rave about it. They drool over the thought of every five-gallon batch, and you just eat it up.

But you have a dirty little secret, don't you? Through all the praise you've never — that's right, never — even *placed* in a homebrew competition. It's time to come clean. No bronze, no silver, and certainly never a gold. There, it feels better to let it out, doesn't it?

There must be some way to rectify this situation. You want to drink from the mug of victory. You want to come out of the closet of brewlosers and into the winner's circle? Okay then, pay attention. What I'm about to reveal is for your eyes only.

The following is a true story. Let's go back to the summer of '98. It was the Fourth of July, Independence Day. The weather was perfect for outdoor brewing. The skies were clear, and our homebrew equipment glistened in the sun. My brewing partner, Dan, and I had bought the freshest grains, the most aromatic hops, and the purest strain of yeast, and we had slightly altered the malt content of a published ESB recipe to call it our own. Nothing could go wrong. We watched with glee as our boiling grains and hops rapidly turned to wort. We drooled as our brew cooled and was transferred to a glass carboy. We hit it with yeast and placed it in a cool, dark cellar. We relaxed and had a homebrew.

Our beer was brewed, the day was young. Our wives had given our leashes a few extra links for the day, so we decided to whip up another batch. Using some leftover grains, some old hops, and a very tired package of dry ale yeast, we started to throw together another brew. The weather started to turn, getting very hot. The humidity rose and sweat rolled down the backs of our knees. Flying bugs and gnats hovered over our boiling wort, diving like moths to a flame. Our propane ran out 15 minutes into the boil. This brew was turning into a nightmare. Finally, we got it transferred into various pots and pans, finishing the boil on the kitchen stove. It took great restraint not to just throw this mess out, but we finally got it into an old plastic bucket, storing it far away from our perfect ESB.

It ain't always pretty...Dan (left) and I learned to walk on the dark side of homebrew competitions.

Within hours the ESB started percolating with active fermentation. Meanwhile, the leftover sludge we had concocted sat there for a week without a single bubble escaping the airlock. It had flatlined. Yelling "Clear!" we tried to resuscitate it with a fresh packet of yeast — bam! Nothing. "Clear!" We added raspberries — bam! — and still nothing happened. "Clear!" More oxygen, some orange extract — bam! A faint pulse...bubbles in the airlock. Life. The cast of "ER" would have been impressed.

The ESB was to die for. Perfect clarity, great body, and a hoppy bitterness that made our tongues twirl. It was entered in "The Taste of the Great Lakes" homebrew competition. Arguing that the more you entered, the cheaper the entry fee, Dan insisted we enter the raspberry orange sludge thing we had brewed. Against my better judgment I agreed.

At the competition we were stunned to learn the ESB hadn't placed. The score sheet read "significant flaws, no head, plastic flavor." Ten out of a possible 50 points. We were humiliated, crying in our beer, looking for a hole to crawl into.

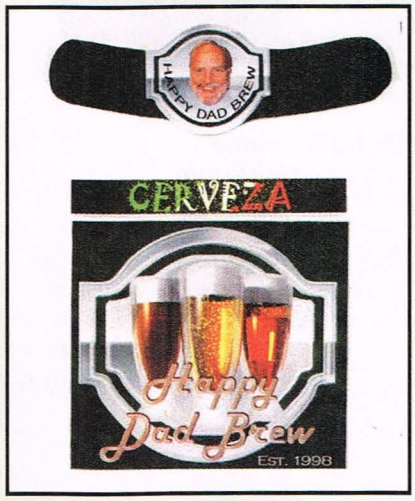
We sat there disheartened, in stunned silence as the last of the awards were announced. Dejected, we barely heard our names announced. "Dan Stafford and Gary King, second place, fruit and vegetable beer." Well, you probably saw this coming like a Mack truck, but our raspberry orange sludge had taken a silver. Our high-fives and victory dances gave way to a couple of smug smiles. Master brewers! We knew it all along.

So you want to brew a winner? Just keep throwing those grains and hops together. Keep brewing beer. And remember, above all else, "Clear!" ■

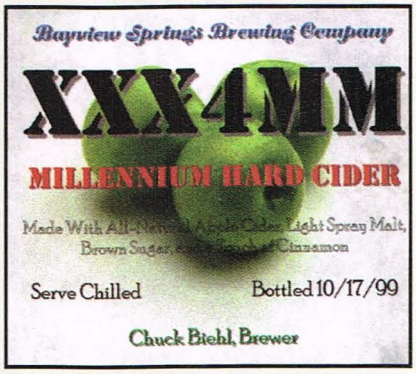
Do you have a 750-word story for Last Call? Mail it with a color photo to Last Call, c/o Brew Your Own, 216 F St., #140, Davis, CA 95616.

22 FL. OZ.

Gary King
New Boston, Michigan
Prize: Six cans of malt extract from California Concentrate Company. Plus: eternal devotion from the editors at BYO.

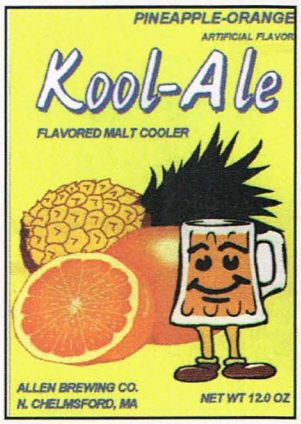


Glen Nichols
Fenton, Michigan
Prize: Four cans of Coopers malt extract from Cascadia.

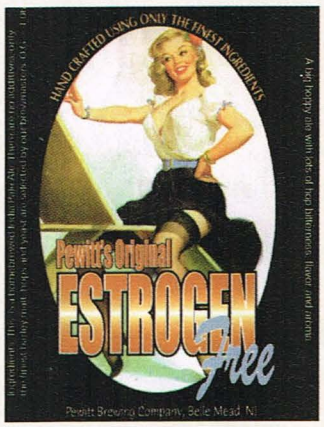


Chuck Biehl
North East, Maryland
Prize: Six yeast packets, T-shirt and various other supplies from Wyeast Laboratories.

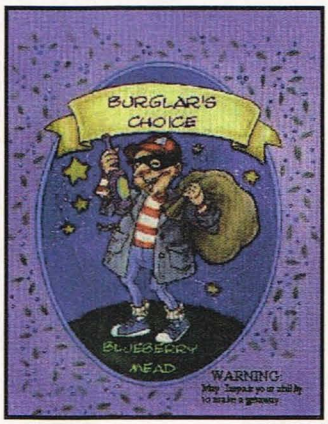
Best of thE resT All the labels that are fit to print



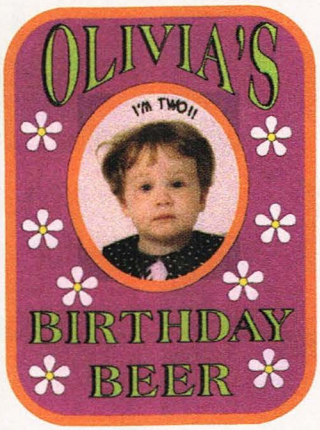
George Allen
Lowell, MA



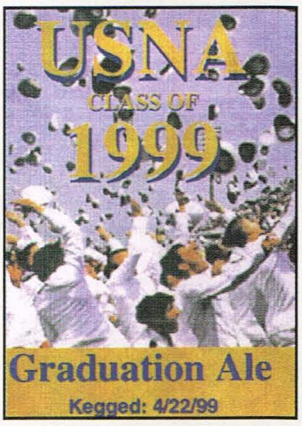
William Pewitt
Belle Mead, NJ



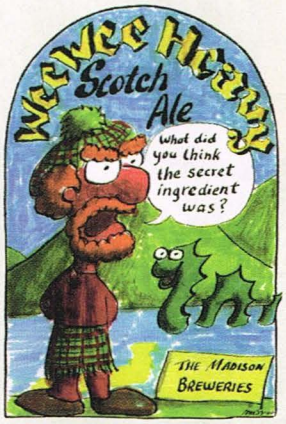
Jack Jordan
Gainesville, FL



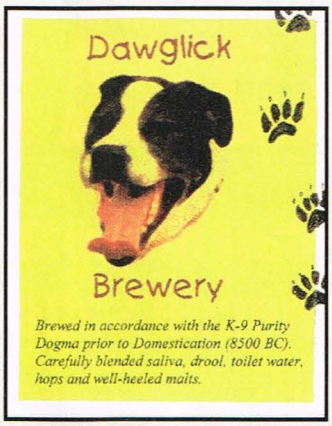
Chris Bennett
New Bern, NC



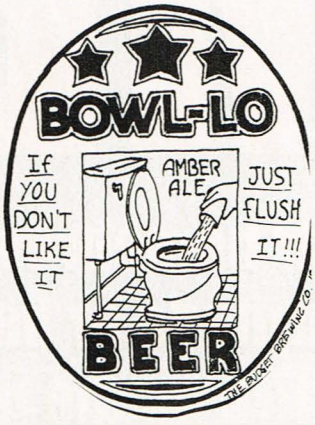
Ken Spiegel
Pasadena, MD



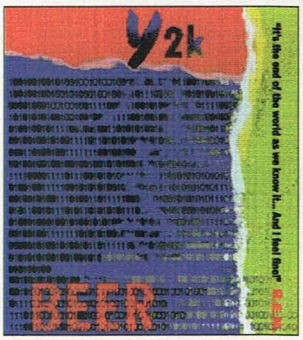
Adam Madison and Dave Douglas
Greenfield, IN



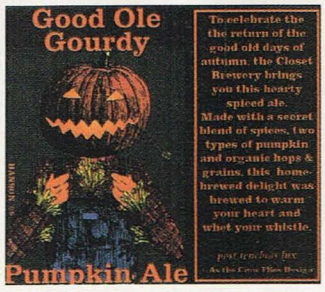
Dave Bieganski
Anchorage, AK



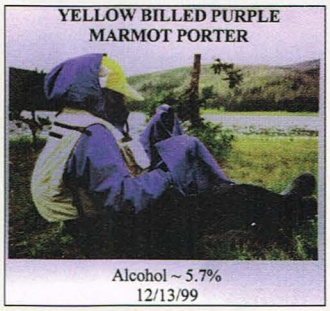
Gregg Wormley
Struthers, OH



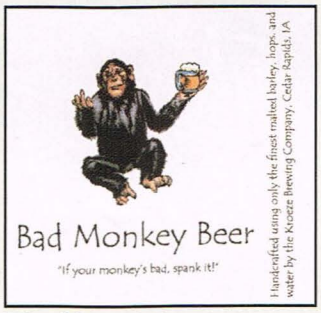
Chris Bennett
New Bern, NC



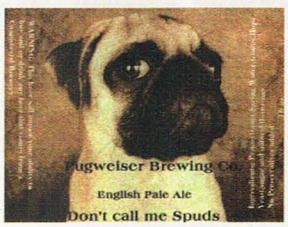
Rob Hanson
Washington, DC



Chris Bersted
Springfield, MO



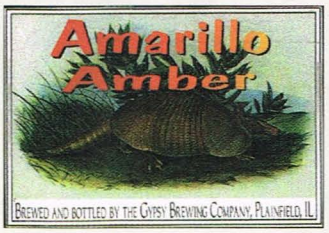
Tim Kroeze
Cedar Rapids, IA



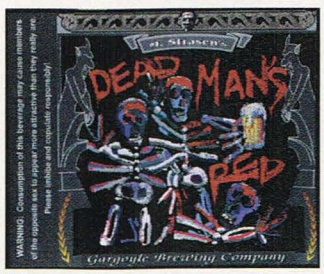
Jim Freach and Carolyn Adams *Catasauqna, PA*



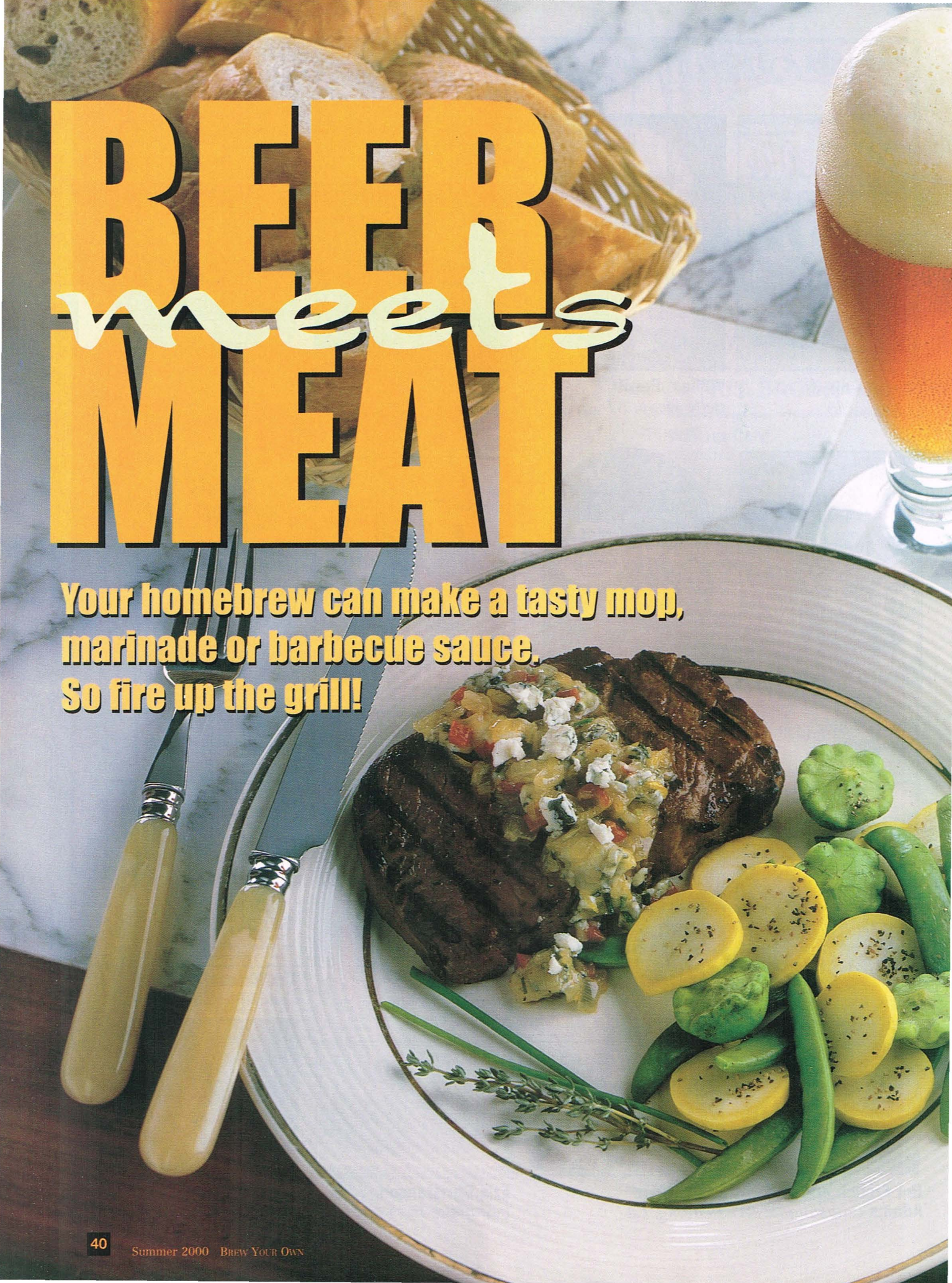
James Diaz
Redding, CA



Eric Christensen
Plainfield, IL



Marc Strasen
Upland, CA



BEER meets MEAT

Your homebrew can make a tasty mop, marinade or barbecue sauce. So fire up the grill!



PHOTO COURTESY OF THE WISCONSIN MILK MARKETING BOARD

ALL ACROSS AMERICA, clouds of smoke are rising from backyards, patios and balconies. When you're close enough to hear the sizzle, you'll recognize the work of ardent grill cooks.

"Ardent" isn't too strong a word to describe the 65 percent of Americans who grill year round — even in cold weather. Almost 90 percent of all Americans own some kind of grill, be it gas, wood-fired or electric. Grilling food is obviously addictive. And it's even better when you grill with beer.

