

Don't Miss the Homebrew Conference June 19-21, Page 45

Vol. 26 No. 3 May/June 2003 The Journal of the American Homebrewers Association

ZYMOLOGY

FOR THE HOMEBREWER AND BEER LOVER

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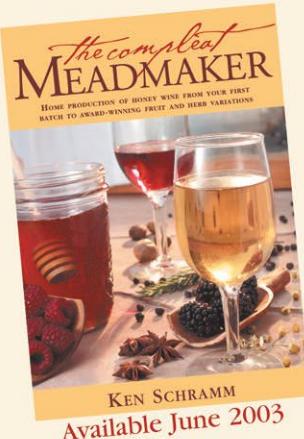
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ZYMURGY®

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

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Few things have caused humankind to utter more poetry than the pilsener that originated in the town by that name. If you haven't already done so, take a peek at the origins of the beer that defines them all and then try your hand at brewing your own.
By William Shawn Scott

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Shhhh! If you sneak into Dusseldorf on the right day, you can taste an elusive German ale designed to reward regulars with a little something special. If, on the other hand, your Lear jet is in the hangar for maintenance that day, you'll just have to brew your own. Here's how.

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Long before you brewed, you probably already knew about Reinheitsgebot, the legendary centuries-old German purity law. But scratch the surface of history and you'll find that the quality it ensured was a far more recent invention than most marketing folks would have you believe.

By Dipl. Brew Master Guenther Thoemmes

HOMEBREWERS AT HEART

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The spirit of homebrewing inspires many a brewer to turn pro. But the realities of commercial existence often extinguish the passion and spontaneity that mark homemade brews. In this story we'll tell you about a hearty band of small brewers who manage to keep that homebrew feeling long after the ink on the brewing license is dry.

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BY PAUL GATZA

National Homebrew Day!

Hi everyone. May 3 is National Homebrew Day. National Homebrew Day was established in a Congressional resolution in 1988 to recognize homebrewers around the country and the work of the American Homebrewers Association (AHA). We celebrate National Homebrew Day as the first Saturday of May each year. One of the ways we celebrate is with a unified brewing project, the AHA's Big Brew.

For this year's Big Brew, we are tapping into our history at the Association of Brewers. As many of you know, we are celebrating 25 years. (Our November/December 2003 issue will be dedicated to our 25-year celebration.) There have been two revolutions in the beer world in recent memory—the rediscovery of homebrewing and the growth of craft brewing. On the homebrewing side, we dip back to Vol. 1, No. 1 of *Zymurgy* to the first recipe, "Vagabond Gingered Ale." The craft beer revolution can be traced to Fritz Maytag's purchase of the Anchor Brewing Company of San Francisco, which we honor with an "Anchor Steam" clone recipe. Our sponsors for the AHA Big Brew are Wyeast, Briess Malting and Quoyn, makers of the Party Pig. See Gary Glass's "Homebrew Clubs" column for full recipes. The AHA Big Brew is one of our most fun events of the year, as nothing represents the camaraderie and essence of homebrewing better than getting together with a large group of friends and making beer.

AHA National Homebrewers Conference



A coalition of Chicago-area clubs is working together and with Association of Brewers staff to put on an outstanding event for



Have fun on National Homebrew Day while brewing beer with fellow brewers and introducing friends to the hobby of brewing.

homebrewers. The 25th annual AHA National Homebrewers Conference is set for Rosemont, Ill. June 19 to 21, 2003. Rosemont is one "Blue Line" stop away from O'Hare airport. The Chicago organizers have dubbed the theme of this year's conference as "Sweet Homebrew Chicago."

The conference speaker roster includes heavy hitters Michael Jackson, Pierre Celis and Garrett Oliver, author of the new Harper Collins book *The Brewmasters Table*. I would like to thank John Hall, Greg Hall and the good folks at Goose Island Brewing Co. for ponying up the sponsorship dollars that

American Homebrewers Association Board of Advisers

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cover Michael Jackson's transportation to the conference from London. I highly recommend Goose Island's beer and brewpubs, as they have become Chicago institutions.

The daytimes feature seminars that are themed into blocks addressing topics in-depth. The nighttimes feature a pre-conference trolley crawl to Chicago breweries and finer watering holes on the 18th (including one of my all-time favorite pubs, The Map Room); Club Night on the 19th; the Rogue Ales Grand Banquet on the 20th; and Real Beer, Real Food on the Solstice. I wish to thank Jack Joyce, Michelle Becker and the other good folks at Rogue for coming back for their third year as Grand Banquet sponsor. The conference should be the best time of 2003 for homebrewers in attendance.

There are rumors that the "Purple Gang"—the underworld organizers of the outstanding 2000 conference in Livonia, Mich., not the rhythm section of "Jailhouse Rock"—is planning on making an appearance and adding some territory in Chicago. I can't blame them. Chicago is a wonderful

town with amazing architecture, museums and nightclubs with trap doors and other reminders of the ill conceived and failed experiment of Prohibition.

The conference will again be the site of the finals of the AHA National Homebrew Competition with the awards announced during the Grand Banquet. Chicago is easily accessible by car or air and a fun time is guaranteed, so come on and join us in Chicago. A full speakers roster and other conference details are available at www.chibeer.org/aha03/. You can register online, fax in the form on page 46 or call conference registrar Kate Porter at 888-822-6273 ext. 123.

AHA Liaison Update

The AHA liaisons are 60-plus hard-core supporters of the AHA who represent the Association at club meetings, beer festivals and events and who make membership presentations to grow the organization. In 2002, the liaisons brought in more than 500 membership years. Two liaisons, Randy

Barnes and Susan Ruud, brought in more than 50 membership years. I would like to thank Randy and Susan for their efforts. Both have received AHA lifetime memberships for their outstanding achievement. Overall, AHA liaisons recruited more than 500 paid membership years for the AHA. Thanks to all liaisons for taking leadership roles in their communities.

AHA Pub Discount Program

The AHA is currently at 200 participating pubs in the Association of Brewers pub discount program. I was in Chicago recently to promote the upcoming conference and attend the Real Ale Festival and a large number of members didn't know they could use the cards at Goose Island's brewpubs. If you are traveling or not, it is worth visiting www.beertown.org on occasion to get the latest update on which pubs are participating. Remember to use your card when you are in participating establishments to keep the program in the front of servers' minds and to tip on the full value of what you are served.

We are currently looking at making the program attractive to better beer bars and ways to involve members in the recruitment process for pubs. Stay tuned to www.beertown.org for ways to get your "local" into the program if it is not already.

Association of Brewers
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Beertown Redesign

Association of Brewers marketing director Cindy Jones led the recent redesign of the www.beertown.org Web site. With the help of the AHA board of advisers on content, the site serves as a great launch point for finding information about association news, homebrewing or the world of beer. If you haven't been to beertown for a while, check it out.

See you in Chicago!

Paul Gatz is director of the American Homebrewers Association.



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BY RAY DANIELS

The Nose Thing

I was running through the last-minute details for a beer dinner recently when I encountered an issue that I'm sure made the banquet manager think I was crazy. She was talking about putting oil lamps on each table during the dinner and I was worried that they might emit some odorous fumes. "My people will complain if they smell," I said.

Of course in that one instant, I had adopted the entire universe of beer geekdom (or beer connoisseur-dom, if you please) as "my people," but I left that fact to ponder late at night over a strong barleywine or two. The immediate issue was a matter of common aesthetics: the nose of the beer drinker can be a sensitive and picky thing. As I pondered ways to pull the banquet manager's leg a bit, I considered the delicate nature of the beer drinker's proboscis.

The nose is incredibly important to the enjoyment of beer—indeed to flavor perception with regard to any beverage or food. The tongue perceives only four flavors (bitter, sweet, sour and salty) along with textures. All those other things that we conjure up as "flavor" come from the nose. That of course is why food tastes so lousy when you have a cold or sinus infection. If you can't smell, you can't taste.

That's simple enough. But where normal people take smelling for granted, the average beer geek gets crazy any time she or he is trying to "taste" (read "smell") a beer and there are other aromas interfering. At the Chicago Beer Society we commonly ban smoking at (or near) any of our events to ensure that we are smelling the beer aromas and not the characteristics of burning tobacco leaves. We also try to avoid meeting or holding events someplace that has a strong aroma: musty basements, vinegary-smelling bars and outdoor venues that get pummeled with automotive exhaust every time the stoplight changes.



Of course the best laid plans of an events coordinator can be undone by one heavily perfumed or cologned guest. Not long ago at a beer tasting event, I was approached by a strong wall of perfume shortly before the woman it was attached to arrived to ask me a question. I was relieved to discover that she was there with not one but three men so that she would be well insulated from others who might wish to enjoy the food and beers rather than her fragrant eau.

Odd aromas may be unwelcome during any sort of beer consumption, but when the order of the day is judging then any sort of perceptible odor can lead to a complaint. I have seen beer judges protest the recently sharpened wood pencils they were given to complete scoresheets. The answer: mechanical pencils.

Cups can be a problem too. Most competitions use recyclable plastic cups for judging, with a fresh cup used for each sample. We avoid glass because the detergents used in washing can leave a residue that may be aromatic in itself and at the very least can kill the head on the beer. And not just any plastic cup will do. Hard plastic is best as the softer varieties (like those you usually find at the grocery store) may have a slight plas-

tic aroma to them—a complaint I have heard more than once at the judging table.

Clearly the issue of aroma must be considered carefully when picking a site and setup for judging beer. A ski lodge motif may be too redolent of wood; attractive floral centerpieces will have to go. Newly laid carpet is a nightmare. Windows open to freshly mulched planting beds must be closed. Smokers right outside the door, or down the hall with a draft that carries into the judge room? Shut 'em down.

When picking a site for judging, a brewery seems like a natural place to go—until you visit the average brewery and realize what a jungle of aromas it is. The area near grain storage smells strongly of malt. If beer has been brewed anytime within the past day or two (and that tends to happen in a brewery!) the brewhouse will smell worty and the fermentation area emanates carbon dioxide and yeast odors. The packaging area seems benign at first until you realize that tons of beer is spilled there and that it also carries the aromas of lube grease, fresh cardboard packing materials and floor drains.

Flashing back to the banquet manager and the oil lamps in question, I was assured that they would not smell. But I wasn't ready to let her off the hook.

"Now what about the water here—it's non-chlorinated, right?" I asked with unfelt earnestness.

"Uh, I don't think so," she said, "but we can probably get some bottled water for the tables."

"Well it's bigger than that," I said. "All of the plates and silver need to be rinsed with non-chlorinated water before use, otherwise they'll have an off-flavor. Actually the linens need to be rinsed in chlorine-free water too—just in case someone spills something and liberates chlorine fumes that would interfere" (continued on page 58)

Lunch Break Launches BrewDear *Zymurgy*,

I just joined the AHA this morning, and it made me think back to how I got started in this. I work for a company in Boulder that used to have lunchtime lectures that would allow us to soak up some information from various guest speakers. In the fall of 2000, one of those speakers was Gary Glass. Gary was kind enough to take an hour out of his day to come and teach us a quick lesson on brewing beer. I had always wanted to try it, but if it wasn't for Gary, I probably never would have. Tomorrow I will be firing up the burner for my 50th gallon of the year. I want to thank Gary once again for getting me pointed in the right direction.

Juan Aviles

Dear Juan,

Gary's passion for brewing is part of what has helped to keep the AHA doing good things for members all over the country these last few years. Nice to see that he has had an impact locally too.

On another note, we wonder how many of our readers might do similar lunch talks at their place of work or local citadel of learning as a way to help spread the gospel of brewing to even more homebrewers-in-waiting.

Cheers,
—Ed.

It's a Hop, Hop, Hoppy WorldDear *Zymurgy*,

I was very excited when reading Charlie Papazian's column in the January/February 2003 issue of *Zymurgy* on "Bitter About a Balancing Act." I completely agree with the thoughts and ideas he developed in that article. In my opinion, it is not really the bitterness of the bittering hop-derived compounds



Thanks to Phil Wilcox for his homebrew label submission!

(iso-alpha-acids or isohumulones) that is the key issue, but the increase in levels of other compounds present in hops that influence the balance and drinkability of beers. After all, independent of whether the isos are produced from high-alpha hops or from low-alpha hops, the structures are exactly identical, having the same properties and also the same bittering characteristics.

However, what we really taste is not the individual isos *per se*, but associations (complexes) with a variety of other beer constituents including hop-derived compounds. It is a pity that these weak associations, as we perceive them on our taste buds, cannot be studied properly, because even mild manipulations destroy the complexes. It is an economic fact that high-alpha hops or, even better, super-high-alpha hops are the varieties of choice for hop processors as these will give highest yields of iso-alpha-acids or advanced hop products and are, thus, most profitable (also for big brewers).

If a brewer is using 5 percent or even lower percentage alpha-hops (a common content for so-called aroma hops) and is aim-

ing at the same bitterness levels as if he was using high-alpha hops, he must apply three, four, maybe even five times more hops. This means adding many more essential oils, polyphenols, etc. It should be quite obvious that such high levels will modify substantially the hop character in beer and eventually mellow the harsh bitterness inherent to isos. In order to achieve positive results, the hop variety must be properly chosen, since compositions of aroma hops vary widely. Cascade may be the prototype of an aroma hop variety with very distinct characteristics, which is now widely featured.

