Special Collector's Issue

Vol. 25 No. 5 September/October 2002 The Journal of the American Homebrewers Association

ZYMURGY

FOR THE HOMEBREWER AND BEER LOVER

Strangely Brewed

Offbeat and Experimental Brewing Techniques

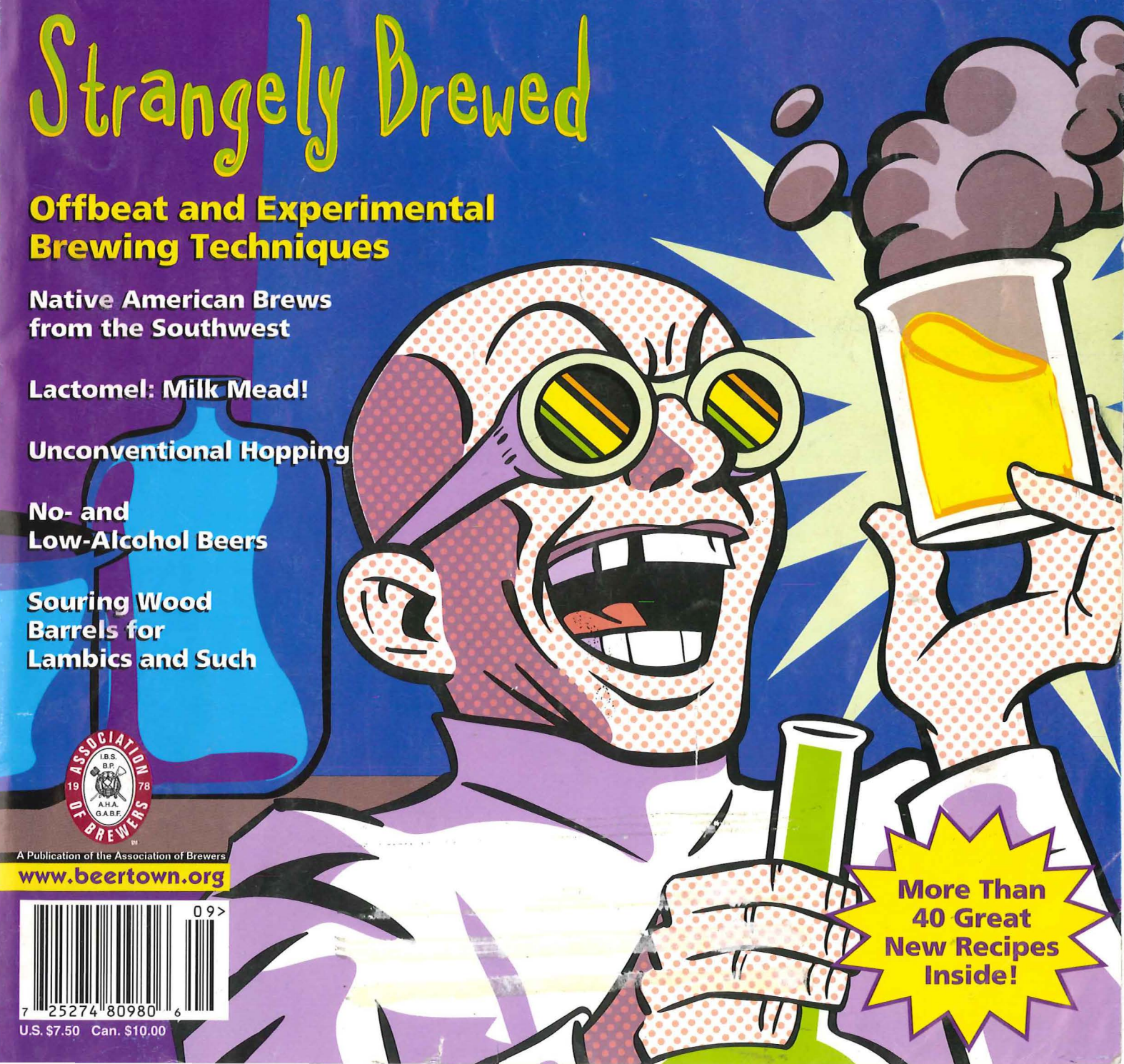
Native American Brews from the Southwest

Lactomel: Milk Mead!

Unconventional Hopping

No- and Low-Alcohol Beers

Souring Wood Barrels for Lambics and Such



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"I wouldn't have believed that a kit beer could be so good"

Roy Bailey - Beer Correspondent
CAMRA's 'What's Brewing' magazine (April 2000)

In Roy Bailey's local Good Beer Guide Pub, the customers' reaction was *"uniformly complimentary"* and *"most of them thought it was a full-mash ale"*

"I'm really impressed! This is better than many pints I've had in the pub"

BBC Radio 4 food & drink programme
(July 2000)

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A Division of the Association of Brewers

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The Association of Brewers Mission Statement
To make quality beer and brewing knowledge accessible to all.

Association of Brewers Inc.
The Association of Brewers Inc. is a Colorado not-for-profit corporation for literary and educational purposes to benefit brewers of beer and all those interested in the art of brewing. The Association of Brewers is a not-for-profit trade Association under Section 501(c)(6) of the Internal Revenue Code.

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ZYMURGY®

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

COLUMNS

DEPARTMENTS

QUICK RECIPE GUIDE

BY PAUL GATZA

Support Your Local ...

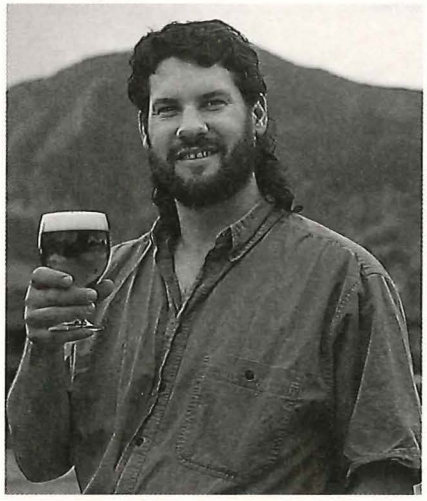
I have been thinking lately of writing about the importance of supporting your local homebrew supply shop, your local homebrew club and your local breweries. It is up to us to maintain healthy brewing communities by helping the local brewing institutions remain viable. One way to support your local brewers is to take advantage of the American Homebrew Association's newest benefit, the Pub Discount Program.

This program launched July 1. Unlike other benefits that we can manage out of Boulder, we need your help to make this program succeed. The Pub Discount Program can only succeed if you take the participating establishments up on their offers. If no one is going to pubs flashing their AHA membership card and asking for the discount, it leaves the consciousness of participating pubs and will become more of a hassle than it is worth. Pubs may then leave the program.

Ideally, participating pubs would have several AHA members visit every day. You get a discount on your dinner and bar tab, and the establishments get increased business. The businesses become appreciative of homebrewers and the AHA and the program spreads through the Institute for Brewing Studies membership, creating more quality beer outlets offering discounts. Support your local brewery, and that support will come back to the homebrewing community.

PAUL'S PHOTO BY BOB GOLDMAN
BREWPUB PHOTO COURTESY OF BOSCOS

AHA members enjoy discounts at the Boscos brewery in Nashville.



I'll save discussion of the need to bring new people into the hobby, shops and clubs for next issue when Teach a Friend to Homebrew Day becomes the focus. (By the way, the more I ponder Ray Daniels' suggestion of "Buddy Brew" as an alternative name for the bulky Teach a Friend to Homebrew Day, the more I like it. Stay tuned.)

AHA National Homebrewers Conference Report

I just returned from the 24th annual AHA National Homebrewers Conference in Irving, TX, and am still on a bit of a high from it. It is so great meeting brewers and reconnecting with many of my friends in this hobby. My thanks go out to the volunteers who put the event together and made it flow onsite, and to the clubs who made absolutely awesome beer and food for the hospitality suite and club night. In particular, I'd like to acknowledge the Fellowship of Oklahoma Ale Makers who blew us away with 12 dynamite kegs of homebrew, and the coalition of Chicago-area clubs who brought great beer, food and a promise to make next year's conference worthy of a silver anniversary event. I know that 50 gallons of imperial stout is headed to bourbon barrels for the event's commemorative beer. I hope Randy Mosher will make more of his wit beer for hospitality and that Ray Daniels can figure out the logistics of getting some well-treated real ale to the event. Mark your calendars: Rosemont, IL, summer solstice weekend.

In addition to the people who made the conference a really great experience, I would like to thank Rogue Ales, FlavorActiV and Beer, Beer & More Beer, whose support offset a portion of the event costs for attendees. Thanks to the category sponsors and to

AHA Financials for 2001

Revenues	Actual	Budget
Membership/Sponsorship	$263,672	$263,200
Zymurgy Advertising	$101,377	$103,500
Magazine Listing	$21,882	$25,000
Magazine Sales	$23,009	$32,400
Conference	$37,152	$42,000
NHC	$33,662	$30,500
Other	$8,628	$22,400
Total Revenues	**$489,385**	**$519,000**
Expenses		
Marketing	$32,255	$35,656
Zymurgy	$209,188	$232,683
Conference	$41,019	$38,858
NHC	$24,009	$25,237
Programs and General	$73,588	$82,603
Total Expenses	**$380,062**	**$415,037**
Contribution to Overhead	**$109,323**	**$103,963**

Notes: NHC is National Homebrew Competition. Programs and General includes salaries not attributed to ***Zymurgy***, the conference and the competition for divisional, advertising and events staff. Overhead includes rent, utilities, maintenance, administrative and information and membership services salaries, some capital expenses and reserve expenses. Those items come out of the Association of Brewers budget, part of which comes from the AHA surplus. Sponsorship of the NHC and the conference are included as program revenue. Charge-backs by retail distribution companies for unsold ***Zymurgy*** copies have been deducted from magazine sales.

Boston Beer Co. in particular for sponsoring the Ninkasi Award, which went to Oregon's Curt Hausam for having the most final-round points in all of the categories. Hausam took five medals in the competition. Congratulations to all the winners. And congrats to Boston Beer for brewing some extreme products in 2002, such as Utopias, the strongest beer in the world, and their new release Sam Adams Light.

Another success is the AHA Board of Advisers, now 100 percent populated by member-elected representatives. We've picked a great group of homebrewers. I have never seen this group fit the role of representative so well. These men and women are really invested in the success of the AHA and are willing to put in the effort to help us become a better association and achieve our mission of making quality brewing and beer knowledge accessible to all. The board is far more involved in our long-term planning process than ever before. Here are some highlights of a few board-driven changes: development of Web site that serves as a portal to the beer world; creation of a speakers bureau to help clubs connect to potential speakers; distribution of tools, such as *Zymurgy for Beginners*, to get more people interested in and supported as they discover homebrewing; and development of a coupon section in ***Zymurgy***.

GABF® Comes of Age

Come to Denver and help celebrate the Great American Beer Festival's 21st birthday, Oct. 3–5, 2002. The event, held at the Colorado Convention Center in downtown Denver, promises to be a blast. A couple of special events include an acoustic band on Thursday night and a flavor training for those who want to know more about the idiosyncrasies of what flavor components make a great beer. Every year we get about 1,000 AHA members in town for the Connoisseurs Tasting, where the GABF awards are presented. They find out which are the best beers in the country and taste them. Beer aside, the best thing about the festival is the camaraderie it fosters. I look forward to seeing you there.

Paul Gatza is the director of the American Homebrewers Association.

BY RAY DANIELS

Wanna Get Weird? Check Out the Commercial Brewers

As a group, homebrewers think they have the pro-brew world beat when it comes to quirky and idiosyncratic brewing practices. But if you think that way, forget about it.

Historically, a lot of weird things have happened in breweries. The first book I pick up from my desk as I write this column describes the use of a pig or ox foot, burned salt, clean sand or ground oak bark in 16th century beer production. So if you want to talk history, we've got all kinds of weird stuff to cover. Let's not go there today though, let's stick to currently active commercial breweries.

On the surface, brewing seems simple: you mash, lauter, boil and ferment. Most brewers today would give that same generic description of the process. But when you tour their breweries and quiz them on their procedures, startling differences appear. In some cases, the differences are one-time or occasional practices. For example, brewer Pete Crowley at my local Rock Bottom recently resorted to decocting parts of a 15-barrel mash on the stove in the restaurant kitchen. Then there is Dogfish Head Brewery in Delaware where Sam Calagione makes his 90-minute IPA by adding hops continuously throughout the boil. (Yum!) Chuck Skypeck and Fred Scheer down in Tennessee making Boscos Flaming Stone Beer add red-hot rocks to the mash tun. All three of those sound very much like things homebrewers would do—and indeed some of the beers in question began as homebrews.

Perhaps you will dismiss these variations as *too close* to homebrew in their heritage. OK, fine. Let's talk Anheuser-Busch. They do things to wort and beer that no one else in the world does. You want quirky? How about the fact that the kettle door (you know, that little hatch on the top of the 200-barrel kettle) has to be *open* during the boil. Close it and the quality control taste panel can tell the difference.

PHOTO BY RAY DANIELS

Not strange enough? How about this: After the boil, hot wort is vortexed and run down the inside surfaces of one- to two-inch diameter tubes while air (yes, *air*) is blown up through the tubes. I was once told that this emulates the effect of the old washboard-style wort coolers that were in use more than 100 years ago when the original A-B recipes were developed. As always, the argument for continuing the practice is flavor—the beer just doesn't taste the same if you don't do this.

Later in the process—right after primary fermentation, as I recall—they do something similar with CO_2 scrubbing. The beer is pumped into the top of a tank and allowed to fall to the bottom while carbon dioxide flows from the bottom and out the top. Weird, huh?

Finally of course, we have the beechwood chips. Anyone who thinks that A-B is trying to impart any sort of wood flavor to the beer should be thoroughly disabused of that notion. Before use, the chips soak and boil in water for several cycles to ensure that all remnants of flavor have been removed. Only then are they added to the lagering tanks where they serve as a support medium for redolent yeast cells, ensuring greater contact between the yeast and beer during aging.

Now, I challenge you: Show me *any* homebrewer who does three things as strange as this in any one batch of beer—much less for every beer they brew.

You want more? Let's talk fermenters. At the Gale's Brewery in the southern English county of Hampshire, I found beautiful enclosed stainless-steel fermenters sitting idle while the brewery worked to bring some newly acquired, but quite well seasoned, wooden fermenters on line. Seems that the costly stainless-steel units didn't produce the same flavor as the traditional wooden fermenters, so they were never put in service for beer production.

In Burton-upon-Trent, the Marston brewery still uses the traditional Burton Union fermentation system involving wooden barrels. Piping connects 20 or more barrels to an open-air trough that collects kraeusen and wort then returns it to the barrels. Despite an absurdly high infection potential and arcane fluid mechanics, the system is a proven winner.

A similarly bizarre fermentation scheme appears in Yorkshire. Traditionalists ferment in slate squares—unusual, but only part of the story. Owing to a highly flocculent yeast strain, a rousing system must pump yeasty wort from the bottom of the fermenter to a deck atop the main tank where it is allowed to again drop down into the wort to do some more work. Now, that's odd.

And lest you think the Brits have a lock on unusual brewing *(continued on page 78)*

Hydrometer Gravitas

Dear ***Zymurgy***,

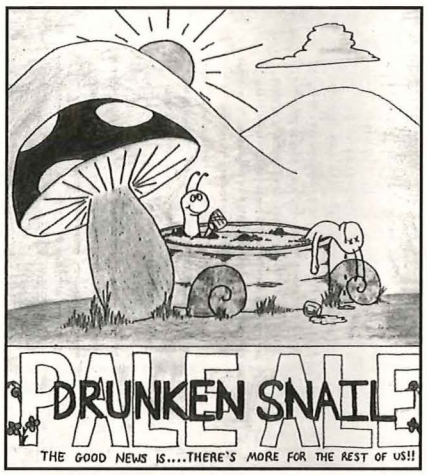
Reading the recent "For Geeks Only" section on hydrometers (***Zymurgy*** March-April 2002), it occurred to me that the method described for hydrometer calibration is inherently subject to error because it requires a graduated cylinder and triple-beam balance scale to be very accurate. After all, the point is to be as accurate as possible.

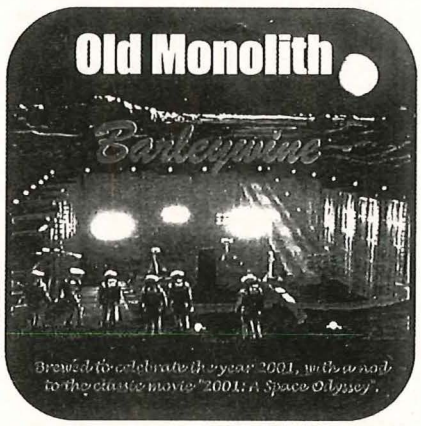
There is a simpler and highly accurate way to calibrate a hydrometer using ordinary canning salt and the principle of saturation to guarantee a high degree of accuracy. Stanley Prevost, a former member of the Rocket City Brewers in Huntsville, AL, developed this procedure.

This is the procedure in a nutshell: 1) Heat a few cups of water to near boiling, add salt and stir using a blender until no more will dissolve. 2) Cool the solution to room temperature and wait a long time for crystals to settle and the solution to clear. 3) Carefully decant the solution off the remaining salt crystals and redecant as required to get a crystal free solution. 4) Using the salt solution, fill up a completely dry, clear 12-ounce beer bottle to near the top and mark the level with clear tape and a pen. 5) Pour the contents into a dry container. 6) Fill the bottle to the same mark with plain water and pour this into the salt solution. What you have is an accurate 1.106 SG solution to use for hydrometer calibration. It is important to use exactly equal amounts of salt solution and water.

For more information on this procedure, visit www.knology.net/~sprevost/beerwine/cal.htm.

Tom Meier
Wrencoe, TN





LABELS COURTESY OF AARON BUTLER AND BILL LAU

Dear Tom,

We see the elegance and simplicity of relying on the innate physical properties of salt and water to achieve the objective. There seems to be every indication that this will work great, but we'd like to have 10 people make up this reference solution and then measure all of them with the same hydrometer just to see how consistent the preparation process turns out to be.

But of course we should run the previously published procedure through that same drill. Anything used for calibration purposes should be a solid and reproducible technique.

—Ed.

Fine Points of Fruit

Dear ***Zymurgy***,

I liked Randy Mosher's article on fruit in the July/August issue of ***Zymurgy***. In it I heard some familiar chords (avoid the grocery store—great minds think alike). The stuff on varieties was nice, but while Red Haven is good, it's not at the top of the peach list. If you *really* want a good peach, try a Peregrine, Champion or Oldmixon Free. If you like them yellow and sweet, try Stark Encore.

The other thing I beg to differ with is the notion that fruit can't compete or coexist with hops. Some fruits have balance windows that make them already a symphony that contrasts sugar with acid, sometimes *lots* of acid—tart cherries, raspberries, kiwi—and the fruit flavors shine right through. That's the same thing we do with beers—contrast sweetness, or in some cases body, with hop bitterness. I still like a hoppy lager blended with tart cherry juice. On the other hand, peaches and hops are not a match. Same for pears and melons; anything with low acid levels at ripeness won't match up well with hops.

I think the key for the beer lies in the amount of body and mouthfeel. If the beer has enough body to withstand high IBUs (viewed another way, if it lacks delicacy), it can withstand the hops and a fruit that finds its sugar/acid window in the same range on the volume dial. Too much hops in a weizen is bad. Too much cherry or raspberry in a weizen is bad, too, because it will be acidic, puckering and out of balance. Rhubarb? Fuhgetaboutit. Lots of hops in an Imperial Stout is nice. Lots of hops and high acid fruit in an Imperial Stout is stupefyingly good.

To each his own.
Ken Schramm
Troy, MI *(continued on page 70)*

SEPTEMBER

7 **Autumn HOMEbrew Review.** Minneapolis, MN. **AHA/BJCP SCP.** Sponsored by the Minnesota Home Brewers Association, this event is for homebrewed beer, mead and cider. Entries accepted: 8/02-8/22. Fee: $7 first entry, $5/additional entry. Award ceremony: 9/7. Contact: Mike Moranz. Phone: 952-885-6382, 952-888-3873; E-mail: pres@mnbrewers.com; URL: http://mnbrewers.com/events/autumn.

9 **Tulare County Fair Homebrew Competition.** Tulare, CA. **AHA/BJCP SCP.** This AHA-sanctioned competition is open to California residents only. Entry forms due Aug. 31. Sponsored by T.C. HOPS, this competition is open to homebrewers in California. Best of show wins $100 and AHA package, first place in each category wins $50 and ribbon, second place receives ribbon and sponsored prizes. Entries accepted: 9/4-9/8. Fee: $0. Awards ceremony: 9/11. Contact: Bert McNutt. Phone: 559-592-8175; URL: http://members.mindinfo.com/goulart.

14 **Topsfield Fair Homebrew Competition.** Topsfield, MA. **BJCP SCP.** Contact: August J. Faustich. Phone: 978-927-2983; E-mail: beach@massed.net.

14 **Fifth Annual West Hundred Open.** Richmond, VA. **AHA/BJCP SCP.** All ale with special category: open-all-styles/no style, best tasting beer. Sponsoring club: Southside Brewers. Entries accepted: 9/4-9/13. Fee: $6 first entry, $5/additional entry. Award ceremony: 9/14. Contact: Mike Buddle. Phone: 804-272-5410; E-mail: brewman2@hotmail.com; URL: www.geocities.com/southsidebrewers.

15-28 **Fifth Annual Cactus Challenge.** Lubbock, TX. **AHA/BJCP SCP.** Sponsored by The Ale-ian Society, this event is "The Best Homebrew Competition in West Texas". Entries accepted: 9/2-9/14. Awards ceremony: 9/28. Contact: Bryan Yeargain. Phone: 806-792-4231, 806-792-5744. Email: yeargain@nts-online.net; URL: http://catcuschallenge.tripod.com/.

20-21 **Fifth Annual Northern California Homebrewers Festival.** Napa, CA. The NCHF is a congregation of homebrewers and homebrew clubs from Northern California and beyond. Homebrewers come to enjoy 1.5 days of sharing 100s of homebrews, live music, guest speakers and gourmet food. We have a Friday night Brewers Dinner where the six-course menu is created and paired with some of the best micro and homebrewed beers available. Tent camping is included in the entrance fee! Contact: Mike Winslow. Phone: 650-225-0656; E-mail: Mksgrist@aol.com; URL: www.brewfest.org or www.laquebrada.com/nchf/main.htm.

28 **Forth Annual Palmetto State Brewers Open.** Columbia, SC. **AHA/BJCP SCP.** Annual competition open to all homebrewers. All BJCP styles, meads and ciders will be accepted and judged. Great prizes and ribbons. Check the Web site for details and entry discounts. Sponsoring club: Palmetto State Brewers Inc. Entries accepted: 9/7-9/21. Fee: $6. Awards ceremony: 9/28. Contact: Gerald Jowers. Phone: 803-798-7914; E-mail: gdjowers@aol.com; URL: www.sagecat.com/psb.htm.

28 **Eighth Annual Brewer's Dream Homebrew Competition.** Beach Park, IL. **AHA/BJCP** SCP. Sponsored by Brewers on the Bluff and Flatlander's Restaurant & Brewery. All BJCP beer styles will be accepted, except lambics, fruit, herb-spice-vegetable, meads, ciders and sakes. Entries accepted: 8/7-8/21. Fee: $6, $5 each for four or more, $3/entry for Brewers in the Bluff members. Awards ceremony: 8/28. Contact: Gregory R. Love Phone: 847-234-5809, 847-937-7273; E-mail: lovegr1@attbi.com; URL: www.clubbob.org.

28 **Mid South Fair.** Memphis, TN. **AHA/BJCP SCP.** 146th Annual Fair. Cash prizes! No entry fee! More than 15 years of judging homebrew. Sponsored by the Bluff City Brewers. Entries accepted: 9/1-9/20. Fee: $0. Awards ceremony: 9/28. Contact: Jim Gosney. Phone: 901-322-1473, 901-756-5298; E-mail: jgosney@midsouth.rr.com.

AMERICAN HOMEBREWERS ASSOCIATION
• KUDOS •
SANCTIONED COMPETITION PROGRAM
BEST OF SHOW

• MARCH 2002 •
13th Annual Reggale & Dredhop Homebrew Competition, 239 entries—**Mark Groshek** of Denver, CO.

• APRIL 2002 •
B.E.E.R. Brew-Off, Sixth Annual Homebrew Competition, 105 entries—**Jim & Jean Thoms** of Kings Park, NY.
BOSS Chicago Cup Challenge, 165 entries—**Joe Formanek**, of Bolingbrook, IL.
Upper Mississippi Mash-Out, 139 entries—**Steve Fletty**, of Falcon Heights, MN.

• MAY 2002 •
Celtic Brew Off, 35 entries—**Richard Graham** of Bedford, TX.
10th Annual Hains Craftbeer & Homebrew Competition, 49 entries—**Greg Morgan** of Juneau, AK.
2002 Sixth Annual Silver Dollar Fair, 118 entries—**Larry Raven** of Chico, CA.
Sunshine Challenge XIII, 607 entries—**Ed Measom** of Winter Park, FL.

• JUNE 2002 •
The Dominion Cup, 92 entries—**Gary Cathey** of Charlotte, NC.
Mother Lode Fair Homebrew Competition, 31 entries—**Peter Smith** of Sonora, CA.
New Pale Ale Pour, 13 entries—**Jon Jorgensen** of Neenah, WI.

AHA SCP = American Homebrewers Association Sanctioned Competition Program. **BJCP** = Beer Judge Certification Program. The Calendar of Events is updated weekly and is available from the Association of Brewers: info@aob.org or www.beertown.org on the Web. To list events, send information to ***Zymurgy*** Calendar of Events. To be listed in the November/December Issue (Vol. 25, No. 6), information must be received by Sept. 3, 2002. Competition organizers wishing to apply for AHA Sanctioning must do so at least two months prior to the event. Contact Kate Porter at kate@aob.org; (303) 447-0816 ext. 123; FAX (303) 447-2825; PO Box 1679, Boulder, CO 80306-1679.

28 **Pacific Brewers Cup.** Los Angeles, CA. **AHA/BJCP SCP.** Sponsoring club: Pacific Gravity. Entries accepted: 9/13-9/20. Fee: $6. Awards ceremony: 10/5. Contact: Carl Townsend. Phone: 310-391-0900, 310-647-4394; E-mail: pacbrewcup@pacificgravity.com; URL: www.pacificgravity.com/pacbrewcup.

28 **Puddle Dock Homebrew Competition.** Portsmouth, NH. Contact: Mike Robinson. E-mail: mrob@ttlc.net; URL: www.seacoasthomebrewers.org.

OCTOBER

3 **Eighth Annual KROC World Brewers Forum.** Denver, CO. Each year Broomfield's Keg Ran Out Club (KROC) hosts two speakers for an evening of brewing education and fellowship for both the amateur and professional brewer and beer lover. This year we have Ralph Olson from Hop Union talking about what he knows best, hops! Garrett Oliver (Brooklyn Brewery) will be speaking about "The Marriage of Beer and Food" with Fred Eckhardt MC-ing the event. Contact: John Adams. E-mail: BrewsTraveler@adamsco-inc.com; URL: www.KROC.org/wbf.htm.

3-5 **Great American Beer Festival.** Denver, CO. **BJCP SCP** Now in its 21st year, the Great American Beer Festival will showcase 300 breweries, pouring more than 1,200 different beers, to an enthusiastic beer-loving crowd of more than 22,000. The GABF is not just about sampling beer, however. The Festival's Professional Judge Panel evaluates attending beers and awards gold, silver and bronze medals recognized around the world as symbols of brewing excellence. Contact: Jessica Gottlab. Phone: 303-447-0816 x 145, 888-U-CAN-BREW x 145; E-mail: jessica@aob.org; URL: www.beertown.org.

5-25 **Hoppy Halloween Challenge.** Fargo, ND. **AHA/BJCP SCP.** The Prairie Homebrewing Companion's fifth annual Hoppy Halloween Challenge is open to all homebrewers making any AHA/BJCP style of beer, mead or cider. Great judging, great prizes and now only two bottles (10-16 oz, any style of glass or plastic) per entry required! Sponsoring club: Prairie Homebrewing Companions. Entries accepted: 9/21-10/4. Fee: $7/entry for the first four, $5/ additional entry. Awards ceremony: 10/26. Contact: Karl Gunderson. Phone: Susan Ruud at 701-231-8445; URL: www.linkup.net/users/dtrautmann/phc.html.

17-19 **19th Annual Dixie Cup.** Houston, TX. **AHA/BJCP SCP.** One of the nation's oldest and largest competitions. Events include the BJCP exam, a rooftop potluck dinner, "Fred Tasting," seminars and a pub crawl. The theme is "Night of the Living Fred". Unique trophy for BOS beer, mead, most points and 40 sets of medallions are awarded. MCAB Qualifier and final in Gulf Coast circuit. Sponsoring club: Foam Rangers. Entries accepted: 10/4-10/11. Fee: $6. Awards ceremony: 10/19. Contact: Kuyler Doyle. Phone: 713-523-8379, 713-798-3918; E-mail: secondary@foamrangers.com; URL: www.foamrangers.com.

19 **Oktobersbest Zinzinnati.** Cincinnati, OH. **AHA/BJCP SCP.** Competition celebrating Cincinnati's rich brewing tradition. AHA-sanctioned sponsoring club: Cincinnati Malt Infusers. Entries accepted: 9/30-10/12. Fee: first, $6; second and third $4; additional entries are free. Award ceremony: 10/19. Contact: Michael Weaver. Phone: 513-984-9337, 513-627-7835; E-mail: oktobersbest@cinci.rr.com; URL: http://hbd.org/cmi/.

20 **Schleswig Bier Contest.** Schleswig, IA. **AHA/BJCP SCP.** Started in 1992, this will be the 27th year for the wine contest. Sponsoring club: Schleswig Wine & Bier Club. Deadline: 10/20 11 a.m. Fee: $5. Award ceremony: 10/20. Contact: Don Thompson. Phone: 712-676-3932, 712-676-3949; E-mail: tommytee@iowatelecom.net.

26 **Fifth Queen of Beer Competition.** Placerville, CA. **BJCP SCP.** Get your female friends to brew that award-winning entry and encourage other women to brew (maybe plan an all women's team brew). Please pass this information on to any/all women brewers you know. Make an announcement at your next club meeting. Help make this the best Queen of Beer to date! Sponsoring Club: Hangtown Association of Zymurgy Enthusiasts (H.A.Z.E.). Entries accepted: 10/1-10/19. Contact: Nora Keller-Seeley. Phone: 530-676-2237; E-mail: QOB_2002@hotmail.com; URL: www.HAZEclub.org.

NOVEMBER

2 **Forth Annual AHA Teach A Friend To Homebrew Day.** Anywhere you happen to be. **AHA SCP.** For the forth straight year, the American Homebrewers Association brings you Teach A Friend To Homebrew Day-a day of fun and service for the homebrewing community. Find that friend or family member trapped in a boring nonbrewing existence and show them the way to the exciting and fulfilling world of homebrewing! Contact: Gary Glass. Phone: 888-822-6273, 303-447-0816 x 121; E-mail: gary@aob.org; URL: www.beertown.org/AHA/.

2 **Novembeerfest.** Kent, WA. **AHA/BJCP SCP.** Sponsoring club: Brews Brothers. Entries accepted: 10/6-10/26. Fee: $5. Contact: Jim Hinken. Phone: 425-483-9324; E-mail: brews.brothers@verizon.net; URL: www.brewsbrothers.org.