"Grilling with beer?" you say. "That's with a pint in one hand and tongs in the other!" Actually, it's more than that: I use beer as the key ingredient in many mops, marinades and barbecue sauces. It adds terrific flavor and helps keep the food moist.

It doesn't take much time to add the flavor of beer to food. Chefs recommend bringing meats to room temperature before grilling, to ensure even cooking. I do so by plunking the food into a zip-close gallon-sized plastic bag or a deep stainless steel dish, and covering it with my beer-based marinade. In an hour (or less, for chicken, fish and vegetables), the flavor of the sauce will set without making the main course mushy.

by Lucy Saunders

BEER meets MEAT

Yes, mush is the result of over-marinating meats, especially tender cuts of beef or pork loin, chicken and fish filets. The typical plant enzymes and acids that are often used in a marinade — like vinegar, wine, pineapple or citrus juices — breaks down the surface texture of the protein. Beer is less acidic than any of these, but the hops may make the food a bit bitter. So don't marinate entrees for longer than two hours, thinking that the beer flavor will intensify. Better to reserve a quarter to a half-cup of the marinade mixture before steeping, and brush it on during the last 10 minutes of cooking to keep the beer flavor fresh. Very tough or bony cuts of meat, such as chicken wings, shanks, briskets and ribs, can marinate a little longer without turning mushy.

Marinades with oil also help keep food from sticking on the grill, or drying out under the high heat. I set aside a quarter-cup of the mixed marinade before adding raw food, just to have extra for basting moisture into the food during grilling. Never baste cooked items with marinade that has covered raw chicken, fish or meat. The risk of food-borne illness is too great.

Homebrewers have a secret advantage when it comes to brewing up a batch of beer-based barbecue sauce: unhopped malt extracts. Plain malt extracts can replace molasses or honey as a sweetener in a sauce or marinade, with the plus that malt retains its flavor stability during grilling. "Malt extracts won't brown as quickly as pure sucrose, so that rich malt flavor won't cook off at high temperatures," says Suzanne Stoeger-Moore, director of food sales for Briess Malts in Chilton, Wisconsin. A tablespoon or two of rich caramel malt extract will do the trick.

According to Jim Tarantino, author of "Marinades" (Crossing Press, $14.95), the basic equation for a marinade is: oil + acid + aromatics + sweetener = marinade. In the case of beer-based sauces, I use one-quarter cup of olive oil or peanut oil for every 12 ounces of beer, plus spices, herbs, vegetables, even fruit. For example, a great marinade for fish starts with a light pilsner and olive oil, blended with lemon zest, diced ripe mango, a tablespoon of malt extract, several sprigs of summer savory, and a bit of salt and pink peppercorns. Just 30 minutes in this beer bath will make plain cod taste wonderful.

When grilling or roasting any kind of meat, be sure you have the right equipment for the task. Today's leaner meats require careful attention to prevent overcooking. Just five minutes spent searching for your tongs can be the difference between a delicious — or a dried-out — dinner. To be an efficient grill cook, equip yourself with these basics: a working grill, fuel and a means to light it, pot holders, long-handled brushes and tongs, a meat thermometer and some sort of fire extinguisher, even if it's just a bucket of sand or a spray bottle filled with water.

Whether you use an elegant gas grill or a humble hibachi, one requirement is constant: safety. Place your grill out of the way of children, pets, doors, stairs or other high-traffic areas. If it's a windy day, choose a spot that won't blow billows of smoke into the grill cook's face. Set up a side table to hold platters, spices and other miscellany at the ready.

Here are some recipes to get you started with grilling with beer.

Malty Mango Marinade

This piquant blend of fresh mango, pureed with pilsner, lemon zest and herbs, adds flavor and moisture to white, bland fish such as cod or haddock. Punch up the seasonings if using this marinade with a more robust, oily fish such as bluefish or shark.

1/4 cup olive oil
12 ounces lager
1 teaspoon minced lemon zest
1/2 cup diced mango
2 teaspoons minced summer savory (fresh)
1/2 teaspoon pink peppercorns
1 teaspoon lemon juice
1 tablespoon caramel malt extract
1 teaspoon minced green scallion tops or chives (fresh)

Blend all ingredients in a blender. Pour over fish placed in a glass or other nonreactive dish. Let the fish marinate at room temperature for 30 minutes, turning filets once. Grill for 2 to 3 minutes per side, or until fish flesh is opaque throughout and golden on the surface. Serve immediately.

BURNING QUESTIONS ABOUT GRILLING? CALL THE WEBER HOTLINE.

For more grill tips, call Weber's Grill-Line at (800) 474-5568. It's open now through Labor Day, from 8 a.m. through 6 p.m. Central Standard Time, weekdays only. You can also request a free copy of their new recipe book, "Grilling For All Seasons." On weekends, check out their Web site: www.weber.com. E-mail questions to grillout@weber.com, and you'll get a response in two days.

Flemish Marinade with Ommegang Abbey Ale and Juniper Berries

This fully flavored marinade was inspired by medieval Flemish sauce recipes, says Wendy Littlefield of Ommegang Brewery in Cooperstown, New York. It heightens the flavor of robust meats such as beef, game and pork. The piney, fragrant aroma of the juniper berries married to Ommegang's complex, Belgian-style Abbey Ale lends this dish a fascinating burst of intriguing flavors.

3 tablespoons vegetable oil
1 1/4 cups onion, very finely chopped
1/2 cup carrot, finely diced
1/2 cup celery, finely diced
3 cups Ommegang Abbey Ale
1 1/2 cups brown meat stock
1/4 cup malt extract
4 tablespoons red wine vinegar
1/2 teaspoon dried thyme
2 bay leaves
1/4 teaspoon dried rosemary
1/2 teaspoon whole peppercorns
12 juniper berries, crushed

Sauté the onion, carrot and celery in the oil until lightly brown. Let cool in a deep, non-reactive bowl. Then combine all the ingredients for the marinade. This is an excellent marinade for a butterflied leg of lamb. The recipe makes about five cups.

Chicken Breasts with Ale and Cumin

This recipe appears courtesy of the CARBOY homebrewers club in North Carolina (an acronym derived from "Cary, Apex, Raleigh Brewers Of Yore"). The original recipe called for making a sauce to sauté the chicken in a pan, but I found it also worked well as a tasty marinade for grilled chicken breasts.

IS IT DONE YET?

WHEN IT COMES TO MEAT, this is the question that matters. The informal method for testing grilled meat or chicken is the "poke" test. Pull the meat off to the side of the grill, away from direct flames, and give it a quick prod with your pinkie. If the meat is soft and squishy, it's rare. If it's springy, it's medium-well. If it's firm, it's well-done.

FDA food specialists say that chicken should reach an internal temperature of 160° F; a whopping 170° F is considered officially safe for beef and pork. It may be safe, but I say it will be dried out and drab by then. If you're old enough to drink beer, it's your own choice. Still, little kids should get well-done burgers.

Smith's Home Brewery Has It All!

THE HOME BREWERY Trade Mark
Nationwide Homebrewing Supplies

If you appreciate the taste of fine, quality beer, then the Home Brewery is for you! Making interesting and delicious beer in your own home is a fun and easy hobby. The Home Brewery has supplied quality, award winning home brewing equipment & ingredients to brewers of every experience level since 1984. By contacting the Home Brewery, you will learn how to brew your own beer, pick up a few recipes, and know where to get everything you will need, including advice, tips & training from our in-house award winning brewers.



- To recieve a FREE Home Brewery Catalog call 800-346-2556
- Mention this ad and receive FREE shipping on your next order within the continental USA

Smith RESTAURANT SUPPLY CO.

500 East Erie Blvd. Syracuse, NY 13202
800-346-2556 Fax 315-478-7004
Hours: M-F 8:30-5:00, Wed until 6:30, Sat 9:30-2:30

CIRCLE 17 ON READER SERVICE CARD

Try it for *free* at www.promash.com

PROMASH™

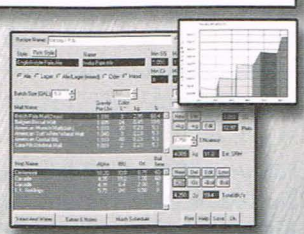
Brewing Software for the Discriminating Brewer



- *Recipe formulation*
- *Brewing sessions*
- *Mash designer*
- *Water profiler*
- *Modifiable databases*
- *Inventory control*
- *American/Metric units*
- *Extensive help system*

"...I worked with the evaluation copy for one evening and purchased it the next morning ... You are right on the money with this software." - *Gordon Power, ProMash User*

Powerful, flexible, easy to use and more for only $24.95
Don't take our word for it, try it completely free at **www.promash.com**



(415) 331-7316 Dealer inquiries welcome

CIRCLE 31 ON READER SERVICE CARD

WISCONSIN GORGONZOLA ALE SAUCE

THE GORGONZOLA ALE SAUCE featured in the photo on page 40 is a delicious topping for grilled steaks. It comes to BYO courtesy of the Wisconsin Milk Marketing Board. You can get a free copy of "A Sampler's Guide to Wisconsin Specialty Cheese and Craft Beer," about pairing specialty cheeses and craft beer, by writing to: Brochure Request #8146, Attn: Wisconsin Milk Marketing Board, 8418 Excelsior Drive, Madison, WI 53717.

2 cups diced onion
2 tablespoons olive oil
1/2 cup amber ale
1/2 teaspoon dried thyme
Salt and pepper to taste
1 teaspoon minced lemon zest
1 tablespoon minced red bell pepper
1 cup crumbled gorgonzola cheese

Caramelize onions with olive oil in a nonstick skillet over low heat, cooking until reduced by half and golden brown. Stir in ale, and season with thyme, salt, pepper, lemon zest, chives and bell pepper. Stir in crumbled gorgonzola while sauce is still warm. Serve immediately over grilled steak or chicken.

1 teaspoon ground cumin
2 tablespoons vegetable oil
1/4 teaspoon minced garlic
1 teaspoon minced shallot
1/2 cup amber ale
2 tablespoons Worcestershire sauce
Salt and freshly ground pepper
2 tablespoons chopped fresh Italian parsley

Blend all ingredients in a blender. Flatten two boned and skinned chicken breasts by placing them between wax paper and pounding with a rolling pin to 3/4 inch thickness. Grill for 3 to 6 minutes on each side, depending on grill heat and thickness of the chicken. ■

Lucy Saunders is author of "Cooking with Beer" (Time Life Books, 1997). All material in this article, unless otherwise noted, is copyrighted (Lucy Saunders © 2000) and will appear in her upcoming book, "Grilling with Beer."

Beer Beer & More Beer

$85/4 Kegs

*Shipped Free!!



- 5 Gallon Kegs
- Excellent Shape
- Cleaned & Pressure Tested
- O-Rings Replaced
- Poppets Replaced When Necessary
- All Lids Have Relief Valves
- Rubber Tops & Bottoms
- No Race Track Lids
- Very Few Dents
- Most Kegs Have Stickers

To Place An Order: 800-600-0033
morebeer.com

*Shipped Free Via UPS In The Continental U.S.A
For Orders Outside The Continental U.S.A Please Call For Shipping Qoute. Quantity Discounts Available.

Beer, Beer & More Beer • 975-D Detroit Ave. • Concord • CA • 94518



YA KNOW, I ONCE SHOT A MAN FOR NOT DRINKIN' MY HOMEBREW!!

GET ALL YOUR EQUIPMENT, SUPPLIES, INGREDIENTS AND ADVICE FROM THE BEST!

- 90+ RECIPE KITS WITH 24 HOMEBREW COMPETITION AWARD WINNERS
- PREMIUM MALTS FROM GERMANY, BELGIUM, BRITAIN AND THE U.S.
- 40+ IMPORTED AND DOMESTIC HOPS
- 60+ BEER AND WINE YEASTS
- HUGE ONLINE CATALOG!!
- FAST AND EASY ONLINE ORDERING!!

10% Off Ingredients for AHA Members!

www.austinhomebrew.com
Toll Free Order Line:
1-800-890-BREW

(512) 467-8427
306 E. 53rd St.
Austin, TX 78751

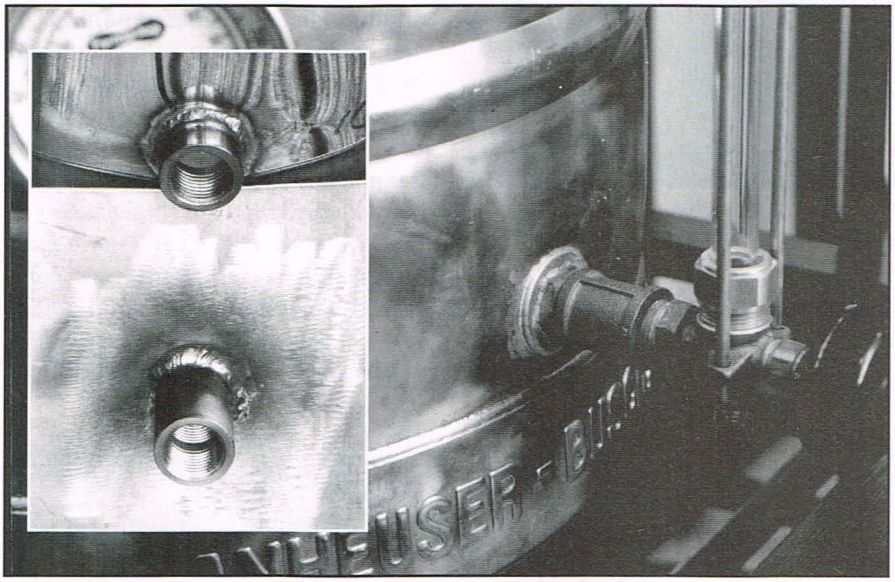
AUSTIN HOMEBREW SUPPLY EST. 1991

CIRCLE 4 ON READER SERVICE CARD

The Hole Story

Tired of siphoning? Put a spigot in your kettle!

by Thom Cannell



PHOTOGRAPHY BY THOM CANNELL

The finished product: You can put a spigot in your brew kettle by silver soldering (large photo), TIG welding (inset, top photo) or silver brazing (inset, bottom photo).

TIRED OF TRANSPORTING kettles full of scalding wort? Tired of siphoning from kettle to carboy? The answer to these problems is simple: put a spigot in your brew kettle.

Though neither simple nor trivial, this is a worthwhile project for any homebrewer. If you have the tools and the expertise, you can do the work yourself. If not, it won't cost much to hand the job over to a professional.

The primary question is how to attach the spigot: by silver soldering, silver brazing or professional welding. A fourth option is to buy a Fermentap weldless kit. It can add a spigot to any kettle, whether it's aluminum, stainless steel or an enameled cooking pot *(see "No Weld, No Worries" on page 50).*

First, some decisions

Regardless of which option you choose, the first decision is where to put the hole. If you're using a converted Sankey keg as your kettle, the hole must be high on the sidewall, above the "chime." (The chime is the place where the bottom, side and support ring meet.) If it's a flat-bottom kettle, you'll want the hole closer to the bottom, so you can drain liquid, rather than siphon.

If you're doing this yourself, assess your tools, your skills and your kettle. If you have a thin-walled kettle, it won't be too difficult to drill the hole. If you have a converted keg or a stainless-steel kettle, it won't be so easy. Stainless steel is tough stuff; cheap drill bits won't cut it ... literally. You'll need something more professional, like good high-speed steel bits, titanium-tipped bits or one of those "sixteen sizes in one" Uni Bore multi-drills.

At my local Builders Square, a titanium bit costs $20 and a Uni Bore is $31. That's quite a price for cutting one hole! If you want the tools anyway, go ahead. Or maybe your homebrew club could buy the equipment for a drilling session. (A tip from the pros: Use heavy pressure at 500 rpm or slower, plenty of the right lube, and a Uni Bore.)