The balance, from my viewpoint, lies in the long boiling times, which invariably lead to drastic changes in the composition of hop constituents. Unfortunately, we scientists do not at present know which specific constituents cause harm and which ones are beneficial to a desirable hop character on prolonged heating. Brewers, on the other hand, know from experience and perhaps tradition which varieties to select and which to avoid in order to brew beers exhibiting an agreeable hop flavor.

So, Charlie's comments were very

thoughtful and passionate at the same time. I myself entertain a lifelong passion for hops and beer. Currently, we are working intensely (10 researchers) on the health-associated properties of hops and their transfer into beers, which should lead to a well-argued preference for beers over other alcoholic drinks. Another line of applied research is pursued in collaboration with the Ghent Brewing School and is generously funded by the Flemish government. We have been studying during the past years all aspects of hops that are of utmost relevance to beer, i.e. bitter compounds (1997-1999) and essential oils (1999-2001), while we are continuing to investigate hop polyphenols (2002-2004). A number of Flemish breweries participate in these studies and are currently applying our know-how.

I can assure you that no other persons in the world can possibly be more convinced of the pivotal role hops play in brewing superior beers than those involved in our research and in our projects (brewers, researchers, teachers, students, myself). Charlie's account from a craft brewer's perspective, but demonstrating great expertise in the domain, fortifies the observations and findings by an authoritative research group on hops like ours (in all honesty).

Sincerely,
Prof. Dr. Denis De Keukeliere
Ghent University, Belgium

Dear Professor K,

Thanks for the insights—and for the support of our own learned professor. We believe that the use of lower alpha hops for bitterness is one reason why homebrews can turn out to be better than commercial beers. Mark another point for the freedom of choice offered by brewing your own beer!

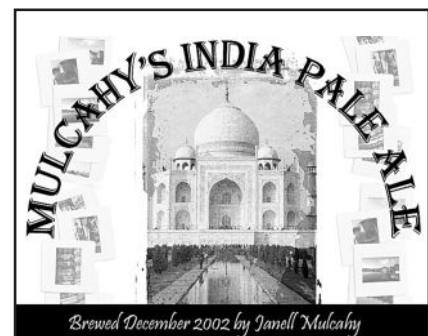
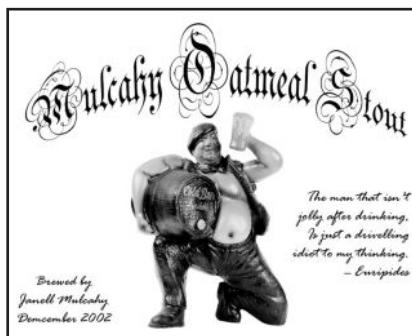
—Ed.

Be Careful Where You're Scrounging

Dear *Zymurgy*,

I enjoyed the article on Randy Mosher's brewery (March/April 2003) and I envy the space he has to brew in. I especially admired the brew kettle he designed and made for his brother. That is a work of art.

There has been a small mistake made of the titanium filter housing. The housing was



Thanks to Kent Tegels and Janell Mulcahy for their homebrew label submissions!

installed on an L-1011, from the part number on the data plate. I doubt if the housing is titanium, though—it's much more likely that aluminum was used for the housing.

The housing holds a filter that cleans the air from an electric air compressor. The air is used to pressurize the potable water tank that pumps the water to coffeemakers, lavatory faucets and water fountains.

A sterile filter could be modified to fit into the housing and with the air compressor an aircraft quality oxygenation system could be constructed for the wort. The electric

power used on airplanes is 115v 400 hz. Developing a power supply for the motor could be a problem.

The L-1011s are being scrapped so an air compressor should be available. Just be careful where the parts come from as the hydraulic fluid used in airplanes is very nasty stuff. Also stainless steel is used in the toilet systems.

Philip McCurdy

Dear Philip,

Thanks for the note. Randy may be the king of scrounging, but you obviously know where to look for the low-down on old airplane parts. That's a good heads up on the hydraulic fluid, but we're not quite sure how to take the reference to stainless steel and toilets. Guess if you built brewing equipment out of that, your barleywine would have to be called "Old Crapper."

Cheers,
—Ed.

Barleywine Redux

Dear Zymurgy,

I just received the most recent copy of Zymurgy (March/April). I have to tell you I enjoyed the article on "Barleywine" by Fal Allen, though I think I prefer the more comprehensive version printed in Brewing Techniques (September/October 1998). I compared the two articles and while your Reader's Digest version is nice, I don't see where it offers one shred of new information or insight.

I'm a lover of big beers and of barleywines in particular and absorb as much information as I can on the style. It's disappointing that Mr. Allen has not come up with anything new to write about in the last four-and-a-half years (he also shared the byline on the original article). I'm always trying new techniques and twists in my brewing and I think I learn something with each batch I brew.

Maybe it's time to start a new feature in Zymurgy. You can call it, "Let's Brew a Barleywine (or any style)," written by the homebrewing community and compiled by someone on your staff. Give everyone a style ahead of time and compile the information and print it in a future magazine. At least you'll be getting fresh information from a variety of sources based on experience and you won't be paying to reprint old articles. I've got some other ideas on how to make this work if you are at all interested.

I get great information and feedback from my brewclub, but there are thousands of other brewers out there that I'd love to tap into for tips and techniques. You can expect

some of it to be contradicting because brewing is based on personal preference, technique and style. My experience might be opposite of your experience and yet the results of both can be satisfactory. Let's compare and celebrate the differences!

I've been brewing for more than seven years and have made many, many barleywines. I'm very cautious about offering advice, but I'm quick to share my personal experience.

I don't mind reprints, but at least infuse them with some fresh thoughts.

Sincerely,
Mike Focht

Dear Mike,

We're sorry that you didn't find anything new in Fal Allen's recent article, but we're sure that many brewers with less experience and more limited libraries found it to be useful and interesting. At the same time, we certainly didn't intend to republish previous work, so we'll have to keep an eye on that in the future. (Thanks for bringing it to our attention.)

As for the communal grope toward consensus about styles, we'd like to think that Zymurgy does play a role in that process—albeit not one that tries to voice a wide range of individual insights in a single article. That sort of contribution is best suited to discussion forums like the AHA's Tech Talk, <http://hbd.org> and the rec.crafts.brewing newsgroup. We'll continue to give individual writers an opportunity to stand back, look at a whole style or story and give us a structured overview of what they have found. And since the breadth of brewing only stretches so far, we'll eventually have someone else write on the same subject—but with their own particular take on it—thus further enhancing the range of knowledge and opinions available to homebrewers.

Cheers,
—Ed.

Send your letters to "Dear Zymurgy," PO Box 1679, Boulder, CO 80306-1679; FAX (303) 447-2825 or ray@aob.org. Hey homebrewers! If you have a homebrew label that you would like to see in our magazine, send it to Magazine Art Director, The Association of Brewers, 736 Pearl Street, Boulder, CO 80302 or e-mail it to kelli@aob.org.

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BY GARY GLASS

Celebrate National Homebrew Day!

Fifteen years ago the United States Congress recognized May 7 as National Homebrew Day to celebrate the great American tradition of homebrewing.

I can think of no better means to bring the local, national and international homebrewing communities together than the National Homebrew Day celebration we call Big Brew. Big Brew, held each year on the first Saturday of May, falls on May 3 this year. This will be the sixth straight year we have celebrated Big Brew. Last year's event brought together more than 2,000 participants at 196 sites across five continents, brewing 5,235 gallons of homebrew! With the help of you and your fellow club members, we hope to make this the biggest, most memorable Big Brew yet.

Things will kick off with a simultaneous toast at noon Central Daylight Time. Then it's time to fire up the kettles! This year we have selected some very special recipes for you to brew. First, in honor of the American Homebrewers Association's 25th anniversary, we dusted off the Vagabond Gingered Ale recipe that appeared in the very first issue of *Zymurgy* published way back in December 1978. The second recipe is a clone of the legendary Anchor Steam beer, which was instrumental in kicking off the craft brewing revolution in the United States.

Be sure to register your site with us online at www.beertown.org/events/big-brew/index.html. When you are done brewing, go back and post the results of your Big Brew site. This helps us to promote the event to the media and gain international exposure for homebrewing. Special thanks go to this year's National Homebrew Day sponsors Briess Malting Co., Party Pig by Quoin and Wyeast Laboratories, Inc.

If you happen to be in the Boulder, Colo. area on the afternoon of Friday, May 2, be

sure to stop by the Association of Brewers office at 736 Pearl Street for our annual pre-Big Brew party on the back deck. Be sure to bring some homebrew to share!

Vagabond Gingered Ale Extract

Malt/Extract

- 3.5 lb (1.6 kg) Dark Liquid Malt Extract
 - 2.5 lb (1.13 kg) Dark Dry Malt Extract
 - 0.75 lb (304 g) Briess Caramel Malt 40L
 - 0.5 lb (225 g) Briess Chocolate Malt
 - 2.0 oz (57 g) Cascade 5.0% AA 60 minutes (10 HBU)
 - 1.0 oz (28 g) Willamette 5.0% AA 1 minute
 - 3.0 oz (85 g) Freshly Grated Ginger Root 60 minutes
 - Wyeast #1275 Thames Valley Ale Yeast
- OG: 1.053
 - IBU: 35
 - SRM: 37

Brewer's Specifics

Steep crushed grains in 1.5 gallons of 150°F (66°C) water for 30 minutes. Sparge with 0.5 gallons of 170°F (77°C) water. Add extract and bring to a boil. Add Cascade hops and ginger and boil for 59 minutes. Add Willamette hops and boil one minute more. Strain into a fermenter filled with 2.5 gallons of cold water. Top up to 5 gallons with cool water. When temperature is below 75°F (24°C), pitch yeast and aerate well. Ferment around 65°F (18°C). When fermentation is complete, bottle with 1.25 cups of dry malt extract or siphon into sanitized party pigs with 0.25-0.33 cups of dry malt extract in each. If you are kegging, pressurize to 2.7 volumes of CO₂.

The May AHA Club-Only Competition

The May AHA Club-Only Competition is English & Scottish Strong Ales. The competition is hosted by David Moritz, Matt Stinchfield and the Rillito Creek Brew Club of Tucson, AZ.

The style for the competition is English & Scottish Strong Ales, BJCP Category 11. One entry of two bottles is accepted per AHA registered homebrew club. Entries require a \$5 check made out to AHA and an entry/recipe form and bottle i.d. forms. More information on the club-only competitions and forms are available at www.beertown.org. Please send your entry to:

AHA COC
c/o Catalina Products
5620 N. Kolb Rd Suite 205
Tucson, AZ 85750

Entries are due May 12-22, 2003. Judging is slated for May 24, 2003. Email for questions or those interested in judging is David-J-Moritz@att.net.

2002-2003 Homebrew Club of the Year Standings

Points	Club
12	Edmonton Homebrewers Guild
12	Hampton Roads Brewing and Beer Tasting Society
12	James River Homebrewers
12	Kansas City Bier Meisters
12	Strange Brew
8	Down River Brewers Guild
8	Fellowship of Oklahoma Ale Makers
8	Great Northern Brewers
4	Minnesota Home Brewers Association
4	Prairie Homebrewing Companions
4	Upstate New York Homebrewers Association

Upcoming 2003 AHA Club-Only Competition Styles

Month	Style or Name	Cat. #	Host
May	English & Scottish Strong Ale	11	Rillito Creek Brew Club
August	European Pale Lager	2	Foam on the Range
Sept/Oct	Specialty/Experimental/Historical Beers	24	Colonial Ale Smiths & Keggers
Nov/Dec	Koelsch & Altbier	8	Pacific Gravity

Vagabond Gingered Ale All-Grain

7.5 lb (3.4 kg) Briess Pale Ale Malt
 1.5 lb (0.68 kg) Briess Caramel Malt 40L
 0.5 lb (225 g) Briess Chocolate Malt
 0.5 lb (225 g) Briess Black Malt
 1.5 oz (43 g) Cascade 5.0% AA 60 minutes (7.5 HBU)
 1.0 oz (27 g) Willamette 5.0% AA 1 minute
 3.0 oz (85 g) Freshly Grated Ginger

Root 60 minutes
 Wyeast #1275 Thames Valley Ale Yeast

- OG: 1.052
- IBU: 36
- SRM: 36

Brewer's Specifics

Mash grains at 150°F (66°C) for 60 minutes. Mash out at 170°F (77°C) and sparge with 170°F water. Collect enough run off to

end up with 5 gallons after a 60-minute boil. Bring run off to a boil and add Cascade hops and ginger. Boil for 59 minutes, add Willamette hops and boil one minute more. Chill to below 75°F (24°C), pitch yeast and aerate well. Ferment around 65°F (18°C). When fermentation is complete, bottle with 1.25 cups of dry malt extract or siphon into sanitized party pigs with 0.25-0.33 cups of dry malt extract in each. If you are kegging, pressurize to 2.7 volumes of CO₂.