8-9 **Orchid Isle Alers Holiday Bash & Homebrew Competition.** Hilo, HI. **AHA/BJCP SCP.** Second annual competition. Sponsored by the Orchid Isle Alers. Enter any of the BJCP styles (Beer Judge Certification Program Guide to Beer Styles 1999). Entries accepted: 10/23-11/6. Fee: $5. Award ceremony: 11/9. Contact: Bob Culnan. Phone: 808-964-5267; E-mail: culnanr001@hawaii.rr.com.

From Our Readers

From left: Mike Uchima, Don Alton, Joe Formanek, Ellen and Rich Janevicius, Shane Coombs, Laurel Coombs, Ray Daniels and Steve McKenna

Become an American Homebrewers Association Sponsor!

I ask you to consider taking the extra step of becoming an AHA sponsor. American Homebrewers Association sponsorship allows the AHA to do more organizing to promote the hobby of homebrewing to the not-yet-brewing public and continue to run outstanding programs for homebrewers. AHA sponsorship is a way for you to show your commitment and give something back to the hobby of homebrewing besides your time, effort and tasty brews. The strength of the AHA is you.

All AHA sponsorships include AHA membership and all of the benefits you currently enjoy, including your subscription to Zymurgy. We will also recognize your contribution on this page of Zymurgy and send you a certificate of appreciation for your brewhouse wall.

To become an AHA sponsor simply fill out the form and fax it back to 303.447.2825 or call membership services at 303.447.0816 or visit www.beertown.org. Thank you for considering sponsorship of the American Homebrewers Association.

- $51 One-Year AHA Sponsorship
- $103 Two-Year AHA Sponsorship
- $60 One-Year AHA Family Sponsorship
- $230 Five-Year AHA Sponsorship
- $460 Lifetime AHA Sponsorship

Yours Brewly,

Paul Gatza

Director, American Homebrewers Association

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Menlo Park, CA

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Homestead, FL

St. Louis Wine & Beer Making
Chesterfield, MO

Lifetime Members

Here is a list of new Lifetime members and Lifetime members we omitted on previous lists:

Mark Emiley
Clearfield, UT

Kerry Skelton
Santa Rosa, CA

John Tallarovic
Des Plaines, IL

Bert McNutt
Visalia, CA

David Gagnon
South Berwick, ME

William Stephenson
Vancouver, WA

William R. Moore
Littleton, CO

Michael Hoppes
Colorado Springs, CO

Michael Weihl
St. Louis, MO

Mark Schoppe
Austin, TX

David Gannon
Cumerland Foreside, ME

Geroge S. Hamontree
Maxwell AFB, AL

Mike Davey
Newbury, OH

Rob Messinger
Vacouver, WA

Michael Loebenberg
Ocean Springs, MS

Jerry Siok
Houston, TX

Nick Allen French
Hesperia, CA

Matthew J. Lamantia
Cedar Park, TX

Gordon Strong
Beavercreek, OH

Joe Presier
Bolingbrook, IL

Andrew William Wood
Phoenix, AZ

Steve Terrian
Kingsford, MI

Bernard Graf
Anapolis, MD

Robert J. Miller
San Luis Obispo, CA

Douglas Schader
American Embassy, APO, AP

Christopher Cape
Chester, NJ

Bill & Cathy Barrington
Cheyenne, MY

Richard F. Chaplin
Killeen, TX

Steve Heffner
La Grange, IL

Eric F. Janie
Alexandria, VA

Darin Dorholt
Sauk Rapids, MN

John Brice
Augusta, GA

Tom Vedvick
Federal Way, WA

Pete Angwin
Redding, CA

CRAFT c/o Kevin Kutskill
Clinton Township, MI

Japan Craft Beer Association c/o Ryouji R. Oda Matsunouchi
Ashiya, JAPAN

Paul Eichenberger
Louisville, KY

Tim Murray
Evergreen, CO

Scott A Snyder
O'Fallon, MO

Jeff Holcomb
Sunnyvale, CA

Dale E Bolt
Hamilton, AL

Larry Bryan
Nashville, TN

William T Jackson
Houston, TX

Michael Carter
Los Alamos, NM

Marc Gignac
Pittsburgh, PA

Virgil Wasko
Largo, FL

Christopher Else
Los Angeles, CA

Christopher Greene
Lake Forest, IL

Taljit Sandhu
Farmington, MI

John Rufilson
Overland Park, KS

Eric W Evans
Twin Falls, ID

Chet Swanson
Boston, MA

Paul Wanderscheid
Urbandale, IA

Robert Polvado
Coppell, TX

Charles Prouty
Alexandria, VA

Randall Barnes
La Mesa, CA

Carl L Saxer
Orlando, FL

Todd Goodman
Westford, MA

Brew Hauler Inc. Thomas Raich
Portage, MI

Rick Abitol
Denver

BY GARY GLASS

AHA Homebrew Club of the Year Crowned at NHC

For the first time since 1995, we have a repeat winner in the Club of the Year competition. For the second year in a row the brewers of Quality Ale and Fermentation Fraternity, better known as QUAFF, raised the AHA Homebrew Club of the Year trophy on stage during the awards ceremony at the National Homebrewers Conference. Based in sunny San Diego, QUAFF produces some truly great homebrew, and lots of it. QUAFF submitted 272 entries in this year's competition, racking up a whopping 192 points. The Brew Rats managed to hold on to their position in second place; they entered 265 homebrews and earned 134 points.

Now the question is can QUAFF three-peat? It has been done, the Sonoma Beerocrats held on to the trophy for 10 straight years from 1986 to 1995, but given the level of competition we've seen in the last two years, I think it will be a tough task. Also, with the finals moving to Chicago next year, the Urban Knaves of Grain (UKG), cowinners of the Club title in 1999, are sure to be looking claim the prize in their own backyard.

National Homebrewers Conference

As anyone who has ever been to the AHA National Homebrewers Conference knows, the homebrew clubs are the heart and soul of the event. The members of the Dallas-Ft. Worth Metroplex homebrew clubs—the NET Hoppers, the Cowtown Cappers, the Knights of the Brown Bottle and the North Texas Homebrewers Association—put in a lot of work to make sure everyone had a great time at the conference. It definitely paid off. Those Texans sure know how to party. It will take me at least a couple of weeks to recover.

Thanks go to the Ale-ians Society in Lubbock, TX, for brewing the commemorative beer, Lub Bock, and to the Red River Brewers of Gainesville, TX, for making the commemorative mead, a blend of mesquite honey and agave nectar donated by St. Patrick's. We especially appreciated the dead scorpion stuck to the bottom of one mead bottle—nice touch guys!

The Thursday Club Night event at the conference is always a fun time, and this year was no exception. With 15 clubs serving their best homebrew, plus beers brewed by the staff of Club Night sponsors Beer, Beer, and More Beer, there were plenty of tasty suds to go around. The beers were wonderful, as you would expect, but clubs also wowed attendees with some scrumptious grub. The Urban Knaves of Grain served gumbo and the Kansas City Beer Meisters tantalized us

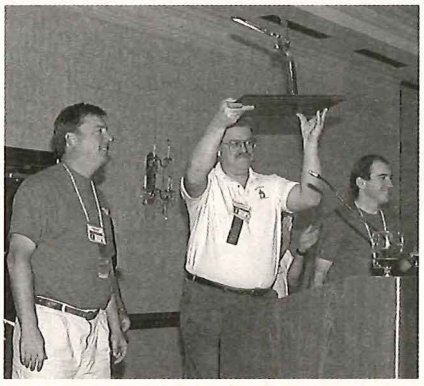


PHOTO BY RAY DANIELS

Peter Carlson, Harold Gulbransen and Tyce Hildenbrand of QUAFF accept their trophy for homebrew Club of the Year at the National Homebrewers Conference in Irving, TX.

2002 Homebrew Club of the Year Top 21

Rank	Points	Club
1	192	Quality Ale & Fermentation Fraternity (QUAFF)
2	134	Brew Rats
3	102	Strange Brew
4	88	Ale and Lager Enthusiasts of Saskatchewan (ALES)
5	79	Urban Knaves of Grain (UKG)
6	74	Maltose Falcons Homebrewing Society
7	71	Kansas City Bier Meisters
8	65	Great Northern Brewers
9	41	Edmonton Homebrewers Guild
10	39	Mountain Ale & Lager Tasters (MALT)
11	33	Upstate New York Homebrewers Association
12	32	Cowtown Cappers
13	31	Hop River Brewers
14	24	North Texas Homebrewers Association
15	21	Austin Zealots (Zymurgic Enthusiasts of Austin Loosley Organized Through Suds)
16(T)	20	Clinton River Association of Fermenting Trendsetters (CRAFT)
16(T)	20	Iowa Brewers Union (IBUs)
18(T)	19	Cary-Apex-Raleigh Brewers of Yore (CARBOY)
18(T)	19	Pacific Gravity
18(T)	19	Strand Brewers' Club
18(T)	19	ZZ Hops

From Our Readers

PHOTO COURTESY OF JOHN CAMPBELL

Tom Vista, also known to his homebrewing friends as "The Hop God" enjoys himself at John Campbell's Fourth of July and birthday party.

PHOTO COURTESY OF MIKE HAINES

From left: Three Mikes—Mike Espig, Mike Kinion and Mike Haines—prepare to sample their creations next to their homebrewing equipment.

PHOTO COURTESY OF PETER MARRA

Peter Marra and the Niagara Association of Homebrewers after their "Ironman Marathon" of brewing—26 beer styles in one day on June 22, 2002.

with their ever-popular barbeque ribs. Being resourceful as homebrewers are, when KCBM found themselves without an oven to heat the ribs, they warmed them under the hoods of their cars. As scary as that might sound, the ribs were damn good.

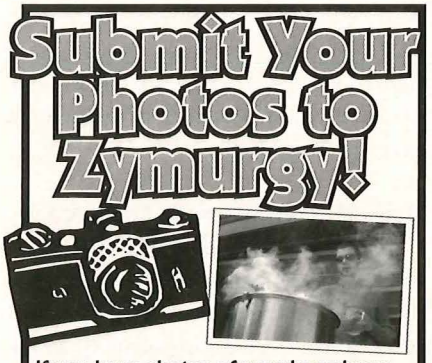
When the Club Night shut down at 11 p.m., the party moved to the hospitality suite where the Fellowship of Oklahoma Ale Makers had 12 kegs of homebrew waiting for us. They also had smoked pecans and pickled garlic to snack on. (I was too stuffed to have any pulled pork.) The party continued until the hotel pulled the plug at 2 a.m.

The hospitality suite was the center of club activity throughout the weekend. The 15-tap tap board and kegerator provided by the North Texas Homebrewers Association (NTHA) worked quite nicely, although it wasn't enough to handle the 18 kegs contributed by the Chicago-area clubs. NTHA raffled off the tap board at the end of the conference to raise funds to help educate new homebrewers. The breakfast taquitos served by the Chicago clubs Saturday morning proved to be an excellent draw, the perfect means of marketing next year's conference, which will be in Chicago, June 18-20.

If you haven't been to a National Homebrewers Conference, I have to ask: what the heck are you holding out for? This is the best party a homebrewer could ever dream of, just ask someone who has been to one. I expect to see all of you in Chicago next June!

IPA Club-Only Competition

A big AHA thank you goes out to Jeff Smith and the South Gasconade Brewing Society of Owensville, MO, for hosting the IPA Club-Only Competition May 4-19, 2002. This was the last of six competitions in the August to May 2001-2002 cycle, with points going toward the Homebrew Club of the Year trophy. Points were awarded on a six-three-one basis for the club-only competitions and the first and second rounds of the AHA National Homebrew Competition. The club whose members have amassed the most points during *(continued on page 77)*



If you have photos of your homebrew club or brewing event we'd like to see them! Send them to us and you may get them published in *Zymurgy!*

Send your slides or prints to:
Dave Harford - Magazine Art Director
The Association of Brewers
736 Pearl Street
Boulder, CO 80302

Digital photos can be E-mailed to:
harford@aob.org

Call (303) 447-0816 x127 for details or instructions on submissions. Please include any relevant captions and names.

BY PROFESSOR SURFEIT

Not Fine for Vegetarians

Dear Professor,

What is the correct amount of gelatin to use in the secondary as a clarifier? I have read everything from a teaspoon to a packet. Does the amount of gelatin have an effect on carbonating with bottling sugar? It seems the longer I brew the dumber I get.

Paul V. Naker

Dear Paul,

Your best bet with gelatin is to use about one tablespoon (some packets are about one tablespoon) fully dissolved in hot, but not boiling, water. Then add it at bottling time, not in the secondary. Ultimately, and in a perfect world, you'd want the finings to drop out all the yeast. If you drop out all the yeast you don't get natural bottle or keg conditioning. So add it at kegging or bottling time with your priming sugar.

Certainly, if it makes you feel better about your beer, use gelatin. It won't do any harm unless you intend to serve your beer to aggressive vegetarians. In my opinion, gelatin is only slightly effective in helping to clarify beer. Clarification should come naturally with a bit of patience and good fermenting procedures.

And, no, gelatin shouldn't effect carbonation levels.

A fine time to be you,
The Professor, Hb.D.

Professor "Uhm?"

Hey Uhm!

I want to get more malt character in my brews. What do I do? I figured I could chill my beer so the yeast drops out at a higher gravity. (I suppose I should also consider using a less attenuating yeast strain). My concern about stopping fermentation by chilling is about bottling. Specifically, will I have to counter-pressure bottle to get my desired results or can I prime and bottle without ignorantly creating messy time bombs? I'm having a difficult time getting that luscious malty mouthfeel, aroma and taste into my beloved brew.

Cheers,
Doug
BC, Canada

P.S. Have you ever had a Hophead from the Tree Brewing Co. in Kelowna, BC, Canada?

Dear Bro—Uhm!

Chilling the brew to halt fermentation will only temporarily make your beer malty. If the beer ever warms up outside the confines of your fridge then watch out—you'll have exploding bottles as the beer continues to ferment. So this is not a solution. If you want to get malt and body character, try crystal malts, try dextrine malts, try high-temperature mashes (about 160° F or 71° C) if you're a masher. Also, if you are a masher, try using a lot more light-colored Munich malt. I've created some terrifically malty brews with 50 percent Munich.

Consult your local shop or go to White Labs (www.whitelabs.com) or Wyeast (www.wyeastlab.com) Web sites to find lower attenuating yeast, which is expressed by expected percent yeast attenuation. That should help you out a lot.

Uhm-T Dump-T
Sitting on a wall,
The Professor, Hb.D

P.S. No, I haven't had a Hophead, but I'd like to.

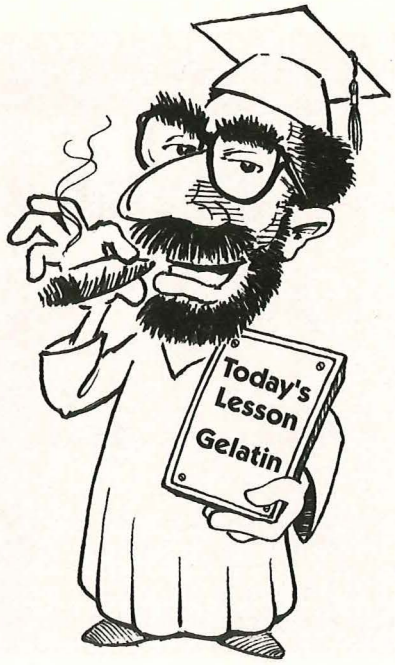


ILLUSTRATION BY JOHN MARTIN

Oak-E-Dokey

Dear Professor,

I have a five-gallon American oak cask that I recently racked a porter out of. I was quite alarmed when I discovered a blue-green leatherlike surface on the top of the beer in the cask. Being bold, I decided to rack into the keg anyway because the beer didn't smell offensive (it smelled pretty good, actually).

Here are my questions/concerns: First, I have no idea what was colonizing on the surface of my beer. I posted several questions on the Internet and to the AHA TechTalk mailing list (every AHA member should join this list, by the way—just E-mail kate@aob.org), and got one lead on the source of the infection. It might be *Brettanomyces.*

Second, how can I determine what the infection was without an organic chemistry lab or researchers at my disposal? Is there a

visual guide to infected beers? Taste and smell work, but if the beer character hasn't been affected, how can I determine the source?

Third, are there any good sources available for brewing beer with oak casks? I have been to several wine Web sites investigating *Brettanomyces* and oak casks, but most of the research is specific to wine, not beer. I would love to see a "care and feeding for you oak cask" article in ***Zymurgy*** some time soon or at least a "how to brew with oak casks." Few brewers know much about them, yet the beers that can be made in them are excellent.

Finally, how do you recommend sanitizing an oak cask? I was alarmed when someone told me to use bleach. I am using iodophor (400 ppm), but wood is porous and I need to also sanitize the outside of the cask.

Thanks in advance!
Tim McManus
Haskell, NJ

Dear Tim,

I've consulted a few of the experts here in the American Homebrewers Association realm. Paul Gatza, AHA director says:

My experience with my "plain" barrel is that it works fine, but should be kept wet on the inside to maintain its integrity. A charred barrel with no lining seems like a bad idea to me. It took four or five ales to reduce the tannin level of my barrel. A safe assumption is that the flavor residue from one batch will likely leach into the next because wood has so many nooks and crannies. Real sanitation is a misnomer.

A friend with a contaminated barrel resorted to burning a sulfur stick inside, which solved his sanitation issue, but gave him a sulfur residue in his next few batches. My advice is getting it up to speed before putting in anything you are emotionally attached to.

Ray Daniels, **Zymurgy** *editor says:*

The brewers at Marston's in Burton-upon-Trent still brew beer in wooden barrels sanitized with steam after each use. I would not use sanitizers with wooden vessels, although I have heard of folks treating them with caustic to help leach the tannins before the first use—this might be a good way to clean your scunge out as well. After that, I'd try using really hot water.

Another thought: You might help to prevent future growth by making sure there is no air space at the top of the barrel while it is in use.

See the article in this issue on how to use oak casks in brewing Belgian sour beers.

Your dear Professor adds:

Regarding caring for barrels, follow the winemakers lead on this one. Don't use bleach or iodophor; winemakers use a sulfite solution. Consult with your homebrew/winemaking shop.

Gads man! Leatherlike growth! Sounds really ugly. Is it the dreaded Oakeefenoakee Creeping Swamp Fungus? I really don't think that's Brett. *It sounds like a fungus of some sort and I don't think you really want to know what it is. Just sanitize with sulfite solution before using and rinse well and sanitize* after *using as well.*

Now, about sources of information on brewing or aging in uncoated oak barrels—that's a new frontier. As you have since found out (see below your (continued on page 70)

BY MIKE BOCK AND
THE URBAN KNAVES OF GRAIN

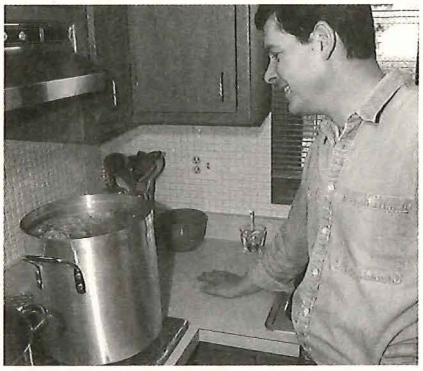
The Brown Ale Extract Experiment

The Urban Knaves of Grain homebrew club was founded in March 1993 in DuPage County, IL, just west of Chicago. Although the Chicago area had several well-established clubs, ours was the first in our county, and the UKG grew quickly to more than 70 members. In 1999, we shared the AHA Homebrew Club of the Year award with the Oregon Brew Crew. Our annual competition, the Drunk Monk Challenge, has attracted 400 to 500 entries from across the United States in each of the last two years.

For our extract experiment, we worked with Muntons' Connoisseur's Range Nut Brown Ale kit. The kit consists of a four-pound (1.8-kg) can of hopped extract syrup and a packet of yeast. Every team was also given a three-pound (1.36-kg) bag of light dry malt extract for use as needed. The kit directions were simple: no boiling necessary, just mix the extract and three pounds (1.36 kg) of sugar with cold water to make six U.S. gallons (22.7 L), then sprinkle the dry yeast on top. Muntons' Homebrew Manager Andy Janes was very helpful in answering our questions as we formulated our recipes. He did have one request: For one of our brews, could we make the kit according to the directions, with no more than the recommended substitution of light dried malt extract for the sugar? We were happy to oblige.

The characteristics of the nut brown or northern English brown ale style limited what we could make from the kit. Nut browns are sweet, caramel-accented beers with a modest level of hop bitterness and no hop flavor or aroma. This meant that light-colored or very dry styles were out, but almost anything else was possible with the right ingredients.

An American brown ale was a natural extension, requiring the addition of finishing and dry hops for flavor and aroma. By steeping roasted malts in the wort and adding hops, we could produce stouts and porters. For one of our experiments we made a raspberry porter. In our most ambitious augmentation of the brown ale kit, we added specialty malts, sugar and hops to make a Belgian-style dubbel.



Darrel Proksa spices his American Brown Ale with copious amounts of fresh hops.

Below: Champion brewer Proksa and former Ninkasi winner Joe Formanek carefully monitor the American Brown Ale.

The beers were brewed on the same weekend by six separate teams. Using some of our own BJCP judges, we evaluated the beers at a club social night six weeks after brewing, admittedly a bit young for some of the styles. At the age of eight weeks, most of the beers were judged again at the 2002 Drunk Monk Challenge. Some of the judges' comments are included here.

Mike Bock and Jeremy Kosigi's No-Boil Nut Brown

Ingredients for 6 U.S. gal (22.7 L)

- **4.0 lb (1.81 kg) Muntons Nut Brown extract**
- **3.0 lb (1.36 kg) light dry malt extract**
- **Muntons dried ale yeast**

- **OG: 1.052**
- **FG: 1.018**

Brewers' Specifics

As directed by the kit, the ingredients were dissolved in cold water that was pre-boiled to sanitize and drive off chlorine. Dried yeast was sprinkled on top. Fermentation proceeded with no problems at all.

Tasters' Impressions

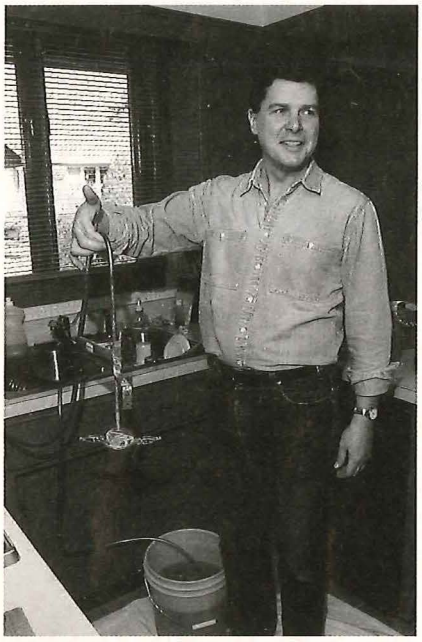
The no-boil brew was perhaps the most eagerly awaited of the six, and we were not disappointed. It had a nice caramelly malt character and the correct low bitterness for a northern English brown. It was rather estery and had a distinct banana aroma and flavor, which we thought was somewhat out of place in this style, but not unpleasant. Overall a very acceptable result for a no-hassle brew.

Darrell Proksa and Dale Conrad's American Brown Ale

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

- **4.0 lb (1.81 kg) Muntons Nut Brown extract**
- **3.0 lb (1.36 kg) light dry malt extract**
- **0.25 lb (114 g) CaraMunich malt**
- **0.25 lb (114 g) CaraVienne malt**

ALL PHOTOS BY MIKE BOCK



Proksa demonstrates homebrewing ingenuity to maximize those hop aromas.

In the end, all of the beers were judged a success and one of them even placed at the prestigious Drunk Monk Challenge and in the NHC first round.

- **1.0 oz (28 g) Centennial hops, 9.8% AA (60 min)**
- **1 tsp Irish moss (15 min)**
- **1.0 oz (28 g) Centennial hops, 9.8% AA (10 min)**
- **1.0 oz (28 g) Willamette hop pellets, 4.8% AA (10 min)**
- **0.5 oz (14 g) Cascade hops, 5.0% AA (10 min)**
- **1.0 oz (28 g) Centennial hop pellets (dry hop)**
- **1.0 oz (28 g) Willamette hop pellets (dry hop)**
- **White Labs WLP002 English ale yeast (from a starter)**
- **3.0 oz (85 g) priming sugar**

- **OG: 1.062**
- **FG: 1.022**

Brewers' Specifics

Steep the caramel malts in a grain bag in 160° F (71° C) water for 45 minutes. Remove the grains, add the extracts and boil 75 minutes; add hops according to the schedule. Counter-flow chill. Bottle after four weeks.

Tasters' Impressions

This beer had good hop aroma, but the judges thought it was surprisingly low in hop flavor and perhaps too bitter. The extra time at high temperature before all of the wort could get through the counterflow chiller may have converted the effect of the finishing hops to bittering. Fruity esters and a bit of apple dominated the flavor and aroma. The judges suggested a different yeast strain next time—an American ale strain might be a good choice.

Marc Kullberg and Warren Gillenwater's Foreign Stout

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

- **4.0 lb (1.81 kg) Muntons Nut Brown extract**
- **3.0 lb (1.36 kg) light dry malt extract**
- **0.25 lb (114 g) British crystal malt**
- **10.0 oz (283 g) chocolate malt**
- **6.0 oz (170 g) roasted barley**
- **5.0 oz (142 g) flaked wheat**
- **1.00 (28 g) oz Fuggles hop pellets, 5.5% AA (60 min)**
- **0.50 oz (14 g) Fuggles hop pellets, 5.5% AA (15 min)**
- **White Labs WLP005 British ale yeast (from the tube)**
- **0.67 cup (160 ml) priming sugar**

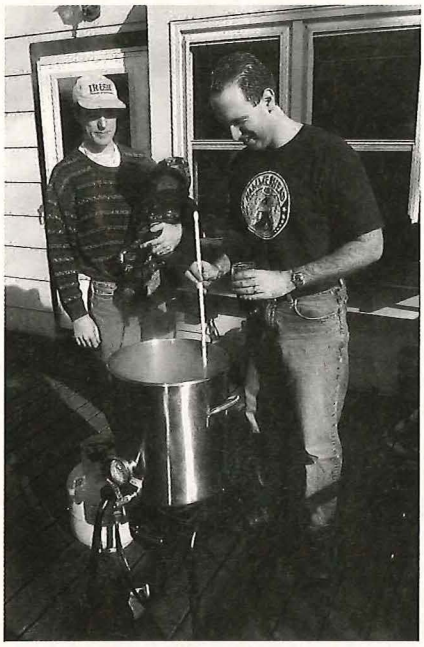
- **OG: 1.064**
- **FG: 1.028**

Brewers' Specifics

Steep the caramel malts in a grain bag while raising the temperature to 170° F (77° C). Remove the grains, add the extracts and boil for 75 minutes; add hops according to the schedule. Immersion chill, pour into the fermenter and pitch the yeast. Prime and bottle after three weeks.

Tasters' Impressions

Good roasted malt flavor, though a bit sharp in the finish with noticeable alcohol. Fruity esters and green applelike acetaldehyde noticeable in both aroma and flavor. It had medium-high bitterness as expected for the style. It had a sweet finish due to the low attenuation.



Homebrewing outside in Chicago in January?! Baby Gillian Bailey supervises George Bailey and Jeff Hertz as they enjoy the beautiful shirtsleeve weather in Chicago.

Jeff Hertz and George Bailey's Robust Porter

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

- **4.0 lb (1.81 kg) Muntons Nut Brown extract**
- **3.0 lb (1.36 kg) light dry malt extract**
- **1.5 lb (680 g) pale malt**
- **0.5 lb (227 g) 80°L crystal malt**
- **10.0 oz (283 g) chocolate malt**
- **5.0 oz (142 g) black patent malt**
- **1.0 oz (28 g) Fuggles, 5.5 AA (60 min)**
- **1.0 oz (28 g) Willamette, 6.0 AA (20 min)**
- **Wyeast 1318 London ale III yeast (repitched from another brew)**

- **OG: 1.056**
- **FG: 1.018**

Brewers' Specifics

Steep all grains for 20 minutes at 152° F (67° C) then remove. Add the extracts and boil 75 minutes; add hops according to schedule. Chill wort and pitch yeast.

Tasters' Impressions

This beer had great roasted malt character in both the aroma and the flavor. It was quite bitter, a bit much for some tastes, but adding up to a rather intense robust porter. Slightly thin for style. Overall, it got high marks from the judges at both our club social night and at the Drunk Monk Challenge

Mike Uchima's Raspberry Porter

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

- **4.0 lb (1.81 kg) Muntons Nut Brown extract**
- **3.0 lb (1.36 kg) Muntons Spraymalt light dry malt extract**
- **1.0 lb (454 g) chocolate malt**
- **0.50 lb (227 g) CaraPils malt**
- **0.50 lb (227 g) CaraVienne malt**
- **0.25 lb (113 g) CaraMunich malt**
- **2.0 oz (57 g) roasted barley**
- **2.0 oz (57 g) black patent malt**
- **6.0 lb (2.72 kg) frozen raspberries**
- **0.50 oz (14 g) Centennial hop pellets, 10% AA (60 min)**
- **1 tsp Irish moss (15 min)**
- **2.00 oz (57 g) Goldings hop plugs, 5% AA (10 min)**
- **1.00 oz (28 g) Willamette hop pellets, 5% AA (10 min)**
- **White Labs WLP002 English ale yeast (from a starter)**
- **4.2 oz (120 g) turbinado sugar (to prime)**

- **OG: 1.072**
- **FG: 1.024**

Brewer's Specifics

Steep the specialty malts in a grain bag in 160° F (71° C) water for 45 minutes. Remove grains, add the extracts, then boil 75 minutes with Irish moss and hop additions. Add the raspberries at the end of the boil. Immersion chill then transfer both fruit and wort to the fermenter. Mike described the primary as a "raspberry volcano," which blew about one pound (0.9 kg) of raspberries out of the fermenter and caused a spectacular mess. Rack off the fruit after five days and bottle five days after that.

Tasters' Impressions

A rich, creamy, uniquely flavored beer. The raspberries came through beautifully in both the flavor and the aroma. The finish featured a lingering hop bitterness tempered by raspberry flavor. The judges liked the combination of raspberry and roast, but they thought the roast malt could be more pronounced to make it more obviously a porter. A less messy way to approach would be to put the raspberries in the secondary; however, it might take a week or two longer to get good extraction of the raspberry flavor and fruit sugars with this method.

Rich Cullotta and Don Alton's Belgian Dubbel

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

- **4.0 lb (1.81 kg) Muntons Nut Brown extract**
- **3.0 lb (1.36 kg) light dry malt extract**
- **1.0 lb (454 g) dark candi sugar**

(continued on page 76)

HOMEBREWING

INDIGENOUS BEVERAGES

OF THE AMERICAN SOUTHWEST

Using readily available prickly pear and mesquite pods, you can fashion interesting modern brews with close ties to the ancient alcoholic drinks of the original Americans.

By
Greg
Sower

Living in the desert Southwest of the United States can be rough for a brewer. The unforgiving temperatures and lack of locally grown ingredients can be a challenge for someone who learned to brew in the moderate climate of the hop-and barley-blessed Northwest.

The idea of attempting to duplicate classic European lagers in the desert seemed as silly as searching for El Dorado, so I turned to *ethnozymurgy* to help quench my thirst for good brews. Ethnozymurgy is the study of how people of a particular culture and region make use of indigenous plants and specialized techniques with respect to fermentation. Not surprisingly, the historical and anthropological literature is filled with information describing alcoholic drinks made from a plethora of native plants. Adapting these historic recipes and ingredients to modern tastes, however, requires some slightly modified brewing techniques.