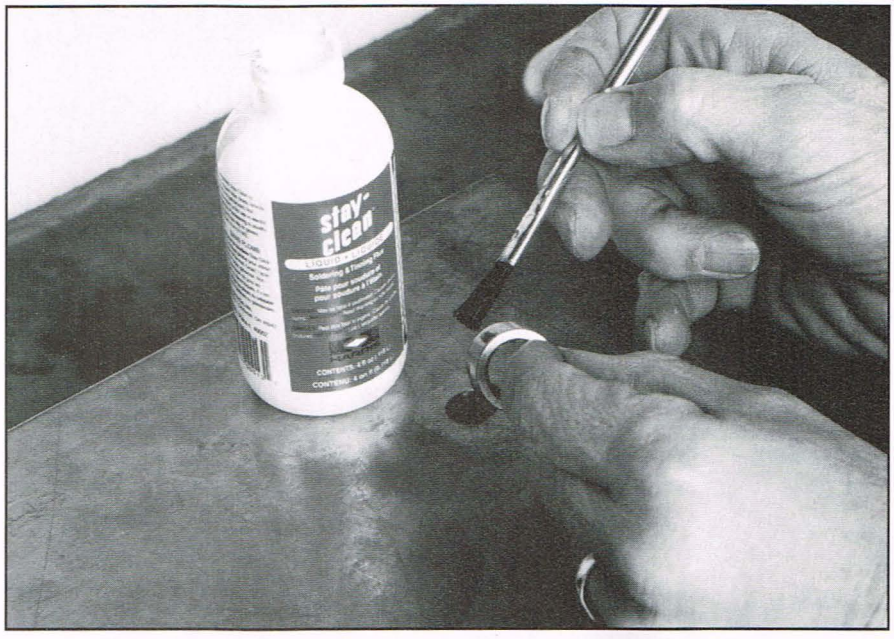
The alternative is having a professional welder pierce your kettle. Welders have the right bits and lots of special cutting tools. And it shouldn't be expensive: A good welder should be able to do the entire job, from hole-cutting to welding, for less than $50 labor.

Either way, first you have to figure out which fitting to stick through the hole. One choice is a nipple, the other is a coupling. If you've never worked with pipe, a nipple is pipe with two male threads, one at either end. A coupling is a larger-diameter pipe with female threads inside each end.

Like anything in homebrewing, there are contradictory opinions on the best fitting to stick through your pot. I'd suggest a coupling because it allows you more freedom to make changes to your set-up.

Think about it. If you have a coupling installed into the pot, you'll want a 3"-5" nipple between the pot and the ball-valve spigot. If you install a nipple, the ball valve would screw right on. But simpler isn't always better.

Let's say you install a short nipple and your ball-valve spigot is close to the pot. The "prop wash" from your burner might heat it enough to burn your hand. To extend the ball valve you'd have to screw on a coupling, another nipple, then your ball valve. If you had



Silver solder: With a half-coupling, begin by drilling a hole slightly larger than the internal thread size. Flux the hole area and the fitting itself, including the bottom.

installed a coupling, you could simply unscrew your nipple and substitute a longer one.

Either way, these fittings are not expensive. Couplings and nipples cost $4 or less; a half-inch ball valve and spigot should be under $30. Ball valves come in brass or stainless; the conventional wisdom is that stainless is much better.

Now it's time to attach the fitting to the kettle. Three popular methods are silver soldering, brazing with oxy-acetylene, or finding a sanitary welder who's familiar with the brewing or dairy industry. Here's a rundown on the trio of options, with a note of caution for do-it-yourself types: We can't teach you metal working in a couple of pages; that's a job for community education.

Silver soldering

Silver soldering is the simplest answer. Silver soldering is just like any other soldering job, whether it's plumbing, automotive body work or electronics. It just requires a different solder, different flux and more heat. (Flux cleans and protects surfaces while soldering and helps solder to flow properly once melted.)

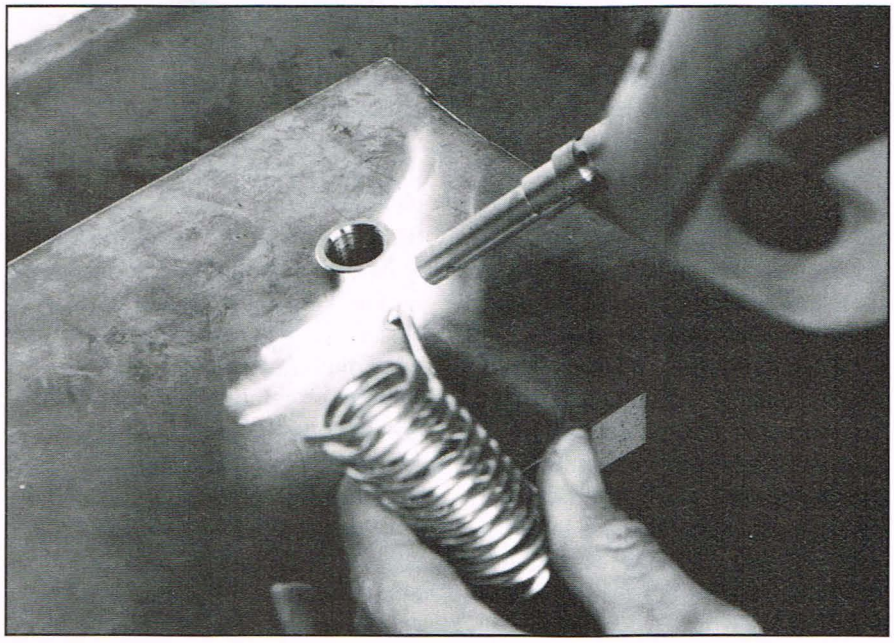
If you own a MAPP gas torch it might get you by. Otherwise you'll need an acetylene-air or oxy-acetylene torch for sufficient heat output.

We asked Harris Welco, a national supplier of welding products and machinery, to suggest the best products for silver soldering stainless steel to stainless steel. They recommend two products, StayBright silver solder (430° F melting point) and StayBright 8 silver solder (535° F). Both are rated by the National Sanitation Foundation for food service use. Harris also says you'll need Stay-Clean liquid flux.

If you're planning on silver soldering, keep in mind a few basics. Silver solder works best when the two surfaces overlap at least three times the thickness of the thinnest metal. If you're going through the wall of a keg with a full coupling, there would be only the "overlap" of the pot's wall. But if you were adding a half-coupling to a thin-walled kettle, there would be plenty of "overlap" where the bottom of the coupling meets the pot's wall.

If you decide to silver solder a coupling or nipple into your pot, start by drilling a very tight hole, one with only .002-.005 (two to five thousandths of an inch) clearance. Harris Welco technician Jeff Heuerman says, "When the silver solder is drawn into the gap, filling it, that's where you get your strength." Silver solder should not bead up, like a weld filet. Actually, you could think of silver solder as an extremely hot, hot-melt glue.

Silver solder is expensive, over $30 a pound. But you can buy just a few ounces. The Stay-Clean liquid



Silver soldering continued: Now apply heat to the fitting. Like any soldering technique, it's the super-hot fitting that melts the solder, not the torch.

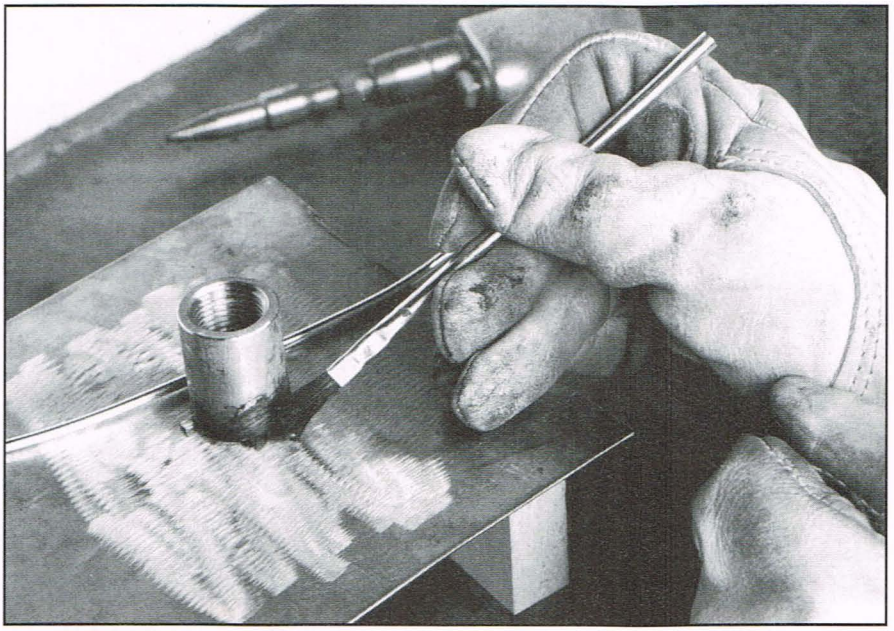
flux retails for $6.40. The bottom line: Silver solder is simple and effective, but it may crack after a year or two of homebrewing service. While you can do it yourself, it's just not as rugged or long-lasting as silver brazing or welding.

Silver brazing

Silver brazing produces a connection that's comparable to professional welding, and it's not as expensive as it sounds.

What's the difference between brazing and welding? Glad you asked. Welding occurs at temperatures high enough to melt the parent metals, both your pot and the fitting. Brazing requires far lower temperatures and uses a filler metal that melts at temperatures lower than the metals being joined.

Silver brazing means brazing with a filler (rod) that contains pure silver. You also need an oxy-acetylene welding torch set. Silver brazing rod and the proper flux should cost less than $20 and you'd be able to braze several pots.



Silver brazing: After you've drilled, apply flux to the coupling and stainless-steel surface. It should reach a brush-width up the coupling and out onto the kettle.

What pots? Stainless steel, of course. Not enamel or (shudder) aluminum. Aluminum can be

Brewcat.com
Professional Brewing at Home™

Your complete online catalog for beer and wine supplies.

Check out our wide selection of microbrew-quality recipe kits.

www.brewcat.com

CIRCLE 20 ON READER SERVICE CARD

Hobby Beverage Equipment

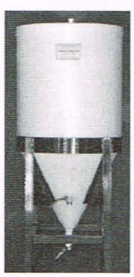
YOU CAN'T BUY WHAT YOU CAN BREW

Mash Lauter Tun

New - Design 2000
For partial & all grain brewers
5 or 10 gallon recipes
Holds 35 pounds of grain



MiniBrew System



Full Barrel

Fermentors

Prices begin with
The Affordable Conical
Size 5 & 10 gallon
half and full barrel

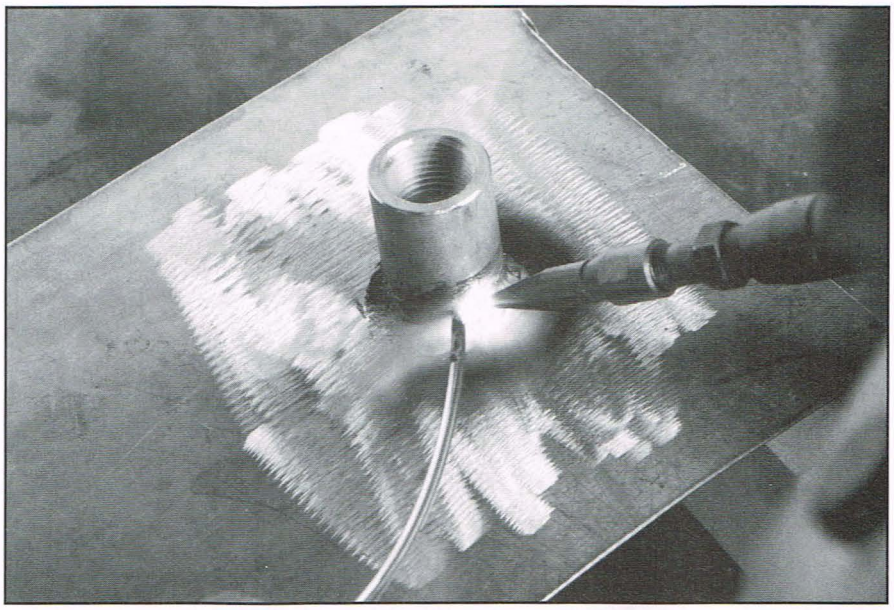
free catalog

Other products

Hot Liquor Tanks - Pumps - Instruments

Box 1387 Temecula CA 92593 - 909-676-2337 - minibrew.com

CIRCLE 14 ON READER SERVICE CARD



Silver brazing continued: Apply heat to the coupling, not to the thin stainless. Enough heat will reflect for brazing. The filler rod is silver, copper and nickel.

"brazed" but that's a different and very tricky subject. Stainless, on the other hand, brazes very nicely.

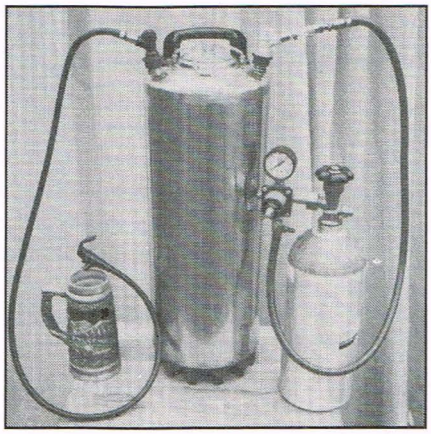
Harris Welco recommends a rod called SafetySilv 56. It contains 56 percent pure silver plus some copper and nickel, perfect for any stainless steel pot or kettle. When brazing stainless steel you need Stay-Silv Black Flux. "Regular white flux is for lower-temperature brazing applications," says Jeff Heuerman. "Stainless steel takes more heat to braze than copper or steel and the flux has a tendency to burn up because its active range is lower. So I recommend Black Flux; it has a greater heat range." The rod, SafetySilv 56, is a low-temperature brazing alloy (its melting point is 1205° F), making it easy to work with even for occasional welders.

The bottom line: If you have an oxy-acetylene welder, or know someone who does, silver brazing is a good choice. It nearly equals professional welding for durability. And you'll love this silver brazing rod; it welds easily and the puddle is very controllable.

Hire a welder

The final choice is to find a "sanitary welder," a welder who

ABOVE THE REST
Homebrewing
SUPPLIES

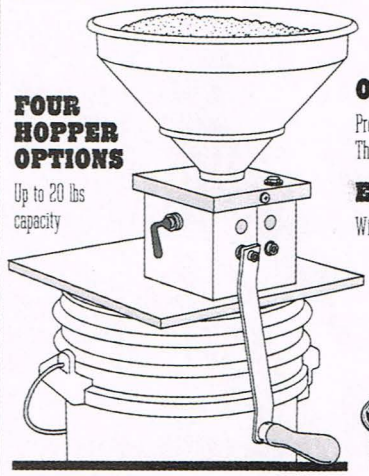


Complete Kegging Kit $149.95 (+ shipping)
New 5 lb. CO2 Tank & Regulator w/Check Valve
Air Line, Beer Line, Tap and Connectors
Reconditioned 5 Gallon Soda Keg
5 - Gallon Reconditioned Soda Keg
$29.95 (+ shipping)
Ball-lock Fittings, High & Low Pressured Tested
Sanitized, Most Seals Replaced, Look Great
Free Catalog of Quality, Low Priced Homebrewing Products

Call Now Order 1-800-898-MALT (6258)
email: allbrew@13tosurf.com • fax: (503) 639-8265

CIRCLE 1 ON READER SERVICE CARD

TWO CONFIGURATIONS
Bucket mount (shown) or table mount
ADJUSTABLE, REPEATABLE
Each turn of the knob moves rollers .016 inches
Phil Mill 2
2-Roller Adjustable Malt Mill
FOUR HOPPER OPTIONS
Up to 20 lbs capacity
OVERLOAD SPRING
Prevents roller damage
The only homebrew mill with this feature
EASILY MOTORIZED
With electric drill and simple adaptor



CHECK OUT OUR COMPLETE LINE OF UNIQUE HOMEBREW EQUIPMENT FOR BREWING, BOTTLING AND DRAFT

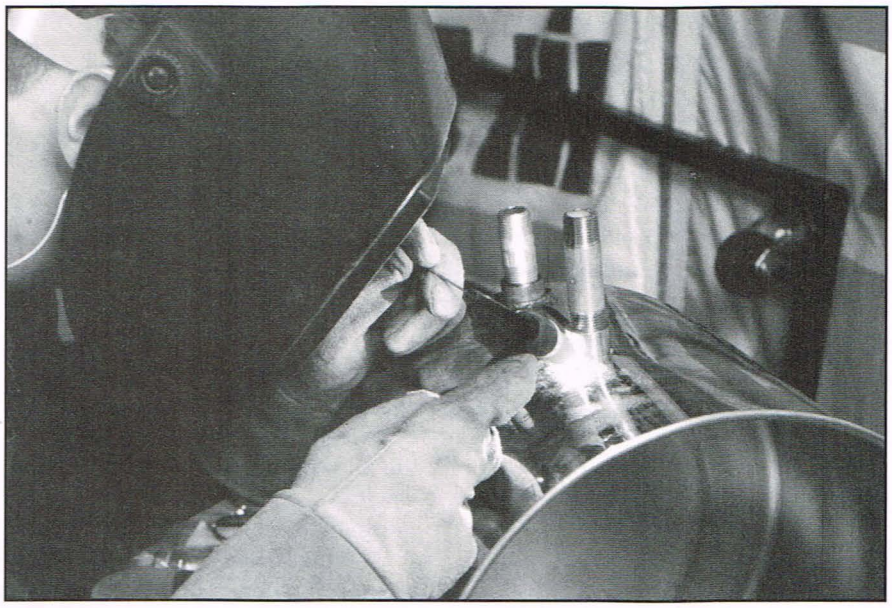
LISTERMANN MANUFACTURING CO INC.
PO Box 12251 • Cincinnati, Ohio 45207 • 513-731-1130
Check us out www.listermann.com On the Web
For information on These and Other Products, Call (513) 731-1130. Wholesale Only.