Anchor Steam Clone Extract*

- 4 lb (1.8 kg) Light Liquid Malt Extract
- 2.25 lb (1 kg) Light Dry Malt Extract
- 14 oz (400 g) Briess Caramel 80L Malt
- 1.25 oz (35 g) Northern Brewer 8% AA (10 HBU) 60 minutes
- 0.5 oz (14 g) Northern Brewer 8% AA 15 minutes
- 0.5 oz (14 g) Northern Brewer 8% AA 1 minute
- Wyeast #2112 California Lager Yeast
- OG: 1.053
- IBU: 40
- SRM: 11-13

Brewer's Specifics

Steep crushed caramel malt in 0.5 gallons of 150°F (66°C) water for 20 minutes. Sparge with 0.5 gallons of 170°F (77°C) water. Top water up to 2.5 gallons, add extract and bring to a boil. Add 1.25 ounces of hops and boil for 45 minutes. Add another 0.5 ounce of hops and boil for 14 minutes. Add remaining 0.5 ounce of hops and boil one minute longer. Strain into a fermenter filled with 2.5 gallons of cool water. Add enough cool water to obtain 5 gallons. Once the wort temperature has dropped below 75°F (24°C), pitch yeast and aerate well. Ferment at 58-68°F (14-20°C). When fermentation is complete, bottle with 1.25 cups of dry malt extract or siphon into sanitized party pigs with 0.25-0.33 cups of dry malt extract in each. If you are kegging, pressurize to 2.8 volumes of CO₂.

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A Division of the Association of Brewers
Celebrating 50 Years

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Crazy Photo Credits Strike Zymurgy March/April Issue!

Odd phases of the moon, drought on the Colorado Front Range and psychic aliens from Mars combined to foul up some of the photos and credits in the March/April 2003 issue of *Zymurgy*.

First, we ran the wrong photo of Dion Hollenbeck's RIMS system on page 56. The correct picture appears below.

Second, we ran a lovely shot of a brewing sculpture (stainless steel system) made by Beer, Beer and More Beer with a credit thanking the folks from an entirely different company on page 38. Please call Chris at Beer, Beer and More Beer and tell him you now know that it is their system.

Finally, the fine brew kettle and burner arrangement that appears on the top of page 28 of that same issue comes from SABCO Industries although our photo credits implied that another supplier might have been the source. Not so!

Thanks to the dozens of eagle-eyed readers who regularly cruise the fine print and keep us honest on these things. We couldn't keep it together without you. (Obviously!) Our apologies to the individuals and companies affected.

—Editor



Zymurgy reader Dion Hollenbeck's RIMS system. The temperature controller cabinet is homebuilt with parts mostly from Omega (PID controller and SSRs). The pump is from March, the stand is completely homebuilt. The two 6,500 watt heater elements are from Grainger. All parts of the system are connected with Hansen.

Anchor Steam Clone All Grain*

- | |
|--|
| 9 lb. Briess Pale Ale Malt |
| 14 oz. Briess Caramel 80L Malt |
| 0.88 oz (25 g) Northern Brewer 8% AA
(7 HBU) 60 minutes |
| 0.5 oz (14 g) Northern Brewer 8% AA
15 minutes |
| 0.5 oz (14 g) Northern Brewer 8% AA
1 minute |
| Wyeast #2112 California Lager Yeast |
- OG: 1.053
 - IBU: 40
 - SRM: 11-13

Brewer's Specifics

Mash grains at 150°F (66°C) for 60 minutes. Mash out at 170°F (77°C) and sparge with 170°F water. Collect enough run off to end up with 5 gallons after a 60-minute boil. Bring run off to a boil, add 0.88 ounce of hops and boil 45 minutes. See extract recipe for remainder of brewing details.

*Based on recipe found in Tess and Mark Szamatulski's *Clone Brews*. Also please note that "Anchor Steam" is a trademark of the Anchor Brewing Company.

Bitter & English Pale Ale Club-Only Competition

The AHA thanks Leo Vitt and the Minnesota Timberworts of Rochester, Minn. for hosting the Bitter & English Pale Ale Club-Only Competition January 25. This was the fourth of six competitions in the August to May 2002-2003 cycle, with points going toward the Homebrew Club of the Year trophy. First place went to Roxanne Hastings of Edmonton, Alberta, representing the Edmonton Homebrewers Guild with his Strong Bitter. Second place went to Thomas Yaeger of Wyandotte, Mich., representing the Down River Brewers Guild with his Special Bitter. Third place went to Carl Eidbo of Fargo, N.D., representing the Prairie Homebrewing Companions with his Strong Bitter.

Congratulations to all of the winners, and thanks to all of the club representative brewers who entered!

Gary Glass is project coordinator for the American Homebrewers Association. 

<http://www.GrapeandGranary.com>



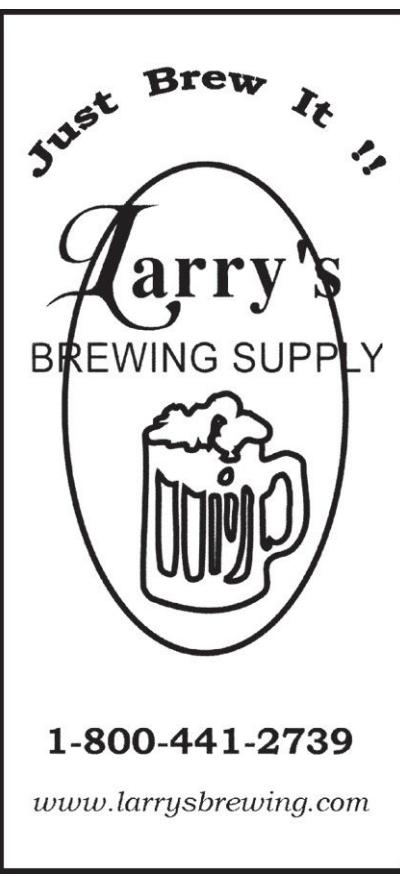
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CALENDAR

AMERICAN HOMEBREWERS ASSOCIATION

APRIL

21-24 Association of Brewers Goes "On the Road"-Southeast Region Southeast USA. The Association of Brewers invites YOU to participate in the "On the Road" events. Charlie Papazian wants to meet enthusiastic homebrewers on his visit to the Southeast region. Visit www.beertown.org for specific times, locations and special homebrew contest information. Contact: Mark Snyder. Phone: 303-447-0816, 888-U-CAN-BREW. Fax: 303-447-2825. E-mail: mark@aob.org Web: www.beertown.org

25-May 4 National Homebrew Competition 1st Round Regional sites across the states. **AHA/BJCP SCP.** Fee: \$8 for AHA members/\$12 for non-members. Deadline: 4/9-4/18. Judging: 4/25-5/4. Takes place at regional sites around the country. Contact: Gary Glass. Phone: 303-447-0816 x 121, 888-U-CAN-BREW. Fax: 303-447-2825. E-mail: gary@aob.org Web: www.beertown.org

26 U.S. Open Charlotte, NC. **BJCP SCP.** Sponsored by Carolina's Brewmasters. See Web site for more details. Contact: Gary Cathey. Phone: 704-634-7648 (day), 704-393-1178 (eve). E-mail: garyc3@aol.com Web: <http://hbd.org/cbm>

MAY

3 The Green Mountain Homebrew Competition Burlington, VT. **AHA/BJCP SCP.** The Green Mountain Mashers homebrew club and the Vermont Pub & Brewery are pleased to announce the largest homebrew competition in Vermont. Deadline: 4/25. Fee: \$5. We recommend brewers send three 12-ounce bottles per entry. Greg Noonan of the Vermont Pub & Brewery will choose the Brewer's cup winner from the Best of Show round to brew at the Pub. Ribbons will be awarded for all styles of beer, mead and cider. Contact: Anna Duany Whyte. Phone: 800-456-BREW. E-mail: gmhc2003@hotmail.com Web: www.mashers.org/

- 3 AHA's 6th Annual Big Brew** All around the world. Celebrate National Homebrew Day with the American Homebrewers Association's Big Brew. Simultaneous Toast: Noon, Central Standard Time. See "Homebrew Clubs" by Gary Glass in the May/June 2003 issue of *Zymurgy* or view online at www.beertown.org. Visit www.beertown.org to find out how you can celebrate. Contact: Gary Glass. Phone: 303-447-0816 x 121. Fax: 888-U-CAN-BREW x 121. E-mail: gary@aob.org Web: <http://hbd.org/beer>
- 4 2003 Upper Mississippi Mash-Out** Minneapolis /St. Paul, MN. **AHA/BJCP SCP.** Sponsored by the Minnesota Home Brewer's Association and the St. Paul Home Brewer's Club. All 26 BJCP categories including Cider and Mead. Deadline: 4/11-4/20. Fees: \$7 for 1st entry, \$5 for additional entries. 2 bottles per entry. Awards Ceremony: 5/4 at Summit Brewing in St. Paul. Qualifier for the 2003 High Plains Homebrewer of the Year award. Contact: Al Boyce. Phone: 952-927-8968. Fax: 651-205-0471. E-mail: al@mnbrewers.com Web: www.mnbrewers.com/mashout
- 5-10 ALES Homebrew Open** Regina, Saskatchewan, Canada. **AHA/BJCP SCP.** A regional homebrew competition for beer, meads and ciders. Sponsored by: ALES (Ale & Lager Enthusiasts of Saskatchewan). Deadlines: 3/28-5/2. Fees: \$5. Awards Ceremony 6/4, however results will be posted on the Web site 5/12. Contact: Barry Bremner. Phone: 306-543-0587, 306-761-1942. E-mail: bbremner@accesscomm.ca Web: www.alesclub.com
- 10 24th Annual Maltose Falcons' Mayfaire Competition** Woodland Hills, CA. Sponsored by the Maltose Falcons Homebrewing Society. We are using the 2003 Edition of the Maltose Falcons Beer Style Guidelines. Now introducing the vaunted Double IPA category. Results used in the Sierra Nevada California Homebrewer of the Year Award. Electronic entry registration is encouraged. Judges and Stewards should register online as well. Deadline: 4/1-4/17. Fee: \$6. Contact: Drew Beechum. Phone: 818-766-0317. E-mail: drewbage1847@yahoo.com Web: www.maltosefalcons.com
- 10 B.E.E.R.'s 7th Annual Brew-off Homebrew Competition** Nesconse, NY. **AHA/BJCP SCP.** Sponsored by B.E.E.R. (Brewer's East End Revival), this is the island's largest competition. This is now part of the "New York State Homebrewer of the Year" (NYS HOTY) statewide competition. Deadline: 4/1-5/2. Fees: \$6. Awards Ceremony: 5/10. Contact: Kevin Basso. Phone: 631-327-1338, 631-231-7050. E-mail: kevinb@awsperry.com Web: <http://hbd.org/beer>
- 12-17 7th Annual Silver Dollar Fair Homebrew Competition** Chico, CA. **AHA/BJCP SCP.** Sponsoring Club: Chico Homebrew Club. Final judging at Sierra Nevada Brewing Company. AHA Medals for 1st, 2nd and 3rd place in Category. Small rosettes for 1st, 2nd and 3rd place in Style. T-shirts, gift certificates and various awards for 1st, 2nd and 3rd place Best of Show in addition to sponsored categories. Deadline: 4/12-5/4. Fee: \$6. Contact: Larry Rauen. Phone: 530-894-2624. E-mail: Wetlands@prodigy.net Web: www.saber.net/~jmaretii/chico_homebrew_club/
- 15-18 Calaveras County Fair and Jumping Frog Jubilee** Angels Camp, CA. **AHA/BJCP SCP.** Amateur Beer Fair Competition open to the following counties: Placer, El Dorado, San Joaquin, Sacramento, Amador, Tuolumne, Alpine, Mariposa, Stanislaus and Calaveras. Sponsored by: Calaveras County Fair. Deadline: 4/1. Fees: \$2. Awards Ceremony: 5/15-5/18. Contact: William Tarachala. Phone: 209-736-2561. E-mail: info@frogtown.org
- 17 The BrewMaster's Open** Alpharetta, GA. **AHA/BJCP SCP.** The BrewMaster's Open will judge all BJCP categories including Ciders and Meads. Awards also given for 1st, 2nd, 3rd and Best of Show. Sponsored by: The Brew-Masters of Alpharetta. Deadline: 5/1-5/10. Fees: \$6. Awards Ceremony: 5/17. Contact: Craig Sikes. Phone: 770-645-1777, 770-888-8665. E-mail: CraigSikes@aol.com Web: www.GeorgiaBrewer.com/BrewMastersOpen
- 17 2nd Annual Cumberland Kegger** Knoxville, TN. **AHA/BJCP SCP.** Keg competition in Crossville TN on a cattle ranch. Register between May 1-7. Competition will feature prizes, potluck dinner, camping, bonfire and possibly big brew-out. Kegs must be hand carried to event. See more details online. Contact: Thomas Karnowski. Phone: 865-405-8803. E-mail: karnowsk@esper.com Web: www.knoxhomebrewers.com/kegger.htm
- 17 21st Annual Oregon Homebrew Festival** Corvallis, OR. **AHA/BJCP SCP.** The oldest and one of the largest homebrew competitions and festivals in Oregon, this year featuring added entertainment to celebrate our 21st Anniversary! Sponsored by: Heart of the Valley Homebrewers. Deadline: 4/1-4/26. Fees: \$6. Judging: 5/16. Awards Ceremony: 5/17. Contact: Ron Hall. Phone: 541-715-2727. Fax: 541-745-7062. E-mail: rhall@hp.com Web: www.hotv.org
- 17-18 Amber Waves of Grain Buffalo, NY. **AHA/BJCP SCP.** Amateur Homebrewing Competition recognizing all BJCP Categories including Ciders and Meads. Sponsored by the Niagara Association of Homebrewers. Fees: \$5. Awards Ceremony: 5/24. BJCP judges and stewards will be needed. If you are interested please contact Christopher Clair or another committee member (contact information can be found on the Web site). All judges must be BJCP certified. Contact: Lawrence A. Pilon. Phone: 716-831-9779. E-mail: alferwon@hotmail.com Web: www.niagarabrewers.org**
- 18 Sunshine Challenge XIV** Orlando, FL. **BJCP SCP.** See Web site for more details. Contact: Ron Bach. Phone: 407-262-7422 x 7043. E-mail: bachian@juno.com Web: <http://cfhb.org/>
- 24 "All that Glitters is Not Old" AHA Club-Only Competition** Tucson, AZ. **AHA/BJCP SCP.** Sponsored by: Rillito Creek Brew Club. Deadlines: 5/12-5/22. Results posted: 5/27. Contact: David J. Moritz. Phone: 520-794-8128, 520-751-1114. E-mail: david-j-moritz@att.net Web: www.beertown.org