The biggest problem with using nonstandard ingredients is their inherent variability. Ingredients harvested from the wild do not have nutrition labels or malt analysis sheets, so successfully repeating recipes that use them can be difficult. Using homemade extracts significantly increases the reproducibility by creating a reliable base that can be measured and adjusted prior to brewing.

Two plants that I have found particularly well suited to my brewing tastes are mesquite (*Prosopis* spp) and prickly pear (*Opuntia* spp). Loaded with sugars and, when roasted, a complex spectrum of flavors that compares favorably to several specialty malts, mesquite is perfect for use in beers. Prickly pear, on the other hand, with its full berry and melon

flavors, helps create a delicious, crisp cider variation that refreshes throughout the hot summer months.

PRICKLY PEAR

The 1994 Special Issue of ***Zymurgy***, Special Ingredients and Indigenous Beers, addressed the use of prickly pear in colonche. Few people have access to adequate supplies of syrup or care to tackle the job of harvesting and preparing such large amounts of a rather hostile fruit. But prickly pear syrup blends nicely with cider making techniques and the resulting hybrid, "gringo-colonche" so to speak, has found a permanent place in my brewing repertoire.

Prickly pears, or *tunas*, as the fruits are known in Spanish, cover a wide variety of *Opuntia* species. Just as not all apples are well suited for cider, some *tun* as are better for brewing than others. If you are harvesting wild fruits, *O. streptacantha*, *O. ficus-indica* and *O. engelmannii* will be your best bets. Their colors range from deep purple to red to light green.

One caveat: *tunas* are very low in acid, thus long-term juice storage presents a problem. Boil your extract to create syrup or add sulfites to preserve the juice without excessive heating, which can change its color and flavor.

Syrups are widely available by mail order and a quick Internet search will turn up numerous options. You can also find them in Mexican grocery stores in many parts of the country.

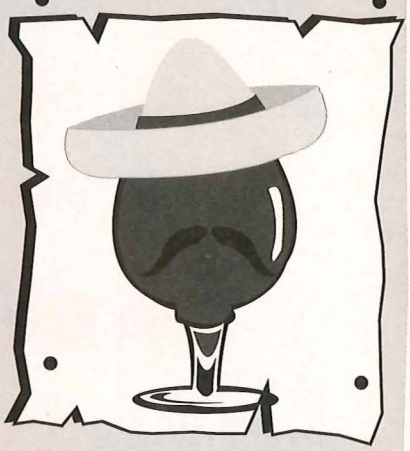
To process harvested *tunas*, first remove the glochids (those pesky hairlike thorns that give the fruit its name) with a stiff brush or by passing the fruit over a flame. Then reduce the fruit to pulp with a potato masher or food processor. Strain the pulp through cheesecloth to collect the skins, seeds and remaining glochids. A quick boil will kill any wild yeast and bacteria as well as coagulate the larger pieces and any glochids that escaped the cheesecloth. Now add sulfites and refrigerate until you're ready to use.

Prickly pear juice contains sugar and will readily ferment, but this recipe calls for it to be added post fermentation as a flavoring. When you do this, it is important to prevent any further fermentation because it would result in overcarbonation or exploding bottles. So, with that said, to make gringo-colonche, simply add the prickly pear juice at a rate of 1:9 or 0.5 gallon of juice to 4.5 gallons (about 2 L to 18 L) of basic apple cider that has finished fermenting. (See sidebar for further details.) For commercial syrups, one seven-ounce (207-ml) bottle to five gallons (19 L) of cider will work. Add sulfite or keep under refrigeration to prevent fermentation of the prickly pear juice and allow the resulting elixir to clear.

MESQUITE

Fruiting about a month earlier than prickly pear, mesquite provided Southwestern Native Americans with a protein- and carbohydrate-packed food. A member of the plant family *Leguminosae* (think beans and peas), mesquite inhabits many of the

Sangre del Chupacabra



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

4.5	gal (17 L) preservative-free apple juice (pasteurized is OK)
3.0	lb (1.36 kg) honey (mesquite is preferred for that Southwestern flavor)
0.5	gal (1.9 L) prickly pear extract or 7 oz. (207 ml) syrup
0.5	oz (14 g) yeast nutrient
4	tbsp (60 ml) acid blend
1	packet Wyeast No. 3068

- OG: 1.065

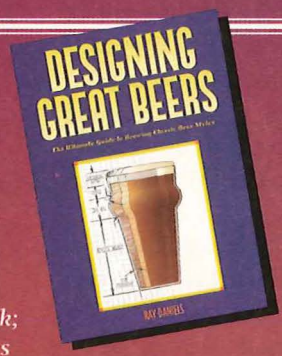
Brewer's Specifics

Boil the honey with two gallons (7.6 L) of apple juice for 20 minutes, then add the acid blend and yeast nutrient and pour into primary fermenter. Shake the fermenter to oxygenate. The primary fermentation will be longer and slower than that of beer, so rack to the secondary after two weeks. When fermentation has ceased and the cider has cleared (should be four to six months), rack to a keg, add sulfites and prickly pear juice, then place in a refrigerator. The cider should be ready in two weeks.

Because finished beverage contains unfermented sugars from the prickly pear juice, take care to prevent further fermentation.

ILLUSTRATIONS BY DAVE HARFORD

Build Your Brewing Knowledge With Our Brewer's Library



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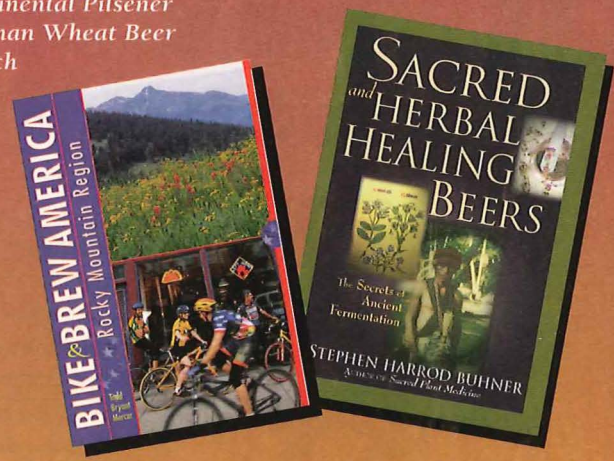

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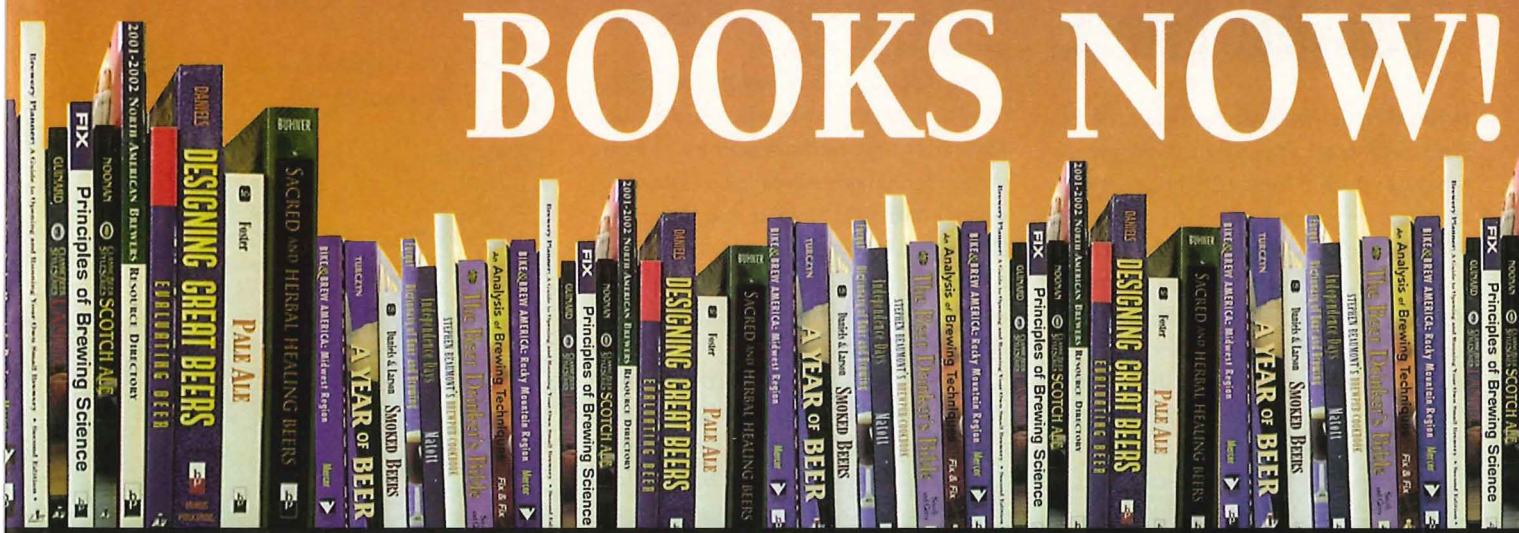

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world's arid and semiarid regions including areas of Africa, the Americas, Australia and Asia as native or introduced species. In the Americas, the leafy green matter is used commercially as livestock forage. Peruvians make algarrobina, a syrup from the fruit that is used to sweeten baked goods. Mesquite has also been used as an instant coffee substitute.

Known as *algarroba* in South America and *kiawe* in Hawaii, mesquite is best known for the unique flavors it contributes to grilled meats. Much maligned by ranchers for its invasive growth on grazing lands and water scavenging capabilities, the sugar-packed fruits largely have been forgotten, or worse, erroneously dismissed as difficult to use. Mesquite can be difficult to mill because the pod must be separated from the extremely hard beans inside. With the proper technique, however, the mesquite freely yields all of its brewing potential. I developed my recipes using *P. velutina*, which is very similar in composition to *P. glandulosa*. These mesquites can be found throughout the Southwestern United States, but the techniques described here will work with any *Prosopis* species.

Mesquite's high sugar content allows a large quantity of melanoidins to be produced, resulting in coffee, nutty, vanilla and cinnamon flavors.

The mesquite tree fruits are long pods encapsulating very hard beans. The beans are not actually useful in brewing but the pods (pericarp) contain from 20 percent to 50 percent sugar by weight. They do not contain any starches, though there are small amounts of oligosaccharides. Because of this, mesquite may be thought of as a unique crystal malt, requiring no mashing to extract the sugars. Of note to those attempting to develop a gluten-free beer for those with Celiac disease, mesquite does not contain gluten.

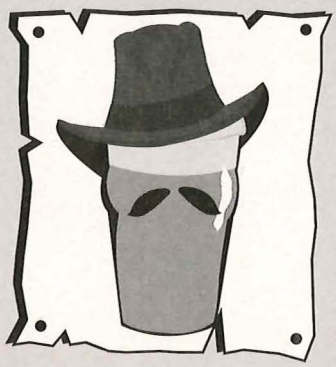
Mesquite pods are highly nutritious, containing 8 percent to 12 percent protein (comparable to barley) as well as calcium, iron, phosphorus and zinc, but they are low in tannins (1.2 percent). Native Americans ground mesquite pods into a fine flour and mixed it with water to form a thick gruel. Anthropological studies and historical literature comment on fermented beverages made from mesquite by Native Americans, though the techniques are either not reported or have apparently been lost.

In Argentina in the early 20th century it wasn't uncommon for people to make *aloja* or algarroba beer by fermenting the raw pods. However, because the pod's major saccharide is sucrose, which ferments less readily than glucose or fructose alone because of the required invertase enzyme, this brew would sour after several days of fermentation. The *Prosopis* species pods can be eaten raw, although roasting creates unique color and flavor profiles that can add a great deal of depth and complexity to a well-crafted homebrew.

Heating sugars such as sucrose allows them to combine with nitrogen through Maillard or browning reactions, thereby producing compounds called melanoidins, which contribute to color and flavor profiles. Mesquite's high sugar content allows a large quantity of melanoidins to be produced, resulting in coffee, nutty, vanilla and cinnamon flavors.

In the southwestern United States mesquite can produce pods in late June and again in mid-September. Harvest the pods when they are light tan and brittle. Pods with streaks of pink and purple supposedly contain more sugar, though this hasn't been scientifically proven. Avoid collecting

Prosopis Pale Ale



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

8.0	lb (3.6 kg) two-row pale malt
1.0	lb (0.45 kg) 40L crystal malt
0.25	lb (113 g) biscuit malt
0.25	lb (113 g) wheat malt
0.5	gal (1.9 L) roasted mesquite extract
0.5	oz (14 g) whole Centennial hops, 10.5% AA (60 min)
0.5	oz (14 g) whole Cascade hops, 5.75% AA (30 min)
0.5	oz (14 g) whole Cascade hops, 5.75% AA (5 min)
1	packet/tube ale yeast

- OG: ~1.058 (dependent on extract)
- Bitterness: 35 IBU

Mash the grains at 149 to 152° F (65 to 67° C) for 60 minutes. Sparge to volume and add mesquite extract. Boil for 60 minutes adding hops as scheduled. Cool rapidly to below 80° F (27° C) and pitch yeast. I use White Labs California V liquid yeast. Allow to ferment. This beer is designed to allow the mesquite flavor reveal itself in a rather standard brew. Replace the specialty malts with more mesquite if desired.

ILLUSTRATIONS BY DAVE HARFORD

pods that have already fallen because they are likely home to brachid-beetles, whose presence is recognizable by a small hole in the pod. Place the pods in the sun, a food dryer or an oven set at 150° F (66° C) to completely dry them and eliminate any remaining insects. After drying, you can store the pods in a freezer indefinitely. If you lack access to mesquite trees, contact Promez in Tucson, AZ, (www.promez.com); they sell Peruvian *P. pallida*.

Anthropological studies and historical literature comment on fermented beverages made from mesquite by Native Americans, though the techniques are either not reported or have apparently been lost.

Roast mesquite by placing rinsed pods on a cookie sheet in a shallow layer (less than 0.75 inch or 2 cm). Place the sheet into an oven preheated to 350° F. Check regularly to monitor the color change. Occasionally remove a pod to taste it for flavor and break it open to check the color. The process should take from 20 minutes for the lightest roast to more than an hour for the darkest. After roasting, let the pods sit for one to two weeks to allow the harsh aromatics to dissipate. Then cover and store as you would any other grain.

The *Prosopis* species varies considerably, so it is best to make an extract before you brew. This will allow you to adjust each batch to better reproduce your results. To make an extract, break the roasted pods into one-inch pieces and add to water in a 1:4 ratio (one pound of pods to two quarts of water) and heat to 150° F (66° C).

Lighter roasted pods will generally take longer to extract all the remaining sugar. Raw mesquite takes almost two hours before the specific gravity readings stabilize. Regular stirring will speed things up. For darker roasts, spoon out some of the extract and try it. When the flavor stops changing significantly, turn off the heat. Small amounts of pods (less than 0.25 lb or 100 g) can be ground in a blender and run through a drip coffee maker.

If you are brewing the same day, simply add the extract at the beginning of the boil. If you plan to store the extract, you can either boil it down to a more stable syrup or add sulfites and refrigerate.

Using homemade extracts as a technique to standardize the variability of either harvested or experimental ingredients greatly increases the chances of creating (and reproducing) a successful brew. Try using extracts on your next foray into historical or experimental brewing.

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Greg Sower is a research specialist in the University of Arizona's Department of Soil, Water, and Environmental Science. He enjoys the challenge of incorporating native plants and techniques in brewing.

Getting Good

Conditioning Wood Barrels

Wood barrels provide a home for organisms essential to the traditional aging and acidification of sour Belgian-style beers. Here we see how the experts prepare and use such barrels.

By Jeff Sparrow

and Sour:

for Sour Beer Production

• WOOD •

holds a special place in the brewing world—but not necessarily for the reasons you might imagine.

Barrels to contain and carry beer have been a part of brewing for several millennia; these specific functions are better achieved today with stainless steel. Rarely has any brewer aimed to impart actual wood flavor to a beer—attempts to do so require a constant supply of virgin barrels. But for some beers, wood has unique flavor-essential properties.

The secret is the porosity of wood. Tiny nooks and crannies in its natural surface give microorganisms a place to hide. Furthermore, the nature of wood allows small amounts of oxygen to reach those organisms, fueling their continued growth. Neither of these conditions would be desirable for a pilsener or even a pale ale, but they are essential for producing long-aged sour beers.

The Belgian province of Flanders is known for its breweries producing sour brown and red ales. Unlike the lambic producers of Brussels and the surrounding area, these breweries rely on the microorganisms held in wooden barrels used for aging rather than spontaneous fermentation from airborne yeast and bacteria. Many Flanders breweries

Homebrewers' Alternate Method to Wooden Barrels

For homebrewers, using oak chips can be a practical, cost-effective alternative to fermenting in oak barrels. Homebrew supply retailers sell various forms of oak. Because a sufficient quantity is necessary to hold the microbes, chips are superior to cubes. Minimally, use enough to cover the bottom of a fermenter.

New oak chips will have a significant oak character. Many brewers recommend repeated soaks in boiling water to remove this character. Problem is, alcohol will leach components that boiling water will not remove. Soaking in beer or wine should eliminate this problem. How long? Err on the side of caution.

When the chips are ready, give the batch some time on them. I once aged a beer with a 1.012 (3° P) "finishing gravity" in a fermenter with oak chips, *Brettanomyces* and *Lactobacillus*. The gravity after 18 months was 1.003 (1° P) and falling. Yes, the wild yeast can cause high carbonation levels, especially if bottled too soon. I had boiled the chips a number of times and the beer still had a significant oak character, which has begun to fade with age.

used wood to ferment their beer, but perhaps none on the scale of the classic Belgian red ale producer, Rodenbach.

The sight of nearly 300 wooden fermentation vessels, some holding more than 600 hectoliters (just short of 500 barrels) of beer, is truly stirring. A working museum of centuries-old fermenting and blending techniques for producing sours beers in wood, Rodenbach today is a bastion of a dying art. Perhaps that is one of the thoughts former Rodenbach Brewmaster Peter Bouckaert had on his mind when he embarked on a wooden fermenter project at the New Belgium Brewery in Ft. Collins, CO, in 1997.

New Belgium was the first microbrewery in the United States to brew only Belgian-style ales on a large scale. It is only fitting that they would also be the first to create a farm of wooden barrels capable of imparting the flavors for Flanders-style sour brown and red ale. The beer is called La Folie (6.5 percent abv), which loosely means "A business endeavor you will lose on." When I asked why Bouckaert thought this would work in the United States he said, "I never thought about that, really."

But wood alone does not sour beer. The wood must first be suffused with a population of microorganisms that will impart the proper flavor.

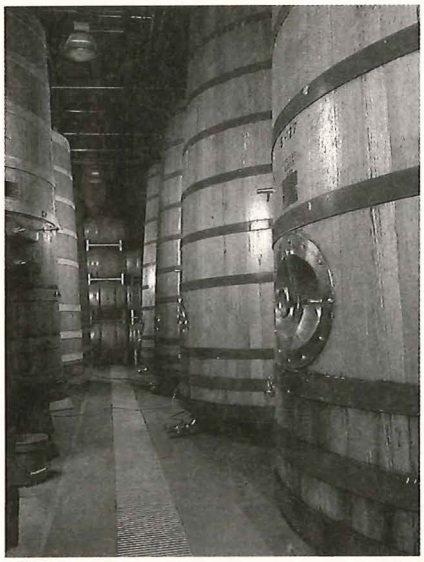
Given New Belgium's methodical approach to creating barrels suitable to producing truly sour beer in the traditional manner, they will serve as a de-facto case study for homebrewers wishing to do the same thing.

When barrels are built, wooden fermenters for making sour beer are created. But wood alone does not sour beer. The wood must first be suffused with a population of microorganisms that will impart the proper flavor. Implanting the ideal combination of microorganisms in the wood is a challenge that some will find pleasant and rewarding. Pierre Rajotte contemplates the origin of these beers in his Classic Beer Style Series book *Belgian Ale* (Brewers Publications, 1992): "A brewer may have tried an old cask of beer and found the sourness and acidity rather pleasant. He may have found that reusing the cask or blending its beer with other beers produced unique and complex ales. He may even have added this beer to other casks to replicate the effect. Today, we find it a more scientific, but no more exact a process."

The first step is to acquire one or more barrels. New Belgium originally bought 12 255-liter used wine casks from the Napa Valley. Wine fermentation had leached the majority of tannins and other wood-related flavor compounds from the barrels. New barrels are more expensive and have not undergone this necessary tannin leaching. Smaller barrels are not cost-effective for a microbrewery and, in any case, are difficult to find. New Belgium now also has four 60-hectoliter barrels and six 130-hectoliter barrels (as well as 86 smaller ones).

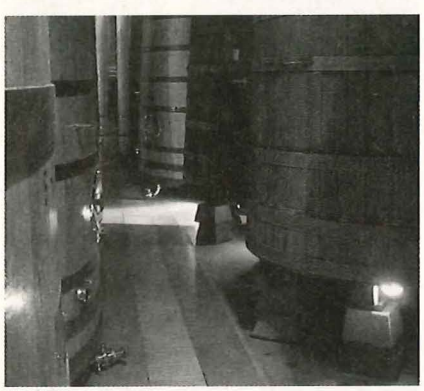
Oak is the wood of choice for fermenters because of its strength, resistance to decay and relative ease of use. Bouckaert and many other brewers prefer French oak because it is more porous, a characteristic

The attractive public entrance of the New Belgium Brewing Co. hardly makes it look like the kind of place where bacteria would be nurtured for brewing.



New Belgium's wood fermenters, big and small.

This close-up shows that these fermenters had a prior life in the wine industry.



The drama of the "visitors" lighting still falls short of the drama that takes place inside.

that aids in oxygen diffusion. "American oak has too many water channels to block the air," he said. The microbes require small amounts of oxygen to feed and propagate. French oak is also generally dried for a longer period of time and, as a result, the barrels impart much less oakiness to the beer. A barrel should also not be pitched because this seals the wood, shutting off the diffusion of air and making it less hospitable to microorganisms.

You'll want to keep several things in mind when selecting a barrel. Visual inspection is key. The barrel should be free of bores or obvious repairs and the bottom should fit cleanly into the staves. It should not have leaks or visual sediment, as evidenced by a ring around the barrel. Bouckaert says it is easy to inspect large empty barrels: "You just get in and look." Avoid barrels with off aromas.

To prepare your barrel for use as a fermenter, it is necessary to reopen the wood's pores. First, the barrel should be rinsed; just don't use hot water because significant changes in temperature can cause leaks. Then scrape the barrel to remove winestone, which can interfere with oxygen diffusion, along with a thin inner layer of the barrel. Then you'll use sulfur to reduce, but not eliminate, the microbiological reactions. Steam cleaning is impractical because the wood in a large barrel is too thick to raise the temperature to an acceptable level over a reasonable period of time. Don't attempt to sterilize the barrel.

The only way to inoculate a barrel with the appropriate microorganisms is to store "infected" beer in it for a period of time. At New Belgium, 12 different organisms were used: three species of *Brettanomyces*, seven species of *Lactobacillus* and two species of *Pediococcus*. Some barrels were inoculated with single batches dosed with one strain, and some had several batches blended together.

The goal of this microbial diversity is to arrive at a cask that has a blend of organisms that will impart a pleasant flavor time after time. Achieving this goal is an iterative process. Only repeated filling, blending, tasting and time will allow the brewer to achieve the desired result. Bouckaert said they tried "intensively" in the begin-

Acquisition of Beer-Souring Microorganisms

The variety of different microorganism strains available to commercial breweries is generally unavailable to homebrewers. Wyeast Laboratories carries the basic organisms necessary to properly sour beer. They are available, usually by special order, through many local homebrew retailers or direct from Wyeast Scientific Supply, www.wyeastscientific.com or 877-551-7238.

3112 Brettanomyces bruxellensis
3536 Brettanomyces lambicus
4335 Lactobacillus delbrueckii
4733 Pediococcus damnosus

Note: No. 3278 Lambic blend contains *Saccharomyces* and is not recommended for this use.

ning, but later slowed down and gained the required patience. The only true test of a barrel is the beer it produces. "If you want to be good," quips Bouckaert, "you're going to have to dump some beer." Accepting this concept is difficult for most brewers, especially homebrewers.

At New Belgium, the initial inoculation process took roughly a year and a half—and many batches of sacrificed beer—before the barrels were ready. Now, after five years, they are still a work in progress, and Bouckaert is always looking for new barrels.

New Belgium's La Folie begins as a medium-brown beer with low hopping levels, fermented with a single-strain lager yeast. Currently, brewers use four different recipes because the barrels are "new," but Bouckaert hopes to eventually settle on just one version. All sugars fermentable by *Saccharomyces cerevisiae* are already fermented before the beer is added to a barrel. The yeast cells are also removed to prevent autolysis off-flavors. La Folie is rather subdued by Belgian standards at 5.5 percent abv prior to aging. The microorganisms, lactic acid producers in particular, are sensitive to high alcohol levels. Bouckaert explained that he once aged a 12 percent abv beer for five years with little evidence of microbe production.

During the next two years the beer undergoes a period of acidification or "ripping" as they call it at Rodenbach. Acids (lactic and acetic) are the most important compounds produced as evidenced by the proportion of acid-producing bacteria used to inoculate the New Belgium barrels.

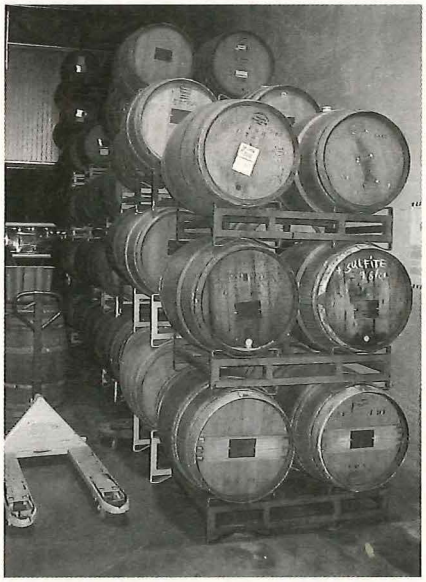
The microorganisms, lactic acid producers in particular, are sensitive to high alcohol levels. Bouckaert explained that he once aged a 12 percent abv beer for five years with little evidence of microbe production.

Bouckaert said the concentration is more important than the absolute content. "The formation of the different components by these microorganisms, leads to derivative formation of components such as esters," he said. The slow diffusion of oxygen into the beer provided by the oak barrels allows the slow-growing "wild" yeast and bacteria to propagate, ferment and meld the compounds they produce into complex flavors and aromas.

Much ado is made about the flavor contribution from the wood itself. Bouckaert believes that for this type of beer production it is negligible. "I am using the wood for its permeability to oxygen and its ability to hold microbes." He said woody flavors are related to the "toasting level" of the wood. All barrels are charred prior to use by a winery. He looks for low to medium toasting levels. Wood's color contribution also is not important. Bouckaert doesn't even note the exact original color of the beer going into the barrels.

La Folie is added to the barrels when its specific gravity is between 1.008 and 1.020 (2° and 5° P), depending on the recipe. After two years, the beer is approximately 1.008 (2° P). Unlike its lambic-style cousin, there is still some remaining sugar fermentable by wild yeast in these sour beers. For this reason, La Folie is sterile filtered, but not pasteurized, prior to bottling. Bouckaert uses sugar and a wine yeast to prime; the resulting refermentation makes the final product 6.5 percent abv. For reference, old lambic can be fermented to a gravity of 1.000 or less.

One single barrel seldom produces a beer suitable for public consumption. (The odd, unblended batch from New Belgium may occasionally be found at the Falling Rock Taproom in Denver, CO.) The true art in the production of sour beer lies in blending. Bouckaert, of course, learned the art during his 10 years at the Rodenbach brewery. Today, he is the final voice on a panel of



New Belgium uses smaller wood barrels as "pilot" fermenters.

Characteristics of Primary Beer-Souring Microorganisms

Brettanomyces is an aerobic wild yeast, meaning it ferments more effectively in the presence of oxygen. It is reasonably tolerant of alcohol and hops. It can ferment glucose into acetic acid and break down dextrins, which are unfermentable by *Saccharomyces cerevisiae*. The primary esters it catalyzes from alcohol and acid are ethyl acetate and ethyl lactate.

Lactobacillus prefers reduced oxygen levels. For this reason it occupies the inner part of the barrel. It is sensitive to ethanol (alcohol) formation and hops. It will produce lactic acid for about 12 to 16 months. Lactic acid is sweet and will balance the sharpness of acetic acid.

Pediococcus is anaerobic, which means at best it grows poorly in the presence of air. It has an even lower tolerance for hops. It will ferment glucose into lactic acid without producing any CO_2. In addition to lactic acid, it can produce noticeable levels of buttery diacetyl, which may dissipate in time.

"whoever wants to taste" at the brewery. (Talk about a perk!) Panelists create their own blends in their glasses, noting what proportion of beer from each barrel was used. Then they taste each other's blends. Taste is the absolute measure for the final product.

Microbes or not, a barrel eventually must be cleaned. First it is rinsed with water (remember, no hot water). Then the barrel is scraped to remove beerstone, which can interfere with oxygen diffusion, and another thin, inner layer of the barrel. Sulfur is used before the barrel is reinoculated with beer from another barrel—generally 10 percent of well-aged beer plus fresh beer. At Rodenbach, every 20 years a barrel is completely disassembled, cleaned and rebuilt stave by stave. Only then does a barrel need to be reinoculated. At New Belgium, the barrels are cleaned more often because they are not yet ready to produce a consistent product time after time.

Traditional sour beer production in wood truly is a passion. To a sour beer producer, the barrels are meant to stand the test of time. Year after year, batch after batch, the barrels will produce a reasonably consistent product that can be blended for public consumption. New Belgium is still approaching this goal, but Bouckaert said, "My barrels will last for 100 years. Hopefully!" I plan on regular visits to the brewery to check on their progress.

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Jeff Sparrow's sour disposition may have come from being a past-president of the Chicago Beer Society, or perhaps because he is the chairman of the 2003 AHA Conference. He considers regular visits to Belgium necessary to keep his body properly inoculated. Those interested in joining the sour beer fraternity can contact him at jeff@chibeer.org.

Unconventional Hopping for the Conventional Brewer

By Marc Sedam

The more things change, the more beer stays the same. Hops were the last of the now-traditional four ingredients to be adopted by brewers. Barley, water and yeast (although what yeast *was* remained a mystery until the 18th century) were all staples in beer and ale for many centuries. Prior to hops, the bitterness used to counterbalance sweet wort came from various plant products and, in some areas, from gruit, an herb blend. The advent of hop cultivation dates to as early as the eighth century,[1] but the *Reinheitsgebot* certainly cemented the hop's place as a primary ingredient in beer. It took about 6,500 years, beginning with the ancient Sumerians and ending with the Germans, for the hop to take its now rightful place in a pint of beer. The next 500 years showed little change in how hops are used in beer. I say it's time to shake things up again.

The hop is a tricky plant. Gruit had many components to give beer a pleasant taste, but hops have it all. The hop flower can provide three different qualities in the finished beer: bitterness, flavor and aroma. Bitterness can be extracted from hops by boiling them in the sweet wort. The longer they are boiled, the more hop bitterness is created during the isomerization of alpha acids (the number listed on all hop packaging) into iso-alpha acids. Bitterness was likely the first reason hops were used in beer, and many new hop hybrids are pushing the envelope of alpha acid content. Hops with alpha acid contents greater than 15 percent, unheard of 10 years ago, are now common. But bitterness is a commodity—boil any hop long enough and you'll get bitterness. Nailing down hop aroma and flavor is by far a more difficult pursuit.