CIRCLE 24 ON READER SERVICE CARD

works with stainless or other exotic materials, not industrial steels. For this project I hired Troy Terwilliger of Twig's Welding in Lansing, Michigan. He travels throughout the state, installing and repairing breweries and microbreweries. Using a $4,000 TIG system (tungsten inert gas), he installed a coupling and a half-coupling in my thin-walled, eight-gallon brewing kettle.

He began by asking where the outlet for the ball valve should be. That was two inches up from the kettle floor, which allows enough room for a siphon tube and a false bottom. (Keg converters will have to measure much higher, above the chime). The next measure was roughly halfway up the kettle, where I wanted to install a half-coupling for a thermometer.

Troy used a water-based marker, then a scribe to mark the metal. A metal punch dimpled the kettle for drilling. He used successively larger drills to make the hole, then did the final sizing with a metal cutting bit and die grinder. The hole for the full coupling was tight enough to support the coupling. The hole he cut for the half-coupling was smaller, only slightly larger than the thread diameter.



TIG welding: Troy Terwilliger, a professional welder in Lansing, Michigan, uses his Tungsten Inert Gas system to install a half-coupling on a thin-walled kettle.

MIDWEST
HOMEBREWING SUPPLIES

Call for our new 40 page Catalog

1-888-449-2739

All of your homebrewing and winemaking supplies in one huge catalog.

- Same Day Shipping
- Friendly advice
- Low prices
- White Lab Yeasts
- 72 Award winning recipe kits
- FREE Brewing Video with any purchase
- Brewery Clone Kits

Recommended by www.about.com
✔*Check out "Best Way to get Started" at the Beer/Homebrew Site*

Midwest 5701 W. 36th St. Minneapolis, MN 55416
Monthly Specials – www.midwestsupplies.com

CIRCLE 26 ON READER SERVICE CARD

GIVE YOUR YEAST PURE OXYGEN!
DRINK BEER IN SIX DAYS!*

Stainless steel diffuser

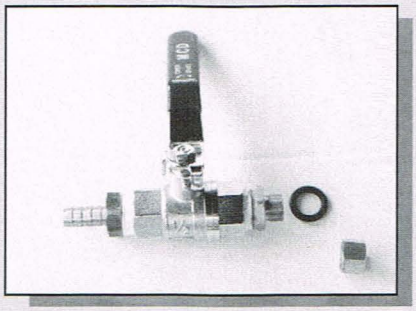
Use the trick the top breweries use. *The Oxynater™* by Liquid Bread® injects pure oxygen into the wort. You get healthier yeast. Faster fermentation. Better attenuation. Cut the risk of off-flavors. Get better tasting beer. No kidding!

2312 Clark Street Unit #8
Orlando, FL 32703
Tel: (877) 888-3533 (toll free)
Fax (407) 522-0902
http://www.liquidbread.com • lbread@iag.net

* Finish your beer with the *Carbonater™* by Liquid Bread®!

CIRCLE 23 ON READER SERVICE CARD

NO WELD, NO WORRIES



IF YOU DON'T WANT TO WELD, or need to quickly add a ball valve to your kettle or sparge-water pot, the Fermentap weldless kit is a great alternative. And it only costs about $18.

Installing this weldless ball valve couldn't be easier. Drill a 9/16-inch hole in your chosen location, insert the ball valve with the O-ring outside the pot, attach the nut on the inside, and tighten the nut enough to lightly compress the O-ring. That's it. Fermentap uses a special heat, flame and UV-resistant O-ring. And they've treated the brass parts to remove any surface lead.

Fermentap recommends sanitizing your ball valve before every brew session by boiling everything but the O-ring. Leave the ball valve half open, so there won't be any leftover wort inside. Another note: If you have a thick-walled pot, this fitting might not be deep enough to go through the wall and show at least three threads, the minimum required for connection.

Call Fermentap at (800) 942-2750 or (925) 671-5386. E-mail: info@fermentap.com. Web: www.fermentap.com.

Troy fit the coupling squarely into its hole, then "tack-welded" one quadrant to check the placement. Then he did the final weld. He flooded the kettle with argon gas during welding to minimize carbon deposition (without the gas, carbon would build up on the "cool" side, and it's difficult to clean).

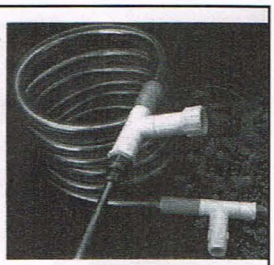
The bottom line: If you can find a good welder, this is your best bet. The parts are cheap and Troy only charged me $25 for labor. You might even convince your welder to work for homebrew! Plus, TIG-welded couplings become part of the kettle structure. If treated properly, they'll last a lifetime.

Ultimately, the choice depends on your tools, skills, finances and time. No matter which method you choose, you heard it here: Put a spigot in your kettle! ■

Thom Cannell is a homebrewer and writer in Lansing, Michigan.

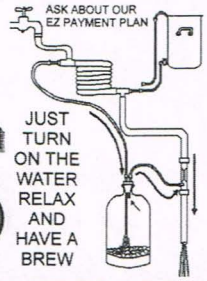


Island Brewing & Fearless join to bring you the best of two worlds with this miracle hot wort transfer system



The Wort Wizard

ASK ABOUT OUR EZ PAYMENT PLAN



JUST TURN ON THE WATER RELAX AND HAVE A BREW

The FEARLESS wort chiller

The Wort Wizard Kit: $23.95

The Fearless Wort Chiller $59.95

The Combined System ONLY $69.95

EASILY SANITIZED & COOLS WORT INSTANTLY
STANDARD GARDEN HOSE CONNECTIONS
USES "WASTED" CHILLER HYDROPOWER TO PUMP & AERATE WORT AUTOMATICALLY
RACK & REMOVE FOAM SIMULTANEOUSLY
COUNTERFLOW & PUMP FOR IMMERSION PRICE

P.O. Box 1951
Key West, FL 33041
wortwizard.com
islandbrew@aol.com
(800) 297-1886

ORDER BY PHONE WEBSTORE OR EMAIL

P.O. Box 854
Boring, OR 97009
www.fearless1.com
fearless1@abac.com
(503) 818-5839

CIRCLE 21 ON READER SERVICE CARD

The Home Brewery

www.homebrewery.com

It's Back!



Yellow Dog Malt Extract
Back by popular demand
See our online Catalog
www.homebrewery.com

The Home Brewery
PO Box 730, Ozark, MO 65721
Free Catalog/Order line 800-321-BREW
brewery@dialnet.net

www.homebrewery.com

The Home Brewery

CIRCLE 16 ON READER SERVICE CARD

Wait, Shake or Inject

Three foolproof ways to carbonate beer in the keg

by Ashton Lewis

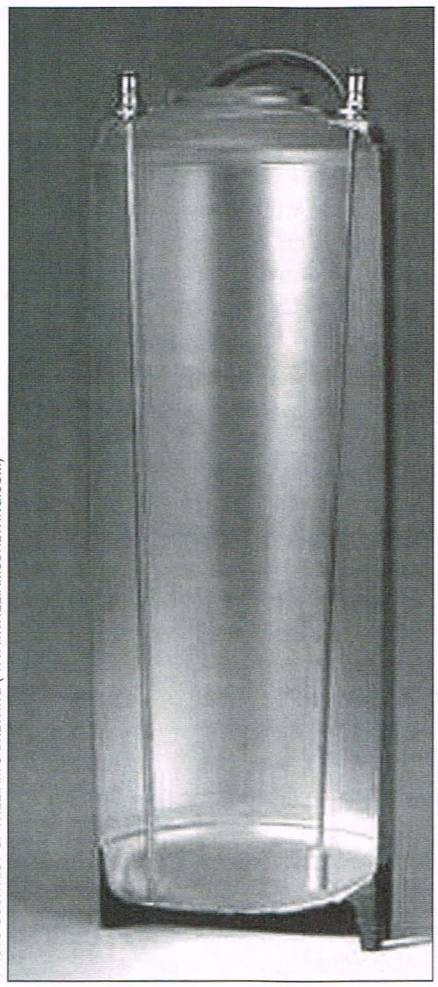


PHOTO COURTESY OF WILLIAM'S BREWING (WWW.WILLIAMSBREWING.COM)

TINY BUBBLES: *A carbonation stone diffuses the carbon dioxide in a stream of very small bubbles from the bottom of the keg. It's the fastest method.*

BEER BREWING IS ALL ABOUT beer flavor. There are endless techniques, gadgets and opinions about the best way to make beer, but at the end of the day, a brewer is judged by how his beer tastes. And the last step in the brewing process that can influence flavor is carbonation.

Carbonation stimulates a nerve in the mouth called the trigeminal nerve. This nerve senses hot, cold and irritants, like the capsicums in spicy peppers. Highly carbonated beers are said to have a "CO_2 burn." This burn is a sensation that is felt throughout the mouth.

Carbonation also influences beer flavor by carrying volatile aroma compounds out of the beer, making these compounds easier to detect with your nose. In addition to carrying flavor compounds, carbon dioxide has a dramatic influence on beer foam and the creamy mouthfeel associated with good beer foam. In a nutshell, beer carbonation is important and should be controlled as carefully as original gravity, bitterness and color.

Measurement and Mechanics

Carbonation level is usually expressed either in terms of "volumes" or grams of carbon dioxide per liter of beer. The latter term is much more common in countries that embrace the metric system (everywhere in the world but the United States!). Most beers in the United States contain roughly 2.5 volumes of carbon dioxide, or about 5 grams per liter. This means that if all the carbon dioxide in one liter of beer were expanded at 0° C and at one atmosphere of pressure, its volume would be 2.5 liters.

The volume is a fairly obtuse unit, but the key thing to understand is that CO_2 volumes increase in beer as top pressure increases at a fixed temperature. CO_2 volumes also increase as temperature decreases at a fixed top pressure.

For example, a beer equilibrated with carbon dioxide at 38° F with a top pressure of 12 pounds per square inch (psi) will have a lower CO_2 content than a beer equilibrated with carbon dioxide at 38° F with a top pressure of 15 psi. The CO_2 content would increase further if the beer were cooled to 34°F.

The word "equilibrated" is very important when it comes to understanding carbonation. Suppose you take a keg of uncarbonated beer at 38° F, hook a CO_2 supply to the keg and set the gas regulator to 12 psi. If you refer to a standard gas chart, it will say that beer contains 2.57 volumes of CO_2. But that's not exactly right: While the beer in the keg will eventually contain 2.57 volumes, it begins flat and picks up carbon dioxide from the headspace over time. It's a dynamic condition.

A gas chart shows equilibrium carbonation levels in beer at various temperatures and pressures. *(For a complete chart, see "Carbonate with Your Keg" in the May issue of BYO.)* But beer that's already in equilibrium is far different than the dynamic condition in the example above.

The rate of carbonation, or the time it takes for beer and headspace pressure to equilibrate, depends on three primary factors: (1) the ratio of gas surface to beer volume, (2) the difference in carbon-dioxide concentration between the gas and beer phase and (3) time. The topic of gas diffusion can be made very complicated by mathematicians and engineers, but the basic concepts are fairly simple.

If the surface area of gas is increased for a given beer volume,

the carbonation rate will increase. Increasing the difference between the concentration of carbon dioxide in the gas and beer phase will increase the carbonation rate. CO_2 concentration in the gas phase is a function of pressure — as the head pressure increases, so does CO_2 concentration.

Rate is by definition dependent on time. A system will equilibrate given enough time. In relation to carbonation, beer will eventually equilibrate with headspace pressure. Fortunately for homebrewers, batch size is small enough for time to be on our sides.

1 Head Pressure and Time

One of the most reliable methods of carbonating beer to a desired level is to establish a constant pressure and temperature and wait. Suppose you want to carbonate the pilsner you just kegged to 2.6 volumes. Also suppose that you plan to serve the beer from your beer refrigerator at 40° F. According to the gas chart the equilibrium pressure associated with 2.6 volumes and 40° F is about 13.5 psi.

This method is so simple! Place your keg in the refrigerator, connect your carbon dioxide source to the gas inlet of the keg, set the regulator to 13.5 psi and wait. A 5-gallon keg of beer usually takes 5 to 7 days to equilibrate. Although this is not the fastest method, the risk of overcarbonation is minimized and the beer is carbonated in a reasonable amount of time.

2 Head Pressure and Shake

Many brewers are anxious to taste their new batch and don't want to wait a week. A faster way to equilibrium is to set the system as described above and shake the keg. This technique is made easier if you use 3 to 4 feet of gas hose between the CO_2 bottle and the keg. The principle involved in this method is surface area — shaking the keg increases the exposure of gas and beer. This method works best if the keg is shaken, allowed to rest and shaken again. After several shake-and-rest cycles you'll notice a difference in the sound of the carbon-dioxide flow from the gas regulator. When the beer is equilibrated with the headspace pressure the sound of carbon dioxide flowing through the regulator will stop.

Some brewers take this method a step further and increase the headspace pressure (the carbon dioxide concentration) above the desired equilibrium pressure. This is the second principle I mentioned in the three principles of carbonation rate. Although this method increases carbonation rate, it is not easy to control. Since the pressure applied to the system is higher than the desired equilibrium pressure,

St. Louis Wine & Beermaking

BEER, WINE & MEAD
SPOKEN HERE

IT'S OUR NATIVE TONGUE

Home Wine & Beer Trade Association

251 Lamp & Lantern Village
St. Louis, MO 63017
(636) 230-8277 • (888) 622-WINE
FAX (636) 527-5413
E-mail - Stlwab@aol.com
See catalog at www.wineandbeermaking.com

The Complete Source for Beer, Wine & Mead Makers

SABCO INDUSTRIES, INC.
Offering a
'KEG FULL OF GREAT IDEAS'





Check our website for sale items!

HOME BREW
EQUIPMENT
SPECIALISTS



4511 South Ave., Toledo, OH 43615
Phone: (419) 531-5347 / Fax: (419) 531-7765
e-mail: sabco@kegs.com
Visit our new improved website www.kegs.com

CIRCLE 30 ON READER SERVICE CARD

the beer can be easily over-carbonated. I personally do not like the technique, but many brewers use it and it's worthy of consideration.

One tip to remember when using the "pressurize and shake" method is to wait a couple hours between the last shake and the first pour!