31 **San Joaquin Fair Homebrew Competition** Stockton, CA. AHA/BJCP SCP. California Residents Only, as it's a county fair. All BJCP styles are acceptable. The fair theme this year is "Pumpkin" that will be entered in the specialty category. Sponsored by: Brewangels. Deadline: 5/10-5/26. Fees: \$5. Awards Ceremony: 5/31. Contact: Rick Reineman. Phone: 209-952-1481. E-mail: rick@reineman.com Web: www.brewangels.com

JUNE

5 **North American Beer Awards**

Idaho Falls, ID. BJCP SCP. Sponsored by the Edmonton Homebrewers Guild. See the Web site for more details. Contact: Glen Hannah. Phone: 780-417-3695. E-mail: ghannah@telusplanet.net Web: www.ehg.ca/

6 **2003 Aurora Brewing Challenge** Edmonton, Alberta. BJCP SCP. See Web site for more details. Contact: Glen Hannah. Phone: 780-417-3695. E-mail: ghannah@telusplanet Web: www.ehg.ca/

7 **BUZZ OFF** West Chester, PA. BJCP SCP. Sponsored by Brewers Unlimited Zany Zymurgists. See Web site for more details. For another year we will be a qualifying event for the prestigious Masters Championship of Amateur Brewing (MCAB) as well as the Delaware Valley Homebrewer of the Year. All BJCP recognized styles including meads and ciders are eligible for entry. Deadline: 5/12-6/1. Contact: Paul McGinnis Jr. Phone: 610-804-0752 (day), 610-857-1106 (eve). E-mail: paul772834@aol.com Web: http://hbd.org/buzz/

8 **8th Annual Big Batch Brew Bash** Houston, TX. AHA/BJCP SCP. The Big Batch Brew Bash has grown to be recognized as the largest single style competition of its kind in the country. This year's style is American Brown Ale. Sponsored by: Kuykendahl Gran Brewers. Deadline: 5/3-5/30. Fees: \$0. Awards Ceremony: 6/8. Contact: Donald Sajd. Phone: 281-351-7541, 832-484-4979. E-mail: rodon@flash.net Web: www.thekgb.org

14 **2003 Homebrew Bash Stout Stagger** Oshkosh, WI. AHA/BJCP SCP. The Society of Oshkosh Brewers (SOBs) announces the 2002 Stout Stagger, to be held in conjunction with the 4th Annual Wisconsin Homebrew Bash on June 14. Entries will be accepted in the following categories: 16a) Dry Stout; 16b) Sweet Stout; 16c) Oatmeal Stout; 16d) Foreign Extra Stout; and 12c) Russian Imperial Stout. Three bottles of each entry are required. Deadline: 6/13. Fee: \$7 for the 1st entry, \$5 for add. entry. Contact: Richard Stueven. Phone: 920-303-1781. Fax: 920-303-1781. E-mail: rstueven@beerweb.com Web: www.realsob.com

19-21 American Homebrewers Association's National Homebrewers Conference Chicago, IL. Holiday Inn Chicago-O'Hare International. "Sweet Home Brew Chicago." Join us at the American Homebrewers Association's 25th Annual National Homebrew Conference. Meet up with all your homebrewing cronies with the opportunity to learn more about your favorite hobby, homebrewing! See ya in Chicago. Contact: Jessica Gottlob. Phone: 303-447-0816 x 145, 888-U-CAN-BREW. Fax: 888-U-CAN-BREW x 145. E-mail: jessica@aob.org Web: www.chibeer.org/aha03/

28 **Mother Lode Fair Homebrew Competition.** Sonora, CA. AHA/BJCP SCP. Judging will begin at 11 a.m.. This competition is open to all California residents. Entry forms and entry fee for each entry must be received by June 17, 2003. All beers must be received by 5 p.m. Tuesday, June 24. You may have your entries delivered to Mother Lode Fair Administration Building, 220 Southgate Drive, Sonora, CA 95370. Sponsored by: Parrott's Ferry Home Brew Club. Deadline: 6/3-6/17. Fee: \$5. Contact: Bill Neilson. Phone: 209-533-0360. E-mail: neilson@pfhbc.org Web: www.pfhbc.org

29 **16th Annual Southern California Homebrew Championships** Corona, CA. AHA/BJCP SCP. Sunday, June 29, at Main Street Brewery, 300 Main Street in Corona. Drop off entries at the brewery or mail to Bruce Bradigan, 2675 Sunny Hills Drive, Norco, CA 91760 by June 28. Fees: \$5. Contact: Christy Elshof. Phone: 909-798-0860. E-mail: brewchick@hotmail.com Web: www.hopheads.com

AMERICAN HOMEBREWERS ASSOCIATION
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SANCTIONED COMPETITION PROGRAM
BEST OF SHOW

JANUARY 2003
Big Beers Belgians & Barleywines Festival Homebrew Competition,
45 entries-David Hess of Marlborough, CT.
Big Bend Brew Off-Joe Gustis of Schertz, TX.

FEBRUARY 2003
6th Annual Eastern Connecticut Homebrew Competition,
303 entries-Bruce Stott of Rockville, CT.
10th Annual Peach State Brewoff, 257 entries-Russ Wilkins of Alpharetta, GA.
2003 DEA Challenge, 103 entries-Patrick Kennerly of Roanoke, VA.
2003 Las Vegas Winterfest Open,
230 entries-Mead BOS: Steve MacMilland and Diane Kirby of Henderson, NV;
Beer BOS: Jim Hodge, Henderson, NV.

MARCH 2003
14th Annual Reggae and Dredhop Homebrew Competition,
203 entries-Mead BOS: John Carlson of Louisville, CO;
Beer BOS: Bob Kauffman of Lafayette, CO.

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 July/August Issue (Vol. 26, No. 3), information must be received by May 2, 2003. 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.

JULY

1-31 American Beer Month 2003

Everywhere in the USA. "Discover the Flavors of Independence." Plan your events and promotions early! Contact: Monica Tall. Phone: 303-447-0816, 888-U-CAN-BREW. E-mail: monica@aob.org Web: www.americanbeermouth.com

12 **E.T. Barnette Homebrew Competition** Fox, AK. AHA/BJCP SCP. Sponsored by Zymurgist Borealis, this event will offer a grand prize of \$500! Prizes will also be awarded to the 1st, 2nd and 3rd place winners of each of the six judged classes. The judged classes are Light Ale, Dark Ale, Light Lager, Dark Lager, Specialty/Mixed Style and Mead. Deadlines: 6/23-7/10. Awards Ceremony: 7/19. Visit the Web site for additional information as well as Entry and Bottle ID. Contact: Scott Stihler. Phone: 907 474-2138. E-mail: stihlerunits@mosquitonet.com Web: www.mosquitonet.com/~stihlerunits/Scotts Den/Beer/Events/Events.html

19 **Ohio State Fair Homebrew Competition.** Columbus, OH.

AHA/BJCP SCP. Sponsored by SODZ, this event is open to all amateur homebrewers in Ohio. Deadline: 7/14-7/18. Fees: \$5. Entry forms & fees must be post-marked by 6/20. Contact: Brett Chance. Phone: 614-644-4126. Fax: 614-771-1536. E-mail: b.chance@expo.state.oh.us Web: www.ohiostatefair.com

AUGUST

1-2 NY State Fair 4th Annual Homebrew Competition. Syracuse, NY. AHA/BJCP SCP.

A state-wide homebrew competition with an award ceremony to take place at the NY State Fair. All New York state residents are invited to participate. Sponsored by the Salt City Brew Club. Deadlines: 7/11-7/25. Fees: \$8 first entry, \$5 additional. Awards ceremony: 8/25 12:00 noon at the Cole Muffler Court Pavilion. Contact: Peter M. Garofalo. Phone: 315-487-7711 ext. 1337. E-mail: pgarofa1@twcny.rr.com Web: www.nysfair.org

2 **AHA's Mead Day.** In your backyard. Brew Mead again or for the very first time, with the AHA! Contact: Gary Glass. Phone: 303-447-0816 x 121, 888-U-CAN-BREW x 121. Fax: 303-447-2825. E-mail: gary@aob.org Web: http://www.beertown.org

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BY JEFFREY RENNER

Pre-Prohibition Extract Kits: Access to Historical Style

One hundred years ago, Americans drank full-flavored golden lagers and ales, far removed from today's light-flavored mainstream beers in most ways except for the fact that they were brewed with corn or rice adjuncts. Recently, American homebrewers have rediscovered pre-Prohibition lagers and ales.¹ Until now, however, these beers have been restricted to brewers able to perform at least a mini-mash.

This has changed with the introduction of Old American Lager and Old American Ale kits from William's Brewing², made from an extract mashed from 70 percent 2-row barley malt and 30 percent flaked maize. They are described as being in the style or tradition of "pre-Prohibition American beers, before the trend began toward ever lighter beers with lower hopping rates." Bill Moore (the "William" of William's) told me that they weren't trying to be historians, but wanted to appeal to drinkers of modern mainstream American beers who want to try brewing something similar but with more character.

Like all William's kits, these come in sturdy, flat boxes with brewing instructions on the top. They include an 8-pound plastic pouch of extract, two plastic bags of hop pellets for flavor and aroma, a bag of priming sugar and an XL smack pack of yeast (2206 and 1056 respectively for the lager and the ale). They will make 5 gallons of beer with a starting gravity of at least 1.049, with a bitterness level of 23 IBU for the ale and 21 IBU for the lager (roughly double that of Budweiser).

Instructions are straightforward and clear. I followed them for the most part, departing by making a half-gallon (decanted) yeast starter for the lager. I also fermented it at a more traditional temperature of 50° F (10° C) rather than the 60° to 65° F (16 to 18° C) specified for both beers.

Not surprisingly, with 8 pounds of

extract, I got more than the guaranteed 1.049 original gravity—5.25 gallons of lager wort at 1.055 and about 5 gallons of ale wort at 1.058. Fermentation of both was rapid and clean, with a final gravity of 1.019 for the lager and 1.022 for the ale. When the lager fermentation slowed at one week, I allowed the temperature to rise to 60° F (16° C) for a three-day diacetyl rest before dropping it to lagering temperature.

"The resulting beers are a bit too dark and are less fermentable than my all-grain versions, resulting in a less crisp beer."

So now the question is: "How did they turn out?" Very tasty.

Both are darker than my typical all-grain classic American Pilsner due to unavoidable darkening of extract during production. They are a full gold with glints of copper, probably about 6 SRM. The lager has a slight haze; the ale is nearly clear. Both have good, long-lasting heads.

The lager is in the style of a Munich Helles, maltier and less bitter than a Pilsner. It has a rich malty aroma with very light diacetyl supporting the malt, but the corn is also evident. It is full-bodied and malty on the palate, with low but perceptible bitterness, and a light, spicy hop flavor and aroma. It finishes with clean, lingering malt and a light bitterness.

The ale reminds me of the old ales of years ago: Ballantine or Carling. It is lightly fruity and less malty than the lager, and again, the corn is nicely evident in a light, grainy sweetness. It also has low but evident bitterness and hop flavor and aroma, and is slightly more clean and bitter, especially in the finish.

I took two cases of the beers to a meeting of the Ann Arbor Brewers' Guild for informal evaluation. The members liked them and

were surprised that they were extract brews. One wrote, "Did you say that this was made from an extract kit? If the American megabreweries had followed this recipe, we'd probably all be drinking Bud!" They were both well received, but generally the lager was more popular.