Smell and flavor are two senses intimately linked. Brewers quickly found that hops with a pleasant aroma and flavor could

create true ambrosia in the glass. Hops with pleasant aromas were prized above all others; we have gone so far as to call hops with the best aroma "noble." Most new varieties of aroma hops have one of the noble hops (Saaz, Hallertauer, Tettnanger and Spalter) in their lineage. But extracting these flavors and aromas in the finished beer is truly a balancing act. If you leave hops in boiling wort, eventually the delicate hop oils will evaporate. Boil too long and they all evaporate, leaving only bitterness. Boil for a moderate amount of time and flavors remain but the aromas are gone. A quick dip in the boiling wort leaves only aromas and few flavors. In the end, tradition has led us down the path of using aroma hops at two times in the brewing process. Hop additions between 15 and 30 minutes before the end of the boil provide hop flavor, while additions less than five minutes before the end of the boil provide hop aroma. And so it has remained—until now.

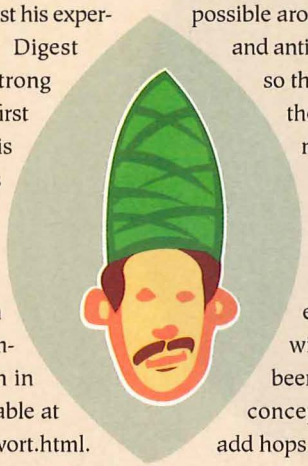
First Wort Hopping: "A fine, unobtrusive hop aroma ..."

First wort hopping, that is adding hops to the kettle as soon as wort covers the bottom, contributes hop flavor and aroma. The hops are left to steep in the hot, but not boiling, wort until the kettle is full. The wort is brought to a boil and the bittering hops are added as usual. No additional flavor and aroma additions are required because the resulting hop flavor and aroma are, in my mind, superior to "normal" additions for the same purposes.

As with most procedures relating to brewing, determining who the first person was to try this technique is impossible. Early 20th century brewers added hops to the beginning wort, but primarily to enhance bitterness.[2] Jean DeClerck, the famous Belgian brewer, was known to steep his hops in 122° F (50° C) water to round out the bitterness, but found an enhanced aroma as well. Preis and colleagues published the first modern mention of first wort hopping (FWH) in *Brauwelt International* in 1995. Their experiment involved two German breweries that experimented with FWH in pilsner-style beers to improve aroma. These breweries produced two beers, identical in every way, except one was first wort hopped and the other hopped normally. The FWH beer was overwhelmingly preferred; the tasting panel attributed "... a fine, unobtrusive hop aroma; a more harmonic beer; a more uniform bitterness"[3] to the experimental product. Brewing chemistry being what it is, no one has been able to determine exactly why this works. Sometimes it's just good enough to simply know that it does.

BEER PHOTO © 2002 STOCKFOOD INC.
ILLUSTRATIONS BY DAVE HARFORD

The late George Fix, Ph.D., picked up the FWH concept and began to post his experiments to the Homebrew Digest (www.hbd.org). Fix was a strong proponent of FWH from his first experiments, improving on his collection of brewing awards for lagers after incorporating the procedure. Several brewers, after reading Fix's experiments, agreed to pitch in with other experiments. A great summary of this research written in 1997 by Dave Draper is available at http://brewery.org/library/1stwort.html. Most of these homebrewers concurred with previous observations. Hop flavor and aroma were not only enhanced, they were more pleasant and rounded compared with previous brews using the same recipe and other hopping techniques.



You do have to consider the increased bitterness that first wort hopping contributes. Rough estimates are that first wort hops add 5 percent more bitterness (as measured in IBUs) to your beer. Hopheads need not even consider this negligible increase, but for more delicately balanced brews, the calculation needs to be made. Brewing software such as StrangeBrew and Promash include built-in FWH calculations, which make recipe formulation for first wort hopped beers even easier. It has been proposed that FWH should represent 30 percent of the total hop additions in any beer, but I'm not a big fan of brewing rules. I have often first wort hopped with all of my hops. I believe that FWH shines in beers where hop aroma and flavor are big portions of the style, such as pilsners and IPAs.

Mash Hopping: Why Not?

In 1999, I was doing some background reading in preparation for making a Berliner weiss. Eric Warner described an old Berliner weiss method of boiling hops in water for an hour and infusing this boiling "hop water" in the mash to increase temperatures.4 Hops were boiled to remove all possible aromas, yet add a little bitterness and antibacterial properties to the wort so that the *lactobacilli* prevalent in the style would grow slowly and not overwhelm the beer with sourness. The boiled hops were also supposed to be a filtering aid in a beer where 50 percent of the grist is unmalted wheat. I had no problems with the mash or the resulting beer, which was delicious, but the concept got me thinking. Why not add hops to the mash?

I began to experiment with mash hopped (MH) beers. To test the concept, I brewed an all-pilsner-malt lager. The results were wonderful. Hop flavor and aroma of the resulting beer really shined. It was a wonderful, delicate flavor that I had never been able to get in any of my past brews. I continued to experiment, increasing and decreasing the mash hops, and brewing many different kinds of MH beers. Feedback from other mash hoppers was mixed—some got really wonderful results and others thought there was no change or that the hop characteristics were reduced with this method. Reviewing all of the data I have collected or have been given, a few trends developed.

> Lighter beers benefit more from mash hopping than darker beers.

First, soft water seems to be a prerequisite for getting good hop characteristics from MH beers. I tested this myself by brewing two MH IPAs, one brewed with soft Chapel Hill water (37 ppm of total hardness) and the other brewed with water adjusted to mimic Burton-on-Trent, England. The Chapel Hill IPA had much more pronounced hop characteristics than the Burton IPA. Second, lighter beers benefit more from mash hopping than darker beers. In the end, I believe that wort pH may have a great deal to do with getting the proper hop characteristics out of a MH beer. But these guidelines should provide a place to start.

Is That It?

Have we reached the end of places to add hops? Perhaps. As mentioned, Berliner weiss recipes add hops to the water. Hops have been added to the mash, the first runnings, during the boil, and as dry hops in the serving vessel. But homebrewers and craft brewers are a creative bunch. Just to cover every possible option, Sam Calagione of the Dogfish Head Brewery in Lewes, DE, makes his "90 Minute IPA" by adding hops continuously during the entire boiling process. Rande Reed at the Snoqualmie Falls Brewery in Snoqualmie, WA, made a batch of beer in honor of Ralph Olsen, the longtime Hopunion owner, that had hop additions anywhere he could—in the mash, as first wort hops, during traditional additions and in the keg. Now that's what I call being *hopportunistic*.

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3. ibid.
4. Warner, Eric. *German Wheat Beer*. Brewers Publications, 1993.

Marc Sedam has been homebrewing since 1992. He's a member of the North American Guild of Beer Writers—winner of the 1999 Silver Tankard Award®—and the TRUB homebrewing club. Marc lives in Chapel Hill, NC, and throws hops at anything he sees.

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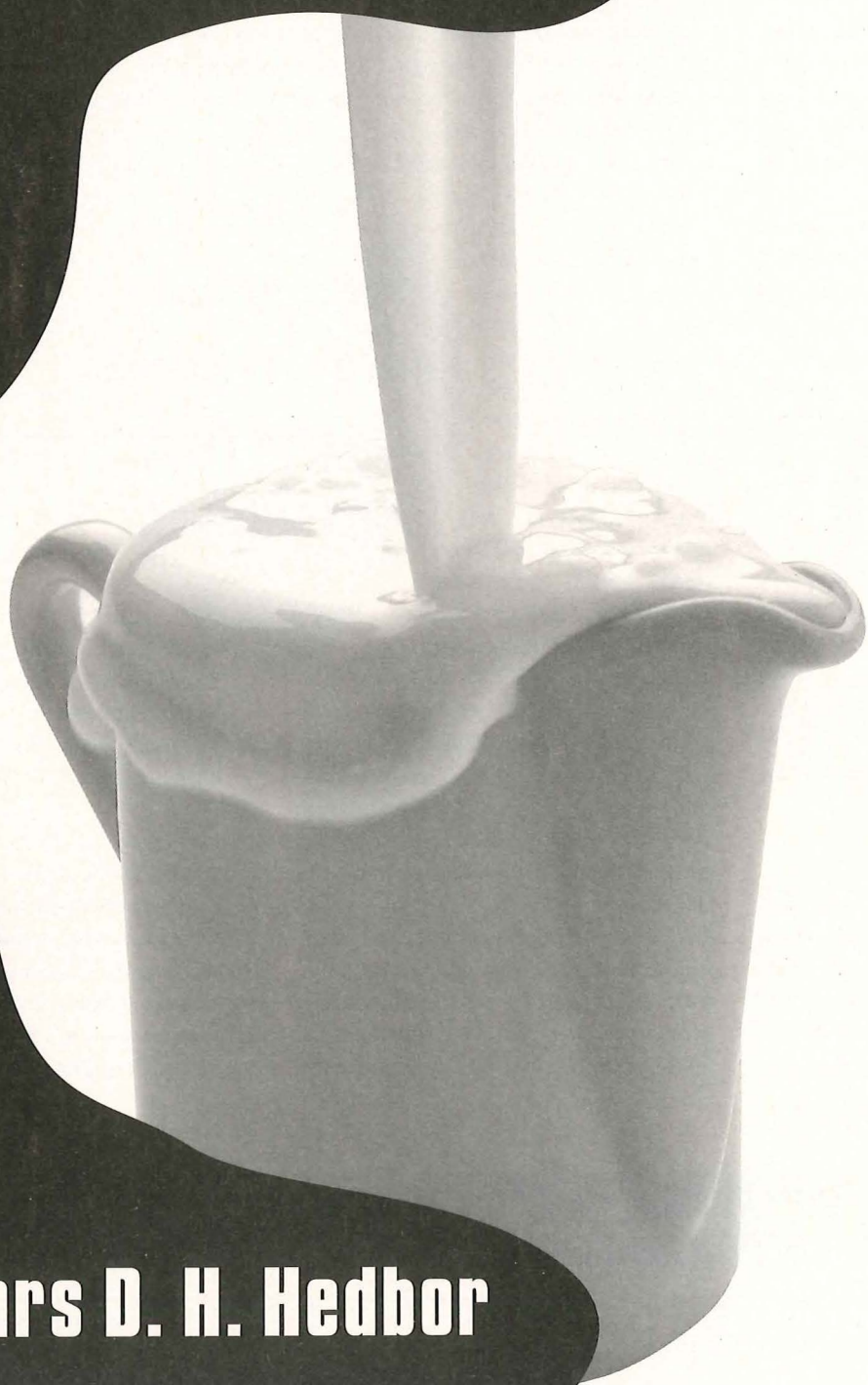


By Lars D. H. Hedbor

THE DRINK OF MILK & HONEY

MONGOL HORDES, A RUINED SUIT AND AN ALASKAN BOOTLEGGER

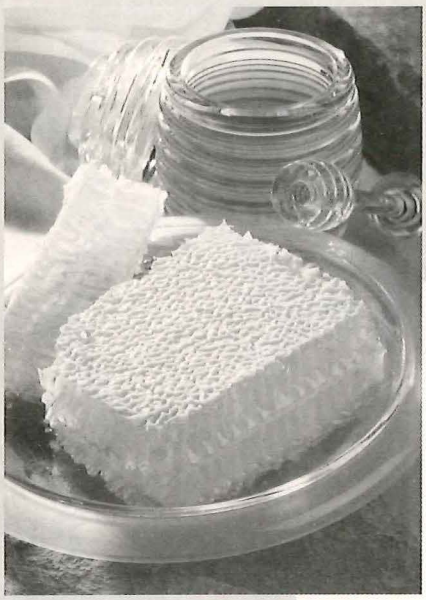
The Mongol horseman who discovered that a skin full of mare's milk had fermented instead of souring must have been nearly as brave—and surprised—as the primitive fellow who first sampled diluted honey that had fermented. Given their likely common origins in accidental fermentation, is it any wonder that, eventually, the two would come together?

Koumiss, as that Mongol horseman's discovery is called, became a staple of the Central Asian steppes, gathering a mythology as rich as any other early fermented beverage. Koumiss was fermented in a skin bag hung by a yurt's doorway. There, passing warriors were traditionally obliged to give it a shake, imparting some of their strength into the beverage. Sadly, the widespread modern reluctance to try any sort of nontraditional dairy product has left koumiss little-known today outside of its birthplace in Central Asia.

The history of my own family's dabblings in homebrewing was punctuated by an unfortunate incident involving an attempt to recreate koumiss. That experiment ended in the detonation of an overcarbonated bottle of my great-uncle's concoction onto his brother's only good suit. Given that his brother was a lawyer preparing for a case before the State Supreme Court, and that this took place in the context of the privations of World War II, is it any wonder that it took 50 years for homebrewing to return to my family?

Mead, on the other hand, has enjoyed something of a renaissance in the last few decades. It has a dedicated following among homebrewers and historical re-enactors. Dozens of meaderies are doing business today across the Americas and Europe. The heroes of popular books and movies, including the Harry Potter and Lord of the Rings series, are featured quaffing mazers of mead with nary a shudder.

PHOTOS COURTESY OF RAY DANIELS, AMD THE NATIONAL HONEY BOARD
ILLUSTRATION BY DEBORAH MILLER



Honey forms the basis of many great meads, including one made with milk.

In the pursuit of something unique—though perhaps not new—many homebrewers are driven to try concoctions that sound questionable. So it was when I read of an old Alaskan bootlegger who made a "milk wine," which he claimed was healthful and tasty to boot. The recipe teased at the back of my mind for months afterward.

When I began discussing milk wine with fellow homebrewers, one of them referred to it as "milk mead." As I read the old bootlegger's recipe more closely, I noticed that it called for either sugar or honey. I promptly dubbed the concoction "lactomel," based on the Latin *lactis* for milk and *mel*, which means honey. Since the milk wine recipe allowed for the addition of either table sugar or honey, I thought that a recipe explicitly based around honey deserved a distinct name.

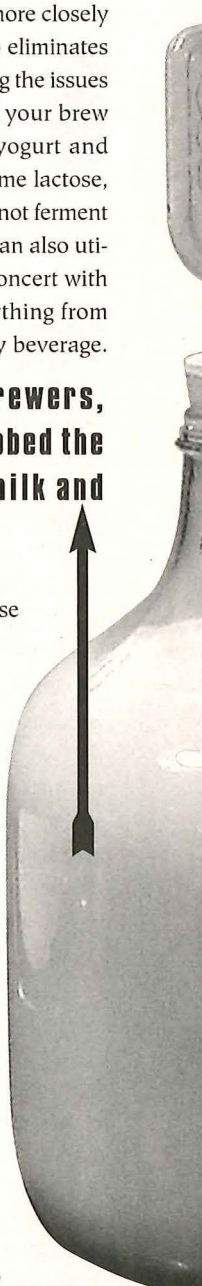
I mentioned the milk wine recipe to another homebrewer who promptly tried it and declared the results drinkable—indeed, possessing an "ineffable" quality from the milk. At that point I decided that I had to try it for myself, but that I would take appropriate precautions to avoid repeating great-uncle's mistake. Having no lawyers in this generation of the family, I felt somewhat safer in that regard as well.

When I began discussing milk wine with fellow homebrewers, one of them referred to it as "milk mead." I promptly dubbed the concoction "lactomel," based on the Latin *lactis* for milk and *mel*, which means honey.

MILK AS A SOURCE OF FERMENTABLE SUGARS

The Mongols used mare's milk because they traveled with their horses anyway; keeping a slow-moving and demanding cow with them would have held them back from their free-roaming lifestyle. Mare's milk, the essential ingredient of traditional koumiss, is not widely available today. It differs from cow's milk primarily in that it has slightly more lactose, or milk sugar, and less protein and fat.

Dairy milk is a complex amalgam of water, lactose, proteins (caseins and whey proteins), fats and minerals. Using skim dairy milk in brewing not only more closely resembles mare's milk, but also eliminates most of the fats up front, avoiding the issues of trying to remove them from your brew later. Yeast used to produce yogurt and other dairy products can consume lactose, but brewing yeast generally will not ferment milk directly. Various bacteria can also utilize lactose, and are used (in concert with dairy yeasts) to produce everything from cheese to kefir, a cultured dairy beverage.



To accomplish fermentation, these organisms produce and use a class of enzymes known as lactases, which can break lactose into galactose and glucose. Our friend *Saccharomyces cerevisiae*, the brewing yeast, can use both of these readily.

The inability to produce enough lactase in the gut causes lactose intolerance in humans, a painful but fairly common affliction. As a result, the homebrewer has widely available options for making lactose edible to their favorite yeasts. Supplemental lactase is commercially available in two primary forms. One is derived from a fungus, *Aspergillus oryzae*. It functions well in the stomach's acidic and warm environment, making it ideal for use in tablets to be taken with dairy foods. The other is extracted from a dairy yeast, *Kluyveromyces lactis*. This variety of lactase functions best at room temper-

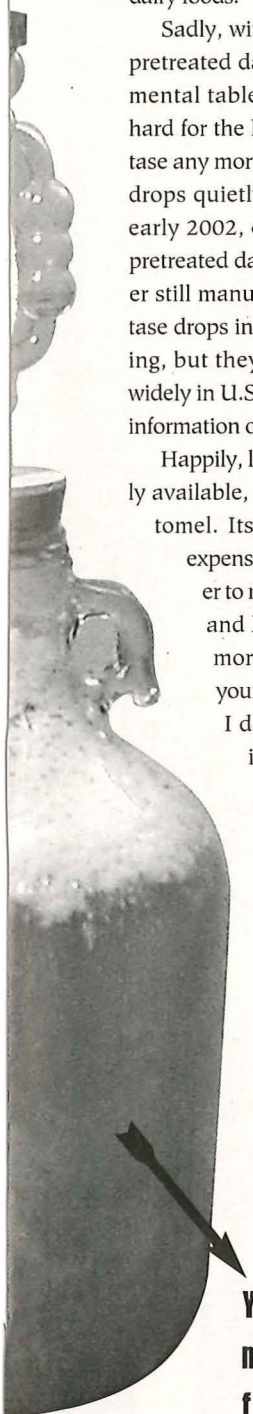
ature or cooler. This is the enzyme that is added to milk prior to consumption, converting its lactose into easily digested sugars and producing "lactose-free" milk. It is also used in the manufacture of other "lactose-free" dairy foods.

Sadly, with the combined popularity of pretreated dairy products and the supplemental tablet form of lactase, it is rather hard for the homebrewer to find liquid lactase any more. The manufacturer of Lactaid drops quietly stopped marketing them in early 2002, choosing to focus instead on pretreated dairy foods. There is one supplier still manufacturing retail-packaged lactase drops in North America as of this writing, but they do not appear to distribute widely in U.S. retail outlets. (See sidebar for information on ordering directly from them.)

Happily, lactose-free nonfat milk is widely available, and can be used to make lactomel. Its primary disadvantage is its expense. It's likely to be much cheaper to make a lactomel with dried milk and lactase drops, not to mention more convenient for scheduling your brew day.

I doubt that authentic koumiss included honey. I have heard that it is a low-alcohol, slightly carbonated, thickened drink, rather like a thin, vaguely fizzy yogurt. The process for lactomel yields a very different product, not unlike standard mead, but with an added smoothness and a slightly nutty flavor. Adding honey also raises the alcohol level from about 1 percent by volume to somewhere in the range of 5 percent to 10 percent, depending upon how attenuative your yeast is and how much honey you use.

There may be a historical precedent for lactomel as a distinct beverage, however. Throughout the Old Testament, present-day Israel is referred to almost formulaically as "the land flowing with milk and honey" (Exodus 3:8). It's not unreasonable to guess that the two were occasionally mixed and fermented, particularly as the Hebrew word used in this context for milk can also describe soured milk.



You will see the fermentation develop three layers: the normal yeast sediment at the bottom, a clear, golden fluid in the middle and a thick cap of curd at the top.

LACTASE ENZYME SOURCE

"Lacteeze" Lactase Drops
Gelda Scientific
6320 Northwest Dr.
Mississauga ON L4V 1J7 CANADA
Phone: 905-673-9320
Fax: 905-673-8114
www.gelda.com

You can find a faxable order form to print out at ourworld.compuserve.com/homepages/stevecarper/order.htm.

THE BREWING PROCESS

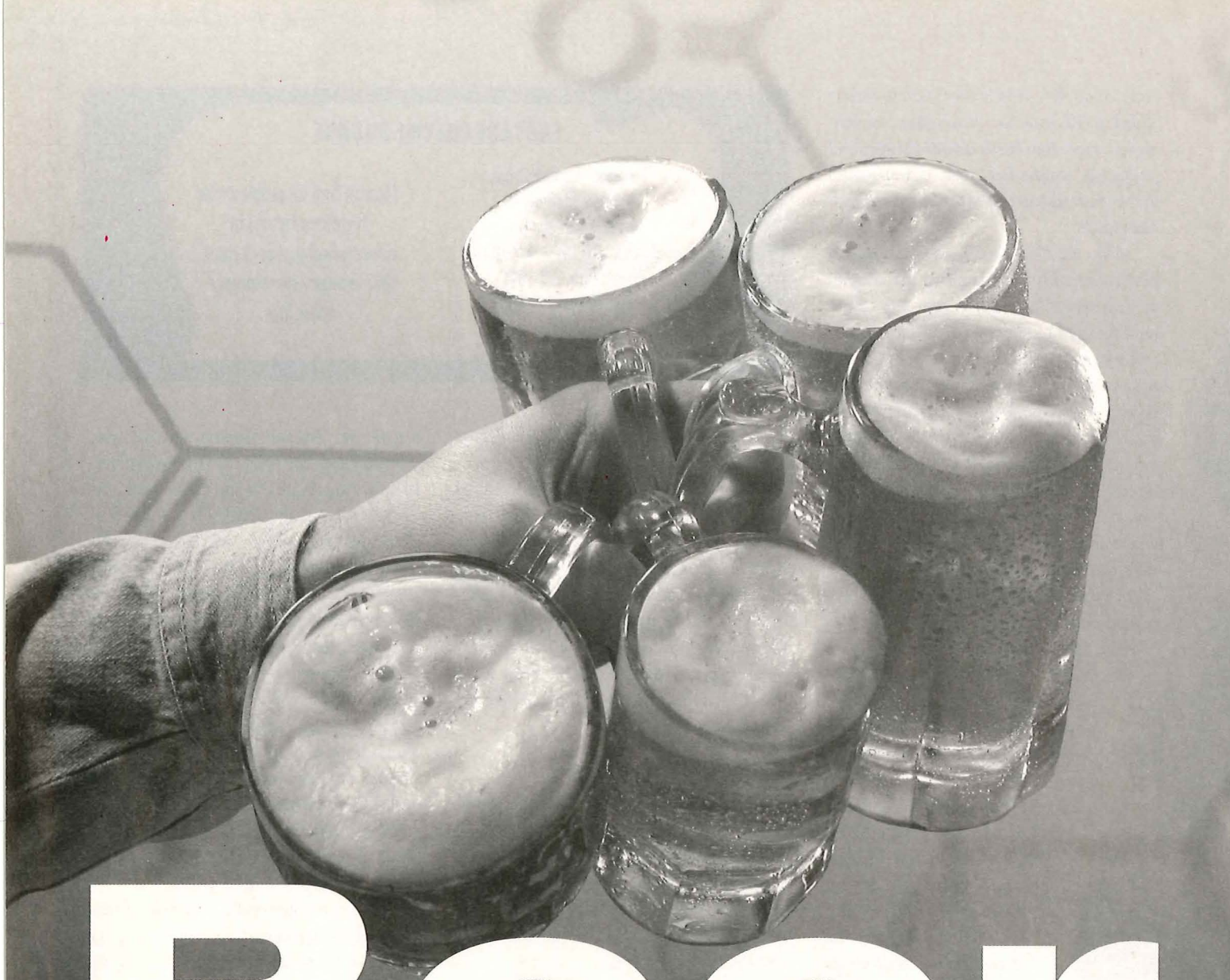
The recipe given here is for a one-gallon batch, since most prospective brewers will probably prefer to try a small batch before committing to a whole keg (or two cases of bottles). Of course, if you want to take the plunge, just directly scale up the quantities of all of the ingredients.

If you have obtained your own lactase enzyme, start by adding the quantity of enzyme indicated on the packaging to two quarts of skim milk. Store it in a cool place for 48 hours so the enzyme has time to convert as much of the lactose as possible. If you can keep it somewhat warmer than normal refrigerator temperatures, perhaps 40 to 50° F (5 to 10° C), the lactase will work better. If you've opted for commercially prepared lactose-free milk, start with two quarts of that and pick up the process at this point.

Bring two quarts of water to a boil to sterilize, and let it cool to 160° F (70° C). Dissolve one to two pounds (0.45 to 1 kg) of honey into one quart of the water, cover it and let it cool to about 70 to 80° F (20 to 25° C). Dissolving the honey in hot water is particularly important if you have unpasteurized honey because you want to be sure to sanitize it before use. To best assess the effect of the milk on the flavor of your first batch, choose a honey with a relatively neutral flavor, such as clover. If a well-meaning friend has given you a few pounds of a blended-to-death grocery honey for making mead with, this is an excellent time to use it.

Once the water-and-honey mixture has reached the appropriate temperature, add it to the lactose-converted milk in your fermenter, then add enough of the remaining boiled, cooled water to bring your total volume to one gallon. Ensure that the must is at appropriate pitching temperature (70 to 90° F or 20 to 30° C). Choose yeast known to produce neutral flavors, such as a champagne or a dry mead yeast. Don't worry about the yeast consuming so much sugar that the finished lactomel will be too dry; the remaining lactose helps moderate the dryness.

Let the yeast work at room temperature (about 70° F or 20° C) for about a week. If your house is warmer than this, you may find lactomel to be more forgiving than other fermented brews. *(continued on page 75)*



Beer Without All the Alcohol

A Method for Brewing Full-Flavored Beer of Almost Any Style with Very Low Alcohol

By Michael D. Hansen

When brewers think about brewing their next batch, rarely do non-alcoholic (NA) beers or very low alcohol (VLA) beers come to mind. For some brewers who can no longer enjoy conventional strength or stronger beer, either by choice or by necessity, brewing these types of beers is a challenge worth undertaking. People who may not want or cannot have a lot of alcohol include diabetics, those watching their weight, people with health conditions, people on medication and people who simply like the flavor of good beer but would rather not have the alcohol. In my case, the motivation for brewing these types of beers is a chronic health condition that has worsened in time, making it difficult to enjoy regular-strength or stronger beers. In addition, I am diabetic. Both conditions require that I take a lot of medication. Although brewers like the ones I have just described may not want or cannot have the alcohol, they may still desire a well-crafted beer full of flavor.

I was surprised to find out that there are about 100 NA beers around the globe (Budvar even makes an NA beer). Unfortunately, most are not available in this country and the majority of the ones that are available are in the light lager style. This means they are bland and sweet, with no discernible hop character whatsoever. Some of the European NA beers have a slight hop character, but it is often difficult to get a fresh bottle that isn't skunked. As a homebrewer and BJCP judge who has brewed and judged many, many different styles of beer, I certainly did not want to be stuck drinking NA light lagers for the rest of my life. So what is a brewer to do if he or she wants a NA stout, alt or wheat? Brew his or her own NA beer.

Brewing Non-Alcoholic beer

NA beer is defined as beer with less than 0.5 percent alcohol by volume. There are three major ways to produce NA beer. The descriptions that follow are oversimplifications and are intended only to give you a rough idea what they are about.

1. Flash heat processing

This method involves a plate that is heated on one side and chilled on the other. A thin layer of beer is passed over the heated part of the plate evaporating the alcohol. The beer is cooled almost instantaneously as it passes over the chilled part of the plate. Cooked flavors are avoided because the beer is heated for a very short period of time.

2. Special filtration

This method involves brewing a conventional beer then filtering it through a special membrane that removes the alcohol.

3. Arrested fermentation

This method also involves brewing a conventional beer and then shortly after fermentation begins, rapidly chilling the beer to deactivate the yeast.

Brewing NA beer using these technologies seems all but impossible for the homebrewer and even for microbreweries and brewpubs. Homebrewers generally do not have enough precision in their system and process to attempt an arrested fermentation. For micros and brewpubs, the equipment required for alcohol removal is expensive and demand for NA beer is not high enough to justify the cost. This is the reason only megabreweries produce NA beer.

An Alternative to NA Beer: VLA beer

The alternative to NA beer is very low alcohol beer, which I define as beer with less than 2 percent alcohol by volume. Several methods exist for creating VLA beer.

1. Simply brew a low alcohol beer such as an English ordinary bitter or Belgian driving beer.

This is a good idea, as I have tasted many very good homebrewed and commercial English ordinary bitters. However, a beer starting in the mid 1.030s and finishing in the low 1.010s will still have around three percent alcohol by volume. The target for VLA beer is an even lower alcohol level.

2. Add hop oils to NA beer.

This option is less of a brewing option and more of an NA beer fix. I experimented with bittering and aroma oils using Paulaner's Thomasbrau NA beer. I chose Thomasbrau because it is sweet and has virtually no hop character. After following the instructions that came with the oils, I discovered that you needed at least twice as much as recommended to get decent hop character. The instructions for the type I used also state that all of your hop bitterness/flavor/aroma should not come from these oils. I would agree completely. Using just these hop oils, the beer seemed to be missing something in the hop department that I could not quite put my finger on. These oils should be used to shore up an underhopped beer, not to bitter/flavor a beer completely.

3. Brew a beer with caramel malts, carapils and/or other specialty grains but do not ferment it.

This is the idea behind beverages such as Malta. People have described this as insipidously sweet. Although one could load a beer like this with hops to counter the sweetness, this is simply unfermented wort and I am interested in beer not wort.

4. Brew a conventional strength beer and remove the alcohol by either freezing or heating

First, I don't want to go to all the trouble involved with either of these methods. What's more, I wouldn't want to risk damaging the beer by using either of these methods. There are many places oxidation and off flavors could be introduced to the beer. Finally, there is no guarantee that enough alcohol is removed by either of these processes.

5. Brew a conventional strength beer and dilute it with water. This doesn't even sound like a good idea. You'd end up with a watery beer that would probably be worse than most NA beers.

My Method for VLA Beer

After weighing all of the above options, I came up with what appears to be a unique solution. My method is a combination of VLA alternatives 1 and 5 with one major difference—the diluent. My method involves blending a low alcohol beer and another liquid in equal proportions to lower the alcohol by about one half. So that the final beer has the appropriate hop character and flavor, the amounts of hops and flavor grains are increased beyond the quantity typical for a given style of beer. What did I blend with? NA beer! I brew a highly dextrinous beer in the low to mid 1.030s and use a very low attenuating yeast which produces a beer around 2.5 percent alcohol by volume. After blending 50/50 with commercial NA beer, I end up with a full-flavored beer with around 1.5 percent alcohol by volume.

My method has evolved and is actually quite easy. At first I simply combined a bottle of NA beer with whatever low alcohol beer I had brewed. I became dissatisfied with this method since I had to have two bottles of beer every time I wanted beer. Instead of combining two bottles, I decided to add the NA beer at bottling time so that the beer was already blended when it came out of the bottle. To do this I had to determine whether there were any fermentable sugars left in the NA beer. I took a can of O'Doul's regular, sanitized the can, and poured it into a sanitized Erlenmeyer flask fitted with an airlock. I vigorously shook the flask over a period of 12 hours to evacuate all dissolved CO_2. I then took a gravity reading, which was 1.014. I added a good dose of yeast from a

Very Low Alcohol Beers

For my recipes I assume 40 percent efficiency for steeping of specialty grains. I use Dave Draper's method for carbonation[2] and Rager's calculations for estimated IBUs.[3] Note that both recipes have about twice the amount of grains and hops typical for the style being brewed. This is so that the beer will have the appropriate character after blending with the NA beer. Also keep in mind that the volume of the brewed beer is half of the total volume. In other words, brew 2.5 gallons of American pale ale or three gallons of oatmeal stout, then blend with equal amounts of NA beer.