3 Gas Injection

Another technique used to cut down on carbonation time is to inject the carbon dioxide into the beer from the bottom of the keg. This method increases the gas surface area and also increases the time of gas exposure to the beer as the bubbles rise. Some brewers simply inject gas through the dip tube on the keg and slowly bleed gas from the headspace of the keg.

Bleeding off the pressure is important to keep the gas flowing through the beer. The idea is to bleed the headspace so slowly that the headspace agrees with your tar-

HOW THE PROS DO IT

Carbonation at the Springfield Brewing Company

At the Springfield Brewing Company, we brew ales and lagers. We naturally carbonate our beers by capping the fermentation at 1.5° Plato above the final gravity. Pressure builds up in the fermenter and the excess is vented though a "spunding valve." Our ales develop about 2.3 volumes of CO_2 with this method because our ale fermentations stop at about 50° F and our fermenters are rated to 15 psi. Our lagers fully carbonate since our lager yeast stops fermenting at 38° F.

We use carbonation stones to increase the carbonation level of our ales to 2.6 volumes. To do this we consult a gas chart to determine the equilibrium pressure required. Next we measure the liquid pressure in the tank by multiplying the beer height in feet by 0.5 psi per foot. This is the pressure exerted by the beer at the bottom of the tank and represents "hydrostatic head." This value is subtracted from the equilibrium head pressure. The resulting figure is our target pressure for carbonation. (Homebrewers can skip this correction because of the short height of a Cornelius keg.)

We introduce gas into our stone at 18 psi. Then we set the bleed rate on the headspace so the tank pressure equals our target pressure. Carbon dioxide is slowly bubbled through the stone for 60 minutes. This method gets us within 0.025 volumes of our target carbonation level. —*A.L.*

We have what you need!

Larry's Brewing Supply

The *only* source you will ever need for your brewing supplies.

With product lines such as:

Briess • Gambrinus • Beeston • Coopers • Telfords • Edme
Muntons • Crown Caps • Vintner's Reserve Wine Kits
Premiere Cuvee Wine Kits • Hobby Beverage Fermenters
Wyeast Labs liquid yeast cultures • Alexanders Grape Concentrates
and much more including kegs and draft equipment.

For the serious beer maniac we custom build stainless steel pots and conical fermenters in a wide range of sizes.

Larry's BREWING SUPPLY
WWW.LARRYSBREWING.COM
1-800-441-8REW

Check us out at www.larrysbrewing.com or give us a call at 1-800-441-2739

CIRCLE 22 ON READER SERVICE CARD

Introducing... CHILLZILLA™

COUNTERFLOW WORT CHILLER

Cools 5 Gallons in under 10 Minutes!

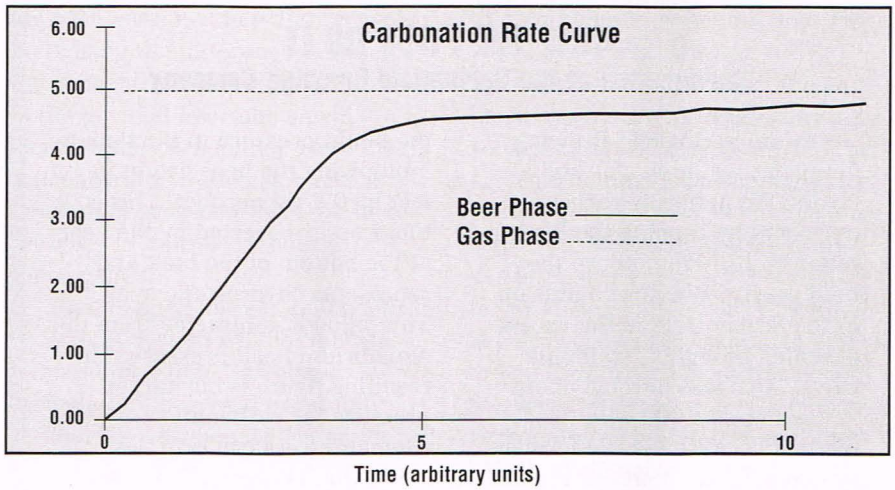
Made of copper, so it won't rust!

Uses less water!

For more information about CHILLZILLA™ and other unique homebrew product lines, contact GREAT FERMENTATIONS of Indiana.

1-888-HME-BREW (463-2739)
e-mail us at grtferm@iquest.net

CIRCLE 13 ON READER SERVICE CARD



get equilibrium pressure and the beer does not foam from the top of the keg. This can be accomplished by barely unscrewing the pressure relief valve on the top of most Cornelius kegs. Kegs without the screw-in pressure relief can be manually bled.

This method is greatly improved when the gas is introduced to beer through a carbonation stone. The stone diffuses the gas into a stream of very small bubbles. Small bubbles are preferred because they have a very high surface-to-volume ratio and small bubbles rise slower than large bubbles. The combined effect is both greater surface area and increased contact time.

This is the fastest method of bulk carbonation in a tank or keg. ("In-line carbonation," which is accomplished by diffusing CO_2 into beer as it travels though an injection device in a pipe, is the very fastest method and is used by larger commercial brewers.) When using a stone, it is very important not to exceed your target equilibrium pressure because your beer is likely to get over-carbonated. Carbonation stones cost about $25.

Control of beer carbonation is as important as weighing out malt and hops. Carbon dioxide is a vital component of beer; its level influences aroma, mouthfeel and foam. The scientific principles may be a bit tough to master, but the methods are a snap. So control your bubbles and make better beer! ■

Ashton Lewis is BYO's technical editor and Master Brewer at the Springfield Brewing Company in Springfield, Missouri.

Keg beer without a keg!



Party Pig ©

Beer Dispenser

Just PRESS, POUR & ENJOY!

- Easier to fill than bottles - No pumps or CO_2 systems.
- Holds 2.25 gallons of beer - Two "*Pigs*" perfect for one 5 gal. fermenter.
- Patented self-inflating Pressure Pouch maintains carbonation and freshness.
- Perfect dispense without disturbing sediment.
- Simple to use - Easy to carry - Fits in "fridge".
- Ideal for parties, picnics and holidays.

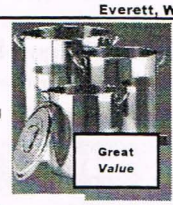
Ask for the ***Party Pig®*** Beer Dispenser at your local homebrew supply shop and at your favorite craft brewer.

QUOIN (*pronounced "coin"*)
401 Violet St.
Golden, CO 80401
Phone: (303) 279-8731
Fax: (303) 278-0833
http://www.partypig.com

Homebrew Heaven
Everett, WA



Brewpot Sale !
All Stainless Steel w/Lids
6 Gallon $49.95
9 Gallon $74.95
12 Gallon $86.95
15 Gallon $109.95
Add a Brass Thru-Wall Fitting and Ball Valve for Just $19.95



Enjoy a MEAD
Nectar of the Gods Mead Kit Just $29.95



Try Your Hand at WINE!
Easy to Make, Complete Instructions

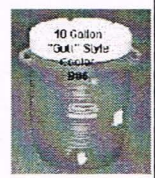


Johannis Reisling
Chablis
Gewurtztraminer
Chardonnay
Mosel
Liebfraumilch
Chianti
Shiraz
Merlot
Cabernet Sauvignon

Makes 25-30 bottles of great wine

$39.95 to $44.95

Complete All-Grain Mash/Sparge Setup
Includes:
* 10 Gallon "Gott" Style Cooler
* False Bottom and all Fittings
* Drain Tube/Ball Valve



Just $79.95



Free Catalog

(800) 850-2739

email: brewheaven@aol.com

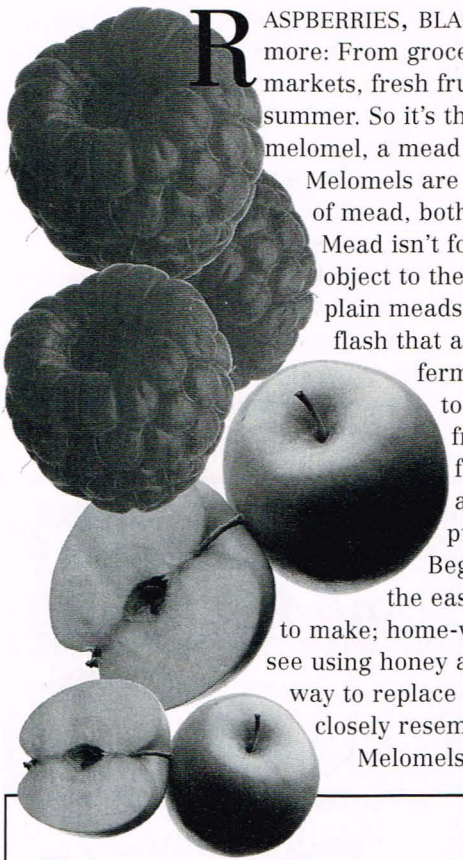
http://www.homebrewheaven.com

CIRCLE 19 ON READER SERVICE CARD

Fruit Cocktail

Use fresh fruit to make a summery melomel

by Alison Crowe



RASPBERRIES, BLACKBERRIES, PEACHES AND more: From grocery stores to farmers' markets, fresh fruit is abundant come summer. So it's the perfect time to try a melomel, a mead made with honey and fruit.

Melomels are a very approachable style of mead, both to drink and to make. Mead isn't for everyone, and those who object to the one-dimensional flavor of plain meads often find they love the flash that a bit of fruit can add to this fermented honey brew. Thanks to natural acids and nutrients from the fruit, melomels also ferment to completion faster and are less "fussy" than pure honey fermentations. Beginners will find melomels the easiest type of honey beverage to make; home-winemaking veterans will see using honey as a creative and logical way to replace some of the sugar in what closely resembles a country wine.

Melomels can be made with almost any type of fruit you have on hand. But fresh, organic fruit that's free of pesticides and herbicides is the best choice, because residual chemicals could harm the yeast. As with buying honey, finding local sources for fresh, seasonal produce can be almost as fun as making the melomel. Try farmers' markets, roadside produce stands and specialty markets for berries, tree fruits and other fruits in season.

Fruits with high acid contents, like citrus fruits, should be used in moderation. Melomels made with them should have titratable acidity (TA) within the accepted range of 5 to 7 grams per liter. In general, the riper the fruit, the less acid it will contain. You should always run a TA test on your fruit and make sure it's within the range of 3.2 to 3.7. This guideline allows yeast to be happy. You can buy a TA testing kit at any homebrewing or winemaking supply store.

Creating your own melomel is almost exactly like making mead, with a few exceptions. Though the added fruit will contribute some nutrients (especially nitrogen) and acids to the "must," it's still wise to use yeast nutrients. These additions will make for a quicker and healthier fermentation. The fruit will also add pectins (long-chain carbohydrates) to the brew, which can potentially cause hazes down the road. Pectic enzyme,

Fine Fruits for Fab Melomels

Fruit	Amount (for one-gallon batch)	Acid Assessment	Upside	Downside
Blackberry	3 pounds	If they spend a lot of time in the sun, blackberries can get very sweet. Generally, though, they're a lot higher in acid than, say, apples or pears.	Blackberries contribute a beautiful color, flavor and aroma to honey wines, making them closer to grape wines in body, texture and color.	Blackberries can make a mushy must that needs to be strained through several layers of cloth or fine sieves. Or try putting them in a muslin bag.
Cherry	1 pound	Sweet cherries are recommended; when ripe, the acid is very balanced. Sour pie cherries are very acidic and their bitterness might spoil the taste.	Cherries add a wonderful red-pink color to melomels, as well as a distinct summery aroma.	Do not use sour cherries. Instead of pitting (which would be a pain), crush and put in a muslin bag.
Cranberry	1.5 pounds	Cranberries can be very tart, though their tannin content can balance an overly aggressive acid taste. Use conservatively.	Cranberries lend a bright red color and elegant aroma. Add spices like clove and nutmeg to make a holiday gift.	Cranberries can be very tannic and acidic. Check your titratable acidity and your taste buds.
Peach	4 pounds	Peaches are not very acidic and can be used in relatively large quantities.	Peaches add flavor and aroma and lots of nutrients for a happy fermentation.	Peaches have a lot of pectin. Be sure not to boil, and use pectic enzyme.
Kiwi	3 pounds	Kiwis can be extremely acidic. Use with discretion, keeping an eye on your titratable acidity.	Kiwis make a fresh, tart and fruity melomel. Be sure to choose only plump, soft kiwis.	Kiwis can be very acidic if not ripe. Small seeds are difficult to strain.

added at a rate of ten drops per gallon, breaks down these chains. It will help to clear and settle your melomel once fermentation is over. By the way, mead should always be fermented between 70° and 78° F.

As in regular mead-making, there's an argument over whether or not to boil. Brewers of the "non-boil" school swear that boiling the honey before fermentation causes the delicate aromas and flavors to escape with the steam. Instead, you could simply hold the hot honey and water at 160° F for 20 minutes to kill any bacteria, skimming off the foam that forms on the surface.

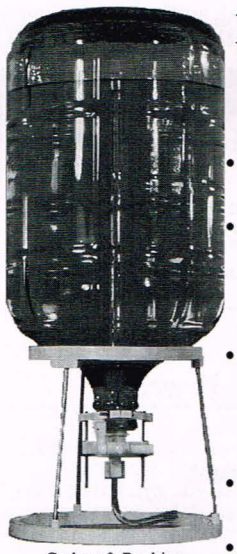
The "boilers," on the other hand, emphasize that boiling helps coagulate albumin proteins and other impurities in the honey, and also kills any spoilage microorganisms. Both contribute to a more consistent, predictable and stable fermentation. Furthermore, adding the crushed fruit to the just-boiled honey will help to kill any harmful microorganisms residing on the fruit. Just be sure never to actually boil the fruit or a damaging amount of pectins will gel in the brew. The recipes below both have a boiling step for those who wish to practice this technique. Those who do not care to boil their honey can skip this step, but beginners are encouraged to follow the recipes exactly.

Down the road, another option is adding the fruit during the secondary. Pasteurize it first by holding it at 160° F for 20 minutes. Then add it to the fermenter along with pectic enzyme. If you're using canned fruit, it's already been pasteurized and you can add it straight into the fermenter.

Melomels, like meads, occasionally have difficulty fermenting to dryness. If this happens, don't despair. Many people expect their melomels to be sweet. It'll just be necessary to add potassium sorbate, at a rate of 3 teaspoons per five gallons, in order to keep the wine from re-fermenting in the bottle. You could also choose a different yeast strain; champagne yeast, for example, should ferment completely dry.

If carbonation doesn't bother you, bottle the beverage when it contains about one percent sugar. Use beer or champagne bottles with crown caps to withstand the carbon dioxide pressure. It's not wise to add any pre-bottling potassium sorbate here, as it will kill off the remaining yeast — and then you won't have any sparkle. If the melomel does go dry (below -.05 degrees Brix or 0.0995 SG) and you want a little fizz, bottle in beer or champagne bottles following the directions in your favorite home-brewing book.

Honey can be used as the priming sugar at the rate of one cup per five-gallon batch. You could also prime a five-gallon batch with 3/4



Carboy & Racking Cane Not Included

Fermentap Valve Kit

Turn Your 5 or 6 Gallon Carboy Into A Conical Fermenter

- **No More Siphoning!** Siphonless transfer to bottling bucket or keg.
- **No Secondary Fermenter Needed!** Dump trub out the bottom drain valve eliminating the need for a secondary fermenter.
- **Harvest Yeast!** Save money by collecting yeast from the bottom drain valve for use in your next batch.
- **All The Benefits Of Glass!** Good visibility and easy sanitation.
- **Affordable!** With a low suggested retail price of **$24.95,** the Fermentap is very affordable.