Is this the easy way to duplicate an all-grain classic American Pilsner or cream ale? Well, no, not quite, both for technical and stylistic reasons. The resulting beers are a bit too dark and are less fermentable than my all-grain versions, resulting in a less crisp beer. Hopping levels are lower as well. But while the classic American Pilsner was the ancestor of modern mainstream lagers, there were many other American lagers a century ago, including soft, malty ones like this one.

These beers strike me as being historically authentic, and they are flavorful, enjoyable and as easy to drink as they are to brew. With a little "doctoring"—more hops, different yeasts (you can buy the extract alone in 6-pound pouches) or a little lower starting gravity, you can brew something closer to the historical style. And 5 or 6 pounds of this extract bittered to 15 to 20 IBU would make a great summertime lawnmower beer.

Historian or not, I'd say Bill Moore has a couple of winners here.

References

1. Renner, J. "The Revival of the Classic American Pilsner." *Zymurgy*: September/October 2000, p. 26.
2. www.williamsbrewing.com

Jeff Renner has been a homebrewer for nearly 30 years and owns a wholesale French bread "micro-bakery" in Ann Arbor, Mich. He was among the first to research and brew pre-Prohibition styles in modern times. He is an elected member of the American Homebrewers Association Board of Advisers.

BOHEMIAN *Rhapsody*

♦ THE QUEST FOR
AN ORIGINAL ♦

BY WM. SHAWN SCOTT

THERE IS AN OLD CZECH PROVERB: "NENI' PIVO, JAKO PIVO." IT LITERALLY TRANSLATES INTO THE ODD EXPRESSION "THERE IS NO BEER LIKE BEER." AN ODD EXPRESSION, THAT IS, UNTIL YOU HAVE TRAVELED TO PLZEN FOR A TASTE OF THE ORIGINAL PILSNER. MY FIRST ENCOUNTER TOOK PLACE IN 1995, AND I HAVE MADE THREE RETURN VISITS. IF YOU EVER GET A CHANCE TO EXPERIENCE IT FOR YOURSELF, I BELIEVE YOU'LL AGREE. IN THE MEANTIME, I'LL WHET YOUR THIRST WITH SOME HISTORY AND OBSERVATIONS.

>



In the caverns. A system of caverns below the Pilsner Urquell brewery was once used to lager all the beers. Here a worker helps to move pitch-lined wooden kegs which are used for serving Pilsner Urquell in the Czech market.



A bartender and a guest of one of Prague's popular pubs enjoy their pints of Czech Pilsner Urquell.

A beer lover in Plzen imbibes not only beer, but also a sense of history. After all, the city is more than 700 years old, founded in 1295 by King Wenceslas II of Bohemia to help protect the lucrative trade routes in that portion of his realm. To encourage settlement, he ensured plenty of beer was available by granting brewing rights to 260 citizens of the new community.

Favorably situated in a fertile valley, and with no shortage of beer, Plzen began to grow and flourish. A malt house was completed in 1307, and the local brewers soon coordinated their activities by brewing "in turn." While some were busy brewing, others would be serving their finished product. A wooden guild sign above the doorway informed thirsty inhabitants which houses were serving.

The beer of that era was very different from the beers of today. Two general types

were produced: a "red" beer made from barley; and a "white" beer made from wheat. They were most likely "gruit" ales, bittered with a variety of spices and consumed soon after fermentation. They were no doubt smoky beverages, since the malt curing technique of the day consisted of direct heating over a wood fire.

Episodes of warfare, upheaval and neglect over the intervening centuries eventually took their toll on the craft. By the early 19th century things were so bad that the town council occasionally forced brewers to spill their beer on the market square to prevent them from foisting the foul swill on the public.

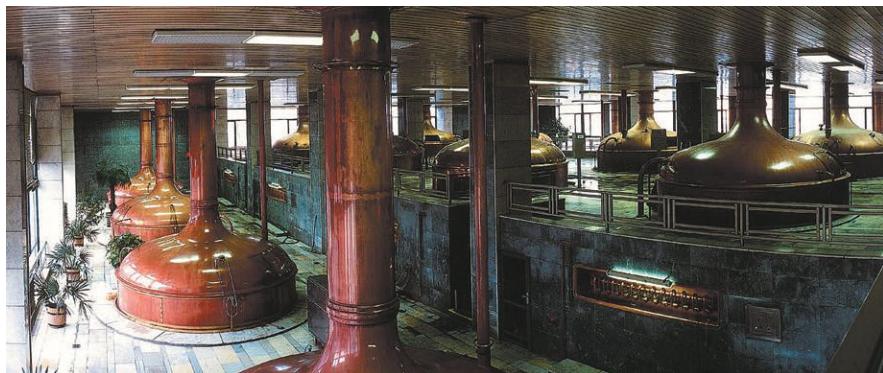
In 1839, a local innkeeper, Vaclav Mirwald, came to grips with the problem by exclaiming, "There is one thing that we really need in Plzen—good, cheap beer!"



Mirwald spent several months lining up investors and convincing the town's private brewers to support his plan for a modern brewery.

Construction of the Burgher's brewery began on a small site just across the Radbuza River. Wells were dug to supply the water, and the soft sandstone facilitated the excavation of lagering caves. To ensure the success of the venture, a very eccentric Bavarian by the name of Josef Groll was hired on as brewmaster. Groll may have been quirky, but he was a top-notch brewer. In October 1842 he mixed the soft waters of Plzen with the malted barley of Moravia, the hops of Zatec and a strain of Bavarian yeast to create a legend. His beer was an overnight success.

As word of the new beer from Plzen spread, demand quickly outstripped supply. The owners immediately took mea-



Pilsner Urquell Brewhouse. With potted plants and window treatments, this looks like a museum of brewing, but it is in fact the main operating brewhouse where Pilsner Urquell is made today.

sures to increase production. By 1855, their beer had reached Vienna, and in 1863 was being served in France. An electric power plant and lighting system were installed in 1883, quickly followed by other high-tech innovations of the era. The brewery experienced a continual expansion and modernization right up to the outbreak of World War I. By 1913, annual production topped one million hectoliters (about 850,000 barrels or 26 million gallons), and exports reached 34 nations, including the U.S.

The fame of Plzen's golden lager triggered a worldwide revolution in brewing. Imitators sprang up across the continent and beyond, selling their own versions of "Pilsner" lager. These marketing ploys were so pervasive that the term Pilsner eventually came to

denote a broad style of beer that even includes mass-produced American lagers. To defend their copyright and distinguish their product as the original, the brewery registered its beer under the title of Pilsner Urquell ("Plzensky Prazdroj" in Czech), meaning "Pilsner from the original source."

The decades following 1913 were not happy ones, and they took a heavy toll on both the citizens and their brewery. In fewer than 40 years they experienced World War I, economic depression, Nazi annexation and World War II, followed by Soviet occupation. The production mark set back in 1913 was not eclipsed until the mid-1960s.

The collapse of the communist regime in 1989 brought with it new opportunities and challenges for brewery managers. Their

chief dilemma was how to turn a profit in a highly competitive market while still preserving the essential quality of their beer. To meet the challenge they relied on what had served them so well in the early days, the combination of technology and tradition. Proposed efficiency measures were carefully tested by the quality control department prior to implementation. Only those judged not to affect the quality of the finished beer were adopted.

**THE PRIDE of
Plzen**

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

9.0 lb (4.1 kg) 2-row Budvar malt (under-modified)
1.0 oz (28 gm) whole Czech Saaz hops (3.8 % AAU), First wort hops
1.0 oz (28 gm) whole Czech Saaz hops (3.8 % AAU), 70 min.
1.0 oz (28 gm) whole Czech Saaz hops (3.8 % AAU), 30 min.
0.5 gal (1.9 L) starter Wyeast-2001 PU "H" Strain

- Original specific gravity: 1.050
- Final specific gravity: 1.015
- Primary fermentation: 11 days at 50° F (10° C)
- Secondary fermentation: 10 days at 40 to 50° F (4 to 10° C)
- Lager 30 days at 34° F (1° C) prior to serving.

Brewer's Specifics

Mash all grains in 12 quarts at 100° F (38° C). Perform three separate decoctions to achieve rest temperatures of 127° F (53° C), 144° F (62° C) and 162° F (72° C). Boil for 120 minutes.

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One traditional method retained in the production of Pilsner Urquell is the use of the triple decoction mashing schedule. Although a double decoction mash would save time and lower energy costs, experiments revealed that the double decoction beers did not have the same fullness of body as the original.

One approved change was the addition of stainless steel cylindroconical fermenters in 1994. Prior to this time all fermentation was conducted in 1,600 open oak vats, with another 3,000 massive oak casks used for lagering. The routine cleaning and maintenance of all these containers was a very labor-intensive enterprise and thus there was a strong incentive to change. Despite this modernization, a limited number of the old oak vessels are still in service. The beer produced in these vessels serves not only as a link to the past, but also as a quality control standard for the future.

If you are fortunate enough to tour the brewery in person, you'll see how the original Pilsner was brewed then, how it is brewed now and even get to compare the two. Your tour sample is tapped straight out of a giant oak lagering cask. If you can't make it to Plzen anytime soon, you'll just have to do what its citizens did in the early days: brew your own!

STRATEGIES FOR BREWING A CZECH STYLE PILSNER

Brewing beer is all about two things: ingredients and process. Brewers who wish to replicate an authentic Pilsner need to carefully consider each of these subjects and how they interrelate with one another.

WATER

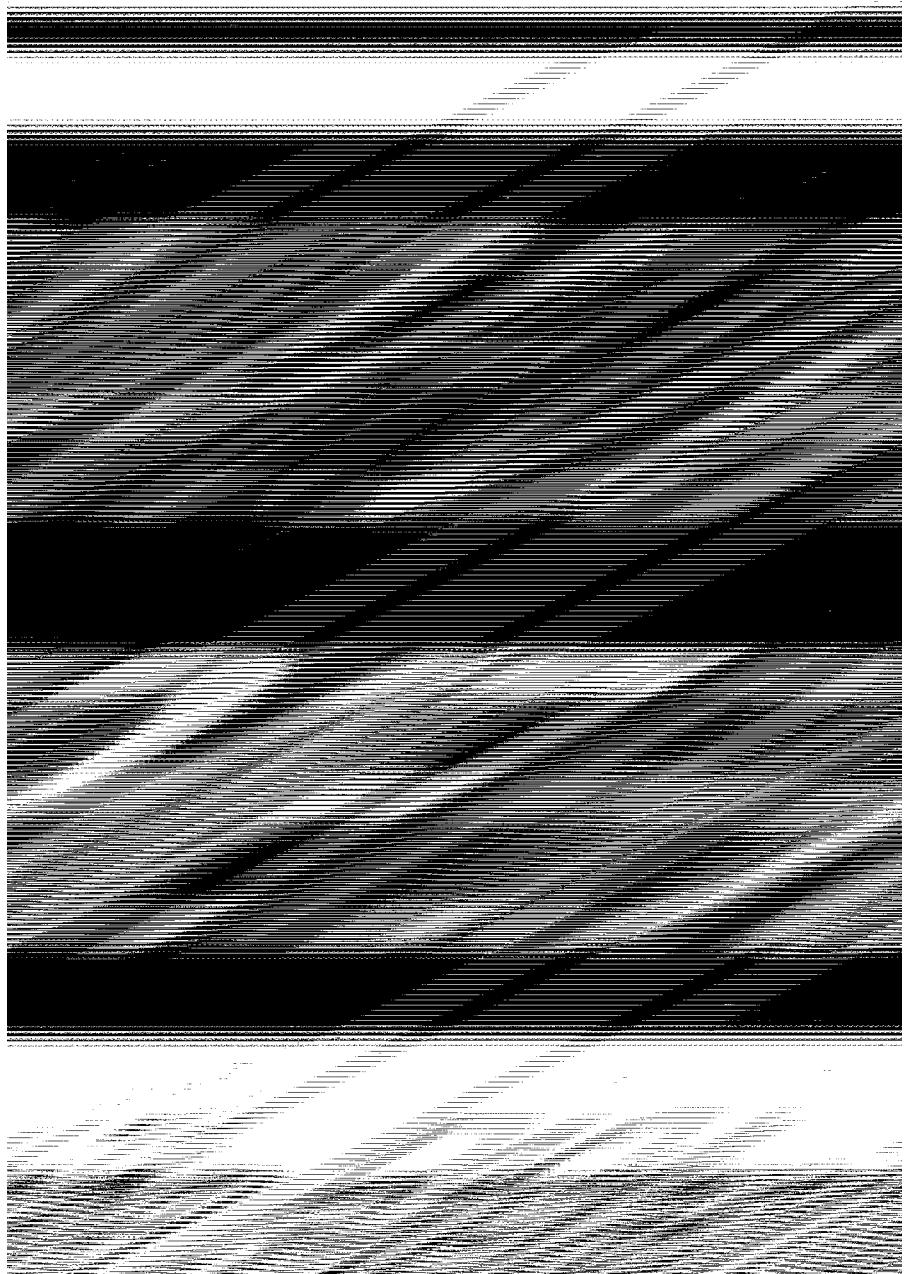
Let's start with the fountain of life and of beer. Plzen is blessed with some extremely soft water. Few natural sources of water available to North American homebrewers even come close to its mineral profile, leaving us to ponder water treatment. Start with the mineral analysis of your current brewing water, paying particular attention to the sulfate, calcium and carbonate content. One easy method for softening brewing water is dilution with distilled water. If your water is really hard, you can perform the dilution after your standard treatment ritu-

als (slaked lime additions, pre-boiling, etc.) A one-to-one dilution should cut all of your ion concentrations in half; a three-to-one dilution will quarter the concentration, and so on. Keep in mind it's highly unlikely that you will exactly match the Plzen profile; your goal is simply to soften the water and control the sulfate content.