American Pale Ale

Recipe for 5 gal (19 L)

- 27 cans/bottles O'Doul's Amber
- 1 lb (0.45 kg) Munich malt
- 1 lb. (0.45 kg) 640L caramel malt
- 1.25 lb (0.57 kg) Laaglander Extra Light DME
- 0.5 oz (14 g) Perle (7.6% alpha) for 60 minutes
- 1 oz (28 g) Cascade, 5.8% AA (20 min)
- 1 oz (28 g) Cascade (knockout)
- 1.5 oz (43 g) whole Cascade hops, (dry hop for 1 week)
- Wyeast No. 1338 European Ale Yeast
- 6.1 g/L corn sugar (to prime)

- OG: 1.033
- FG: 1.018
- ABV (as brewed): 2.5%
- IBUs (as brewed): 51
- ABV (final): 1.5%
- IBUs (final): 31
- Steep grains at 158-160 °F (70-71 °C) for 45 minutes.

Oatmeal Stout

Recipe for 6 gal (22.7 L)

- 32 cans/bottles O'Doul's Amber
- 0.5 lb (0.23 kg) 640L caramel
- 0.25 lb (113 g) roast barley
- 0.25 lb (113 g) chocolate malt
- 0.25 lb (113 g) flaked barley
- 0.25 lb (113 g) carapils
- 0.25 lb (113 g) flaked oats
- 1 lb (0.45 kg) Laaglander Extra Light DME
- 1.25 oz (35 g) Styrian Goldings hops, 4.0% AA (60 min)
- Wyeast No. 1338 European Ale Yeast
- 5.8 g/L corn sugar (to prime)

- OG: 1.036
- FG: 1.019
- ABV (as brewed): 2.7%
- IBUs (as brewed): 38
- ABV (final): 1.6%
- IBUs (final): 25
- Steep grains at 158-160 °F (70-71 °C) for 45 minutes.

freshly racked primary and let it sit for several days. I took another gravity reading, which was also 1.014. I concluded that there were no fermentable sugars and that I could add the NA beer at bottling and prime the brewed beer with my usual method. The one thing that I did not anticipate was the amount of foaming. I knew there would be some foaming, but not the amount I encountered. This made bottling very difficult.

The third and final step in the evolution of my method arose from the experiment to determine if there were any fermentable sugars left in the NA beer. I decided to add the NA beer to the fermenter with the wort and ferment the entire amount. This avoids the foaming problem at bottling time and still gives you blended beer out of the bottle. Since there are no residual sugars in the NA beer, you can use NA beer in the same manner as you would use water. The only caveat to using NA beer is that it takes some advanced planning because you need to evacuate the CO_2 in the NA beer.

Steps for Brewing VLA beer

About 24 hours prior to brewing, add the NA beer to a sanitized fermenter fitted with an airlock. Periodically shake the fermenter to evacuate the CO_2 in the NA beer. Any oxygen introduced at this point will be used during fermentation. I use O'Doul's Amber for beers that are amber or darker. Amber has a FG of 1.022 and 12 IBUs[1] (we'll need these figures for calculations later). For light colored beers I use O'Doul's regular (FG: 1.015, 11 IBUs). I use cans because there is no chance for skunking and they are easy to sanitize and open.

Prepare a highly dextrinous wort with an OG around 1.035. It doesn't matter whether you use extract with specialty grains or all-grain methods for this. If you use extract, make sure you use one high in dextrins such as Laaglander. If you are an all-grain brewer, mash at the high end of the temperature range—around 158 to 160° F (70 to 71° C). Increase the hops and flavor grains for the style of beer you are brewing (more on this later). Add cooled wort to the

NA beer in the fermenter, pitch yeast and ferment as usual. Take a gravity reading prior to adding wort to fermenter. Bottle as usual. Since you have decarbonated the NA beer, prime for the entire volume of beer.

Calculation of Approximate Alcohol Level

Although one knows the OG of the brewed beer prior to blending, the FG of the finished beer and the calculation of the approximate alcohol level take a bit of algebra since the finished beer is a blend of fermented beer and NA beer.

If the blended beer has a particular FG and we know the FG of the NA beer used as a diluent, we can solve for the FG of the brewed beer in the following equation:

$$\frac{(V_{Br} \times FG_{Br}) + (V_{NA} \times FG_{NA})}{(V_{Br} + V_{NA})} = FG_{BL}$$

Where V_{Br} = volume of the brewed beer
V_{NA} = volume of the NA beer
FG_{Br} = final gravity of the brewed beer
FG_{NA} = final gravity of the NA beer
FG_{BL} = final gravity of the blended beer

All gravities should be expressed in whole points so that 1.042 = 42.

Example: Suppose we brewed 2.5 gallons of beer and blended it with 2.5 gallons of O'Doul's Amber. Suppose the FG of the blended beer is 1.018. We know that O'Doul's Amber has a FG of 1.022. Using these numbers to solve for the final gravity of the brewed beer we get:

$$\frac{(2.5 \times FG_{Br}) + (2.5 \times 22)}{(2.5 + 2.5)} = 18$$

which reduces to:

$$2.5 \times FG_{Br} + 55 = 90$$

with a final answer of:

$$FG_{Br} = 14$$

Thus, the FG of the brewed beer is 1.014. Now that we know this, we can calculate the abv of the brewed beer which had an OG of 1.034 which turns out to be 2.6 percent. Furthermore, the approximate ABV for the blended beer is simply the average of the two alcohol contents (since we blended in equal proportions): (2.6% + 0.5%) / 2 = 1.6 percent.

So, How Do They Taste?

I subjected my homebrew club to two of my VLA beers and received positive comments. However, I wanted truly objective comments, which necessitated entering the beers in a competition. Since my method involves blending with commercial beer, I could not rightfully enter a competition blindly. I contacted John Sullivan, head judge for The St. Louis Brews' 2001 Happy Holidays Homebrew Competition, to explain my method and to request permission to enter my beers for judging. I, of course, requested that they be disqualified from any awards should they place. John happily obliged and I entered my American Pale Ale and Oatmeal Stout into category 24: Specialty, Experimental & Historical beers. I described the beers as very low alcohol beers so the judges were aware of the nature of the beers, but did not disclose commercial beer as an ingredient.

The American pale ale received a score of 31 and the judges noted good Cascade hop aroma, but a bit too much bitterness

A New Yeast for No- and Low-Alcohol Beers

Dave Logsdon of Wyeast Laboratories Inc. in Mt. Hood, OR, recently presented data from research he did on low-alcohol beer production using nonmaltose-fermenting yeast. Logsdon used *Saccharomycodes ludwigii*, a yeast strain that can only ferment monosaccharides, such as glucose, rather than disaccharides, such as maltose and sucrose. Disaccharides generally constitute the majority of the wort sugars.

Using traditional malts, this yeast strain produces a relatively sweet beer that may require dilution if the goal is an alcohol level less than 0.5 percent. However, the benefit of this method is that any brewer can use it. Logsdon has contacted Briess Malting Co. in Chilton, WI, to discuss a base malt with controlled sugar levels that would allow both reduced sweetness and minimal alcohol production. By combining such a malt with various specialty malts, brewers could make many different styles of low- or no-alcohol beer. The two companies are working together to formulate specific low- and no-alcohol beer recipes. In the meantime, brewers wishing to experiment with *S. ludwigii* can contact Wyeast directly for purchasing information.

-Editor

in the palate with very little malt. I agree that the beer as entered was too hoppy and that it needed more malt. Being a hophead, I shot for the upper end of the range for IBUs for the final product. The original recipe was for about 35–40 IBUs. Because this beer has so little malt, this came off as very overhopped. I have adjusted it to about 25–30 IBUs. The original recipe had one pound of carapils which has been replaced by Munich malt to boost the maltiness without adding more caramel flavor. Hopefully with these two changes the American pale ale will have better balance.

The oatmeal stout received a score of 32. Here the judges generally found the desired malt character, but they wanted a bit more of it, and the hopping seemed about right. I did not make any changes to the recipe below based on the judges' comments.

Conclusion

While this method is in its infancy, I have shown that it is possible for a homebrewer to brew a respectable very low alcohol beer. The biggest advantage to this method is that it allows you to brew many different styles of beer. You are not stuck with light lager. Any beer style where alcohol is not a major component could be brewed with this method, including stouts, porters, bitters, kölsch, alt, pale ales, etc. Since the flavor of alcohol (as well as big malt) is an important component to beers such as bocks, barleywines and large Belgian beers, I don't think this method would work very well for those styles. For styles where yeast character is big component, such as weizens and witbiers, this method might work. With more experimentation and attempts at different styles, this method can develop into quite a viable option for those who love beer but don't want or can't have all the alcohol. The biggest disadvantage to this is that the beer still has some alcohol. If even the smallest amount of alcohol is off limits for you, better stick to milk. I would be interested in hearing about others' efforts to make this kind of beer using this or other methods.

References

1. Anheuser-Busch, Inc. Personal communication.
2. Draper, D. and Hibberd, M (1996) Priming Bottled Beer for Consistency and Reproducibility. *Brewing Techniques* 4(4), pp 16-23.
3. Hall, M (1997) What's Your IBU? ***Zymurgy***, 20(4), pp 54-67.

Further Reading

Non-alcoholic beer section at The Brewery Web site: www.brewery.org/brewery/-Library.html#NABeer

My Web site: www.geocities.com/nlbeerguy/lowalc/-lowalc.html

Reviews of NA beers at The Opinionated Beer Page Web site: www.tobp .com/-review/nabrews.asp

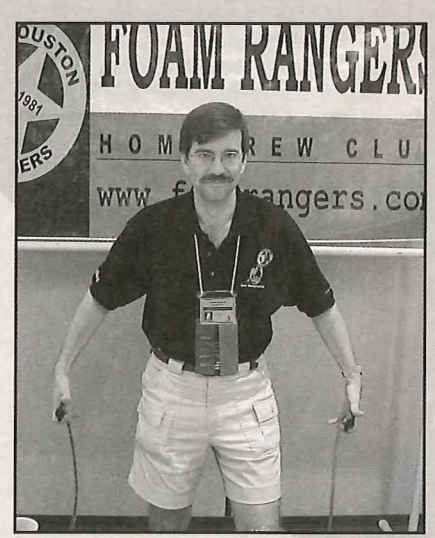
Mike Hansen is a clinical biostatistician at the University of Iowa. He has been brewing since 1993 and is a BJCP judge working toward his National rank. He is a current member and past president of The Honorable Iowa River Society of Talented Yeastmasters (THIRSTY).

National Homebrewers

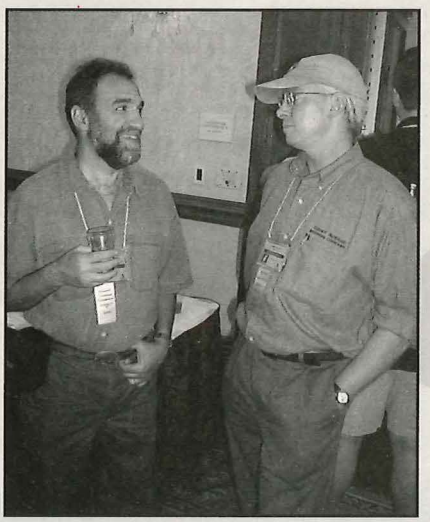
Irving, Texas
June 20-22, 2002

The last week in June found denizens of the American Homebrewers Association gathered in Dallas, Texas for the annual National Homebrewers Conference. These pages features some of the sights (and frights!) found at this foamy gathering.

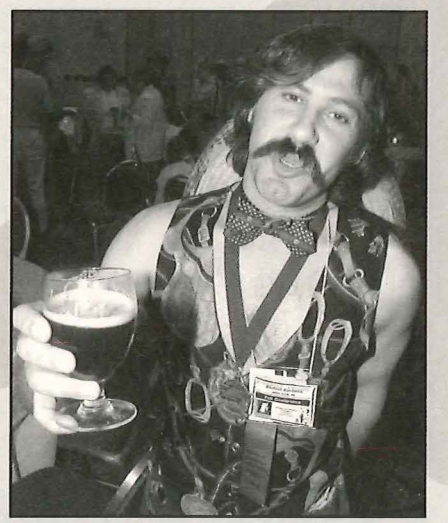
A laminated custom tap system decorated with "Brewman" cartoons in the hospitality suite.



Louis Bonham readies for a quick draw at the Foam Rangers booth during club night.

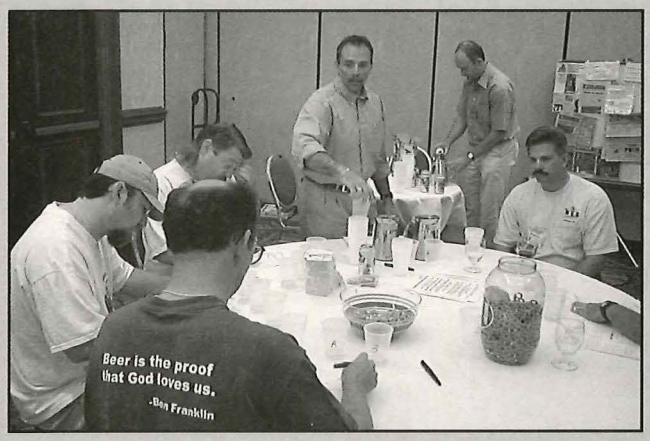


AHA Board of Advisers member Rob Moline chats with Charlie.



Mike Bardalis was dressed to the nines for the grand banquet.

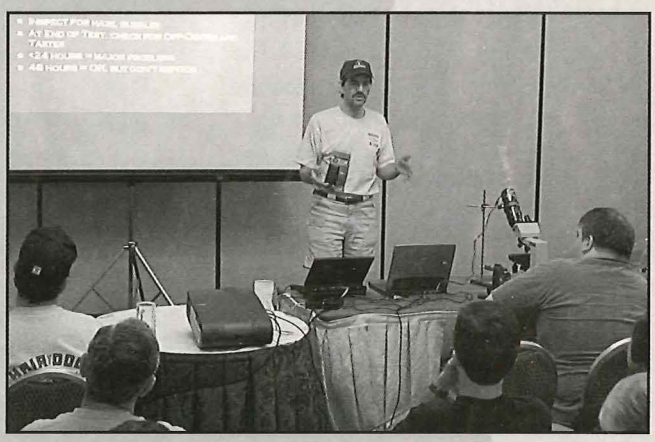
Conference 2002



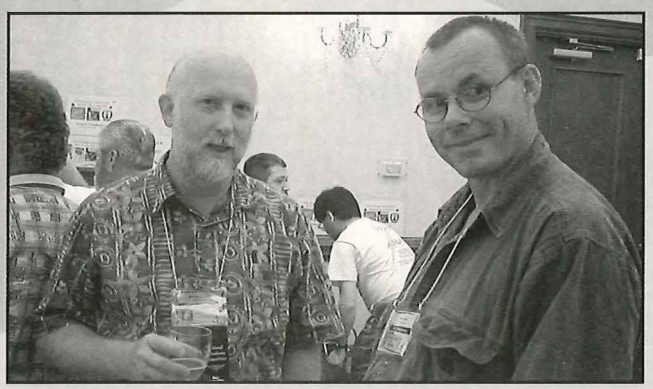
Judging the judges: FlavorActiV challenged judges and brewers alike with written questions and beer fault identification. The winner received the company's new "Enthusiast" tasting package.

From left, Robin Beck chatting with AHA board members Susan Ruud and Alberta Rager. (After a long session at club night, the stuff that comes in those clear bottles seemed popular with everyone.)

Bev Blackwood was wearing a kilt---he's smiling in this picture because he knows where both of Grand Wazoo Jimmy Paige's hands are at the moment.



Louis Bonham demonstrates simple lab procedures available to homebrewers during his presentation.



North meets South: Chicagoan Randy Mosher chats with Texan Bo Turton during a session in the hospitality suite.

Paul Gatza discusses various aspects of the AHA's operations at the AHA members meeting.

PHOTOS BY RAY DANIELS

For Geeks Only

Reader Advisory: *Warning!* These pages are rated XG (eXtra Geeky) by the Bureau of Magazine Mucktymucks. Items in this section may contain raw data, graphic functions, full statistics and undiluted biochemistry. Keep away from poets, squeamish novices and others who may find the joyously technical nature of this prose to be mindbendingly conceptual or socially offensive. Also, because of the complex nature of brewing science, there is no guarantee that you will live longer, brew better or win any awards in the next homebrew competition based upon the conclusions presented here.

Estimate the Thermal Response Characteristics of Beer in Glass Carboys

By Steven Gardner, Ph.D.

Glass carboys have become the vessel of choice for small-scale beer fermentation in homebrewing and pilot brewing. These containers are advantageous because they are inexpensive, readily available and have neutral flavor and odor characteristics. Furthermore, the smooth inner surface resists bacterial growth and facilitates thorough sanitation. Since the glass is also transparent, it is possible to directly observe the state of the beer during fermentation and maturation. The latter is extremely helpful for tracking specific phases in the fermentation cycle such as high kraeusen.

Once you've transferred wort or beer to the carboy, good thermal management becomes a primary objective. Glass carboys are small and thus may be placed in a refrigerator or other regulated environment for temperature control. After a period of time, the temperature of the beer will eventually equilibrate with that of the controlled environment. The *rate* at which this thermal equilibrium is achieved is synonymous to the thermal response. The beer's thermal history, and hence final quality, can be significantly influenced by the corresponding thermal response times. If you know the thermal response characteristics of the carboy/beer system, you can use this information to predict and control the course of temperature changes in the beer.

You can directly evaluate the thermal response of beer in glass carboys if provisions are available to measure the beer's temperature as a function of time. However, this is not always convenient or practical, and in some cases it may even be unsafe. However, once the thermal response has been experimentally measured for a given set of conditions, the resulting data can be used to model the system and predict future responses without physically measuring the beer's temperature and compromising sanitation.

I have characterized the thermal response of two different glass carboy systems (see Figure 1). The equipment consists of a glass carboy configured with three stainless-steel thermocouples (Type T) and a digital thermocouple meter (Cole-Parmer Instrument Co., model #EW-91100-40). The thermocouple probes were positioned to enable simultaneous temperature measurements at the carboy's center, internal surface and external surface. During the measurements, the carboy was maintained inside a 6-cubic-foot refrigerator equipped with a programmable digital thermostat (Fisher Scientific Inc., model #11-463-47A). The digital thermostat controlled the refrigerator compartment temperature to within ±2° F (1° C). The thermocouple wires were directed through the refrigerator door seal and connected to the external thermocouple meter. This configuration enabled constant temperature monitoring without opening the refrigerator door and disturbing the system.

For convenience, the thermal response was initially measured for five gallons of water inside a five-gallon glass carboy. The carboy full of water was placed inside the refrigerator, which was set to 65° F (18° C). Once the water temperature had equilibrated with the refrigeration compartment, the thermostat was adjusted to 40° F (4° C). At this stage, temperature readings from the three thermocouples were recorded versus time as the carboy contents gradually cooled. The resulting data constitute the thermal response curve for cooling for this system.

All else being equal, the thermal response curve for heating is not simply the inverse of the cooling curve. This is partly due to the asymmetry that exists within the experimental system (i.e., the shape of the carboy and the refrigerator interior). Therefore, the thermal response to heating must be measured separately. In a subsequent experiment, the same carboy at a uniform 40° F (4° C) was transferred to an identical refrigerator set at 65° F (18° C). Once again, the thermocouple outputs were recorded versus time as the carboy system approached equilibrium temperature. These data repre-

ILLUSTRATION BY CHARLES STUBBS

Are You A Geek Too? *Zymurgy* is looking for contributions for the "For Geeks Only" section. If you have studied a particular area of brewing science using in-depth library research or experimental data and would like to see the results published here, let us know by contacting Ray Daniels at ray@aob.org or via the mail address listed in the masthead on page 4.

Figure 1

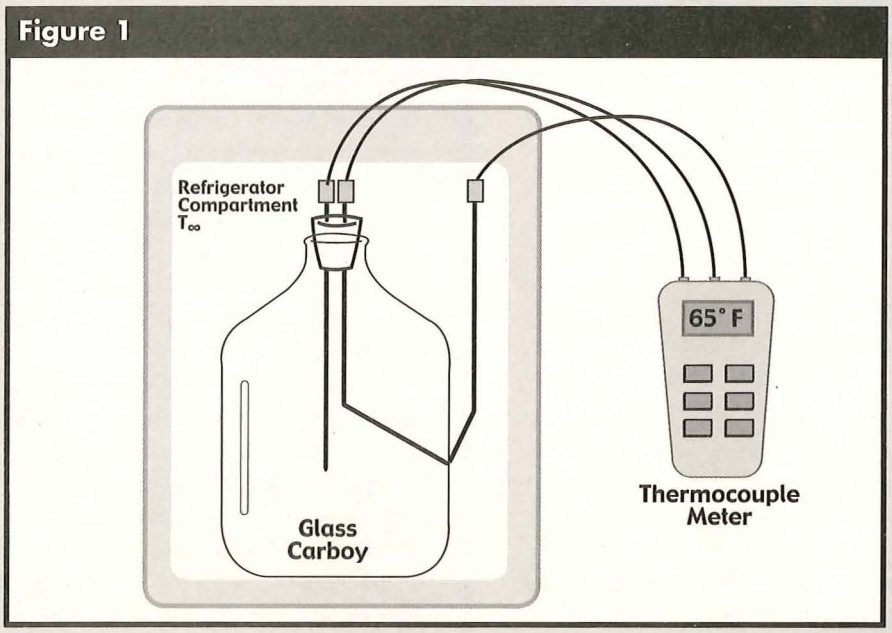


Figure 1. This diagram represents the experimental apparatus used to collect the thermal response data. Three thermocouples are configured to simultaneously measure the temperature at the centerline, interior wall and exterior wall of the glass carboy.

sent the characteristic thermal response to the imposed heating conditions.

The two experiments described above were also performed using five gallons of water in a seven-gallon glass carboy. The size and shape of the seven-gallon carboy differs appreciably from the five-gallon carboy. For this reason, the thermal response characteristics may be significantly different, even when each carboy contains the same volume of liquid.

As the Heat Moves

Transient, or unsteady-state, heat transfer is the general term for the physical process of a body changing temperature. In much the same way as an electric current flows across a resistor when there is an applied voltage, heat flows between the beer and the air surrounding the carboy as a result of an imposed temperature gradient. In this case, however, the heat flow encounters resistance as it moves between the bulk beer volume and the internal surface of the carboy, across the solid glass wall of the carboy and between the outside surface of the glass and the surrounding air. In essence, each segment of the heat transfer path is a resistor connected in series to form a thermal circuit. Any one of the thermal resistors could dominate the thermal response of the system. Note that the heat transfer path described above neglects heat that would be lost through the top and bottom surfaces of the liquid in the carboy. In reality, this is often an acceptable approximation for modeling purposes. The accuracy of the model's predictions will ultimately provide justification for this simplifying assumption.

In a situation such as this, the following equation may be applied to describe how the beer's temperature (T) changes with respect to time (t):

$$\frac{(T - T_\infty)}{(T_0 - T_\infty)} = e^{-z(t)} \qquad (1)$$

where T_0 is the initial temperature of the beer, T_∞ is the bulk air temperature outside the carboy and the coefficient z represents the overall resistance to heat transfer. Qualitatively, the equation stipulates that the beer's temperature will follow an exponential path during the transition between T_0 and T_∞. The magnitude of the coefficient z will determine how quickly the temperature transition takes place. In other words, the value of z determines the characteristic thermal response of the system. Equation No. 1 is actually a special case of a more general correlation describing transient heat transfer that conforms to the lumped-capacitance assumption.[1]

When the time-temperature data from each of the aforementioned experiments are fitted to equation No. 1, a corresponding z value is computed. The results from each experiment indicate that the appropriate thermal response parameter (z) is approximately 0.1 hr^{-1}. Therefore, under the conditions of these experiments, the thermal response is essentially independent of the carboy size (five- and seven-gallon capacities)

Figure 2

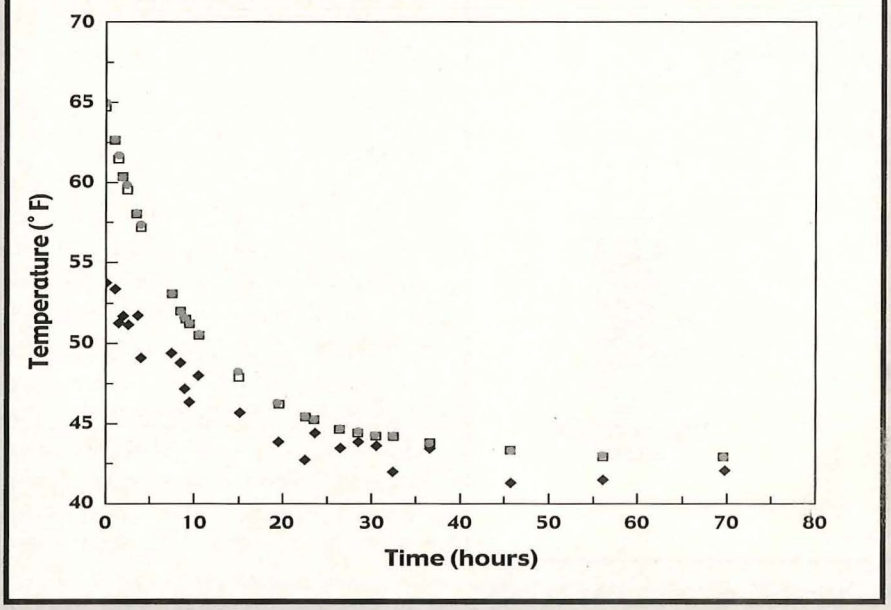


Figure 2. This raw data was acquired while five gallons of water was cooled in a seven-gallon glass carboy. The symbols correspond to the temperatures at the carboy's centerline (circles), internal surface (squares) and the external surface (diamonds) as a function of time. In this case, the carboy was cooled from 65° to 42° F (18° to 6° C) using the system depicted in Figure 1. The data scatter with respect to the external surface temperature (diamonds) reflects an increased sensitivity to natural cycling (± 2° F or about 1° C) of the refrigerator set-point temperature.

and direction of heat transfer (heating or cooling) for five gallons of water.

You can also draw other important conclusions from the experiments. The temperature of the water did not vary spatially during the heat transfer events. The centerline temperature and the temperature at the inside wall of the carboy remained practically equal as heat was transferred to and from the liquid. This is important because the form of equation No. 1 is based on heat transfer to and from a body that maintains a uniform temperature within.[1] The placement of the thermocouples also reveals that the temperature at the external carboy surface is not always a reliable indicator of the actual liquid temperature within. As illustrated in Figure 2, the temperature difference between the centerline and the *external* surface of the carboy wall exceeded 10° F (5° C) during some periods. Only as equilibrium is approached do the two temperatures begin to coincide.

In the remaining experiments, the applicability of equation No. 1 was evaluated on glass carboys that contained beer instead of water. The time-temperature data produced a thermal response essentially identical to that measured from water in all cases ($z = 0.1$ hr^{-1}). This is logical because beer is between 92 percent and 95 percent water by weight.[2] Therefore, the thermal response of five gallons of beer in a glass carboy (five- and seven-gallon capacities) is adequately described by the following equation:

$$T = (T_o - T_\infty)\, e^{-0.1(t)} + T_\infty \qquad (2)$$

where time (t) is expressed in hours.

In part 2 of this investigation, I'll share some practical applications of equation No. 2. The numerical examples will present various useful forms of the equation and apply the results to basic brewing operations including diacetyl rests and lagering. I'll also identify important physical constraints.

References

1. F.P. Incropera and D.P. DeWitt, *Introduction to Heat Transfer*, 3rd Ed., J. Wiley & Sons, New York (1996) pp. 212-213.
2. D.E. Briggs, J.S. Hough, R. Stevens and T.W. Young, *Malting and Brewing Science*, Vol. 1: Malt and Sweet Wort, 2nd Ed., Chapman and Hall, New York (1981) p. 219.

Steven Gardner holds a Ph.D. in chemical engineering from the University of Florida. A Siebel graduate and veteran homebrewer, he works by day as an R&D process engineer at Millennium Specialty Chemicals, a manufacturer of flavor and fragrance compounds in Jacksonville, FL.

BY CHARLIE PAPAZIAN

Unconventional Beer Styles, Revisited

I attended the "Unconventional Beer Styles" panel discussion during the Craft Brewers Conference this past April. Chuck Hahn of the Malt Shovel Brewery in Sydney, Australia, asked whether there was much experimental brewing that didn't emphasize alcohol content. His observation was that many of the unique experimental beers seemed to involve high ethanol levels. Most agreed that increasing the alcohol levels seemed to be most popular with cutting-edge brewers.

I have encountered a few experimental beers brewed by Italian craft brewers that were not formulated with elevated alcohol content as a main feature. I chronicled these travels in detail in the September-October 2000 issue of ***Zymurgy***. Here are a few excerpts from that article:

Brighella, Milan's Brewpub: Birrificio Lambrate's Christmas beer weighs in at 8 percent alcohol. It is a golden, fruity ale reminiscent of Belgian old brown ales. The brewers use 10 percent German-made sauer malt to create Brighella. The sauer malt is soured by natural lactic fermentation and is often used in small amounts by German brewers to acidify their mashes. It contributes remarkably soft acidity without the often overpowering complexity of bacterially fermented Belgian ales, from which this beer's pedigree emerged. Brighella is fermented with a dried English ale yeast that is used in all of the brewery's beers. Despite a somewhat elevated alcohol level, this beer was highly drinkable.

Ghisa, Milan's Brewpub: Birrificio Lambrate's unique, dark, smoke-flavored beer uses 30 percent German beech wood–smoked malt, Munich, Melanoidan, caramel and black huskless Carafa malts. At 6.2 percent alcohol, this beer is surprisingly smooth in body and flavor. The smoke flavor is well balanced; the dark and toasted malts offer a velvety texture. It is not overly hopped. This is smoke-flavored ale that is not assertive; it is smooth with excellent drinkability.

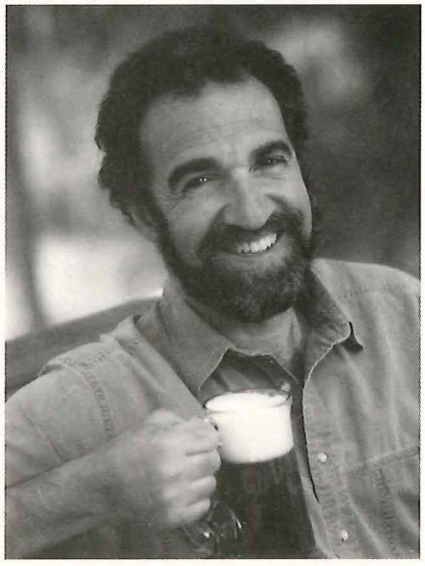


PHOTO BY MICHAEL LICHTER

Prima, Birrificio Italiano: This beer, produced in a brewpub in Marinone outside of Como, was formulated by owner-brewer Agostino Arioli. The soft caramel personality dominates this popular brown lager. You might begin by characterizing it as a German Dunkel style, but it has a sweet twist of crème caramel that is close to butterscotch but most definitely is not. The malt bill does not include caramel malts; rather the extra boil time gives this heady lager its special character. Arioli uses CaraMunich, CaraPils, Munich and Pils malts to brew this complex and well-balanced beer.