For the shop nearest you call

800-942-2750

See all of our innovative products and a list of Fermentap retailers online at

fermentap.com

Fermentap Fermentap



The Grape and Granary

A Complete Line of Homebrew Supplies and Equipment

- Kegging Supplies
- Mail Order Prices
- Same Day Shipping
- Bulk Pricing

Call or Write for a Free Catalog
1035 Evans Avenue
Akron, OH 44305
1-800-695-9870
www.grapeandgranary.com

CIRCLE 12 ON READER SERVICE CARD

cup corn sugar or 1-1/4 cup extra light dried malt extract (any British variety would do). The DME will add a creamy texture. No matter which priming sugar you choose, remember to boil it for 5 to 10 minutes in 1-1/2 cups of water before adding it to the batch.

Raspberry Melomel (one gallon)

This raspberry melomel is perfect for summer brewing. It's even more perfect for conjuring up memories of summer when it's opened and enjoyed later.

Ingredients

- 3 pounds honey
- 2 pounds raspberries
- 1/2 cup sucrose (table sugar)
- 2 teaspoon acid blend (like Vinacid R)
- 10 drops liquid pectic enzyme
- 1 teaspoon yeast nutrient
- 1 packet Montrachet yeast
- Enough cold, preboiled water to make up 1 gallon

Step By Step

In a large, non-reactive kettle boil the honey and some water. The ratio should be one part honey to two parts water; use the empty honey container to measure the water. Boil for 10 to 20 minutes, skimming off any scum and foam.

Add the raspberries, gently crushed, to the hot honey and let cool until warm. If you did not boil the honey, treat the following step as your first step.

Add raspberries, honey, sugar and acid blend to your primary fermenter. I'd recommend a plastic fermenter with a lid and airlock. Mix thoroughly. Then add the pectic enzyme, yeast nutrient and enough cold, preboiled water to make one gallon, mixing well.

Disperse the yeast in one cup warm water. Let stand for 10 to 15 minutes. If the liquid is bubbly and frothy, add to the honey-berry mixture, stirring gently to disperse the yeast. If the yeast have not activated, it might mean your yeast is old or has lost its ability to rehydrate. In that case, buy a new packet from your local homebrew supplier.

Let stand in a warm place (70° to 78° F). Monitor the sugar level (specific gravity) to check for fermentation progression by using a hydrometer occasionally. Stir the must twice daily to keep the floating "cap" of fermenting fruit moist.

After the most vigorous fermentation period is over (about 5 to 10 days), strain the solid material out of the primary fermenter into another clean bucket. Siphon this liquid into a clean one-gallon jug and top up with cold, preboiled water if necessary. Top with a bung and fermentation lock.

Melomels need to be racked every two to three months, depend-

BREWERS!



Since 1979, William's Brewing has been the leader in catalog home brewing sales. We feature a huge line of home brewing equipment and supplies.

Request your free catalog today, and find out why we are the leader!

REQUEST YOUR FREE CATALOG TODAY!

WILLIAM'S BREWING

P.O. Box 2195-BE • San Leandro • CA • 94577

Phone Requests: 800-759-6025 • Fax: 800-283-2745

See Our Web Catalog: http://www.williamsbrewing.com

CIRCLE 36 ON READER SERVICE CARD

Forget about washing bottles!

Only $29.99 +s&h



Get the Handy, Reusable 2 1/2 gal. Medicine Rock Keg System!

Saves time fetching and cleaning bottles. Fits right in the fridge for cold, on-tap homebrew. System includes a 2 1/2 gal. keg, keg cap assembly, extra seal and hand pump. Buy an extra keg (only $16.99 for the keg, cap, and seal... you don't need another pump) so when you brew a 5 gal. batch, you'll be done in a flash.

Call 1 800 682-5228

Medicine Rock Division

See our web site @ www.medicinerock.com

email: medicinerock@eaglepeak.com

Dakota Supply, HCR 2 Box 2A, W. Hwy 212, Gettysburg, SD 57442

CIRCLE 25 ON READER SERVICE CARD

ing upon the amount of sediment in the bottom of the jug. The fermentation of this medium-sweet melomel may take a month to finish, and even when the yeast activity stops it may not be dry. Whatever turns out to be the case, you should rack three times before bottling. If necessary, top up with cold, preboiled water to prevent oxidation.

When racking, siphon the clear melomel into another clean one-gallon jug and top up with cold, preboiled water. Fit the jug with a clean bung and fermentation lock. After another week, check the titratable acidity (g/L) of your melomel. If it is much below 5 g/L or tastes flat, try adding your favorite acid blend in order to bring the TA up to around 7 g/L.

After the last racking and before bottling, if you have the equipment, you could filter the mead into a clean carboy. After the acid's adjusted (and after you've filtered, if you did), potassium sorbate will prevent a re-fermentation in the bottle.

After waiting one month, if you wish to bottle your melomel, do so. Adding wine conditioner is an optional step that might improve the body and mouthfeel of the final product. If using, mix well into the wine before you bottle it. Bottle-age for 6 months before consumption.

Cyser Apple Honey Mead (five gallons)

A cyser is traditionally a "sack mead," or a sweet mead, that's made with honey and apples. This cyser is quite like a wine, and will have a wine's higher alcohol content when it's finished. An important note: When buying the apple juice or cider, be sure it doesn't contain any preservatives — like potassium sorbate, sodium benzoate or sulfites — which would kill the yeast. Check at a health-food store or find a cider producer who'll sell you juice right off the press.

Ingredients

- 4 gal. apple cider or juice (with no preservatives)
- 10 lb. honey
- 3 tsp. liquid pectic enzyme
- 3 tsp. yeast nutrient
- 3 tsp. malic acid
- Enough cold, preboiled water to bring total volume to 5 gallons
- 1 packet champagne yeast
- 3 tsp. potassium sorbate
- 250 ml wine conditioner (optional)

Step By Step

In large, non-reactive kettle boil the honey with water. The ratio should be one part honey to two parts water; use the empty honey containers to measure the water. Boil for 10 to 20 minutes, skimming off any scum and foam.

Add the apple juice to the hot honey once you take it off the burner. Stir thoroughly. Add the malic acid to your primary fermenter (a seven-gallon plastic fermenter with a lid and airlock works well) and mix well. Add the pectic enzyme, yeast nutrient and enough cold, preboiled water to make up 5 gallons, mixing well. The specific gravity should be between 1.085 and 1.095.

Disperse the yeast in 1 cup warm water. Let stand for 10 to 15 minutes. If the liquid is actively bubbly and frothy, add to the honey mixture, stirring gently to disperse the yeast. If the yeast have not activated, it might mean your yeast is old or has lost its ability to rehydrate. If that's the case, you'll need to buy a new packet from your local homebrew supplier.

Let stand in a warm place (70° to 78° degrees F). Monitor the sugar level (specific gravity) to check for fermentation progression by using a hydrometer about every other day.

When specific gravity has reached about 1.020, siphon this liquid into a clean, five-gallon carboy and top up with cold, preboiled water if necessary. Top with a bung and fermentation lock. The fermentation will continue to progress

Advertiser Index

	Page No.	Circle No.
Above the Rest Beer & Wine Homebrewing	48	1
American Brewers Guild	15	2
Asheville Brewers Supply	59	3
Austin Homebrew Supply	44	4
Beer and Wine Hobby	16	5
Beer, Beer & More Beer	44	-
Brew By You	59	6
Brewsource	15	7
California Concentrate Co.	20	8
Crosby & Baker Ltd./Spagnol's	Cov. II	-
EZ Cap	20	-
F.H. Steinbart	19	9
Fermentap	56	-
Ferron & Hobbie Communications	8	10
Foxx Equipment Company	59	11
Grape and Granary	56	12
Great Fermentations of Indiana	53	13
Hobby Beverage Equipment	47	14
Home Brewery, The (CA)	8	15
Home Brewery, The (MO)	50	16
Home Brewery/Smith Restaurant Supply	43	17
Homebrew Adventures	12	18
Homebrew Heaven	54	19
Homebrew Pro Shoppe	47	20
Island Brewing Products	50	21
Jet Carboy and Bottle Washer Co.	59	-
Larry's Brewing Supply	53	22
LD Carlson Company	13	-
Liquid Bread, Inc.	49	23
Listermann Mfg. Co.	48	24
Medicine Rock Division - Dakota Supply	57	25
Midwest Homebrewing Supplies	49	26
Muntons	Cov. IV	27
National Brewpub Conference & Tradeshow	6	-
Northern Brewer, Ltd.	12	28
Paine's/John Bull	3	-
Primal Brewer Clothing Company	21	29
Quoin Industrial	54	-
SABCO Industries	52	30
Sausalito Brewing Co./ProMash	43	31
Seven Bridges Organic Homebrewing	59	32
St. Louis Wine & Beermaking	52	-
St. Patrick's of Texas	14	-
Stout Billy's	59	-
Taphandles.com	16	33
Vinotheque U.S.A.	14	34
White Labs	31	35
William's Brewing	57	36
Wine Kitz/Wine-Art	Cov.III	37

The index on this page is provided as a service to our readers. The publisher does not assume any liability for errors or omissions.

slowly at this point, often taking a number of weeks to finish.

After three more weeks, or when the specific gravity reaches around 0.995, rack into another clean carboy. At this specific gravity reading, your mead will be dry. Top up with cold, preboiled water.

After another week, check the titratable acidity (in grams per liter) of your mead. If it is much below 5 g/L or tastes flat, try adding an acid blend in order to bring the titratable acidity up to around 7 g/L.

At this point, if you have the equipment, you could filter the mead into a clean carboy. After the acid's adjusted (and after you've filtered, if you did) add some postassium sorbate to prevent a re-fermentation in the bottle. Let the mead sit (bulk age) for one month.

After a month, if you wish to bottle your mead in homebrew or champagne bottles with crown caps, do so. Adding wine conditioner is an optional step that might improve the body and mouthfeel of the final cyser. If you decide to use a bit of wine conditioner, mix it thoroughly into the mead before you bottle it. Bottle-age your cyser for 5 months before consumption. ■

Alison Crowe is an enologist at the Bonny Doon Vineyard in Santa Cruz, California, and a graduate of the University of California at Davis' Department of Viticulture and Enology. She's also a regular contributor to Brew Your Own and WineMaker magazines.

More aBout MEADS

If you'd like to learn more about meads, here are two terrific books to buy:

"Making Wild Wines & Meads: 125 Unusual Recipes Using Herbs, Fruits, Flowers and More" by Pattie Vargas and Rich Gulling (Storey Books, 1999). A guide to making wines and meads with everything from fruit to fennel and rose hips to pea pods.

"A Sip Through Time: A Collection of Old Brewing Recipes" by Cindy Renfrow (Cindy Renfrow, 1994). Offbeat old beverages like "Syllabub" and "French Barley Posset."

BREWER'S MARKETPLACE



GET THE JET-IT BLASTS!

The Original and Incredible Carboy and Bottle Washer

• Automatic shut-off • All brass construction
• Cleans your bottles fast • Attaches easily to faucet

inquire at your local shop or call 231-935-4555
Jet Carboy and Bottle Washer Co.
310 W. Front St., Suite 401, Traverse City, MI 49684
mikea@traverse.com • www.antonco.com

Brew Organic!

Brew clean, great tasting beer...promote sustainable, chemical free farming...



Over 30 Ingredient kits for extract, partial mash, & all grain brewers

The World's Only Organic Beer Kits

Complete Selection of Organic Ingredients
- 9 different organic hops
- 10 types of malt
- Brewing herbs & spices
- Malt extract & adjuncts

Huge Selection of Quality Equipment
- Fermenting & Bottling
- Keg Equipment
- Brew Kettles & Mash Equip.
- Books & Magazines

FREE Catalog...Free Shipping of Orders over $60
Wholesale Inquiries Welcome

Better Beer For a Better World — Bridges

Seven Bridges Cooperative
1-800-768-4409
www.breworganic.com
7bridges@breworganic.com
419 May Ave., Santa Cruz, CA 95060

CIRCLE 32 ON READER SERVICE CARD

Make your own beer!

Start with the best ingredients.
Let us show you how!

Now on the Web!
www.ashevillebrewers.com

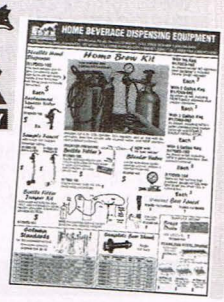
ASHEVILLE BREWERS SUPPLY

828 285-0515

ASHEVILLE, NORTH CAROLINA
SINCE 1994 • SOUTH'S FINEST

CIRCLE 3 ON READER SERVICE CARD

FOXX EQUIPMENT COMPANY



JUST HB!

Foxx parts *especially for the* **Home brewer!**

Our 2000 Home Dispensing Catalog is now available summarizing Foxx pop tank parts, **Foxx counter pressure bottle fillers**, CO2 cylinders, regs., et al.
Call for your nearest HB shop!

- WHOLESALE ONLY -
421 Southwest Boulevard
Kansas City, Mo 64108
(800) 821-2254 • Denver (800) 525-2484

CIRCLE 11 ON READER SERVICE CARD

STOUT BILLY'S

All the fixins for beer, wine and mead

61 Market Street
Portsmouth, NH 03801

online
FREE CATALOG
stoutbillys.com

1-800-392-4792

Brew By You
1-888-542-BREW
www.brewbyyou.net

Counter Pressure Bottle Filler....$39.99
-Bottle from a keg with ease! Full instructions included
Cooper's Plain Liquid Malts.....$8.99
-Great Malt Extract...Even better price! (3.3lb cans)
Refrigerator Thermostat.....$44.99
-Precisely control temperature to do a lager right
1 lb Hop Pellets.....$6.99/lb
-Cascade, Chinook, Galena, Nugget, Yakima Magnum

CHECK OUT OUR WEB SITE 24 HRS/DAY FOR SECURE ORDERING, INFORMATION, MORE SPECIALS AND COMPLETE CATALOG.
ORDERS PLACED BY 1:00PM SHIP SAME DAY.
WE ACCEPT ALL MAJOR CREDIT CARDS.

Store Hours: 11am-7pm Mon to Thurs; 11am-8pm Fri; 10am-5:00pm Sat
Fax 1-888-542-2739*3504 Cottman Ave. Philadelphia, PA 19149 *Drink different™

CIRCLE 6 ON READER SERVICE CARD

HOMEBREW DIRECTORY

UNITED STATES

ALABAMA

Werner's Trading Company
1115 Fourth St. S.W.
Cullman 1-800-965-8796
E-mail:
www@wernerstradingco.com
www.wernerstradingco.com
The Unusual Store.

ARIZONA

Brew Your Own Brew
2562 North Campbell
Tucson (520) 322-5049
1-888-322-5049
www.brewyourownbrew.com
Our staff is trained by the American Brewers Guild!

Homebrewers Outpost & Mail Order Co.
823 North Humphreys
Flagstaff 1-800-450-9535
www.homebrewers.com
FREE CATALOG! Over 20 years of brewing experience.

What Ale's Ya
6362 West Bell Road
Glendale (623) 486-8016
Great selection of beer- & wine-making supplies.

ARKANSAS

Brewmeisters Homebrew & Winemaking Supply
1558 K Airport Road
Hot Springs (501) 767-7780
The brew-it-yourself store!

The Home Brewery
455 E. Township St.
Fayetteville 1-800-618-9474
homebrewery@arkansasusa.com
Top-quality Home Brewery products.

CALIFORNIA

The Beverage People
840 Piner Road, #14
Santa Rosa
1-800-544-1867
www.metro.net/jobybp
32-page Catalog of Beer & Mead & Wine Supplies.

Brewer's Rendezvous
11116 Downey Ave.
Downey (562) 923-6292
www.bobbrews.com
Toll-free order line:
1-888-215-7718
Extensive inventory!

Doc's Cellar
855 Capitolio Way, Ste. #2
San Luis Obispo
1-800-286-1950
www.docs-cellar.hypermart.net/
Largest beer & wine supplier on the central coast.

Good 4 What Ales Ya!
The Home Brew Shop
1570 Nord Ave.
Chico (530) 342-3768
E-mail: hbs@jps.net
Supplies for brewers, wine-makers & soda aficionados.

The Home Brewery
1506 Columbia Ave., #12
Riverside 1-800-622-7393
acmebrew@empirenet.com
www.homebrewery.net
Top-quality Supplies for the Home Brewer or Vintner.