MALT

Your malt will not only influence the flavor of your beer, but may determine what mashing techniques you should employ.

The Prazdroj brewery performs its own malting, using Czech grown Amulet and Tolar barley. Although this particular malt is not commercially available, suitable substitutes are. Your best choice may be the 2-row Czech Pilsner malt currently sold as "Budvar undermodified." This is especially the case if you plan on employing the traditional mashing schedule. Another good choice would include the "well-modified" Moravian 2-row Pilsner. Other high quality European 2-row Pilsner malts can also be used.





SPEEDY Gambrini

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

- 7.0 lb (3.2 kg) 2-row Pilsner malt (well modified)
- 1.0 lb (0.45 kg) 2-row Vienna malt
- 0.5 lb (226 gm) Cara-pils

- 1.0 oz (28 gm) whole Czech Saaz hops (3.3% AA), First wort hops
- 1.0 oz (28 gm) whole Czech Saaz hops (3.3% AA), 60 min.
- 1.0 oz whole (28 gm) Czech Saaz hops (3.3% AA), 30 min.
- 0.5 gal (1.9 L) starter Wyeast-2278 Czech Pils

- Original specific gravity: 1.048
- Final specific gravity: 1.013
- Primary fermentation: 11 days at 50° F (10° C)
- Secondary fermentation: 10 days at 40 to 50° F (4-10° C)

Brewer's Specifics

Mash all grains in 11 quarts at 154° F (68° C) for 30 minutes, then raise to 162° F (72° C) for 15 minutes. Boil for 90 minutes.

HOPS

The classic Czech Pilsner calls for the classic Czech hop. This means procuring the authentic Saaz variety, cultivated near the town of Zatec. The Saaz hop is also grown domestically in the U.S., but differs from its old-world cousin because of differences in soil, climate and other growing conditions. Once you find the real Czech McCoy, your choice is between whole flower hops or hop pellets.

Although pelletized hops offer many advantages, the use of fresh whole hops is the traditional method, perhaps for good reason. The Saaz hop is renowned as a "noble" hop for its refined flavor and aro-

"ONE TRADITIONAL METHOD RETAINED IN THE PRODUCTION OF PILSNER URQUELL IS THE USE OF THE TRIPLE DECOCTION MASHING SCHEDULE. ALTHOUGH A DOUBLE DECOCTION MASH WOULD SAVE TIME AND LOWER ENERGY COSTS, EXPERIMENTS REVEALED THAT THE DOUBLE DECOCTION BEERS DID NOT HAVE THE SAME FULLNESS OF BODY AS THE ORIGINAL."

matic properties. One of its significant essential oils is farnesene and many credit its levels for the unique appeal of the Saaz hop. A good deal of farnesene is lost during the milling and pelletization process, leading some to prefer whole hops for production of this type of beer.

If you must be an iconoclast by using another variety of hops, try the Polish Lubliner, which is closely related to Saaz (if not of the same stock), or perhaps the German Tettnanger, another noble hop with lots of farnesene.

YEAST

One of the characteristics that distinguishes a Bohemian style Pilsner from its German counterpart is its higher finishing gravity. Although mashing schedules and fermentation practices account for much of these differences, the strain of yeast employed is always of paramount importance. As the adage goes, "Brewers make wort, but yeast makes beer."

Fortunately for us, there are a number of commercially available yeasts from which to choose. Just keep in mind that all yeasts labeled as Pilsner may be more suitable for the production of "new world" Pilsners. In addition, in the recent past the Prazdroj brewery used up to five different strains of yeast to produce Pilsner Urquell.

So which Pilsen yeast do we choose? If you are attempting a Pilsner Urquell clone, you'll want an apparent attenuation of about 70 percent. Try the new Wyeast-2001 PU "H" strain. Another choice might be the Wyeast-2124 Bohemian Lager. If you prefer a crisper finish, try any of the following: Wyeast-2002 Gambrinus; Wyeast-2278 Czech Pils; or White Labs WLP-800 Pilsen. And if southern Bohemia is more your style, try White Labs WLP-802 or Wyeast-2000.

Perhaps your local homebrew club

would like to organize some yeast trials on a large batch of wort. Members could experience the profound impact different yeast strains have on a finished beer and select their personal favorites. You could even experiment in the art of beer blending, or dabble with mixed fermentations.

MASHING

When it comes to the mash, to decoct or not to decoct is the question. Triple decoction is the traditional method, but it requires a bit more planning and makes for a very long day in the brewhouse. If you decide to go the full route, I salute you. Your dedication is noteworthy. On the other hand, if you select the simpler methods of step or infusion mashing, congratulate yourself as a practical person, and take solace in the fact that excellent beers are produced in this manner.

Regardless of your mash method, you need to consider what temperature rests to employ. If you are using an undermodified malt, you'll need a protein rest of 15 to 20 minutes in the range of 123 to 130° F (50 to 55° C). The overwhelming majority of malts on the marketplace, however, do not require a protein rest. In fact, conducting a protein rest with these malts may result in beer with poor head retention and a thin body, not exactly the hallmarks of a classic Pilsner. Unless your malt is marketed as "undermodified" (or has a Kolbach index for modification of 40 or less), skip the protein rest.

If you elect to use a step mash or simple infusion mash, you should consider using a higher saccharification temperature. A rest in the range of 154 to 156° F (68 to 69° C) will produce a somewhat less attenuable wort, and leave a bit more body and malt finish in your beer.

If you decide to go the decoction route, give some thought to the number of decoc-



The Grand Gate at Pilsner Urquell. This gate marks the entrance to the Pilsner Urquell brewery in Pilsen, Czech Republic. At the top, it is marked with the year of the brewery's founding and the brewing of the first Pilsner: 1842. The water tower seen through the right gate is a distinctive landmark of the brewery today.

tions that you will perform and the rest temperatures you wish to achieve. A good deal of technical information on decoction mashing is available on the Web and in various publications, but a couple of points are worth mentioning.

The first has to do with the grist- to- liquid ratio in the pulled decoction. Most texts advise to pull the thickest part of the mash for decoction. This raises the specter of a scorched grist, especially on the first decoction when heating over a direct flame. Adding a significant infusion of heated brewing liquor to the decoction vessel not only limits the scorching potential, but it also reduces the time required to reach the saccharification temperature. It should be noted that the Prazdroj brewery uses a direct flame for heating its decoctions, but the technique involves boiling a much thinner portion of the mash.

Another promising decoction technique rarely discussed is the so-called Schmitz process. It is essentially a step mash followed by a single decoction of 100 percent of the grist. Instead of pulling out portions of the mash for decoction in a separate vessel, the Schmitz process removes a portion of the mash liquid (along with its enzymes) short-

ly after mash in. After starch conversion, the entire mash is boiled for 10 minutes, then cooled to slightly above high saccharification temperature. At this point the liquid drawn off early in the process can safely be added back into the mash to convert any remaining starches. This technique offers many of the benefits of conventional decoction mashing, but is quite a bit quicker and a lot less messy. You be the judge.

CONDUCTING THE BOIL

The volume of runnings collected should be such that you will be left with a wort gravity in the range of 1.048 to 1.050 after a full two-hour boil. Tradition dictates that equal volumes of hops be added to the wort at three different times to achieve a final bitterness of 40 IBU. The first hop addition occurs prior to the boil, the second addition just before the midpoint of the boil, and the last addition occurs when about 30 minutes of boil time remain.

FERMENTATION AND LAGERING

Fermentation should be conducted on the low end of your yeast's recommended temperature spectrum, using a large volume of healthy yeast. The primary fermentation period for a wort of this gravity would be about 11 to 12 days in length, providing it was pitched with enough

yeast. Colder and slightly shorter fermentations are another reason for the fuller finish of a Bohemian Pilsner. It also leaves higher amounts of residual diacetyl in the fermented beer.

The traditional method of diacetyl reduction is kraeusening: adding a small volume of freshly fermenting wort into the secondary fermenter. This secondary fermentation reduces diacetyl, and provides a natural means of carbonating the beer.

Homebrewers can mimic this practice by freezing one or two pints of their original wort, later thawing and mixing it into a serving keg that doubles as your secondary fermenter. Lower the temperature by 1° F (0.5° C) per day for 10 days before dropping down to 34° F (1° C). Allow the beer to lager at this temperature at least four weeks before serving.

And remember to raise your glass in honor of those long departed souls who gave us the original. There truly is no beer like beer. "Dej Buh Stesti."

Shawn Scott currently resides in McAlester, Okla. with his wife Joyce and their three dogs. He has been an avid homebrewer since 1988, and is an active member of the Fellowship of Oklahoma Ale Makers (FOAM). To finance his travels and brewing experiments, Shawn is gainfully employed as a Logistics Management Specialist with the U.S. Army Defense Ammunition Center.



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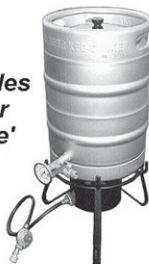
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Ein Sticke bitte:

*As you enter the dark and smoky recesses
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you feel as if you are amidst members
of a secret society
and what you are about to witness
is an exclusive ritual.*



Sticke: The “Secret” Altbier

Dusk comes early to the banks of the Rhine in the dead of winter. And Dusseldorf, the ancestral home of altbier, hugs those banks and nestles in the cozy twilight of a special day. It's the third Tuesday in January—and you are on a mission. You park your car in the garage next to the Kaufhof department store on the Heinrich-Heine-Allee and walk down Bolkerstrasse, through the heart of the Altstadt or “old town.”

This section of Dusseldorf is one square mile of cobblestone lanes lined with centuries-old buildings that now house some two hundred bars, taverns, pubs and restaurants. Surrounded by expansive parks and wide, modern boulevards, the Altstadt has been turned into a *Fussgängerparadies* (pedestrians' paradise) where



by Horst Dornbusch

cars are banned. Your destination is the Uerige brewpub, Dusseldorf's signature altbier pub at Number 1 Bergerstrasse, a half-mile walk from the parking garage.

The Dusseldorf Altstadt, incidentally, was not named after the top-fermented Dusseldorf altbier, nor vice versa, even though the verbal analogy is both fortuitous and fitting. The Altstadt is indeed old. Some of the buildings there are almost as old as the city itself, which received its incorporation charter from the Duke of Berg in 1288. Likewise, altbier means "old beer," a name acquired in the early 19th century when the "new" bottom-fermentation method, that is, lager brewing, was making serious inroads in the Rhineland.

But altbier is not just old—it's ancient. Though its earliest roots are shrouded in obscurity, we do know that the homebrewing of ale was already a regular household activity when the Roman legions occupied the regions along the lower Rhine more than two thousand years ago. The Latin scribes who were sent by the Roman emperors to report on the goings-on among the conquered barbaric *germanii* wrote of a strong, murky quaff made from barley and wheat and sometimes flavored with honey. The beverage caused the Teutonic imbibers to regularly pass out on the bear or boar skins they had spread out in front of their tribal camp fires. This rough Germanic ale, of course, has since greatly

metamorphosed, but it is nonetheless the foundation brew from which the smooth modern altbier stems.

As you enter the dark and smoky recesses of the hallowed halls of the Uerige pub, a crowd of *cognoscenti*—people in the know—has already gathered expectantly in the taproom. You feel as if you are amidst members of a secret society and what you are about to witness is an exclusive ritual. And, as the crowd falls silent, it appears: a moist wooden cask, brought up in an elevator from the cellars below. The tap master—or *zappes* in the Dusseldorf dialect—lifts it onto the bar's counter. Clad in a blue shirt, black pants and a long, blue apron, he raises a wooden mallet and deftly sinks a brass spout into the cask's bunghole. The first cask of what must rank among the world's rarest beers is ready to relinquish its precious, gravity-fed nectar. You walk over to a corner to find a seat on a wooden bench next to an ancient empty cask that doubles as a table, and you tell the *köbes*, as a waiter is known in an altbier pub, "Ein Sticke bitte."