I still recall the extraordinary quality of this beer. The "crème caramel" character was astounding. Now that I've given more thought to this beer and considered its long boil time (upwards of two or three hours), which contributes to the character, I've realized that the crème caramel character is similar to the soft caramel notes so typical of barley wines and higher-strength lagers and ales. The caramelization during the excessive wort boiling is key not only to Agostino's Prima, but also to barley wines and doppelbocks, which go through the long boil to reduce volume and concentrate sugars.

Taking this notion one step further, I propose that this unique crème caramel character could be infused into a 4 percent to 6 percent lager or ale by boiling wort for three to five hours, and then adding back purified water at the end to restore the wort volume. The wort caramelization character would remain. I recognize that wort-boiling systems are unique and levels of caramelization depend on the heat source and many other factors, but would a barley wine have the same character if a certain degree of wort caramelization did not take place? Also, beware: my initial reaction to Prima was that it had high diacetyl levels. As I continued to assess its character, I realized that it was not diacetyl (butterscotch), but a more toffeelike caramelization. An expert evaluator may perceive the difference as subtle, but the beer's overall drinkability was quite good. This would not have been the case if the beer were high in diacetyl.

Niña, La Baladin: The tiny village of Piozzo's popular brewpub serves Niña on draft. This brew is similar in profile to an English-style bitter, but with a twist—the hop aroma is floral and German. It is dispensed with nitrogen. This beer is an extraordinary combination of traditions and is stylistically unique. The German hop character was quite evident and unlike any commercially brewed English or American bitter or pale ale I have tasted.

Creating unique beers without trying to outdo each other with alcohol content is appealing to many brewers and beer drinkers. Now, please understand that I do very much appreciate the complexity of flavors created

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

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

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

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

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

METRIC BITTERNESS UNITS (MBUs) are equal to the number of grams of hops multiplied by the percent alpha acid.

A Hop Garnish

It's that time of year again. The new hop crop is being harvested along with the many other things we've grown in our gardens. Knowing that the best is always homegrown, here's an awesome suggestion from Michael Saunders and Melissa Madden of Boulder, CO. Garnish that hoppy pale ale or India pale ale with a few freshly harvested hops. What a visual, aromatic and flavor treat! That lemon wedge on your wheat beer doesn't even come close to fulfilling the satisfaction inspired by this Maple Heights' invention. What better way to serve your next pint than to grace it with the emerald gems we love?

by some of the more recent high-alcohol formulations and aging processes, but I believe there is more opportunity to think outside the high-alcohol box and create some unique and drinkable beers.

In the spirit of creativity and with a respect for tradition, let's cut the shuck and jive and get on with the recipes.

Born in the U.S.A.—German Pale Ale

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

- **3 lb (1.4 kg) pale malt**
- **2 lb (0.9 kg) Munich malt**
- **3 lb (1.4 kg) light dried malt extract**
- **1.5 oz (42 g) German Tradition whole hops, 10 HBU/177 MBU (60 min)**
- **1.5 oz (42 g) German Hersbrucker-Hallertauer whole hops, 6 HBU/168 MBU (20 min)**
- **0.5 oz (14 g) German Hersbrucker-Hallertauer hop pellets (dry hop)**
- **0.25 tsp powdered Irish moss**
- **0.75 cup (180 ml) corn sugar (to prime bottles) or 0.33 cups (80 ml) corn sugar (to prime keg)**
- **Wyeast American ale yeast No. 1056 or White Labs English ale yeast**
- **Target OG: 1.050 (12.5° P)**
- **Approximate FG: 1.014 (3.5° P)**
- **IBUs: about 42**
- **Approximate color: 7 SRM (14 EBC)**
- **ABV: 5%**
- **Apparent yeast attenuation: about 70%**

Use a step infusion mash. Add 5 quarts (4.8 L) of 145° F (63° C) water to the crushed grain, stir, stabilize and hold the temperature at 132° F (53° C) for 30 minutes. Add 2.5 quarts (2 L) of boiling water and add heat to bring temperature up to 157° F (69.5° C) and hold for about 30 minutes. Then raise temperature to 167° F (75° C), lauter and sparge with 2.5 gallons (9.5 L) of 170° F (77° C) water. Collect about 3.5 gallons (15 L) of runoff and add malt extract and hops and bring to a full boil.

The total boil time will be 60 minutes; make the first hop addition at the beginning. When 20 minutes remain, make the last hop addition. When 10 minutes remain, add Irish moss. After a total wort boil of 60 minutes turn off the heat and place the pot (with cover on) in a cold-water bath for 15 minutes. Strain and sparge the warm wort into a sanitized fermenter to which you've added 2.5 gallons (9.5 L) of cold water.

Pitch a good dose of healthy active ale yeast when the wort temperature is about 70° F (21° C), then primary ferment at temperatures between 65 and 70° F (18.5 and 21° C) for four to six days. Rack from your primary to a secondary and add the hop pellets for dry hopping. Your net yield will be 5 gallons (19 L) in the secondary. If you have the capability, cellar the beer at about 55° F (12.5° C) for seven to 10 days. Prime with sugar and bottle or keg when complete.

Embracing Sunset Amber Lager

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

- **3.3 lb (1.8 kg) German amber malt extract syrup**
- **3 lb (1.4 kg) light dried malt extract**
- **1.5 oz (42 g) German Tradition whole**

(continued on page 77)

PHOTO COURTESY OF MICHAEL SAUNDERS

2002 AHA National Homebrew Competition Winners

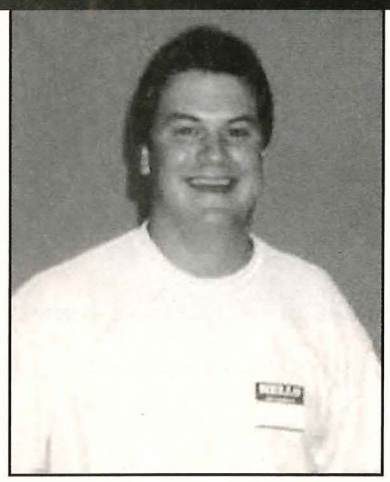
Homebrewer of the Year and Ninkasi Award Winner

Ninkasi Award sponsored by

SAMUEL ADAMS

Homebrewer of the Year award sponsored by

Muntons PLC
WORLD CLASS MALT



Curt Hausam
Salem, OR, Strange Brew

Curt Hausam started brewing in 1992 when his wife, Kim, bought him Dave Miller's *Brewing the World's Great Beers* for a stocking stuffer. Curt owns a business called Aycock Knives, where he manufactures and sells kitchen cutlery. Even though the business has nothing to do with beer, he started selling beer and wine supplies shortly after he started to brew in order to satisfy his obsessive beer behavior. In 1994, Curt stewarded and entered his first beer competition, taking home a couple first-place ribbons for an American pale ale and a vienna. He was hooked into the judging aspect of beer immediately. "I was so impressed that the judges could actually taste my procedure and ingredients by having a glass of beer," says Curt. Two BJCP exams and numerous judging venues later, he is now a National judge.

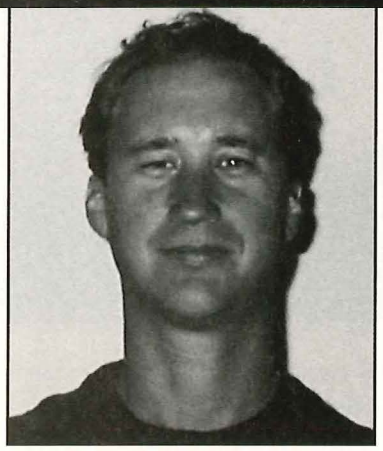
Curt has been a member of both the Capitol Brewers (Salem, OR) and the Oregon Brew Crew (Portland, OR) when they won the Homebrew Club of the Year. He was hoping to help Strange Brew of Newberg, OR, in that quest this year. He has amassed a substantial list of brewing accomplishments. He has won more than 100 first-place ribbons (his daughter's count), including those earned at the Master's Championship of Amateur Brewing and 10 best-of-show awards from various competitions. He has twice been named Homebrewer of the Year with the Oregon Brew Crew, and he participated in Widmer Bros. Brewing Co.'s "Collaborator" project, where homebrew recipes are made at commercial scale. Recently he "retired" from the position of competition coordinator at the Oregon State Fair Beer Competition.

His favorite beer styles to make and drink "are typically German and lagered," he says. He currently brews on a 30-gallon system of his own design. "That means I only have to brew 6.66 times a year," Curt says, laughing.

Meadmaker of the Year

Meadmaker of the Year award sponsored by

REDSTONE MEADERY
Mountain Honey Wine



Mark Densel
Ocean Side, CA, QUAFF

Once he started brewing beer, Mark Densel's brother mentioned he had 60 pounds of honey left over from his brief pursuit of beekeeping. Mark's meadmaking started soon after. That "left over" honey produced a very nice traditional mead that placed second in the 2001 AHA National Homebrew Competition (NHC). Mark regarded that first success as "sheer luck" at the time, but decided to try for a repeat when QUAFF made an organized push to defend the Homebrew Club of the Year title for 2002.

The meads Mark submitted for the 2002 NHC included a traditional, a melomel and what would become his "Meadmaker of the Year" metheglin. That metheglin was a family product—the pomegranate juice comes from a tree in the backyard at his in-laws house. Mark says his mother-in-law, kids and he spend several weekends every November shucking pomegranite fruit to make jam. In the process, it occurred to him that the rather tart and sour character of pomegranate juice was well suited to balancing the natural sweetness of honey as well as lending a beautiful red color.

Mark uses a no-boil method of heating the honey/water mixture. Afterward, he adds cold water to bring the temperature down and adjust the gravity (always greater than 1.100). Mark typically racks two or three times within the first 12 months, and starts to sample the mead after a year or so. He believes that patience is the foremost ingredient in successful meadmaking, followed by honey source, yeast and technique.

Cidermaker of the Year

Wayne Beckerman
Stone Ridge, NY, Hudson Valley Homebrewers

Wayne Beckerman started homebrewing in 1995. After checking out a few homebrew shops, he bought a starter set-up and a shop-made kit for Charlie Papazian's "Wise Ass Red Bitter." Not long after, he joined the Hudson Valley Home Brewers (HVHB) and was on to all-grain brewing by 1997.

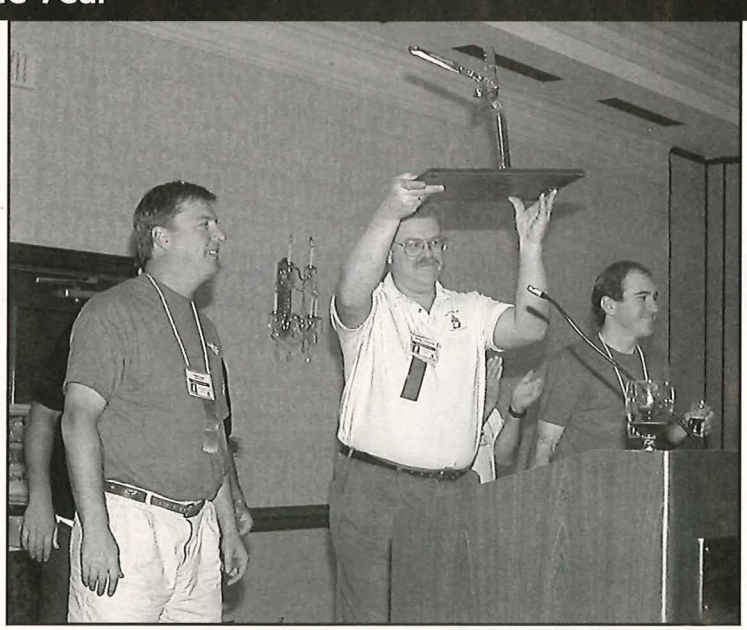
He discovered the world of cidermaking in 1998 from his "cider mentors," Bruce and Gloria Franconi of Party Creations, who hold a cider pressing every year. Although unable to make the first pressing he heard about, he bought a few bushels of Northern Spy apples and pressed them at home. The cider was delicious and took second best of show at the annual HVHB competition and third in cider at the NHC. Needless to say, he was hooked.

He still prefers to use Northern Spy apples and considers them to be the perfect cider apple because they have the right blend of sweetness, acids and tannins. Recently, he has been making spiced cider and experimenting with other fruits, including cranberries and blueberries.

Homebrew Club of the Year
award sponsored by

COOPERS

Club of the Year



Quality Ale & Fermentation Fraternity (QUAFF)
San Diego, CA

Going into the grand banquet of the American Homebrewers Association's National Homebrew Conference on Saturday, June 23, the 25 attending QUAFF members were anxious and excited as they held a slim four-point lead in the Club of the Year competition. As the awards were announced, QUAFF started adding on to their point total—they never gave up their lead. Despite this, they still didn't clinch the win until the final eight category results were announced. In total, 11 QUAFF members won 13 medals in the NHC second round, securing the first repeat win by a club since 1995.

When they aren't focusing on winning the Club of the Year award, QUAFF sponsors the America's Finest City Homebrew Competition, an annual AHA-sanctioned competition open to all homebrewers. They also sponsor beer judge study groups and qualifying exams. The club meets the fourth Tuesday of each month and guests are always welcome—check their Web site for details if you are going to be in town: www.softbrew.com/quaff/pg_home.htm.

Of the 3,074 entries submitted to the 24th Annual AHA National Homebrew Competition, these are the best-the Gold Medal winners-in each of the 29 NHC categories. If you are looking to brew some outstanding beer, mead or cider, it would be hard to go wrong with any of these winning recipes.

Putting on the National Homebrew Competition is an immense undertaking, one that cannot be done without the hard work of many dedicated volunteers in the United States and Canada. This year's volunteers included Antoinette Hodges and Dion Hollenbeck in San Diego; Mark Wilson in Portland, OR; Alberta Rager, Jackie Rager, and Rob Beck in Kansas City; Bev Blackwood and Jimmy Paige in Houston; Jeff Sparrow and Joe Prieser in Chicago; Dennis Kinvig and John Tyler in Ontario, Canada; Tina Weymann, Kevin Mudd, Paul Guarracini, and Tom Tills in Rochester, NY; Gloria Franconi in Red Hook, NY; and Jim Layton and Tony Stone in Irving, TX. Next time you see any of these individuals be sure to thank them for their efforts.

The success of the National Homebrew Competition is also dependent upon the fine sponsors who donate to the competition. Please support the businesses that support homebrewing and the AHA.

Of course, no competition can exist without judges to evaluate the entries. The AHA is very thankful for the support we get from the Beer Judge Certification Program (BJCP) and highly encourages all homebrewers to get involved with the program. For more information on the BJCP and for a list of upcoming BJCP exams, see www.bjcp.org.

Thanks to all of the entrants and congratulations to the winners!

Gary Glass
National Homebrew Competition Director

Light/Standard/Premium Lager

Gold Medal

AHA 2002
National Homebrew
Competition

Jack Sykes of Kansas City Bier Meisters, Overland Park, KA

Ingredients for 6 U.S. gal (22.7 L)

- **8.0 lb (3.6 kg) Belgian pilsen malt**
- **1.0 lb (0.45 kg) German wheat**
- **1.0 lb (0.45 kg) CaraPils malt**
- **1.0 lb (0.45 kg) rice syrup**
- **0.5 oz (14 g) Tettnanger hop pellets, 3.1% AA (60 min)**
- **0.5 oz (14 g) Tettnanger hop pellets, 3.1% AA (30 min)**
- **1.0 oz (28 g) Hallertauer hop pellets, 4.8% AA (10 min)**
- **White Labs San Francisco lager WLP810**
- **0.25 tsp (1.2 ml) yeast energizer**
- **2 tsp (10 ml) gelatin**
- **2 tsp (10 ml) Irish moss, hydrated**
- **0.75 cup (177 ml) corn sugar (to prime)**

- **Original specific gravity: 1.048**
- **Final specific gravity: 1.012**
- **Boiling time: 75 min**
- **Primary fermentation: seven days at 50° F (11° C)**
- **Secondary fermentation: 14 days at 32° F (0° C)**

Brewer's Specifics

Mash grains for 90 minutes at 147 ° F (64° C).

Judges' Comments

"Low malt. Clean, smooth finish lacks crispness. Medium body. Good clean beer." "Malt, DMS, grainy. Balance on the sweet side. A little more crispness would improve greatly."

"I would like more malt to balance spices, slight oxidation. Sweet, fruity, spicy. Nutmeg? Cinnamon?"

Runners-Up

Silver Medal: Rick Georgette, West Bloanfield, MI
Bronze Medal: John Aitchdon of Maltose Falcons, Northridge, CA

European Pale Lager/ Dortmunder Export

Gold Medal

AHA 2002
National Homebrew
Competition

Rob Beck of Kansas City Biermeisters, Kansas City, MO

"River Forest Export"

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

- **9.5 lb (4.3 kg) pilsner malt**
- **1.5 lb (0.68 kg) Cafafoam malt**
- **0.5 lb (0.23 kg) Munich malt**
- **1.0 oz (28 g) Hallertauer Mittlefreu whole hops, 4.0% AA (59 min)**
- **0.5 oz (14 g) Tettnanger whole hops, 7.5% AA (29 min)**
- **0.5 oz (14 g) Tettnanger whole hops, 7.5% AA (17 min)**

0.5 oz (14 g) Tettnanger whole hops, 7.5% AA (knockout)
0.5 oz (14 g) Hallertauer mittlefreu whole hops, 4.0% AA (knockout)
Wyeast 2308 Munich lager yeast (10-cup [2,366-ml] starter)
Isinglass and polyclar finings

- **Original specific gravity: 1.052**
- **Final specific gravity: 1.013**
- **Boiling time: 75 min**
- **Primary fermentation: 15 days at 47° F (8° C)**
- **Secondary fermentation: 68 days at 30° F (-1° C)**

Brewer's Specifics

Mash grains 16 minutes at 120 ° F (49° C), 11 minutes at 130-147° F (54-64° C), 17 minutes at 147° F (64° C), 22 minutes at 156° F (69° C), 38 minutes at 160° F (71° C) and 27 minutes at 168° F (76° C).

Force carbonate with approximately 2.8 volumes of CO2.

Judges' Comments

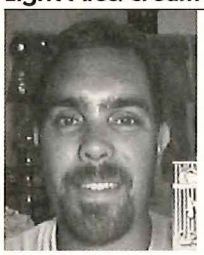
"Very clean character with solid maltiness; low hop aroma; some nice sweet, grainy aromas. Medium golden in color with a low whitish head. Excellent clarity and color. Some initial maltiness that carries through to a slightly sweet finish. Bitterness complements malt nicely to give a nice balance. Very solid Dortmuner-style export. This is a great recipe."

"Moderate German hop aroma. Medium gold color, very clear. Hop flavor is quite high for style. Malt is fairly neutral, but can't compete with hops. Sweetish finish. Good job, but a bit out of balance for a Dortmunder. Hop level is close to a German pilsener."

Runners-Up

Silver Medal: Mark Messmer, Sycamore, IL
Bronze Medal: Robert F. Geisendorfer, Yakima, WA

Light Ales/Cream Ale



Gold Medal

AHA 2002 National HomebrewCompetition

Category award sponsored by Redhook Ale Brewery

Chris "Pacman" Ingermann of BrewRats, Muncie, IN

"Lao Kang's Cream Ale"

Ingredients for 12.5 U.S. gal (47.3 L)

16.0 lb (7.26 kg) six-row malt
4.0 lb (1.8 kg) flaked maize
0.5 lb (0.23 kg) honey malt
3.0 oz (85 g) liberty whole hops, 4.8% AA (60 min)
1.0 oz (28 g) liberty whole hops, 4.8% AA (5 min)
White Labs San Francisco Olager yeast

- **Original specific gravity: 1.053**
- **Final specific gravity: 1.015**
- **Boiling time: 70 min**
- **Primary fermentation: 14 days at 62° F (17° C)**
- **Secondary fermentation: 14 days at 45° F (7° C)**
- **Tertiary fermentation: 14 days at 34° F (1° C)**

Brewer's Specifics

Mash grains at 122° F (50° C) for 20 minutes. Increase temperature to 134° F (57° C) for 20 minutes, to 154° F (68° C) for 60 minutes, then to 168° F (76° C) for 20 minutes. Force carbonate with 2.1 volumes of CO2.

Judges' Comments

"Good effort at a lighter, delicate style. Hop is a bit elevated and body just a bit full, but it blends well and is quite drinkable."

"Some graininess, DMS, sweet corn flavor. Hop bitterness high for style, some fruitiness. Very good attempt at style. I would reduce the amount of hop bitterness, but nice creamy texture and otherwise on style."

Runners-Up

Silver Medal: Robert F. Geisendorfer, Yakima, WA
Bronze Medal: Michael Smith, Spencer, NC

Bitter and English Pale Ale/ Strong Bitter/English Pale Ale

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by St. Louis Wine and Beermaking

Jeff Niggemeyer, Longmont, CO

"Valymber"

Ingredients for 10 U.S. gal (37.8 L)

13 lb (5.55 kg) Hugh Baird pale malt
1 lb (0.45 kg) 120° crystal malt
1 lb (0.45 kg) special roast malt
1 lb (0.45 kg) wheat malt
3 lb (1.36 kg) pale malt extract
1.5 oz (45 g) Centennial hop pellets, 9.1% AA (60 min)
0.5 oz (14 g) Centennial hop pellets, 9.1% AA (30 min)
0.5 oz (14 g) Cascade hop pellets, 6.0% AA (knockout)
0.5 oz (14 g) Centennial hop pellets, 6.0% AA (dry hop)
Wyeast 1056 American ale yeast (1-qt [0.95-L] slurry from previous batch)
0.5 tsp (2.5 ml) Irish moss

- **Original specific gravity: 1.048**
- **Final specific gravity: 1.004**
- **Boiling time: 80 min**
- **Primary fermentation: 10 days at 66° F (19° C)**
- **Secondary fermentation: 40 days at 36° F (2° C)**

Brewer's Specifics

Mash all grains at 155° F (68° C) for 90 minutes. Add malt extract to runoff for kettle boil. Force carbonate with 10 pounds CO2.

Judges' Comments

"Malt up front, low crystal makes for a good balance. Hops come in right behind. Clean dry finish. No major flaws here. Almost too clean for a bitter. This would be great on cask."

"Nice floral/hop aroma that complements the rich maltiness. Well balanced hops and malt flavor. Pleasant fruitiness. Finishes well with appropriate warmth and hop bitterness. Medium to full body with a warm feel. Carbonation is appropriate. A very nice bitter that fits the style well."

Runners-Up

Silver Medal: Jamil Zainasheff of Quality Ale Fermentation Fraternity (QUAFF), Elk Grove, CA

Bronze Medal: Ed Measom of Central Florida Home Brewers, Winter Park, FL

Scottish Ales/Heavy 70/-

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by The Homebrew Shop

Jamil Zainasheff of Quality Ale Fermentation Fraternity (QUAFF), Elk Grove, CA

Ingredients for 6 U.S. gal (22.7 L)

- **6.5 lb (2.95 kg) pale two-row malt**
- **1.0 lb (0.45 kg) 40° crystal malt**
- **0.5 lb (0.23 kg) Munich malt**
- **0.25 lb (0.11 kg) 120° crystal malt**
- **0.19 lb (86 g) light chocolate malt**
- **0.8 oz (22.6 g) Goldings E.K. hop pellets, 6.6% AA (60 min)**
- **Whirlfloc finings (20 min)**
- **White Labs WLP004 Irish stout yeast**

- **Original specific gravity: 1.037**
- **Final specific gravity: 1.015**
- **Boiling time: 90 min**
- **Primary fermentation: eight days at 65° F (18° C)**
- **Secondary fermentation: two days at 65° F (18° C)**

Brewer's Specifics

Single step mash: 60-minute saccharification rest at 154° F (68° C), 15-minute mash-out rest at 168° F (76° C). Sparge for 69 minutes with 170° F (77° C) water. Force carbonate.

Judges' Comments

"Malty, clean, some toast/biscuit is good. Hops kept in balance for style. Medium light mouthfeel—I'd like a little more body. I like this beer. Seems to be good solid middle of category."

"Nice copper color, decent clarity, good head. Medium body, medium carbonation (perhaps a bit high for style). Excellent example of style."

Runners-Up

Silver Medal: Bob Maher of Brewers United for Real Potables, Falls Church, VA

Bronze Medal: Dean Fikar of Cowtown Cappers, Fort Worth, TX

American Pale Ale/American Amber

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by BJ's Pizza Grill and Brewery

Joe Formanek of Urban Knaves of Grain, Bolingbrook, IL

"Veronica's All-American Amber Ale"

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

- **4.0 lb (1.81 kg) DWC pale two-row malt**
- **4.0 lb (1.81 kg) Crisp Marris Otter malt**
- **1.0 lb (0.45 kg) SMC Special pale malt**
- **1.0 lb (0.45 kg) Weyermann's wheat**
- **1.0 lb (0.45 kg) DWC aromatic malt**
- **0.5 lb (0.23 kg) DWC biscuit malt**
- **0.6 lb (272 g) DWC CaraVienna malt**
- **1.0 oz (28 g) DWC Special B malt**

2.0 oz (57 g) Cascade whole hops, 9.4% AA (60 min)
1.0 oz (28 g) Centennial whole hops, 10.9% AA (10 min)
1.0 oz (28 g) Willamette whole hops, 4.8% AA (10 min)
1.0 oz (28 g) homegrown whole hops (10 min)
1.0 oz (28 g) Centennial whole hops, 10.9% AA (dry hop)
1.0 oz (28 g) Willamette whole hops, 4.8% AA (dry hop)
1.0 tsp (4.9 ml) Irish moss
White Labs English ale yeast WLP002 (2-pint [1-L] starter)
0.5 cup (118 ml) corn sugar (to prime)

- Original specific gravity: 1.060
- Final specific gravity: 1.016
- Boiling time: 75 min
- Primary fermentation: seven days at 65° F (18° C)
- Secondary fermentation: nine days at 65° F (18° C)

Brewer's Specifics

Single infusion mash: 60 minutes at 153° F (67° C), 15 minutes at 170° F (77° C).

Judges' Comments

"Bitter but with some caramel flavor. Balanced toward hops. Some fruitiness in the middle, perhaps. Quite effervescent, tingles on the roof of my mouth; medium body. Very nice, well-balanced effort. Good job."

"A nice hoppy, malty beverage."

Runners-Up

Silver Medal: Paul Pilcher of Kansas City Bier Meisters, Kansas City, MO
Bronze Medal: John Watson of Underground Brewers of Connecticut, Southbury, CT

India Pale Ale

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Pyramid Breweries Inc.

David Welch of Strand Brewers' Club, Long Beach, CA

"Vista I.P.A."

Ingredients for 10.5 U.S. gal (39.75 L)

23.5 lb (10.66 kg) British Marris Otter two-row pale malt
0.5 lb (0.23 kg) Briess 120° crystal malt
1.5 oz (43 g) Chinook whole hops, 12.5% AA (60 min)
1.0 oz (28 g) Columbus whole hops, 15.1% AA (60 min)
0.5 oz (14 g) Centennial whole hops, 10.9% AA (30 min)
1.5 oz (43 g) Cascade whole hops, 7.0% AA (15 min)
1.0 oz (28 g) Columbus hop pellets, 14.2% AA (2 min)
2.0 oz (57 g) Cascade hop pellets, 5.8% AA (2 min)
3.0 oz (85 g) Cascade hop pellets, 5.8% AA (dry hop)
2.0 oz (57 g) Centennial hop pellets, 11.0% AA (dry hop)
White Labs California ale WLP001 (2-qt [1.89-L] starter)

- Original specific gravity: 1.070
- Final specific gravity: 1.014
- Boiling time: 60 min
- Primary fermentation: 21 days at 68-70° F (20-21° C)
- Secondary fermentation: 21 days at 36° F (2° C)

Brewer's Specifics

Adjust brewing water to pH 5.7. Mash grains for two hours at 149° F (65° C).

Force carbonate at 16 psi and store at 44° F (7° C).

Judges' Comments

"Very clean. Malt and hops swim together in near perfect balance. Perfect color; sparkling bright. The bittering is excellent-big hop flavor that lingers on and on. Finish is dry with only a very slight astringency. Great beer. Increase the carbonation a bit. Not much off the mark here. Send me a case, please!"

"Aroma is malty, fruity, hoppy, citrusy and caramely. Hop flavor evident; malty, dry finish. Citrusy and fruity esters. A refreshing hoppy beer with good malt character for balance and a pleasant lingering bitterness."

Runners-Up

Silver Medal: Brian Cole of Mountain Ale and Lager Tasters (MALT), Black Mountain, NC
Bronze Medal: Paul Long of Strange Brew, Newberg, OR

Kölsch and Alt/Kölsch

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Northwestern Extract

Brian Cole of Mountain Ale and Lager Tasters (MALT), Black Mountain, NC

"Oh de Cologne"

Ingredients for 7.5 U.S. gal (28.4 L)

88% Cargill Europils malt
25% German red wheat
25% Schreier white wheat
7% Schreier Munich
0.5 oz (14 g) Magnum hop pellets, 15% AA (60 min)
0.5 oz (14 g) Saaz hop pellets, 3.6% AA (5 min)
1 Tbsp (14.8 ml) polyclar
1 tsp (4.9 ml) Britesorb
White Labs German ale yeast WL029 (2-qt [1.89-L] starter)

- Original specific gravity: 1.050
- Final specific gravity: 1.009
- Boiling time: 60 min

- **Primary fermentation: 10 days at 65° F (18° C)**
- **Secondary fermentation: 14 days at 35° F (2° C)**

Brewer's Specifics

[Grain bill is presented in percentages because Cole does parti-gyle mashes.] Mash grains at 154° F (68° C) for 120 minutes.

Judges' Comments

"Light hop aroma, some fruitiness. Brilliant white head, clear. Balance of malt and bitter is good, a well-rounded profile. This is a very well-made beer."

"Light malt flavors with medium bitterness. Low to medium hop flavor. Finishes dry with low to no esters. Medium to light body. A crisp, refreshing beer. Clean with good bitterness, but also balanced with a hint of malt. Good job."

Runners-Up

Silver Medal: Russ Bee of North Texas Homebrewers Association, Rockwall, TX
Bronze Medal: Bob Maher of Brewers United for Real Potables, Falls Church, VA

German Amber Lager/Vienna Lager

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Homebrew Headquarters

Jim Layton of North Texas Homebrewers, Howe, TX

"Bois d'Arc Vienna"

Ingredients for 6.5 U.S. gal (24.6 L)

- **7.0 lb (3.18 kg) light Munich malt**
- **3.5 lb (1.59 kg) Pils malt**
- **0.5 lb (0.23 kg) CaraMunich malt**
- **0.5 lb (0.23 kg) melanoidin malt**
- **0.6 oz (18.66 g) Sterling hop pellets, 7.2% AA (60 min)**
- **0.5 oz (14 g) Saaz hop pellets, 3.1% AA (30 min)**
- **0.7 oz (21.77 g) Crystal hop pellets, 2.7% AA (15 min)**
- **Wyeast Bohemian lager yeast 2124 (0.5-gal [1.89-L] starter)**
- **2.29 oz (65 g) dextrose (to prime)**

- **Original specific gravity: 1.051**
- **Final specific gravity: 1.014**
- **Boiling time: 90 min**
- **Primary fermentation: 32 days at 50° F (10° C)**
- **Secondary fermentation: 16 days at 50° F (10° C)**

Brewer's Specifics

Mash grains at 135° F (57° C) for 10 minutes. Raise temperature to 144° F (62° C) for 30 minutes, then 158 ° F (70° C) for 30 minutes. Sparge with 170° F (77° C) water.