HopTech
6398 Dougherty Rd., Ste. 18
Dublin (925) 875-0246

Napa Fermentation Supplies
575 3rd St., Bldg. A
(Inside Town & Country Fairgrounds) P.O. Box 5839
Napa 94581 (707) 255-6372
www.napafermentation.com
Serving your brewing needs since 1983!

Original Home Brew Outlet
5528 Auburn Blvd., #1
Sacramento (916) 348-6322
Open 7 Days. New location!

Ruud-Rick's Homebrew Supply
7273 Murray Drive, #15
Stockton 1-800-333-BREW
ruudrick@aol.com
Visit our Web site at http://welcome.to/ruud-ricks/
Fantastic selection!

Stein Fillers
4160 Norse Way
Long Beach (562) 425-0588
brew@steinfillers.com
www.steinfillers.com
Best darn brew store in Southern California!

COLORADO

Beer at Home
3157 South Broadway
Englewood
(303) 789-3676
1-800-789-3677
www.beerathome.com

The Brew Hut
15108 East Hampden Ave.
Aurora
1-800-730-9336
www.thebrewhut.com
Beer, Wine, Mead & Soda — WE HAVE IT ALL!

The Homebrew Hut
555 Highway 287, Unit I
Broomfield
(303) 460-1776
One-Stop Brewing Supply Since 1993!

CONNECTICUT

Maltose Express
391 Main St.
Monroe
1-800-MALTOSE
www.maltose.com
Buy supplies from the authors of "CLONEBREWS"!

GEORGIA

Marietta Homebrew Supply, Inc.
1355 Roswell Road, Ste. 660
Marietta
1-888-571-5055
Low prices, high quality, great service!

Savannah Homebrew Shop
42nd & Skidaway Road
Savannah
(912) 236-4675
Fax orders: (912) 233-6943
Visit us at:
www.savhomebrewshoppe.com
Call for store hrs. Express shipping available.

HAWAII

Oahu Homebrew Supply
856 Ilaniwai St., #103
Honolulu
(808) 596-BREW
scheitlins@compuserve.com
FREE catalog!

ILLINOIS

The Brewer's Coop
30 W. 114 Butterfield Road
Warrenville 60555
(630) 393-BEER (2337)
DuPage County's LARGEST homebrew shop!

Chicagoland Winemakers Inc.
689 West North Ave.
Elmhurst 60126
Phone: 1-800-226-BREW
E-mail: cwinemaker@aol.com
FREE instruction!

Crystal Lake Health Food Store
25 E. Crystal Lake Ave.
Crystal Lake
(815) 459-7942
Honey - Sorghum - Maple Syrup - Bulk Herbs!

INDIANA

Anderson's Orchard & Winery, Inc.
430 East U.S. Hwy 6
Valpairiso 46383
(219) 464-4936
E-mail: andwine@niia.net
www.andersonsvineyard.com
Complete line of brewing & winemaking supplies

Beer & Wine by U
1456 North Green River Road
Evansville (812) 471-4352 or
1-800-845-1572
Call for a FREE Catalog!

Great Fermentations of Indiana
1712 East 86th St.
Indianapolis (317) 848-6218
or toll-free 1-888-463-2739
E-mail us at grtferm@iquest.net

KANSAS

Bacchus & Barleycorn
6633 Nieman Road
Shawnee
(913) 962-2501
www.bacchusbarleycorn.com
When only the best will do, we do!

Homebrew Pro Shoppe
11938 W. 119th St.
Overland Park (913) 345-9455
Secure online ordering:
www.brewcat.com

KENTUCKY

Winemakers Supply & Pipe Shop
9477 Westport Road
Louisville (502) 425-1692
www.wine-beer-makerssupply.com
Since 1972!

For details on listing your store in the Homebrew Directory, call (802) 362-3981.

HOMEBREW DIRECTORY

MARYLAND

The Flying Barrel
103 South Carrol St.
Frederick
(301) 663-4491 or
Fax (301) 663-6195
www.flyingbarrel.com
Maryland's 1st Brew-On-Premise & large selection of homebrewing supplies! Sterile hemp for homebrewing.

Maryland Homebrew
6770 Oak Hall Lane, #115
Columbia
1-888-BREWNOW
www.mdhb.com
We ship UPS daily.

MASSACHUSETTS

Beer & Wine Hobby
155 New Boston St., Unit T
Woburn 1-800-523-5423
E-mail: shop@beer-wine.com
Web site: www.beer-wine.com
For the most discriminating beer & wine hobbyist.

NFG Homebrew Supplies
72 Summer St.
Leominster
(978) 840-1955
nfgbrew@aol.com
Great prices! Personalized Service!

Strange Brew Beer & Winemaking Supply
197 Main St.
Marlboro
1-877-460-5050
E-mail: stbrew@tiac.net
Website: www.Home-Brew.com
We put the dash back in Home-Brew!

West Boylston Homebrew Emporium
Causeway Mall, Rt. 12
West Boylston
(508) 835-3374
www.wbhomebrew.com
Service, variety, quality. Open 7 days.

MICHIGAN

Adventures in Homebrewing
23305 Ford
Dearborn
(313) 277-BREW
Visit us at
www.homebrewing.org

Brew-It Yourself Center
13262 Northline Road
Southgate 48195
(734) 284-9529
brewyourself@earthlink.net
www.brewityourself.com
Complete homebrewing & homewinemaking supplies.

Cap'n' Cork Homebrew Supplies
18501 Hall Rd., Ste. 2
Macomb Twp.
(810) 286-5202
Wyeast, Hops & Bulk Grains! Inside ACE Hardware.

Lake Superior Brewing Supplies
P.O. Box 486 Ada
1-800-345-CORK
West Michigan's beer- and wine-making supplier.

Pete's Pipe & Barrel
305 E. Mitchell St.
Petoskey
(231) 347-3322
bblcraft@voyager.net
Quality ingredients, excellent service and competitive prices.

The Red Salamander
205 North Bridge St.
Grand Ledge
(517) 627-2012
Fax: (517) 627-3167
Phone or fax your order.

things BEER
Home of the Fermentation Station
100 East Grand River Ave.
Williamston
(517) 655-6701
www.thingsbeer.com
Your Full-Service Homebrew Shop!

Wine Barrel Plus Home-brewing & Winemaking Supplies
30303 Plymouth Road
Livonia 48150
(734) 522-9463
www.winebarrel.com/catalog
World's LARGEST Independent Retail Homebrew Shop!

MINNESOTA

Brew-N-Grow
8179 University Ave. N.E.
Fridley
1-800-230-8191
www.brewngrow.com
Homebrew and winemaking supplies

The Home Brewery
211 Oak St. S.E.
Minneapolis
(612) 379-3115
or 1-800-399-7276
E-mail: mhanson@winternet.com
www.homebrewery-mn.com
Top-quality Home Brewery products.

Lake Superior Smokin' Brews, Inc.
600 East Superior St.
Duluth 55802
1-800-720-0013
Fax: (218) 720-6459
www.smokinbrews.com
Beer & Wine Supplies/Cigars & Accessories.

Northern Brewer, Ltd.
1150 Grand Ave.
St. Paul 55105
1-800-681-2739
www.nbrewer.com
Call or write for a FREE CATALOG!

Semplex of USA
4171 Lyndale Ave. N.
Minneapolis
(612) 522-0500
Est. 1962 — Best Service & Prices! FREE CATALOG!

MISSOURI

Home Brew Supply, LLC
3508 S. 22nd St.
St. Joseph
(816) 233-9688
www.thehomebrewstore.com

The Home Brewery
205 West Bain (P.O. Box 730)
Ozark
1-800-321-BREW (2739)
brewery@dialnet.net
www.homebrewery.com
The original Home Brewery products.

St. Louis Wine & Beermaking
251 Lamp & Lantern Village
St. Louis 63017
1-888-622-WINE (9463)
www.wineandbeermaking.com
The complete source for Beer, Wine & Mead makers! Fax us at (636) 527-5413

T and M Homebrew Supply
625 South 5th St.
St. Charles (636) 940-0996
tmhomebrew@aol.com
Everything you need for beer- or wine-making!

NEBRASKA

Fermenter's Supply & Equipment
8410 'K' Plaza, Suite #10
Omaha 68127
(402) 593-9171
Fax: (402) 593-9942
www.fermenterssupply.com
Since 1971. Malt, hops, yeast, grapes, winemaking supplies & great advice.

NEVADA

Beer & Brew Gear
4972 S. Maryland Pkwy., #4
Las Vegas (702) 736-8504
www.beer-brewgear.com
Your Beer, Wine & Soda Making Headquarters.

NEW HAMPSHIRE

Red, White & Brew, Inc.
865 2nd St.
Mallard Pond Plaza
Manchester 03102
(603) 647-ALES
www.redwhiteandbrew.com
A full-service brewing facility: brew-on-premise & homebrewing supplies.

Stout Billy's
61 Market
Portsmouth (603) 436-1792
Online catalog & recipes!
www.stoutbillys.com

NEW JERSEY

Beercrafters
110A Greentree Road
Turnersville
(856) 2-BREW-IT
E-mail: drbarley@aol.com
So. Jersey's COMPLETE Homebrew Supplier.

NEW YORK

At Home Warehouse Distributors
10686 Main St.
Clarence 1-800-210-8585
www.ahwd.com
Superior service and experience!

E.J. Wren Homebrewer, Inc.
Ponderosa Plaza,
Old Liverpool Rd.
Liverpool 13088
1-800-724-6875
E-mail:
ejwren@brew-master.com
www.ejwren.com
Largest homebrew shop in Central New York.

For details on listing your store in the Homebrew Directory, call (802) 362-3981.

The Home Brewery c/o Smith Restaurant Supply
500 Erie Blvd. E.
Syracuse 1-800-346-2556
M-F 8:30-5, Wed. 'til 6:30
Sat. 9:30-2:30
Top-quality Home Brewery products.

NORTH CAROLINA

Alternative Beverage
114-O Freeland Lane
Charlotte
Advice Line: (704) 527-2337
Order Line: 1-800-365-2739
www.ebrew.com
25 years serving all home brewers' & winemakers' needs!

American Brewmaster Inc.
3021-5 Stoneybrook Dr.
Raleigh (919) 850-0095
www.americanbrewmaster.com
Just good people to do business with!

Assembly Required
340 North Main St.
Hendersonville 1-800-486-2592
www.assemblyrequired.com
Your Full-Service Home Brew Shop!

Homebrew Adventures
1109-A Central Ave.
Charlotte 28204 1-888-785-7766
www.homebrewadventures.com
The Southeast's best-stocked store with excellent low prices!

OHIO

The Grape and Granary
1035 Evans Ave.
Akron (330) 633-7223
www.grapeandgranary.com
Complete Brewing & Winemaking Store.

J.W. Dover Vineyards, Inc.
24945 Detroit Rd.
Westlake (440) 871-0700
www.ad-net.com/adn13/jwdover.htm *Open since 1934!*

JC Homebrewing Co.
8306 State Route 43
East Springfield 1-800-899-5180
www.jchomebrew.com
Place your order on our Website!

Portage Hills Vineyards
1420 Martin Rd.
Suffield 44260 1-800-418-6493
www.portagehills.com
Brewing and Winemaking. Free catalog.

Shreve Home Brewing & Wine Making Supply
299 Jones St., P.O. Box 17
Shreve 44676
1-877-567-2149 (Toll-Free)
www.shrevehomebrewing.com
FREE catalog!

VinBrew Supply
4411 Carroll Southern Rd.
Carroll (740) 756-4712 or
1-800-905-9059
www.vinbrew.com
Serving greater Ohio.

OKLAHOMA

Barlow's Brew Shop
2647 North Main St.
McAlester 74501
(918) 423-8202 or
Toll Free 1-877-656-8202
Email: barlowbrew@aol.com

The Brew Shop
3624 N. Pennsylvania
Oklahoma City (405) 528-5193
thebrewshop@msn.com
OKC's premiere supplier of homebrewing equipment & supplies!

PENNSYLVANIA

Beer Unlimited
Route 30 & 401
Malvern (610) 889-0905
We also do wine!
Open 7 days a week.
Guaranteed fresh ingredients.

Brew By You
3504 Cottman Ave.
Philadelphia 1-888-542-BREW
www.brewbyyou.net
Secure online ordering available.

The Brew Company of Carlisle
152 South Hanover St.
Carlisle (717) 241-2734
www.brewcompany.com
A Little Store With a Lot of Knowledge!

Keystone Homebrew Supply
779 Bethlehem Pike (Rt. 309)
Montgomeryville
(215) 855-0100
keystonehb@juno.com
Quality Ingredients and Expert Advice!

Keystone Kettles Homebrew Supply Store
120 W. Bishop St.
Bellefonte
(814) 353-BREW
Central Pennsylvania's most complete homebrew and wine supply store.

South Hills Brewing Supply
2345 Noblestown Road
Pittsburgh 1-800-417-2904
www.weir.net/brew
Wine- and beer-making supplies & tapping equipment!

Triangle Homebrewing Supply
3634 Penn Ave.
Pittsburgh (412) 621-2228
Bringing you the BEST for less!

RHODE ISLAND

Blackstone Valley Brewing Supplies
407 Park Ave.
Woonsocket
(401) 765-3830
Quality Products and Personalized Service!

SOUTH CAROLINA

Florence Brew Shop
1210 S. Cashua Dr., Ste. 2
Florence 1-800-667-6319
www.florencebrew.com
The newest, best-priced shop around!

TENNESSEE

All Seasons Gardening & Brewing Supply
3900 Hillsborough Rd., Ste. 16
Nashville 1-800-790-2188
Nashville's Largest Homebrew Supplier!

TEXAS

Austin Homebrew Supply
306 E. 53rd St.
Austin
1-800-890-BREW
(512) 467-8427
www.austinhomebrew.com
10% off ingredients for AHA members!

Foreman's / The Home Brewery
3800 Colleyville Blvd.
(P.O. Box 308)
Colleyville
1-800-817-7369
www.flash.net/~greg10
Top-quality Home Brewery products. Check out our site.

The Homebrew Shop
900 Copeland Rd., Ste. 120
Arlington 76011
(817) 792-3940
or fax (817) 277-8374
www.brew-shop.com
Beer, wine, mead making supplies

St. Patrick's of Texas
1828 Fleischer Drive
Austin
1-800-448-4224
www.stpats.com
World's largest homebrew supply!
FREE CATALOG!

The Winemaker Shop
5356 West Vickery Blvd.
Fort Worth
(817) 377-4488
brewsome@home.com
http://winemakershop.com
FREE catalog

UTAH

Art's Brewing Supplies
642 South 250 West
Salt Lake City 84101
(801) 533-8029
www.users.uswest.net/~artsbrew
Sale prices all the time!

VIRGINIA

The Brewmeister Shop
1215-G George Washington Memorial Highway
Yorktown
(757) 595-HOPS (4677)
The place for ALL your brewing needs!

Vintage Cellar
1313 South Main St.
Blacksburg 1-800-672-9463
www.vintagecellar.com
Ingredient kits with White Labs Yeast, Belgian Ales & Glassware! Complete line of brewing supplies.

Virginia Beach Homebrew Hobbies
3700 Shore Dr., Suite #101
Virginia Beach 23455
(757) 318-7600
www.homebrewusa.com
Largest Selection of Beer & Wine Making Supplies & Equpment in Southeastern Virginia!

For details on listing your store in the Homebrew Directory, call (802) 362-3981.

HOMEBREW DIRECTORY

WeekEnd Brewer — Home Brew Shop
4205 West Hundred Road
Chester
(804) 796-9760
www.weekendbrewer.com
LARGEST variety of malts & hops in the Richmond area!