The Sticke Mystique

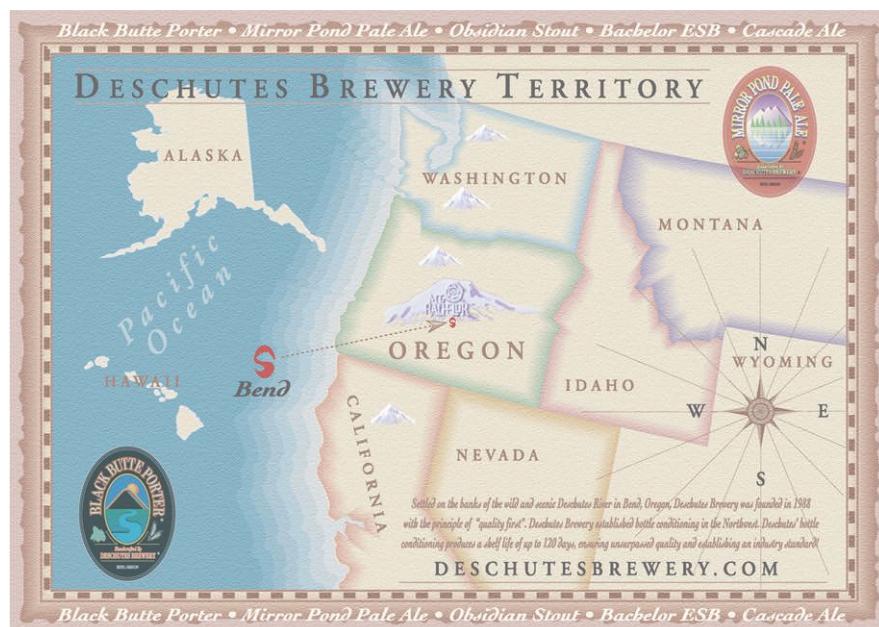
Sticke is the strongest and rarest altbier there is. To understand its strange name we must first delve into a bit of linguistic history: "Sticke" is a mangled version of the low German word "stickum," which translates into English as "secret." At Uerige, a single

batch of this secret variety of altbier is brewed only twice a year, ready for tapping on the third Tuesday in January and the third Tuesday in October. Other altbier makers, too, produce a Sticke, also just a few times a year. In the past, some of them even kept the dates a secret.

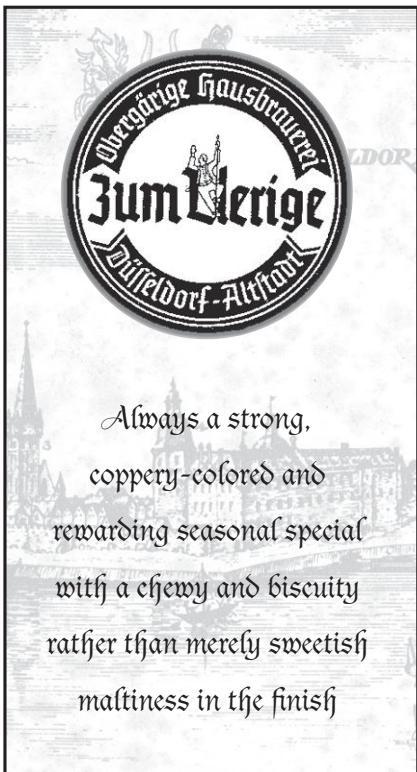
Dusseldorf somehow differs from all other German cities. Berlin, having resumed its status as capital in a reunified country, is now a glitzy cosmopolitan megalopolis. Frankfurt has the stock market and is decidedly business-like. Munich is joyously Bavarian. Hanover is dryly matter-of-fact. Hamburg is reserved. Cologne, 25 miles up the river from Dusseldorf and home of the other Rhenish ale, Kölsch, is jovial and friendly in a back-slapping sort of way. But Dusseldorf is cool to the touch. It is Germany's fashion center—understated and elegant, like cool jazz, with plenty of depth and profound emotion. Once you let Dusseldorf under your skin, you are hooked forever.

The soul of Dusseldorf is the ancient center of town. But unlike many of the world's venerable places, the Altstadt has never been turned into a tourist trap. Instead, it is a place where locals hang out for hearty meals of pig's knuckle, sauerkraut and potato salad with very sharp indigenous mustard and a few glasses of altbier. That unique, cool-fermented, lagered ale is part of the Dusseldorf soul, too. The denizens of the old town have fashioned a drinking culture all their own that is at once local and world class. If you ask for a beer in a creaky 17th-century bar or in a modern stainless steel and neon pizza joint, it's understood in either place that what you want is an altbier. The ale that was invented in Dusseldorf still reigns supreme among the populace as an everyday drink—except on those few "secret" days of the year, when a select inner circle of devotees congregates to pay homage to the son of alt, Sticke.

The origin of Sticke, according to local lore, dates from a time when beer ingredients were still measured rather haphazardly by the buckets-full. If the brewmaster made a mistake and mashed in too generous an amount of malt (for an OG of perhaps 1.056 or 14° P), he also had to add an extra dose of hops. The finished beer from such a batch



would be a strong and substantial beverage—one not to be missed by altbier stalwarts. Just think of Sticke as the altbier version of a bock. Because Sticke started out as a mistake, it was rarely brewed the same way twice. News of a brewmaster's mistake would travel quickly among the initiated,



who would pass the secret by word of mouth, behind cupped hands, in a "stickum" sort of way—and to be in on the secret was quite a privilege. It is said that this hot tip, shared among aficionados, became the origin of the beer's name.

In the Schumacher brewpub at 123 Oststrasse, a similar specialty altbier is seasonally available. At Schumacher, which started brewing in 1838 and is today the oldest altbier brewpub in the world, the Sticke brew is called Latzenbier. It, too, is usually brewed only twice a year. In 2002, the auspicious tapping dates were September 19 and November 21. Apparently, the name Latzenbier dates from a time when monasteries still dominated the brewing trade and ordinary folk were served only thin beer, known as "convent beer." But the real stuff, the strong beer, was stored high up on "latten" or "latzen" (wooden slats) out of sight of the impecunious com-

moners. This top-shelf brew, or Latzenbier, would be reserved only for the brew monks themselves or sold secretly to deserving folk—that is, those with ample cash to make the pious friars rich.

With modern quality control in the brewhouse, the old brewmasters' accidents that spawned Sticke no longer happen. But many altbier makers have revived the Sticke tradition by making a deliberate "mistake" occasionally as a surprise. They let their brewmasters loose to give them a chance to play with their ingredients and create a free-style, strong altbier. Once tapped, Sticke flows until the batch is completely drained, which rarely takes more than a few days. Nowadays Sticke is meant primarily as a thank-you to regulars. Although stronger and more expensive to make, Sticke is always sold at the normal altbier price. Non-regulars, of course, are served these special beers too, as long as they know when to show up at the brewpub to get them. Fortunately for the itinerant beer enthusiast, the secrecy that used to surround the unveiling of Sticke has greatly abated, because the altbier pubs that keep the tradition alive now advertise the debutante dates of their special offerings on posters and Web sites.

The Character of the Secret

The variability of Sticke or Latzenbier from one batch to another, or from one altbier brewery to another, makes it inadvisable to come up with too rigid and uniform a description of the brew. It is perhaps a stretch to suggest that Sticke is closer to the mighty old Germanic brews than is the modern, everyday altbier. Yet most of these specialty beers do have almost one or even two percentage points more alcohol by volume than the regular 4.8 percent abv altbiers. For a drinkable balance to the stronger maltiness, however, hopping rates of a Sticke/Latzenbier are substantially higher—up to 60 IBU compared to the 25 to 45 IBU found in alt. Sometimes a Sticke is also dry-hopped in the fermenter—an otherwise thoroughly un-German custom. The color of a Sticke, though, is generally much like that of the normal, year-round brew—usually around 14 to 20 SRM. The result is always a strong, coppery-colored

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Psst! Sticke altbier

All-Grain Recipe (based on 65 percent extract efficiency)

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

4.9 lb. (2.2 kg) pale Pils malt
1.8 lb. (0.82 kg) Munich malt
1.8 lb. (0.82 kg) "red" malt
0.45 lb. (200 g) wheat malt
0.36 oz. (10 g) black malt

All-Extract Recipe (based on extract-to-water ratio by weight of 1:4.4)

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

4.2 lb. (1.9 kg) Pils-type malt extract
3.0 lb. (176 kg) Amber, Munich, Oktoberfest, or Vienna malt extract
6.0 oz. (170 g) Wheat malt extract
3.0 to 5.0 oz. (85-141 g) Dark, Dunkel or Rauch malt extract

- Original specific gravity: 1.056 (14°P)
- Final specific gravity: approx. 1.014 (3.5°P)
- IBU: 50
- SRM: 16
- ABV: approx. 5.5

Brewer's Specifics: See article for brewing details.

brew, the substitution of 2 percent of the grist with a generic caramel malt (at 60° L) is optional for some depth of color. Alternatively, you could also add up to 0.25 percent of Weyermann dehusked Carafa Special Type 3 (at 488 to 563° L). Sticke altbiers that are brewed with regular instead of dehusked caramel malts exhibit roasty notes in the finish, permissible in a Sticke even though it would be out of place in a regular altbier. Another optional grain for a Sticke is up to 10 percent malted pale wheat. The rest of the grain bill is pale Pils-style malt. Depending on your system's extract efficiency, use approximately 7.5 pounds of grain (at a professional-level efficiency of 80 percent) to 11.5 pounds of grain (at a low 50-percent efficiency) per 5 U.S. gallons of net kettle volume.

Brewing Your Own Sticke

The quantities shown in the recipe that accompanies this article are calculated for a system with an extract efficiency of 65 percent, which requires about 9 pounds of grain for 5 gallons of Sticke with an OG of 1.056 and a color rating of 16 SRM. Adjust the grain amounts for the efficiency of your system and, in the spirit of Sticke, substitute any grain type listed below in accordance with the tips suggested above. You can also increase the overall amount of grain, while keeping the relative proportions, for a Sticke with a bigger kick.

Extract brewers can replace all or parts of the above grain bill with unhopped, canned malts. For a Sticke of OG 1.056, you can mix and match various extracts at an extract-to-water ratio by weight (not by volume!) of 1:4.4 (this equals 1.5 pounds per gallon or 184 grams of extract per liter of wort). If you make a Sticke entirely from extract and use the recipe shown here, therefore, you need a total of roughly 7.7 pounds (3.5 kg) of canned malt for 5 gallons (19 L). For best results, use only extracts based on German grains, such as Bierkeller or Weyermann. Substitute the 4.9 pounds (2.2 kg) pale Pils grain with 4.2 pounds (1.9 kg) of Bierkeller Plain Light or Weyermann Bavarian Pilsner malt extract. Substitute the Munich and red grains combined with about 3 pounds (1.36 kg) of one or a combination of the following malt extracts: Bierkeller Amber, Weyermann Munich

and rewarding seasonal special with a chewy and biscuity rather than merely sweetish maltiness in the finish. There is also a hint of fruitiness and black currant in the aftertaste. The recipe included here takes a middle-of-the-road approach to Sticke, with an abv of roughly 5.5 percent, an IBU level of 50, an SRM-value of 16 and a third hop addition shortly after shutdown, but no dry-hopping.

Sticke/Latzenbier brewmasters have only one real restriction on their free-flowing creativity: they must adhere to standard altbier brewing techniques. This means most importantly that the beer must be made with the altbier's characteristic cool-fermenting yeast, and that it must be lagered. The key to brewing a great Sticke, just as a great altbier, is the exclusive use of high-quality summer barley. The protein level should be

around 10.5 to 11.5 percent. This is slightly higher than the 9 to 10 percent found in a typical British-style barley—which is why all otherwise great British ale malts tend to make inferior altbiers.

The predominant copper color of the very malty-nutty Sticke comes from a generous addition (as much as 40 percent) of Munich malt. Depending on color preferences, you can use a paler Munich (such as Weyermann Munich Type 1 at 5.1 to 7.3° L) or a darker Munich (such as Weyermann Munich Type 2 at 8.8 to 11.1° L). You probably want to avoid Munich malts whose color rating approaches 20° L. Those brewers who wish to experiment with a "stickum" surprise, however, can substitute a portion of the Munich malt with red malt (such as Weyermann Carared at 16 to 23°L).

Because of the freestyle nature of the

Amber or Weyermann Vienna Red. Substitute the malted wheat with about 6 ounces (170 g) of Weyermann Bavarian Hefeweizen extract. Finally, substitute the black malt with 3 to 5 ounces (85-141 g) of Bierkeller Dark or Weyermann Bavarian Dunkel. Naturally, you can always steep one or more specialty grains in a muslin bag in your brewing liquor rather than substituting them with extract.

Because at home you are allowed to make a Sticke "mistake" any time of the year, and because Sticke is such a freestyle brew, you might want to create your own specials by using some of the seasonal extract varieties that are now reaching the market. For instance, in May you can replace the Munich and red grains with a Maibock extract for a "Sticke-Mai-Alt-Bock." Likewise, in the fall you can make an "Oktober-Sticke-Festbier" by using an Oktoberfest extract instead of the Munich and red grains. For a slightly smoky "Christmas Rauch-Sticke" you might even want to try using smoked grain instead of the black grains or the dark/Dunkel extracts.