Judges' Comments

"Amber orange color with nice creamy head, good lace. Good clarity. Low toasted malt profile. Gives way to a hint of hop bitterness. Slightly sweet. Some malt graininess. Maybe a bit understated, but well done in the Vienna style. Just a bit sweet. Mash temperature could help adjust here. Hop level good."

"Nice toasted malt aroma. Good toasty malt flavor, dries in finish. Malt and hop balance nice. Cleanly made. Perhaps a bit fuller than appropriate."

Runners-Up

Silver Medal: Larry Baker, Corning, NY
Bronze Medal: Rob Beck of Kansas City Bier Meisters, Kansas City, MO

Brown Ale/Southern English Brown

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Alternative Beverage

Scott Northuis, Champlia, MN

"Dirty Nortchez House Special Brown"

Ingredients for 10 U.S. gal (37.85 L)

- **11.0 lb (5 kg) Briess two-row malt**
- **4.0 lb (1.81 kg) Briess 90° crystal malt**

- **0.5 lb (0.23 kg) Briess chocolate malt**
- **2.0 lb (0.91 kg) brown sugar**
- **2.0 oz (57 g) Fuggles hop pellets, 5.7% AA (40 min)**
- **2.0 oz (57 g) E.K. Goldings hop pellets, 6.6% AA (15 min)**
- **2.0 tsp (10 ml) Irish moss**
- **Wyeast London ale yeast 1028**
- **3 Prime Tabs (to prime)**

- **Original specific gravity: 1.050**
- **Final specific gravity: not measured**
- **Boiling time: 60 min**
- **Primary fermentation: eight days at 60° F (16° C)**
- **Secondary fermentation: 10 days at 60° F (16° C)**

Brewer's Specifics

Mash grains at 155° F (68° C) for 60 minutes. Add brown sugar to boil.

Judges' Comments

"Malty aroma with some plum character. No hops—appropriate for style. Deep brown color with mahogany highlights.

Caramely and malty flavor; malty sweetness. Full malty mouthfeel; low carbonation; nice dry finish. Easy drinking, good balance. Nice job."

"Very malty and nutty with hints of dark malt and restrained bitterness toward the middle and end. Gentle CO_2, some caramel and a bit dry but OK. Very nice! Style very good. Great session beer."

Runners-Up:
Silver Medal: Roxanne Hastings of Edmonton Homebrewers Guild, Edmonton, Alberta, Canada
Bronze Medal: Pat Heveron, Newberg, OR

Strong Scotch Ale

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Austin Homebrew Supply

Tom Miklinevich and Tom Fenton of Underground Brewers Club of Connecticut, West Redding, CT

"S.S.A. No. 258"

Ingredients for 6 U.S. gal (22.7 L)

15.0	lb (6.8 kg) Marris Otter pale malt
3.0	lb (1.36 kg) Munich malt
6.0	oz (2.72 kg) Belgian aromatic
8.0	oz (3.63 kg) German wheat
4.0	oz (1.81 kg) roasted barley
4.0	oz (1.81 kg) special B
2.0	oz (0.91 kg) American chocolate malt
1.09	oz (31 g) Northern Brewer whole hops, 7.5% AA (75 min)
1.09	oz (31 g) Northern Brewer whole hops, 7.5% AA (60 min)
0.46	oz (13 g) Northern Brewer whole hops, 7.5% AA (50 min)
0.49	oz (14 g) Fuggles whole hops, 7.5% AA (15 min)
1	tsp (4.9 ml) Irish moss
	Wyeast Scotch ale yeast No. 1728

- **Original specific gravity: 1.099**
- **Final specific gravity: 1.026**
- **Boiling time: 90 min**
- **Primary fermentation: 21 days at 65° F (18° C)**
- **Secondary fermentation: 13 days at 65° F (18° C)**

Brewer's Specifics

Mash grains for two hours at 154° F (68° C). Force carbonate.

Judges' Comments

"Big rich caramel. Alcohol evident but not overwhelming Hop flavor is low, balance is sweet. Finish is sweet."

"This beer is all about malt, I really like it. I wouldn't change a thing ... well, maybe a little peat smoke malt would add some complexity."

Runners-Up
Silver Medal: Curt Hausam of Strange Brew, Salem, OR
Bronze Medal: Bruce Stott of Hop River Brewers, Rockville, CT

Barleywine and Imperial Stout/ Russian Imperial Stout

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Anchor Brewing Co.

Pete Devaris of Great Northern Brewers, Anchorage, AK

"Love Potion No. 9"

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

12.0	lb (5.44 kg) pale malt
1.0	lb (0.45 kg) black patent malt
1.0	lb (0.45 kg) roasted barley
1.0	lb (0.45 kg) flaked barley
2.0	oz (57 g) Chinook whole hops, 13% AA (FWH)
1.0	oz (28 g) Cascade whole hops, 5.7% AA (30 min)
1.0	oz (28 g) Cascade whole hops, 5.7% AA (15 min)
	Wyeast Ringwood ale yeast
	(6.3-cup [1.5-L] starter)

- **Original specific gravity: 1.102**
- **Final specific gravity: 1.026**
- **Boiling time: 180 min**
- **Primary fermentation: 30 days at 70° F (21° C)**
- **Secondary fermentation: 30 days at 70° F (21° C)**
- **Other: bottle aged one year at 54° F (12° C)**

Brewer's Specifics

Mash grains 90 minutes at 120° F (49° C), then 120 minutes at 154° F (68° C).

Force carbonate with 2.5 volumes CO_2/nitrogen.

Judges' Comments

"Fruity with moderate roastiness. Finish is malty with fruit. Low to medium hop flavor with low bitterness. Alcohol flavors low. Full body; silky; good carbonation. The blend of malt roastiness and fruity esters is quite pleasant. Could use more alcohol (this is the biggest of stouts), and could use more hop character."

"Surprisingly mild aroma; some roasty malt and light esters. Huge dark brown head. Chocolatey malt with almost cherry-like fruity flavors. A bit sour. Low bitterness and hop flavor. I'd like a little more roast and hop intensity. A bit harsh in the finish. Surprising given the mild start."

"Moderately sweet with nice warming sensation. Full bodied; rich, roasty flavor with nice alcohol contribution. A very drinkable stout that seems balanced and finishes somewhat sweet."

Runners-Up
Silver Medal: Bob and Kim Barrett of Ann Arbor Brewers Build and Fermental Order of Renaissance Draughtsmen, Ann Arbor, MI
Bronze Medal: Steve Bagley and Milan McVay, Medina, OH

European Dark Lager/Schwarzbier

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Briess Malting Co.

David Neilly, Weyburn of Ale and Lager Enthusiasts of Saskatchewan, Saskatchewan, Canada

"Black Mamba"

Ingredients for 6 U.S. gal (22.7 L)

- **5.0 lb (2.27 kg) Pilsner malt**
- **3.0 lb (1.36 kg) light Munich malt**
- **1.0 lb (0.45 kg) dark Munich malt**
- **8.0 oz (227 g) CaraPils malt**
- **8.0 oz (227 g) Belgian chocolate malt**
- **4.0 oz (113 g) Carafa II**
- **4.0 oz (113 g) Cararoma malt**
- **1.0 oz (28 g) Tettnanger hop pellets, 4% AA (60 min)**
- **0.5 oz (14 g) Saaz hop pellets, 3.4% AA (45 min)**
- **0.5 oz (14 g) Saaz hop pellets, 3.4% AA (30 min)**
- **1.0 oz (28 g) Saaz hop pellets, 3.4% AA (15 min)**
- **1 tsp (4.9 ml) Irish moss, hydrated (15 min)**
- **Wyeast Czech Pils No. 2278 (1-cup [250-ml] starter)**
- **4.0 oz (113 g) light dry malt extract (to prime)**
- **2.5 oz (71 g) corn sugar (to prime)**

- **Original specific gravity: 1.056**
- **Final specific gravity: 1.016**
- **Boiling time: 90 min**
- **Primary fermentation: 10 days at 52° F (11° C)**
- **Secondary fermentation: 17 days at 55° F (13° C)**

Brewer's Specifics

Mash grains at 124° F (51° C) for 30 minutes. Raise temperature to 150° F (66° C) for one hour, then to 168° F (76° C) for 10 minutes.

Judges' Comments

"Low hop aroma OK. Some roast and malt in aroma. Good color in both beer and head-head retention good. Malt flavor up front gives way to a roasted flavor that balances the sweetness. Bitterness is appropriate. Slight oxidized flavor. Body is good. Finish is slightly astringent."

"Appropriate chocolatey nose with a note of patent. Ample and lasting head. Chocolate malt transitions smoothly to patent/hop bitterness. Pleasant and drinkable; could use a bit more body."

Runners-Up

Silver Medal: Glenn Thomas of Cary Apex Raleigh Brewers of Yore (CARBOY), Raleigh, NC

Bronze Medal: Jack "Sauce" Kephart of Brew Rats, Akron, OH

Bock/Maibock/Hellesbock

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Washington Hop Commission

Brian St. Clair of Bloatarian Brewing League, Cincinnati, OH

"Rebock"

Ingredients for 8 U.S. gal (30.28 L)

- **12.0 lb (5.44 kg) Pilsener malt**
- **10.5 lb (4.76 kg) Munich malt**
- **1.0 oz (28 g) Saaz whole hops, 3.5% AA (first wort)**
- **1.5 oz (43 g) Tettnanger hop pellets, 4.2% AA (45 min)**
- **1 Tbsp (14.8 ml) Irish moss, rehydrated (20 min)**
- **1.0 oz (28 g) Saaz whole hops, 3.5% AA (10 min)**
- **Wyeast Bavarian lager yeast No. 2206 (slurry from previous batch)**

- **Original specific gravity: 1.078**
- **Final specific gravity: 1.023**
- **Boiling time: 75 min**
- **Primary fermentation: 16 days at 55° F (13° C)**
- **Secondary fermentation: 39 days at 46° F (8° C)**

Brewer's Specifics

Use high-temperature German double decoction mash with rests at 142° F (61° C), 157° F (69° C) and 169° F (76° C).

Force carbonate.

Judges' Comments

"Really malty aroma, almost sweet. Beautiful clear amber color; good head retention. Very good, clean malt flavor with a slight hop bite in finish. Nice balance! Alcohol a little hot, but not detracting. Body

and mouthfeel fit style. Some residual cloying sweetness, but still OK. A rich beautiful example of style. Very well balanced and clean. Well done!"

"Very nice helles. Watch pH of mash/sparge water because this finishes acidic."

Runners-Up

Silver Medal: Glenn Thomas of Cary Apex Raleigh Brewers of Yore (CARBOY), Raleigh, NC

Bronze Medal: Mike Bardallis of Downriver Brewers Guild, Allen Park, MI

Robust Porter

Gold Medal

Ninkasi Award Winner

Homebrewer of the Year

AHA 2002 National Homebrew Competition

Category award sponsored by Deschutes Brewery Inc.

Curt Hausam of Strange Brew, Salem, OR

"More Likea Stout"

Ingredients for 20 U.S. gal (75.7 L)

- **20.0 lb (9 kg) Hugh Baird pale ale malt**
- **5.5 lb (2.5 kg) roasted barley**
- **3.0 lb (1.36 kg) chocolate malt**
- **3.0 lb (1.36 kg) CaraMunich malt**
- **2.0 lb (0.9 kg) CaraPils malt**
- **1.0 lb (0.45 kg) Carastan light**
- **1.0 lb (0.45 kg) British crystal malt**
- **1.0 lb (0.45 kg) flaked barley**
- **3.5 oz (99 g) Kent Goldings whole hops, 6.0% AA (90 min)**
- **2.0 oz (57 g) Fuggles whole hops, 5.7% AA (15 min)**
- **Wyeast London ale yeast No. 1028 (4-qt [3.79-L] starter)**

- **Original specific gravity: 1.080**
- **Final specific gravity: unknown**
- **Boiling time: 90 min**
- **Primary fermentation: 25 days at 65° F (18° C)**
- **Secondary fermentation: 10 days at 65° F (18° C)**

Brewer's Specifics

Mash grains at 153° F (67° C) for two hours. Force carbonate.

Judges' Comments

"Malty aroma with some roastiness present. Very dark (black) with creamy head. Malty and roasty. Very nice balance with hop additions. Coffee flavor in finish. Tasty! Very smooth mouthfeel, creamy, medium to full body. Carbonation is good for style. Excellent example of style. Very nice beer. Thanks!"

"Nice roast malt flavor, hints of chocolate balanced well with bitterness at finish. Low hop flavor. Finishes somewhat dry, OK. Very nice porter. Good balance between malt, hops, fermentation temperatures."

Runners-Up

Silver Medal: Todd Howes and Chris Morgan of Barley Bandits, Orange, CA

Bronze Medal: Tom Miklinevich and Phil Simpson of Underground Brewers Club of Connecticut, West Redding, CT

Dry Stout

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Brew and Grow

Jack and Molly Hines, Erie, PA

"Dry Stout"

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

- **2.5 lb (1.13 kg) Briess malt**
- **0.5 lb (226 g) British chocolate malt**
- **1.0 lb (0.45 kg) Muntons roasted malt**
- **5.5 lb (2.5 kg) Paul's amber malt**
- **0.5 lb (226 g) CaraPils malt**
- **2.25 oz Fuggles pellet hops, 4.2% AA (60 min)**
- **0.75 oz (21 g) Fuggles pellet hops, 4.2% AA (5 min)**
- **Wyeast Irish Ale Yeast No. 1084 (0.5-gal [1.89-L] starter)**
- **0.75 cup (177 ml) corn sugar (to prime)**

- **Original specific gravity: 1.046**
- **Final specific gravity: 1.0156**
- **Boiling time: 60 min**
- **Primary fermentation: nine days at 65° F (18° C)**
- **Secondary fermentation: 47 days at 65° F (18° C)**

Brewers' Specifics

Mash grains for 90 minutes at 155° F (68° C).

Judges' Comments

"A very well-made dry stout; I think the roasted malt is a pinch too high (manifests in the late finish). I would drop a few ounces on that and replace with roasted barley. Well done!"

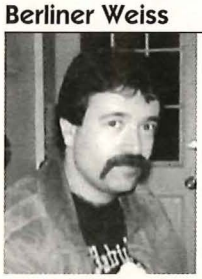
"A very good example of style, nice roasted malt flavor and well balanced, fruity esters give it a nice complexity. Enjoyable to drink."

Runners-Up

Silver Medal: Dave Corbett of Underground Brewers of Connecticut, Milford, CT

Bronze Medal: Curt Hausam of Strange Brew, Salem, OR

Berliner Weiss



Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Widmer Brothers Brewing Co.

Peter Fantasia, of Brewrats, Mays Landing, NJ

"Berlin Refresher"

Ingredients for 10.5 U.S. gal (40 L)

- **5.0 lb (2.26 kg) two-row malt**
- **5.0 lb (2.26 kg) wheat malt**
- **2.0 oz. (56 g) Tettnanger pellet hops, 4% AA (30 min)**
- **Wyeast Kölsch yeast No. 2565 and *Lactobacillus* (2.1-cup [500-ml] starter)**
- **7.0 oz (202.5 g) cane sugar (to prime)**

- **Original specific gravity: 1.030**

- **Final specific gravity: 1.008**
- **Boiling time: 30-min simmer**
- **Primary fermentation: nine days at 70° F (21° C)**
- **Secondary fermentation: three months**

Brewer's Specifics

Mash for 60 minutes at 155° F (68° C).

Judges' Comments

"Outstanding example of this style! A very well-made beer. A little more sourness wouldn't hurt. Carbonation level could be higher. Nice Job!"

"A fine effort on a different style."

Runners-Up

Silver Medal: Wes and Nancy Sampson of Brewing Anonymously Thoughout Florida, Ocoee, FL

Bronze Medal: Jack "Sauce" Kephart of Brew Rats, Akron, OH

Strong Belgian/Tripel Ale

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by New Belgium Brewing Co.

Rick Georgette, West Bloomfield, MI

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

- **17.0 lbs (7.71 kg) DWC pils malt**
- **1.0 lb (0.45 kg) Cara pils malt**
- **2.0 lb (0.9 kg) light candi sugar**
- **1.0 oz (28 g) Tettanger pellet hops, 3.9% AA (30 min)**
- **0.5 oz (14 g) East Kent Goldings whole hops, 5% AA (30 min)**
- **0.75 oz (21 g) Styrian Gold whole hops, 4.5% AA (15 min)**
- **Wyeast Trappist High Gravity yeast No. 3787 (one XL pack)**

- **Original specific gravity: 1.084**
- **Final specific gravity: 1.016**
- **Boiling time: 90 min**
- **Primary fermentation: 30 days at 69-70° F (21° C)**

- **Secondary fermentation: eight days at 60-70 °F (16-21° C)**
- **Tertiary fermentation: 30 days at 32° F (0° C)**

Brewer's Specifics

Mash for 30 minutes at 129° F (54° C), 60 minutes at 150° F (66° C) and 10 minutes at 161° F (71° C).

Judges' Comments

"You hit this style right on. Excellent flavor, aggressive while still amazingly drinkable. I think you should consider joining an Abbey!"

"Great beer. Very drinkable. As this beer warmed up in the glass, it gave other great characters. Maybe a bit sweet. Very good."

Runners-Up

Silver Medal: Dion Hollenbeck of Quality Ale and Fermentation Fraternity (QUAFF), Cortez, CO

Bronze Medal: Adam Drahushuk of Sultans of Swig, Collegeville, PA

Belgian and French Ale/ Specialty Ale

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Manneken-Brussels Imports Inc.

Carl Melissas, of Covert Hop Society, Woodstock, GA

"A Tribute to Orval"

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

- **7.5 lb (3.4 kg) DWC pale malt**
- **1.1 lb (0.48 kg) Weyermann Vienna malt**
- **13.0 oz (369 g) DWC Caravienne malt**
- **1.0 oz (28 g) Kent Golding whole hops, 4.8% AA (75 min)**
- **0.65 oz (18.6 g) Hallertauer whole hops, 5.0% AA (75 min)**
- **1.5 lb (0.68 kg) clear candi sugar (45 min)**
- **0.5 oz (14 g) bitter orange peel (15 min)**
- **0.5 oz (14 g) Kent Golding whole hops, 4.8% AA (15 min)**
- **0.32 oz (9.3 g) crushed coriander seed (5 min)**
- **0.8 oz (22.5 g) Kent Golding whole hops, 4.8% AA (dry)**
- **Brewtek CL380 yeast with starter**
- **Wyeast *Brettanomyces lambicus* No. 3526 with starter**
- **White Labs WLP 570 yeast with starter**
- **5.0 oz (142 g) clear candi sugar (to prime)**

- **Original specific gravity: 1.062**
- **Original specific gravity: 1.016**
- **Primary fermentation: six days at 68° F (20° C)**
- **Secondary fermentation: 60 days at 59° F (15° C)**
- **Tertiary fermentation: 30 days at 65° F (18° C)**

Brewer's Specifics

Mash sequence: 15 minutes at 145° F (63° C), 15 minutes at 150° F (66° C), 30 minutes at 156° F (69° C), 30 minutes at

160° F (71° C) and 20 minutes at 172° F (77° C).

Judges' Comments

"I would try for just a little more attenuation because the finish is just a touch sweet. A very nice beer."

"Right on with the 'aged' Brett character. Quite a nice piece of brewing!"

Runners-Up

Silver Medal: Craig Corley of Pacific Gravity, Santa Monica, CA

Bronze Medal: Peter Zien of Quality Ale and Fermentation Fraternity (QUAFF), San Diego, CA

Lambic and Belgian Sour Ale/ Straight Lambic-Style Ale

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by The Beverage People

Robert Wietor, of Central Florida Homebrewers, Kissimee, FL

"B'gosh It's Good Lambic"

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

- 4.75 lb (2.15 kg) Belgian pale malt
- 2.0 lb (0.9 kg) flaked wheat
- 4.0 oz (113 g) CaraVienne malt
- 2.0 oz (56 g) three-year old whole hops (type and alpha acid unknown) (60 min)
- Wyeast Lambic blend No. 3278
- 1 cup (236 ml) Muntons light malt extract (to prime)

- Original specific gravity: 1.054
- Final specific gravity: 1.006
- Boil time: 60 min
- Primary fermentation: 240 days at 68-75° F (20-24° C)

Brewer's Specifics

Mash for 60 minutes at 155° F (68° C).

Judges' Comments

"A quite complex lambic that exemplifies the hard end of the style range quite well. The acetic notes are a bit strong."

"Nice example of straight lambic. Very complex. The color is a bit off, but otherwise very good."

Runners-Up

Silver Medal: Corey J. Martin of Austin Zealots, Round Rock, TX

Bronze Medal: Steve Piatz of Minnesota Homebrewers Association, Eagan, MN

Fruit Beer

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Steinbart Wholesale

Aimee and Pete Devaris, of the Great Northern Brewers, Anchorage, AK

"Cherry Chick Beer"

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

- 12.0 lb (5.4 kg) Belgian pilsner malt
- 5.0 lb (2.26 kg) Belgian wheat malt
- 0.5 oz (14 g) Northern Brewer whole hops, 8.25% AA (60 min)
- 0.5 oz (14 g) Styrian Golding whole hops, 5.25% (60 min)
- 1.0 oz (28 g) Styrian Golding whole hops, 5.25% (15 min)
- 1.0 oz (28 g) Styrian Golding whole hops, 5.25% (1 min)
- Chimay Blue Clone yeast (in primary)
- 8.0 lb (3.6 kg) Bing cherries (secondary, day eight)
- 7.0 lb (3.2 kg) Bing cherries (secondary, day 14)
- .75 cup Belgian candi sugar (to prime)

- Original specific gravity: 1.079
- Final specific gravity: 1.014
- Boil time: 90 min
- Primary fermentation: eight days at 72° F (22° C)
- Secondary fermentation: 22 days at 72° F (22° C)
- Other fermentation: Bottle conditioned 10 months at 54° F (12° C)

Brewer's Specifics

Mash for 60 minutes at 122° F (50° C) then 90 minutes at 154° F (68° C). Mash out at 168° F (76° C). Spontaneous fermentation from wild yeast on cherries in secondary.

Judges' Comments

"Although first impressions of the gusher are poor, this is a well-rounded beer with good balance. Just let this complete fermentation prior to bottling."

"OK, after we got passed it exploding on us, this turned out to be pretty good. Getting it into a glass is the biggest challenge. A complex beer; it knows how to assert itself."

Runners-Up

Silver Medal: Keith S. Bradley of Austin Zealots, Austin, TX

Bronze Medal: John Aitchon of Maltose Falcons, Northridge, CA

Spice/Herb/Vegetable Beer

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Marin Brewing Co.

Roger Gibson, of Kansas City Biermeisters, Liberty, MO

"Summertime Ginger Ale"

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

- 2.0 lb (0.9 kg) extra light dry malt extract
- 1.0 lb (0.45 kg) clover honey
- 4.0 oz (113 g) Belgian aromatic malt
- 0.5 lb (226 g) lactose (added to boil)
- 1.0 oz Spalt whole hops, 2.5% AA (45 min)
- 2.0 oz (56 g) fresh chopped ginger (15 min)
- Wyeast Kolsh yeast No. 2565
- 2.0 oz (56 g) of fresh chopped ginger-root (secondary for seven days)
- 0.75 cup (177 ml) corn sugar (to prime)

- **Original specific gravity: 1.028**
- **Final specific gravity: 1.000**
- **Boil time: 60 min**
- **Primary fermentation: five days at 60° F (16° C)**
- **Secondary fermentation: 10 days at 50° F (10° C)**

Brewer's Specifics

Belgian aromatic malt steeped for 30 minutes from 60-150° F (16-66° C).

Judges' Comments

"A clean beer with a touch of ginger for complexity. Missing honey character."

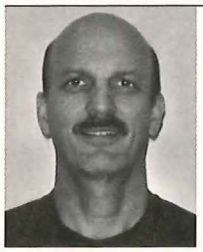
"A nice beer, but the honey character could be increased. The ginger buries the subtlety of the Kölsch style. Nice effort."

Runners-Up

Silver Medal: Peter Zien and Harold Gulbransen of Quality Ale and Fermentation Fraternity (QUAFF), San Diego, CA

Bronze Medal: Curt Hausam of Strange Brew, Salem, OR

Oak Smoked Strong Scotch Ale



Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Alaskan Brewing Co.

Dean Fikar, of Cowtown Cappers, Fort Worth, TX

"Madeline's Smoked Wee Heavy #5"

Ingredients for 6.5 U.S. gal (25 L)

- **12.5 lb (5.67 kg) Briess pale ale malt**
- **3.0 lb (1.36 kg) European Pilsner malt**
- **2.5 lb (1.13 kg) light Munich malt**
- **1.5 lb (0.68 kg) Belgian aromatic malt**
- **1.0 lb (0.45 kg) Belgian CaraMunich malt**
- **1.0 lb (0.45 kg) Belgian CaraVienne malt**
- **1.0 lb (0.45 kg) Durst wheat malt**
- **1.0 lb (0.45 kg) peated malt**
- **1.74 oz (49 g) East Kent Goldings whole hops, 5.3% AA (70 min)**
- **Wyeast European ale yeast No. 1338 with starter**

- **Original specific gravity: 1.090**
- **Final specific gravity: 1.032**
- **Boil time: 90 min**
- **Primary fermentation: 14 days at 60-65° F (15-18° C)**
- **Secondary fermentation: four days at 65° F (18° C)**
- **Tertiary fermentation: 70 days at 32-65° F (0-18° C)**

Brewer's Specifics

Mashed 90 minutes at 154° F (68° C).

Judges' Comments

"Very nice, good balance, prominent smoke. I could get used to this one. Good toffeelike character with just enough bitterness to balance."

"Could have a bit more body"

Runners-Up

Silver Medal: Harold Gulbransen of Quality Ale and Fermentation Fraternity (QUAFF), San Diego, CA

Bronze Medal: Rick Georgette, West Bloanfield, MI

Specialty/Experimental

Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Anderson Valley Brewing Co.

Steve Bagley and Milan McVay, Medina, OH

"Honey Wheat Wine"

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

- **10.0 lb (4.5 kg) Durst wheat malt**
- **4.0 lb (1.8 kg) DWC aromatic malt**
- **3.0 lb 1.36 kg) DWC Munich malt**
- **4.0 lb (1.8 kg) DWC pale malt**
- **4.0 lb (1.8 kg) honey (60 min)**
- **2.5 oz (70 g) Perle pellet hops, 7% AA (60 min)**
- **1.0 oz (28 g) Hallertauer pellet hops, 4% AA (15 min)**
- **0.5 oz (14 g) orange peel (10 min)**
- **0.75 oz (21 g) coriander (10 min)**
- **0.5 oz (14 g) orange peel (2 min)**
- **0.75 oz (21 g) coriander (2 min)**
- **Wyeast American ale yeast No. 1056**
- **0.75 cup (177 ml) corn sugar (to prime)**

- **Original specific gravity: 1.100**
- **Final specific gravity: 1.016**
- **Boil time: 90 min**

- **Primary fermentation: 10 days at 60° F (16° C)**
- **Secondary fermentation: 30 days at 62° F (17° C)**
- **Tertiary fermentation: 120 days at 35° F (1° C)**

Brewers' Specifics

Mash grains for 90 minutes at 150° F (66° C).

Judges' Comments

"Orange, malt and coriander all quite apparent. Nicely put together beer."

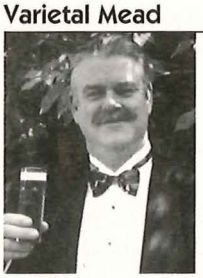
"Nice beer. Coriander is a little light, but orange flavors and aromas are a nice touch."

Runners-Up

Silver Medal: Curt Hausam of Strange Brew, Salem, OR

Bronze Medal: Stan Holder of Derby Brew Club, Wichita, KS

Varietal Mead



Gold Medal

AHA 2002 National Homebrew Competition

Category award sponsored by Winemaker Shop

Harold Gulbransen, of Quality Ale and Fermentation Fraternity, San Diego, CA

"Peter Nelson's Sweet Mead"

Recipe for 4.8 U.S. gal (19 L)

15.0	lbs (6.8 kg) Texas Huajillo honey
	Lalvin 71B-1122 yeast
2	packages Beverage People yeast nutrient
2	tbsp (29.5 ml) tartaric acid
1	tbsp (15 ml) citric acid

- **Original specific gravity: 1.105**
- **Final specific gravity: unknown**
- **Boil time: one min**
- **Primary fermentation: 30 days at 70° F (21° C)**
- **Secondary fermentation: 180 days at 70° F (21° C)**

Brewer's Specifics

Boil for one minute. Force carbonate.

Judge Comments

"Fruity, buttery. This is an exceptional mead."

"I loved this one, it was excellent."

Runners-Up

Silver Medal: Tom Baldwin of Washoe Zyphyr Zymurgists, Reno, NV

Bronze Medal: Joe Formanek of Urban Knaves of Grain, Bolingbrook, IL

Fruit Mead/Cyser

Gold Medal

AHA 2002 National Homebrew Competition

Category award s ponsored by Bacchus and Barleycorn Ltd.

Cowan "The Beerbarian" Bowman, of The Brewrats, Farmington, NM

"Apple Butter Cyser"

Ingredients for 6 U.S. gal (23 L)

5.0	gal (19 L) fresh apple cider
2.0	lb (0.9 kg) light dry malt extract
5.0	lb (2.26 kg) turbinado sugar
20	pieces cassia bark
2.0	lb (0.9 kg) apple butter
10.0	lb (4.5 kg) citrus honey
2.0	lb (0.9 kg) golden raisins
0.5	tsp (2.5 ml) nutmeg
	Wyeast Eau de Vie yeast No. 3347

- **Original specific gravity: 1.146**
- **Final specific gravity: 1.035**
- **Primary fermentation: 90 days at 68° F (15° C)**
- **Secondary fermentation: 180 days at 68° F (15° C)**
- **Tertiary fermentation: 60 days at room temperature**

Brewer's Specifics

Golden raisins and nutmeg added in secondary.

Judges' Comments

"Spicy aroma, apple is subdued. A well-balanced mead, nice effort."

"Nice complexity of spice and raisins. Very alcoholic, almost harshly so."

Runners-Up

Silver Medal: Mike Kidubich of Upstate New York Homebrewers Association, Rochester, NY

Bronze Medal: Joe Formanek of Urban Knaves of Grain, Bolingbrook, IL

Metheglin/Mead

Gold Medal

Meadmaker of the Year

AHA 2002 National Homebrew Competition

Category award sponsored by Brewstuff

Mark Densel, of Quality Ale and Fermentation Fraternity, Oceanside, CA

"Pomegranate Metheglin"

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

15	lb (6.8 kg) clover honey
0.5	l (2.1 cups) pomegranate juice
1.5	lb (0.68 kg) Montmorency cherries
	dash of ginger
	dash of ground cloves
1	tsp (5 ml) gypsum
1	tsp (5 ml) yeast nutrient
0.25	tsp (1.25 ml) Irish moss (boil)
	Cote de Blanc yeast

- **Original specific gravity: 1.100**
- **Final specific gravity: unknown**
- **Boil time: 10 min**
- **Primary fermentation: one year at room temperature**
- **Secondary fermentation: one year at room temperature**

Judges' Comments

"Cherry aroma dominates. A touch of ginger. A truly fantastic mead. Don't tell me that it contains ginger and clove and it's a winner!"

"Clover and ginger up front then some honey character-maybe some cherry in aroma. Overall very good."