WASHINGTON

Bader Beer & Wine Supply, Inc.
711 Grand Blvd.
Vancouver, WA 98661
1-800-596-3610
Visit our Web site at www.baderbrewing.com

Cascade Brewing Supplies
224 Puyallup Ave.
Tacoma (253) 383-8980 or
1-800-700-8980
http://members.aol.com/greatbrew/home.html

The Cellar Homebrew
Dept. BR
14411 Greenwood Ave. N.
Seattle 98133 1-800-342-1871
FREE Catalog/Guidebook, FAST Reliable Service, 25 Years!
Secure ordering online
www.cellar-homebrew.com

Larry's Brewing Supply
7405 S. 212th St., #103
Kent 1-800-441-2739
www.larrysbrewing.com
Products for Home and Craft Brewers!

Northwest Brewers Supply
316 Commercial Ave.
Anacortes 1-800-460-7095
nwbs@fidalgo.net
All Your Brewing Needs Since 1987.

WISCONSIN

Homebrew Market
520 East Wisconsin Ave.
Appleton 54911
(920) 733-4294 or
1-800-261-BEER
www.homebrewmarket.com
Beer & Wine Supply Retail Store and Mail-Order Specialists!

Homebrewing Depot
9509 W. Greenfield Ave.
Milwaukee
(414) 778-0781
or 1-800-413-BREW
E-mail: thedepot@execpc.com
Great selection, great prices, knowledgeable staff! Beer + Wine.

Wine & Hop Shop
1931 Monroe St.
Madison
1-800-657-5199
buenosdz@chorus.net
Southern Wisconsin's largest selection of beer- & wine-making supplies.

CANADA

ONTARIO

D'Vine Wine (Your Place or Mine) Franchise Systems (USA) Inc.
514 Camden Circle
Mississauga L4Z 2P2
1-888-GO-4-WINE
Fax (905) 712-3871
www.dvinewine.com
On-premises franchise

Brew Your Own
THE HOW-TO HOMEBREW BEER MAGAZINE

Reach 75,000 homebrewers every month in the Homebrew Directory.

For details, call (802) 362-3981.

For details on listing your store in the Homebrew Directory, call (802) 362-3981.

CLASSIFIEDS

BOOKS & VIDEOS

HOPS GROWING SECRETS revealed! Two-hour video mini-course. Only $19.95. 1-888-GRO-HOPS. www.netcom.com/~dluzanp

BREWING EQUIPMENT

5-GALLON BALL-LOCK KEGS
$12 each and rebuilt for $20 each. RCB Equipment, 1-888-449-8859, www.rcbequip.com

5-GALLON STAINLESS STEEL
drums ($60) and 30-gallon stainless steel drums ($80). RCB Equipment, 1-88-4549-8859, www.rcbequip.com

CIGARS

FREE CIGAR CATALOG. CALL 1-888-70-CIGAR for Corona Cigar Company's catalog of cigars, humidors, and accessories — all at discount prices! Order online at www.coronacigar.com

SUPPLIES

DRAFTSMAN BREWING COMPANY
You'll love our prices! Call today for our FREE homebrew supply catalog. 1-888-440-BEER www.draftsman.com

HOPS & DREAMS Homebrew and Winemaking supplies. Great prices & FREE catalog! 1-888-BREW-BY-U www.hopsanddreams.com

HOMEBREW SUPPLY RETAILERS

ebrew.com

FREE HOMEBREWING CATALOG – Call WindRiver Brewing – 1-800-266-4677. SHOP ONLINE – www.windriverbrew.com

MAKE QUALITY BEER & WINE! Supplying home beer- and winemakers since 1971. FREE Catalog/Guidebook — Fast, Reliable Service. The Cellar Homebrew, Dept. BR, 14411 Greenwood Ave N., Seattle, WA 98133. 1-800-342-1871. Secure Online Ordering: www.cellar-homebrew.com

INGREDIENTS

HOPS DIRECT @ PUTERBAUGH FARMS is your direct source for hops. 1-888-972-3616 & www.hopsdirect.com

MISCELLANEOUS

HOME COFFEE ROASTING
Learn to roast your own. Supplies and instructions, BetterBeans.com/roasting.html

Brew Your Own
THE HOW-TO HOMEBREW BEER MAGAZINE

For classified advertising information, call (802) 362-3981.

For details on listing your store in the Classifieds, call (802) 362-3981.

This Beer Could Make Me Famous!

(Damn! If I Could Just Remember How I Made It!)

by Stephen Rakaseder

A FEW YEARS BACK, I CREATED a masterpiece. The recipe was a modified steam beer; I fermented a batch at normal ale temperatures but used a fine liquid lager yeast. The result was my own version of Anchor Steam, a rich brew with plenty of hop character and millions of fine natural bubbles. It was the clearest, most lively beer I've ever made. And I've never been able to make it again.

It was an all-grain recipe for a ten-gallon batch, and the ingredients included a very special dark roasted malt that I found in a homebrew supply shop in New York state. The wort immediately smelled of success. It was sweeter than normal and had a thick, calm boil. I was with friends, and of course we all were expounding on our brewing techniques. Every so often, I jotted down a few brewing notes.

I bottle-conditioned my beer for one week longer than normal. When it was ready, I threw a dinner party in honor of Fritz Maytag, the man who resurrected Anchor Steam in San Francisco. (In case you haven't guessed, I'm a huge Anchor Steam fan). The menu had a San Francisco theme; it started with artichokes from Gilroy, California — famous for its garlic and yes, garlic beer — and ended with seafood in steam-beer batter. I planned to serve plenty of my Anchor Steam homebrew.

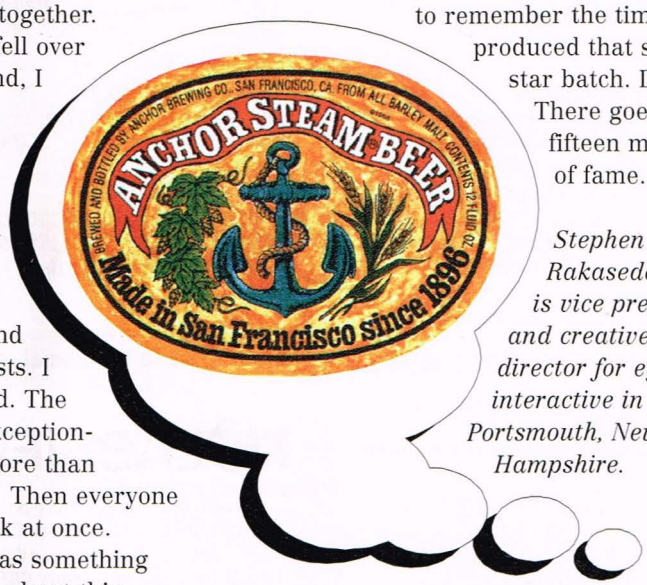
Just as we were sitting down to dinner, a surprise guest popped in. He was the friend of a friend and happened to be in town. He also happened to be a food critic for *The New York Times*. We welcomed the critic into our coterie of beer enthusiasts. He sat down and we poured him a pint. We all raised our glasses and sipped together.

Silence fell over the room and, I kid you not, the music slowed to a rhythmic pulse. I saw nothing but wiggling eyebrows and smiling guests. I was shocked. The beer was exceptional. It was more than exceptional! Then everyone began to talk at once.

There was something very special about this beer. It had a unique malty flavor with strong esters of clover honey, and a surprising sugary rum flavor. I quickly listed the ingredients and assured everyone that I had not added sugar of any kind, only several kinds of malt and Cascade hops.

I was beaming. The food critic told me this was the finest beer he had ever tasted. I couldn't help it: I agreed! Then everyone around the room concurred. My friend Ted began to blab about how I should go into the brewing business and use this beer as my resume. Needless to say, I really enjoyed the evening.

But it was never to happen again. I've tried four times to duplicate that beer, with no success. And I can tell you why. I was so busy talking that I took pathetic brewing notes! I've used the exact same ingredients in ultra-precise amounts, but I've never been able to remember the timing that produced that superstar batch. Damn. There goes my fifteen minutes of fame. ■





I DREAM OF STEAMY: *This man will forever be haunted by the beer he can't make.*

Stephen Rakaseder is vice president and creative director for eyeon interactive in Portsmouth, New Hampshire.

WINE KITZ®

BEER & WINE
MAKING MADE EASY

Wine Art®

Founded in 1959, Wine-Art grew into one of the world's largest and most respected manufacturers of top quality wine making kits.

From its first store in 1992, Wine Kitz has grown into one of North America's leading and most successful retailers of wine and beer kits.

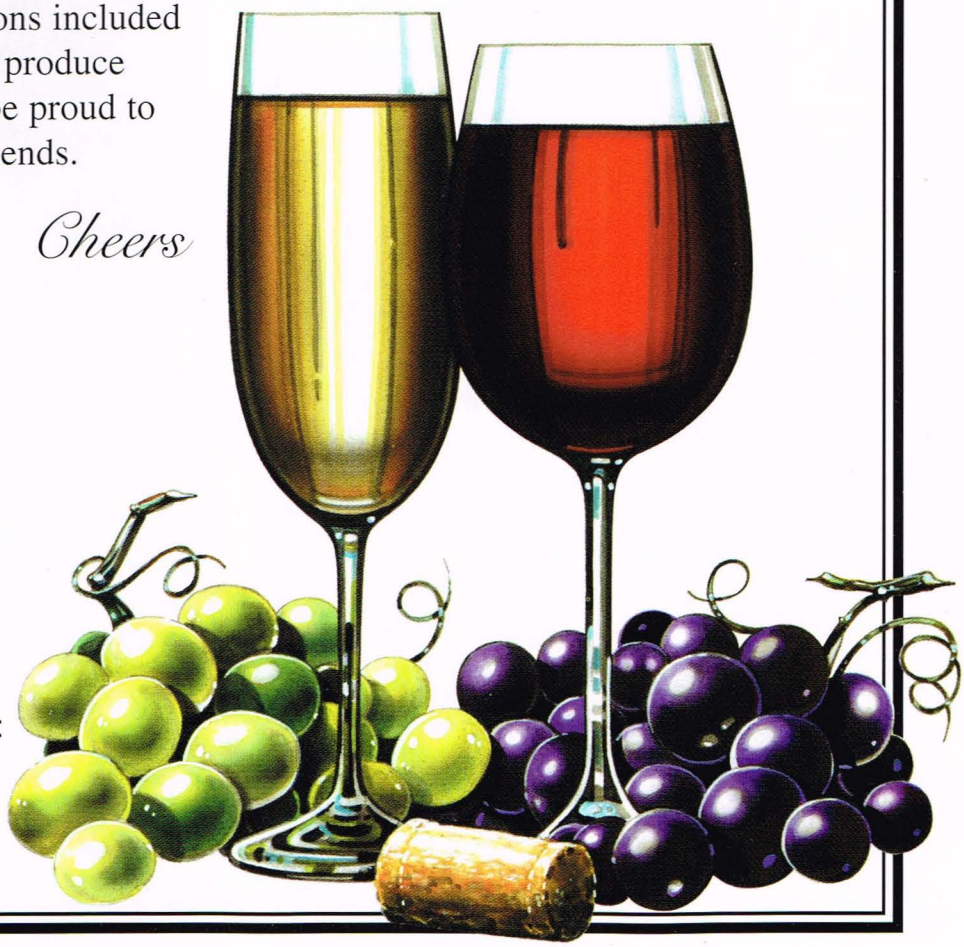
World Vintners Corp. brings together these two great companies to provide you with the best products worldwide.

Success Guaranteed

By following the instructions included with our kits, you will produce beverage that you will be proud to serve family and friends.

Cheers

SUPPLYING DISCRIMINATING WINE MAKERS Since 1959



www.wineart.com

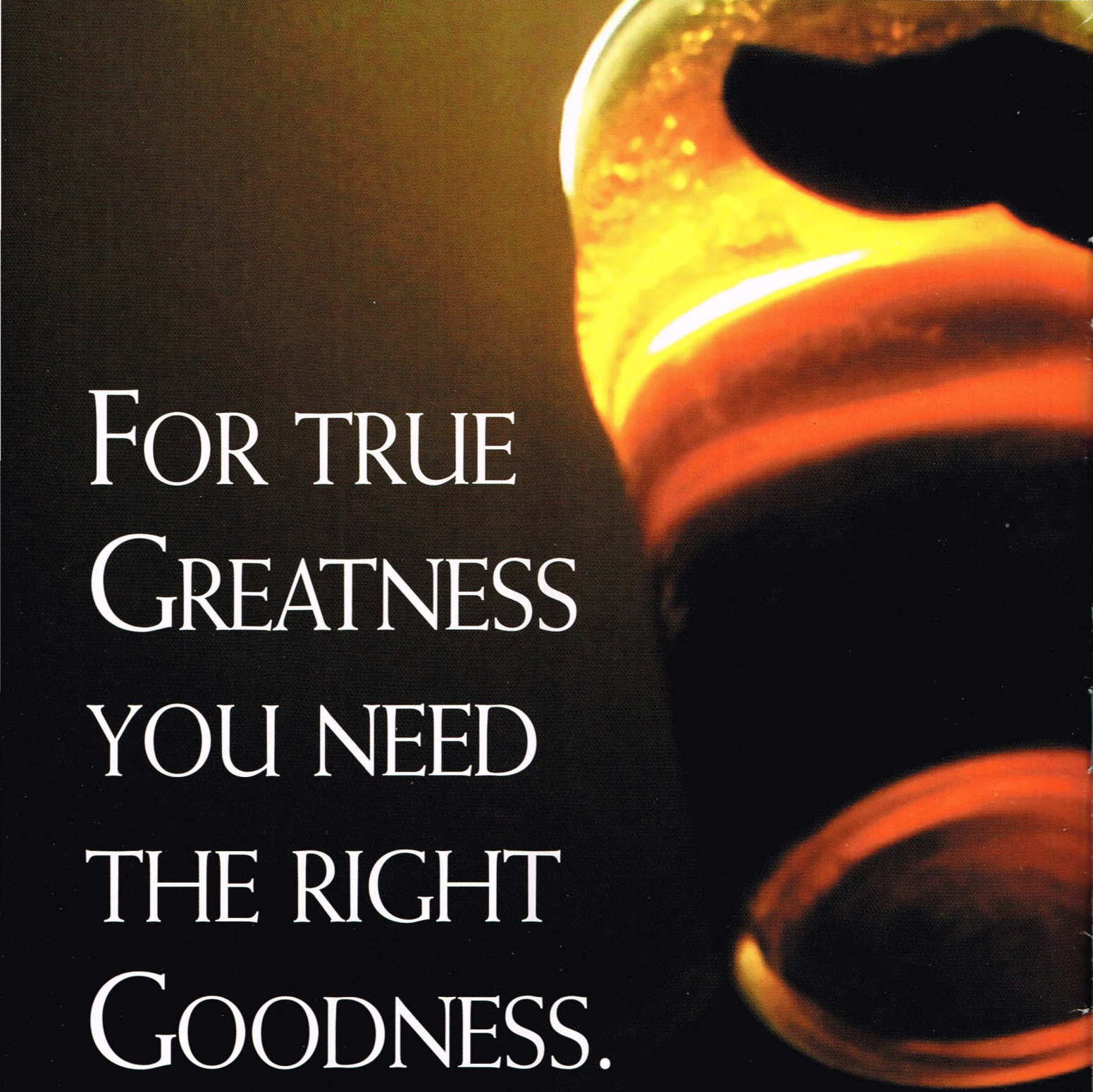
www.winekitz.com

Email: info@wineart.com

For the retailer nearest you call:
1-888-477-9463

For franchise information:
1-800-835-6640

CIRCLE 37 ON READER SERVICE CARD



FOR TRUE GREATNESS YOU NEED THE RIGHT GOODNESS.

These days you can brew beers as good as those made by the world's most famous breweries. But you need the right ingredients to do it. As well as supplying malt to famous breweries, Muntons have been making beer kits for years. Using the finest English 2-row barley and time-honored malting skills handed down through generations, Muntons deliver flavor and quality every time.
Thank goodness for Muntons.

If you don't already know Muntons, ask at your nearest brew store. They do.

Muntons
A WORLD OF DIFFERENCE

Grain Malts • Liquid Malts • Spraymalts • Brew Kits • Plain & Hopped Malt Extracts·

CIRCLE 27 ON READER SERVICE CARD