Runners-Up

Silver Medal: Harold Gulbransen of Quality Ale and Fermentation Fraternity (QUAFF), San Diego, CA

Bronze Medal: Ray Wilson Jr. of Fellowship of Oklahoma Ale Makers (FOAM), Broken Arrow, OK

Cider/Standard Cider

Gold Medal

Cidermaker of the Year

AHA 2002 National Homebrew Competition

Category award sponsored by National Honey Board

Wayne Beckerman, of Hudson Valley Homebrewers, Stone Ridge, NY

"Spy Cider"

Ingredients for 5.5 US gal (20.8L)

- **5.5 gal (20.8 L) of fresh pressed Northern Spy juice**
- **2 packs Red Star Primier Cuvee champagne yeast**
- **0.25 tsp (1.25 ml) potassium metabisulfite**
- **1.25 tsp (6.25 ml) potassium sorbate table sugar to taste at kegging**

- **Original specific gravity: 1.056**
- **Final specific gravity: 0.998**
- **Primary fermentation: 28 days at 65 °F (18 °C)**
- **Secondary fermentation: 4 months at 63(F (17 °C)**

Brewer's Specifics

Place fresh juice in sanitized 6.5-gallon carboy with blow-off tube and add potassium metabisulfite. After 24 hours, shake carboy vigorously to dispel remaining sulfite. Rehydrate and pitch yeast. Add potassium sorbate at kegging to stop further fermentation. Boil table sugar in water for 10 to 15 minutes and use to sweeten the cider to taste. Force carbonate.

Judges' Comments

"Great apple flavor with a rather sweet finish. Well made and very drinkable."

"This is hard to say how many pints I could drink. I would definitely need a driver to get me home."

Runners-Up

Silver Medal: Bruce Franconi of Hudson Valley Home Brewers Inc., Red Hook, NY

Bronze Medal: Todd Snyder of Niagara Association of Homebrewers, Williamsville, NY

New Entrant/Dortmunder Export

Gold Medal

AHA 2002 National Homebrew Competition

Richard Pidgeon, Virginia Beach, VA

Recipe for 10 U.S. gal (38 L)

- **8.0 lb (3.6 kg) Paul's mild malt**
- **6.0 lb (2.7 kg) Briess Brewers' malt**
- **4.0 lb (1.8 kg) Briess Vienna malt**
- **2.0 lb (0.9 kg) Briess dextrine malt**
- **8.0 oz (226 g) Briess white wheat malt**
- **3.0 oz (85 g) Saaz pellet hops, 3.9% AA (60 min)**
- **3.0 oz (85 g) Saaz pellet hops, 3.9% AA (30 min)**
- **2.0 oz (56 g) Saaz pellet hops, 3.9% AA (15 min)**
- **2.0 oz (56 g) Saaz pellet hops, 3.9% AA (2 min)**
- **Wyeast California lager yeast No. 2112**

- **Original specific gravity: 1.050**
- **Final specific gravity: 1.008**
- **Boil time: 90 min**
- **Primary fermentation: 14 days at 60° F (16° C)**
- **Secondary fermentation: 22 days at 60° F (16° C)**
- **Tertiary fermentation: (lager) 2 8 days at 40° F (4° C)**
- **Other: 42 days at 32° F (0° C)**

Brewer's Specifics

Grains mashed 90 minutes at 149° F (65° C).

Judges' Comments

"Good punch of malt and hops, very well balanced. Flavor hops are slightly overdone but this is a well-made beer."

"Very nice beer. Could be more balanced for style. Hops more than malt."

Runners-Up

Silver Medal: Joseph Budnauro, Santa Rosa, CA

Bronze Medal: Denise Graham and Scott Graham of Miami Area Society of Homebrewers, Miami, FL

Dear Professor *(from page 18)*
additional comments), brewers have not traditionally made lager or English type ales in uncoated barrels.

And you, Sir Tim, answer your own question:

As a member of the TechTalk mailing list, I took advantage of the recently sponsored Siebel Week. I am overjoyed by the entire experience, although the news wasn't what I wanted to hear. I strongly urge you to run a Zymurgy article about the mailing list and the success of Siebel Week.

Kirk Annand of the Siebel Institute of Technology provided an excellent response to my question:

Using oak casks without "brewers' pitch" is not and never has been very common in brewing. When barrels were a standard way of delivering draught beer to taverns, they were always coated with brewers' pitch first. This tarlike compound was melted, added to the barrel and rolled around in the barrel to completely cover the wood. In fact, a lot of old breweries burnt down because of pitch-melting fires. The purpose of the pitch was to seal the keg so that air would not get in and carbon dioxide would not get out of the beer, but also to prevent the wood coming in contact with the beer. Wood is not a good material to contact beer because it has a porous surface and it is almost impossible to eliminate beer-spoiling organisms. The Michael Jackson Beer Hunter *video on Czech beers shows brewers removing and adding pitch to the old fermenters and storage tanks that used to be used at Pilsner Urquell.*

Lambic brewers use casks, but since their beers naturally ferment with yeast and bacteria from the air, the barrels are just another way to get fermentation going. Using a barrel to get an oak character to beer is difficult to control. Wine usually has a higher alcohol content than beer along with lower pH and higher acidity. Beer is a much more delicate beverage and sanitation is more critical in breweries than it is in wineries. Using the techniques that vintner's use to break in a barrel is not really acceptable for beer. I know brewers who use old whisky barrels for brewing, often to get some whisky character into their beers. These barrels are also charred inside and the remnants of the highly alcoholic liquid reduce the chance of wayward bacteria that could spoil their beer.

And finally your dear old Professor suggests:

If you don't want to hassle with getting your beer into oak, why not get oak into your beer? Take a few pieces of oak (the kind you want) and add it to your secondary. You can pressure cook the chips to sanitize them. You could pan- or oven-toast the chips to bring out the vanillin character of toasted oak. This really works. I've had some raw spirits marinated in this manner and I must say they were smooth. I have a mead with a half-cup of oak chips floating at the bottom (I think this mead is trying to tell me "bottoms up").

Anyway, my man Tim, you've got plenty to consider at this point and I suppose we'll just have to run an article about oak and beer in a future Zymurgy.

Battling the Swamps,
The Professor, Hb.D.

Send your homebrewing questions to "Dear Professor," PO Box 1679, Boulder, CO 80306-1679; FAX (303) 447-2825 or professor@aob.org.

Dear Zymurgy *(from page 11)*
Ken,

*Given your many years of experience in growing fruit and brewing not only beer, but also meads and wines with them, I'm very happy to have your input. Also, having gotten a look at the fruit section in your soon-to-be published book (*The Compleat Meadmaker, *Brewers Publications, March 2003), we know that you have a lot more good stuff to offer on this subject.*

—Ed.

From Pilsen to Portland

Dear ***Zymurgy***,

Forgive me, but I must tell you the story behind a beer I made recently. My grandfather was an infantryman in the 97th Amphibious Infantry during World War II. He carried a Browning automatic rifle from Italy to the Czech Republic. The last town his company liberated was the town of Pilsen, Bohemia, Czech Republic shortly before V.E. Day. His company beat the Russians to Pilsen by one day. The people of Pilsen were so overjoyed that the Americans had gotten to them first that the brewery (*the* Pilsen Brewery) broke out a bunch of huge kegs from a cellar and the GIs and towns' people put on a two-day drunk. They served two types of beer. One was dark and thick and sweet, a bock of some sort. I've had him try quite a few and Celebrator is the closest thing out there, but it isn't quite right. "Needs more hop," he says. I've tried to replicate this but haven't quite hit the mark yet. The other beer they served, was "good and refreshing" according to gramps, similar to today's Pilsner Urquell, but with a rounder malt and lighter hop. My grandfather made a trip to Pilsen for the 50th anniversary of V.E. Day. He said the towns' people rolled out the red carpet, but the Pilsner they produce today just isn't quite what they used to make.

For 15 years I've been trying to replicate that "good and refreshing" Pilsner. He tasted one of my homebrewed efforts at Easter and he cried. I guess I finally hit the mark.

I hope you enjoyed the history.

Thanks,
Chad Stevens
Portland, OR

Chad,

Thanks, we did enjoy the history. It is a great thing when brewers have close ties to the brewing heritage of Europe to draw on.

We've visited the Pilsen brewery and drunk both the fresh pilsener and their dark beer called Purkmister, which we remember as having many stoutlike qualities: a slight roast barley aroma with definite chocolate tones. It was softer and fuller bodied than the pils. To reproduce it, you might try for something more like a robust porter brewed with a lager yeast. After all, you've got Christmas coming up and grandpa needs another memorable present.

—Ed.

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Lactomel *(from page 41)* Either the lactose or galactose present in the must suppresses formation of fusel alcohols, or the lactose moderates its flavor. In either event, although 70° F (20° C) may be ideal, the lactomel should still yield fine flavor when fermented at ambient temperatures as high as 85° F (30° C).

Because the first phase of lactomel fermentation is curd separation, there is a good chance of plugging up a standard airlock. Until the curd has formed, it's a good idea to simply cover the mouth of your fermenter loosely with clean aluminum foil secured with a rubber band to keep it in place. If you have left insufficient headspace in your fermenter the curd may overflow, so it would be prudent to place the fermenter in a catch basin. Once the curd has formed, you can remove enough to give an airlock a safe margin to avoid blockage, then ferment as normal.

You will see the fermentation develop three layers: the normal yeast sediment at the bottom, a clear, golden fluid in the middle and a thick cap of curd at the top. After a week, you can rack the mead, leaving the sediment and curd behind. You can eat the curd like cottage cheese—if you are brave—but be aware that it may contain a good amount of alcohol unless you rinse it out first. It has a flavor reminiscent of mascarpone cheese, which is typically used in Italian desserts. (Mascarpone is produced through very different processes, though, so the curd from this is unlikely to be a good substitute.)

Continue to ferment in secondary until hydrometer readings have stabilized, then bottle as normal. If you like, you can prime the one-gallon batch with about three tablespoons of honey or sugar for a carbonated product. Lactomel is reported to be best if consumed young. I have read of at least one brewer who found that it declined rapidly after two years in the bottle.

The flavor of lactomel is a combination of the normal sweetness, floral notes and alcohol of mead with a smoothness probably contributed by the unconverted lactose in the milk. Lactose is sometimes added to meads and wines to slightly sweeten a too-dry fermentation because the yeast will leave it unscathed. As the lactomel ages, you may find that the lactase continues breaking down lactose, though, which may rob the drink of its smoothness.

The other major contributor to the unique flavor of lactomel is the whey protein. As cheese makers know, most of the caseins are probably lost in the curd, but the whey proteins remain dissolved in solution, imparting some of the nutty, cheeselike flavors of lactomel. These proteins, too, are easily denatured (broken down) by heat, and may be a factor in the beverage's reported poor aging.

SUMMARY

Drawing on deep historical roots, lactomel intertwines two ancient beverages and results in a drink that, if not new, is certainly unique. The availability of modern enzymes throws a new wrinkle into milk fermentation, and adding honey gives a balancing sweetness to the natural flavor of soured milk.

While it's probably not for everyone, if you're in an adventurous mood and find yourself with an unused fermenter, lactomel is worth a try, if only to enjoy the looks on your friends' faces when you tell them about it!

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Lars Hedbor started making meads several years ago out of interest in the historic nature of this underappreciated beverage. Since then, brewing beer has caught his attention. He spends a great deal of time researching indigenous fermentations of all varieties from all around the world. His ever-tolerant wife prefers that he stick to mead, but his two daughters enjoy the funny faces he makes when he tries something new and bizarre.

Extract Experiments *(from page 21)*

5.0 oz (142 g) Durst 90°L crystal malt
5.0 oz (142 g) Special B malt
0.25 oz (7 g) Hallertauer hop pellets, 6.5% AA (60 min)
White Labs WLP500 Trappist ale yeast (from the tube)
4.5 oz (127 g) priming sugar

- **OG: 1.068**
- **FG: 1.012**

Brewers' Specifics

Steep the specialty malts in a grain bag for 30 minutes at 170° F (77° C), then remove the bag. Add the extracts and boil 75 minutes; add hops according to the schedule. Immersion chill, pour into the fermenter then pitch the yeast. Rack to secondary after one week. Bottle three weeks later.

Tasters' Impressions

Belgian estery character was prominent in both the aroma and the flavor—a complex combination of fruitiness, banana, vanilla and spicy clove. It had a good, clean malty flavor with a touch of caramel and a slightly sweet finish. This beer received high scores from all the judges and took the bronze medal in the Belgian Dubbel and Belgian Strong Dark Ale category at the Drunk Monk Challenge as well as third place in the "New Entrants" category at the Great Lakes first round of the AHA's National Homebrew Competition.

In a Nut-Brown Shell

One feature that five of the six beers had in common was a relatively high final gravity, or low attenuation. This is typically attributable to one of two reasons, either weak fermentation or high unfermentable content. Weak fermentation can have many causes, ranging from low yeast-pitching rates to low oxygen or nutrient levels. But it seems unlikely to be a factor in all five beers because of the variety of wort compositions. The quantity of yeast pitched ranged from an ordinary retail tube to a small-scale starter to the entire cake from a previous five-gallon batch. The more likely cause is a high level of unfermentable carbohydrates (dextrins) in the extract. The dextrin content is controlled by the temperature of the mash—in this case, the mash the manufacturer used to produce the extract. The unfermentables give body to the beer, but can also leave the beer with a sweet finish. These are tradeoffs brewers make between body and fermentability. In our experiment, only one beer (the stout) drew comments about sweetness from the judges; all were rated as having appropriate body. In the end, all of the beers were judged a success and one of them even placed at the prestigious Drunk Monk Challenge and in the NHC first round. So if you do not have a lot of time to brew, we can highly recommend that you consider the Muntons family of products.

Steve McKenna has been brewing since 1991. He was a founding member of the Urban Knaves of Grain and is also active in the Chicago Beer Society. He is a BJCP national beer judge. A chemist by profession, and a traveler by inclination, he hopes to be able to perform further research into Belgian beers.

Upcoming 2002-2003 AHA Club-Only Competition Styles

Month	Style or Name	Cat.#	Host
Sept/Oct	Strong Belgian Ale	18	Minnesota Homebrewers Association
Nov/Dec	Fruits & Veggies	21, 22	Dukes of Ale
Jan/Feb	Bitter & English Pale Ale	4	Minnesota Timberworts
Mar/Apr	Brown Ale	10	Prairie Homebrewing Companions
May	English & Scottish Strong Ale	11	Rillito Creek Brew Club

Homebrew Clubs *(from page 16)*
points during the year is crowned the Homebrew Club of the Year.

Of the 43 entries the winners were:

1st Place:
Mark Ryan of Anchorage, AK, representing The Great Northern Brewers with his IPA.

2nd Place:
Kenneth Adamson of Edmond, OK, representing the High Plains Draughters with his Adamson's Burton IPA.

3rd Place:
Kenny Schrader of Edison, NJ, representing W.H.A.L.E.S. with his Divorce Court IPA.

Thanks to all of the club representative brewers who entered.

There is a new point system for the 2002-2003 club-only competition cycle. Clubs will earn points on a 12-eight-four basis for first, second and third places, respectively, in the Club-Only Competitions. Clubs will earn points on a six-four-two basis for first, second and third places, respectively, in the first and second round of the National Homebrew Competition.

From Our Readers

While looking through our pictures for submission, I found probably the most important one that we have. This is one of Robin Barnhart holding one of her daughters at the annual Big Brew. We recently lost Robin to a 3.5 year bout with brain cancer. She was 31. Robin was one of those people you truly enjoyed being around; she was always upbeat and fast with a smile. She put up with bathtubs full of bottles from her all-grain brewing husband Mike, while doing an excellent job of raising two young, well-mannered daughters, Amber and Ashley. All of us in the club will miss her. We wish Mike and the kids well, and Godspeed. Sometimes we need to not only raise our glasses, but to set them down and reflect on things more important than yeast starters and fresh hops.

—Dave Martin
Ashtabula Area Homebrewers
Ashtabula, OH

Strong Belgian Ale AHA Club-Only Competition

The September/October AHA Club-Only Competition is Strong Belgian Ale. The competition is hosted by Mike Moranz and the Minnesota Home Brewers Association (http://www.mnbrewers.com) and Wind River Brewing Co. (http://www.windriverbrew.com) of Chester County, PA.

The style for the competition is strong Belgian ale, BJCP category 18. One entry of two bottles is accepted per AHA registered homebrew club. Entries require a $5 check made payable to "AHA," along with the entry/recipe and bottle ID forms. More information on the Club-Only Competitions and forms are available at www.beertown.org/AHA/Clubs/clubcomp.htm.
Please send your entry to:

AHA COC
WindRiver Brewing Co.
c/o Mike Moranz
7212 Washington Ave. S.
Eden Prairie, MN 55344

Entries are due by Sept. 30, 2002. Judging is slated for Oct. 5, 2002. E-mail MMoranz@cbburnet.com with questions or if you are interested in judging.

Gary Glass is the project coordinator for the American Homebrewers Association

World of Worts *(from page 54)*

hops, 10 HBU/177 MBU (60 min)

- **1.5 oz (42 g) German Hersbrucker-Hallertauer whole hops, 6 HBU/168 MBU (20 min)**
- **0.5 oz (14 g) German Hersbrucker-Hallertauer hop pellets (dry hop)**
- **0.25 tsp powdered Irish moss**
- **0.75 cup (180 ml) corn sugar (to prime bottles) or 0.33 cups (80 ml) (to prime keg)**
- **Wyeast American ale yeast No. 1056 or White Labs English ale yeast**

- **Target OG: 1.050 (12.5° P)**
- **Approximate FG: 1.014 (3.5° P)**
- **IBUs: about 40**
- **Approximate color: 12 SRM (24 EBC)**
- **ABV: 5%**
- **Apparent yeast attenuation: about 70%**

Add malt extracts to 2.5 gallons (9.5 L) hot water. Bring to a boil and add hops. Boil for 40 minutes, then make the final hop addition. Boil for 10 minutes and add Irish moss. Boil for 10 minutes more. After a total wort boil of 60 minutes, turn off the heat, strain out and sparge hops and direct the hot wort into a sanitized fermenter to which 2.5 gallons (9.5 L) of cold water have been added. If necessary, add additional cold water to achieve a 5-gallon (19-L) batch.

Pitch a good dose of healthy active ale yeast when wort temperature is about 70° F (21° C), then primary ferment at temperatures between 65 and 70° F (18.5 and 21° C) for four to six days. Rack from your primary to a secondary and add the hop pellets for dry hopping. Your net yield will be 5 gallons (19 L) in the secondary. If you have the capability, cellar the beer at about 55° F (12.5° C) for seven to10 days. Prime with sugar and bottle or keg when complete.

World traveler Charlie Papazian is the founding president of the Association of Brewers and the author of numerous best-selling books on homebrewing. His most recent books are *Home Brewers Gold* (Avon, 1997), a collection of prize-winning recipes from the 1996 World Beer Cup Competition, and *The Best of Zymurgy* (Avon, 1998) a collection of the best articles and advice from 20 years of *Zymurgy*.

Homebrew & Beyond *(from page 9)*

practices, I have toured German breweries where weird was in season. How about something called "cold flotation"? Chilled wort is infused with a large dose of oxygen in a holding tank. The cold break rides air bubbles to the top so that after eight hours clear wort can be drained from the tank and sent on to the fermenter.

At the same Bavarian brewery, I saw *Lactobacillus* breeders—not for making sour beer, but for natural acidification of the mash and wort. And in the brew house, they had a square brew kettle with an asymmetrical sloped heating surface on the bottom. Hailed as the next great breakthrough in brewing technology when installed, it never quite performed as promised.

Elsewhere in Germany I'm told you can find a pressurized lauter tun that uses CO_2 to help drive the wort through the grain bed, and unattended brew houses that will page the brewer and alert him or her to problems should they occur.

On top of all this, I have seen American craft brewers who dry hop with chili peppers, line a lauter tun with juniper boughs, smoke malt at a fish processing plant, or freeze and refreeze a beer to smooth and concentrate it. I used to think the common progression of homebrewers into craft brewers in the United States was the explanation for these offbeat-brewing practices. However, as I have expanded my knowledge of commercial brewing around the world, I have to admit that on the whole, commercial brewers have been just as inventive—and in many cases, just as stubborn—as homebrewers can be when it comes to making beer.

And that just goes to show you that the brewing fraternity should never be seen as an "us" versus "them" world where the line is determined by whether you sell your beer for a living. In making beer, we all do things that another brewer would consider crazy or wild from time to time, and sometimes the results are fantastic.

With that in mind, I raise my glass to brewers who march to the beat of a different drummer, no matter what their batch size. May we all make great beer.

Ray Daniels constantly reinvents the brewing process in his basement in Chicago.

Last Drop *(from page 80)*

lager dated September 2000. Having beer in hand, I was relaxed. Necessity was in labor. I had old lager yeast and undrinkably sweet beer. Hey, it was worth a shot. So I popped the pouch and let it sit in the fermenting fridge. A few days latter it had swelled. Swell, I thought, I'll pitch it in the keg of Fred Abbey Dark. But the keg was under pressure. Could you just release the pressure, pitch the yeast and leave the pressure valve open?

It's really kind of pathetic, isn't it, what a homebrewer will try to keep from dumping beer? Usually, I just make up a new style, but this beer begged for divine intervention.

After releasing the CO_2, I pitched the yeast and waited to see what life would give me. It could have been lemons or something similarly sour. I had no idea if it would even ferment. But I kept the fridge at ale temperatures for the benefit of the recently brewed Imperial Smoked Porter and Uncommonly Mild and checked my light bulb daily.

On May 17 I brewed again, this time a Belgian golden ale and a wit. Needing the room in the fermenting fridge, I decided to see if Fred Abbey Dark was worth moving to the dispensing fridge. I put some CO_2 pressure on it and pumped out a glass of, well, yeast. Yeast is a good thing, I thought. The next glass was dark and less cloudy, so I brought it too my lips. Hmmm, some rich fruitiness, plums or currants, maybe. Not sweet at all, but complexly malty and with a subtle and growing warmth in the finish. I checked the gravity and it read an astounding 1.007.

So, now, here's the FKCS^2 method: Ferment 14 days starting at 68° F (20° C) and drop to 45° F (7° C) early, maybe day two or three. Keg, carbonate and serve an occasional glass. After about a month, release CO_2 and pitch a swelled 18-month old package of lager yeast. Ferment 14 days at 68° F (20° C) (and keep the temperature steady) then recarbonate and serve.

In honor of its parentage, I've got to enter this in a contest as Dumb Luck Strong Dark Ale, but only in a competition that doesn't require the recipe.

Mark Roberts has been a homebrewer since 1993 and a BJCP judge since 2000. Occasionally, when the Beer Gods permit, his brewing efforts are successful. More often, they are like this.

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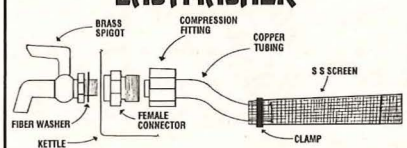

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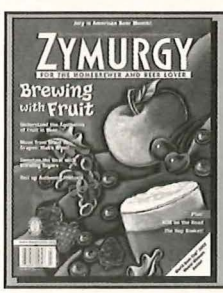

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BY MARK L. ROBERTS

Congratulations Mr. Roberts, It's a Beer! The Birth of the FKCS^2 Method

When I look at traditional brewing methods, from sahti making to triple decoctions, I have to wonder how those early brewers first discovered what worked, without knowing why. Of course, if I look at how my own homebrewing methods evolve, it becomes a lot clearer.

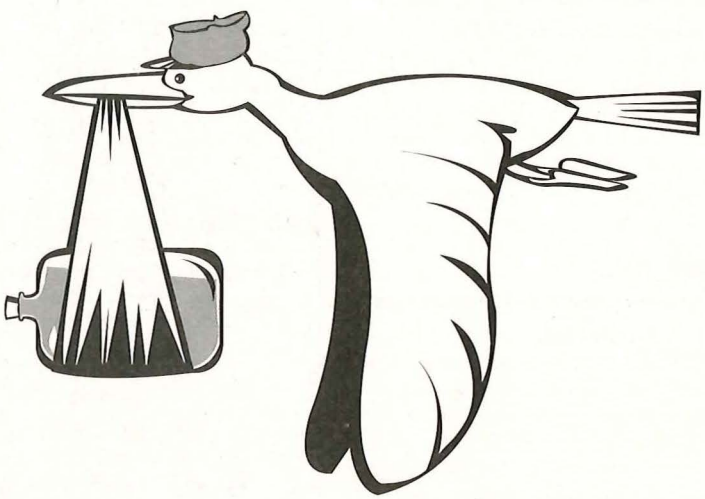
Take, for example, a new method I will call the Ferment/Keg/Carbonate/Serve^2 (FKCS^2) method. It involves a primary and secondary fermentation, but with some unusual steps in between, including kegging and serving.

How did I stumble upon this method? Well, they say necessity is the mother of invention. Traditionally, they don't say who the father is. But I know Invention isn't some bastard child without a surname. In fact, I am here to tell you that Invention is the child of Necessity and that promiscuous rogue, Dumb Luck.

I'll admit my brew day all too often proceeds wild and free—untamable, unstoppable and irreproducible. Although I read extensively and try to practice generally recommended methods, repeating them consistently outdoors in all seasons proves problematic. Every now and then something goes awry and, often in an effort to salvage the situation, I boldly go where no homebrewer may have gone before. And so it was when Mr. Luck and Ms. Necessity decided to give birth in my brew shed.

Fred the Shed is unheated and uninsulated, so the ambient temperature in Fred is a problem. I ferment in a refrigerator, usually two five-gallon batches at a time. I use a controller in summer and a 40 watt light bulb for heat along with the controller in the winter to maintain (theoretically) 62–68° F (17–20° C) for ales most months of the year.

On March 9, 2002, I brewed a Belgian strong dark ale and a pale ale. For the Belgian, I used Munich, honey, pale, Special B and wheat malts, as well as some flaked rye and turbinado sugar. Little did I know that my final ingredient list would also include a burned out light bulb, an ancient package of liquid lager yeast and a post-serve secondary fermentation.



Brew day went well. I pitched Chico ale yeast in the pale ale and a nice Belgian Abbey yeast in the strong dark. In honor of my brew shed, I called the latter Fred Abbey Dark.

Now, March in Kentucky is a roller coaster ride through the Fahrenheit scale (It's also a roller coaster ride through the Celsius scale, but not nearly as exciting a ride). In the daytime, I may need to turn off the bulb to keep the fridge from running too much; at night, it is usually vital that it be turned on. Sometimes the temperature is constant enough that I become complacent and just leave it on or off. And maybe I don't check it every day.

I found the burned out bulb on kegging day, but who knows how long it was out. The carboys were cool to the touch.

The Chico ale yeast proved remarkably tolerant of cool temperatures—obviously at least 45° F (7° C), which proved to be my racking temperature—and my pale ale was fine with a final gravity below 1.010. Good clarity, too, I must admit.

Apparently, Belgian Abbey yeast is like a snowbird in Florida—it doesn't like the cold. Not one wit. When I kegged my Belgian strong, which had started at 1.075, it had a final gravity of 1.037. I tried it. As its creator, I desperately wanted to love it. But it had the body of maple syrup and about the same sugar content. I gave up on it and figured I'd just dump it next time I brewed, but I poured the occasional glass in the hopes that the beer gods would transform it into something drinkable out of mercy. There are four beer gods by the way, and I try to appease them all, but that's a different story.

The next brew day came at the end of April and I needed the space in my serving fridge, so it was time to do something with the Belgian. While reaching for the keg, I spied a shiny golden object in the fridge door behind some spices. It was an old slap pack of Wyeast Bavarian *(continued on page 78)*

ILLUSTRATION BY DAVE HARFORD

We do not all have the privilege of being
athletes, poets or home brewers.
But one quality binds us.
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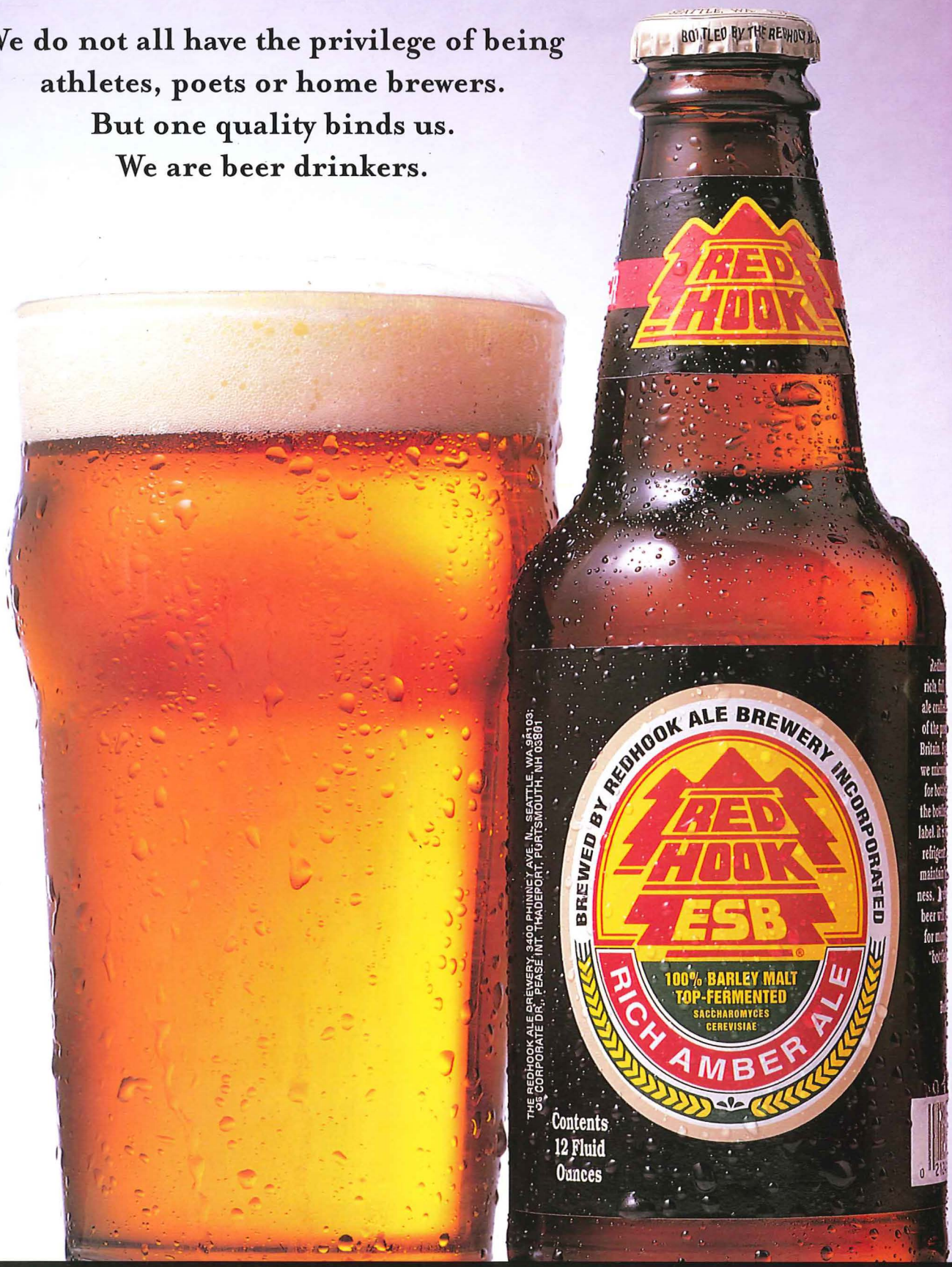

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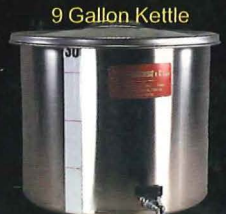

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