Commercial altbier brewers in Dusseldorf prefer a multi-step mashing procedure, with rests at approximately 122, 146 and 156° F (50°, 63° and 69° C) for maximum conversion. Each of these rests should take about 30 minutes and the entire mashing process can last about two hours. Decoction is no longer considered a necessity nowadays, and only a few breweries still employ it, mostly out of reverence for tradition. Lautering of the Sticke (at 170° F or 77° C) may take about an hour and a half.

Water in Dusseldorf is very similar to that of Munich, London and Dublin (approximately 250 ppm carbonate hardness), so a Sticke brew ought not to present problems for North American brewers who have succeeded in making beer styles from these cities in the past. Check your mash pH, though. It should be around 5.2. The boil should last about two hours, so you may have to compensate your net kettle volume for evaporation losses. The favored noble hop variety in Dusseldorf is Spalt, but Northern Brewer, Hersbrucker and Perle work well, too. Use any one of these hops alone or in combination for bitterness, flavor and aroma. Add the bittering hops

about 30 minutes into the boil.

For an IBU level of 50 (see recipe), calculate your bittering hops addition for a 5-gallon batch by dividing 0.1111111 by the alpha acid rating (% AA) of your hops. For instance, with a 5-percent alpha-acid hops ($0.1111111 \div 0.05$), you will need 2.2 ounces (62 g) for bitterness; with a 3-percent AA hops, you will need 3.7 ounces (105 g). Add about 1 ounce of flavor hops (regardless of percent AA) about 10 minutes before shutdown, and add about 2 ounces for aroma hops (also regardless of AA) about 10 minutes after shutdown. Then let the wort rest in the kettle for about 30 minutes for improved sedimentation of the floating particulate.

Cool the wort to about 60° F (16° C) and pitch an authentic alt yeast. Wyeast 1007 gives the cleanest taste at a fermentation temperature between 55 and 60° F (10 to 16° C), while White Labs WLP036 prefers a temperature about 10° F (5.5° C) higher. Depending on the selected yeast and temperature, primary fermentation may last as little as four days or as long as two weeks. When the ferment is within a few points of the final gravity of approximately 1.014, rack the beer and drop the temperature gradually over three to four days down to the mid-40s for a slow secondary fermentation and maturation that may last an additional three weeks. Then rack the brew again and lager it for another two weeks or longer at a temperature in the mid-30s or lower. Finally, prime the beer with about half a cup of corn sugar or light DME and package. Serve at around 45 to 50° F (7 to 10° C).

The result of this long and meticulous process is a unique copper-colored brew that has the nutty-malty flavor and full-bodied richness of a Bock, the complexity of an ale, the noble hop bouquet and creamy head of a Pils, and the clean, mellow-smooth finish of an Oktoberfest. Sticke—the best-kept secret in the world of beers!

Horst Dornbusch was born and raised in Dusseldorf. Dismay with the American beer scene led him to become a homebrewer at a time when there was little or no information available on the subject. In the decades since, he has produced both homebrewed and commercial altbier in America.



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The German Reinheitsgebot

A Myth of the 20th Century?

The German purity law of 1516 is, at least in its basics, known to most beer drinkers. It has been an issue for public discussions even before the European Union took action in skipping it. For some it is the oldest observed food law in the world, for others it is a fossil from the times of nationalistic protectionist-policy.

The European High Court dropped the Reinheitsgebot in 1987. However, the German brewers declared themselves still committed to it. Foreign beer declared accordingly can since then be sold in Germany, but the success is modest. To an extent as a *quid pro quo* the EU has recognized the Bavarian Reinheitsgebot as a registered quality label and the German beer as a protected traditional food. The importance of the Reinheitsgebot for the first-class quality of German beers and the reputation of German brewers throughout the world are undisputed. But the question is interesting: how far has the German brewery complied with these rules over the past 500 years?

What Does It Mean?

First one has to clarify what the Reinheitsgebot means. This is already the first dispute, especially if one compares the original text from 1516 with contemporary laws—for example the current beer

tax law. Yeast is of course not mentioned at all, because it was unknown as an ingredient until the invention of the microscope.

On the other hand the current laws mention other starch or sugar sources than barley malt: wheat malt, inverted sugar, sugar from starch and sugar-based colors. A clear line is drawn here between top- and bottom-fermented beers, though knowledge of this would have definitely overextended the dear old Bavarian duke Wilhelm IV. Likewise the grouping into several gravities: permitted and illegal. Use of hop extracts is permitted, but at least with the stipulation that the components are identical with the natural hops and may not be added later than wort boiling. Addition of water at fermentation stage is permitted exceptionally. Beer clarifiers are permitted, but have to be removed without any trace, as far as technically possible.

In total, the most recent Reinheitsgebot contains more paragraphs dealing with exceptions than with rules. And almost at the end, as a kind of a highlight, there is a beautiful sentence in context with mixing of different gravities: “The Minister of Finances may grant exceptions.” This could go for the whole law, and there is no better way of showing the motivation behind the law. Why is the Minister of Finance in charge of the Reinheitsgebot and not the ministry for Agriculture or Public Health?

by Guenher Thoemmes



Authentic German lagers can be produced in both Germany and America—as with the Kaltenberg brand. The original brewing family from Germany has established a lager brewery in Vail, Colo.

The Story of the Reinheitsgebot

The history of Reinheitsgebot presents many interesting facets. The great number of ordinances that have been enacted and disabled on a regular basis from 1150 on clearly shows that pure beer was not the issue. Once it was inferior grain, because the good stuff was used for baking; at times it was rivalry among the guilds and sometimes it was just about money. History books prove that the first regulations on beer were more than necessary. The brewers were a bunch of crooks willing to do anything for a quick profit. Too much water and cheap grain was common procedure. Penalties for irregularities were on the daily agenda, despite grave brewing oaths and plenty of ordinances. However, beer prevailed as the people's drink. Indeed, in Bavaria, viticulture was almost entirely given up.

And while the landlords in Bavaria had a direct impact on the beer, in the northern part the guilds did what needed to be done. With the exception of the Brewing Order of Hamburg from 1695 there is no sign of legal initiatives. The breweries of northern Germany were, for a long time, leading in volume and quality of the beer, even without a Reinheitsgebot. Strict guild laws helped to fight competition and determined what could be sold. But the decline of the Hanseatic League—a once powerful trade collabora-

ration among various German cities—late in the 17th century began to disrupt distribution of beer. At the same time, fashionable new drinks such as coffee, tea and chocolate reduced the demand for beer dramatically.

Advocators of the Reinheitsgebot like to point out that, finally, it was the law in the whole German Reich, because it was so good. The truth is that the nationwide legislation of the Reinheitsgebot was the beginning of a conformity process lasting until today in the German beer culture. But this happened in the late 19th century, in 1871. What happened in the years between 1516 and 1871? These 355 long years are usually ignored the same way some folks in Germany ignore the time between 1933 and 1945. Many wars and revolutions scattered Germany into numerous small countries, and competition from abroad was eliminated. Everyone brewed what he wanted, needed or could sell. Beer was mainly brewed in households and monasteries. There was little or no control over beer.

Strange recipes were inherited from generation to generation and found access to the books. The variety of beers peaked like never before or after. The secularization in early 19th century set an end to the monastic brewing. And just at a time when lager was becoming very popular beyond Germany and beer could be exported in a pro-

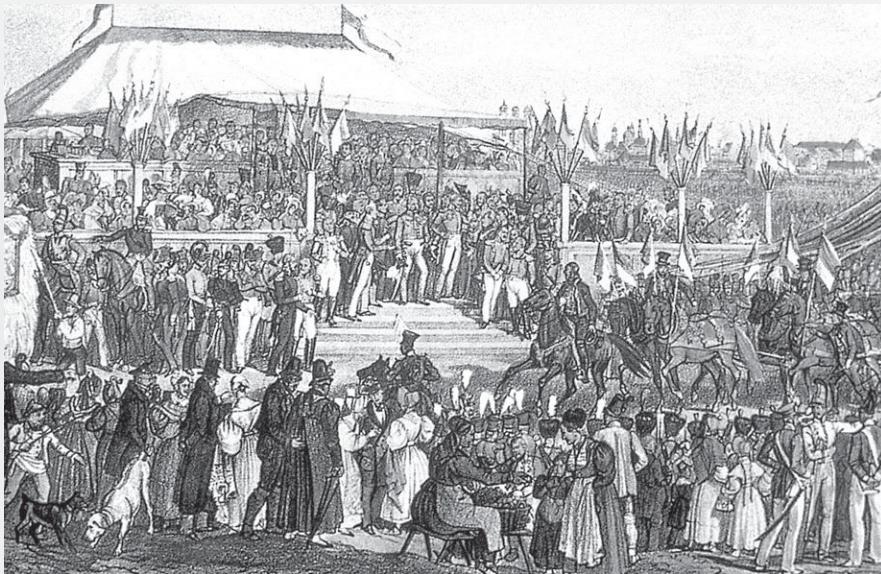
fessional way, the brewers remembered the ancient laws. Was this really a coincidence?

The Reinheitsgebot in Practice

Paper is patient, they say, and paper for laws more than ever. So let's have a look into the brewing books of those days, because one practices what one learns. It is nice to see how very creative the brewers have always been in repairing sour and infected beers. If they couldn't find a witch or a thunderstorm to blame, they added very grubby herbs and spices in order to conceal the off-flavor. It was better than dumping a whole brew.

In the oldest book we found, the title says all that needs to be known about the former comprehension of the Reinheitsgebot: "The Perfect Beer Brewer or a Short Lesson to Brew All Kinds of Beers as well as Making Spoilt Beers Good Again, and All Kinds of Herb-Beers. With an Addendum for Brewing Mead," printed in 1784 in Frankfurt and Leipzig. It is interesting that the author points out various times the importance of good malt, good water and good hops. But this seems to be sufficient to serve the Reinheitsgebot. Because after a bloodcurdling history of beer he introduces recipes for the following: Vermouthbeer, Juniperbeer, Rosemarybeer, Mugwortbeer, Mintbeer, Lemonbeer, Laurelbeer, Marjorambeer, Lavenderbeer, Balmbeer, Anisebeer, Fennelbeer, Clovebeer, Veronicabeer, Cherrybeer, Raspberrybeer, Sloebeer and, as a sort of prophylaxis, an "herb-beer which is useful in times of plague." This is just an excerpt, followed by tips as to which herbs to use to conceal a certain off-flavor and which herb beer is a cure for which disease. For the real smart guys there is even a recipe: how to give the beer a wine flavor. A later edition of this book repeats it all word for word.

With the next book we go south: "The Beer from Bamberg," by a Mr. Seifert, printed in Bamberg in 1818. It also has a pragmatic subtitle: "Practical Procedures, Manuals and Advantages for Brewing the Bamberger Beer, Based on Chemical Principles, with an Addendum Containing Proven Means to Shine Up a Hazy Beer, Improve a Sour Beer, with Two Tables." All over the book we find the praise of the Bamberger beer, the good raw materials, all within the Reinheitsgebot—until the addendum. Salt, ginger, pepper and



This picture depicts the first Oktoberfest celebration in 1810. But those first Oktoberfest beers weren't subject to the purity law that their 20th century brewers so proudly proclaimed.

brandy are harmless little helpers—even chalk is recommended. But then it gets beastly: cooked fishbladder helps to solve haze problems and for a beer where fermentation does not stop, some cooked calf-feet, added in form of a jelly, should do marvels.

A Mr. Zimmermann wrote a very comprehensive book in 1842 named, "The Textbook of the Beer Brewery," the second edition printed in Berlin in 1852. This is a first approach to a real textbook. Besides the traditional raw materials we find detailed chapters on clearing aids, for example Irish moss or, once again, fishbladder. A larger chapter deals with "Botanical excerpts as useful for the brewing trade." Included are gentian root, bitter clover, yarrow, vermouth, juniper and 25 other plants and herbs. Furthermore there are chapters titled, "Syrup from starch as a substitute for malt," recipes for a "champagne beer" or an unhopped "Broyhan-beer." Finally the author totally turns off the path of Reinheitsgebot: the last part, over 50 pages, deals exclusively with potato beer, otherwise very traditional but with potatoes instead of malt.

And this only 19 years before the Reinheitsgebot was introduced in the German Reich! From then on it went uphill with the purity of the German beer; the task was to be ahead of the English and other beer-exporting countries. From 1906 the Reinheitsgebot was the law in the whole of Ger-

many. The Weimar Republic and the Federal Republic of Germany, after World War II, also adopted it each in convenient versions. In the 20th century the Reinheitsgebot was never seriously questioned in Germany, for obvious reasons. Diversity declined, but as long as competition from abroad had to stay outside it didn't matter. German textbooks of the 20th century draw a sharp line between "permitted" and "not-permitted" ingredients. Knowledge alone of the "not-permitted" is not a crime, is it?

The German brewers over the years have learned to arrange themselves within the limits of the Reinheitsgebot with technical or economical necessities. But still sometimes it has a hypocritical taste. For example, in the discussion on how to add acid to wort and mash, brewers came to a very fast agreement as to how to produce lactic acid according to the Reinheitsgebot. This is done by fermenting wort with lactic acid bacteria to create a strongly acidic "beer" that can then be added to the mash or wort for acidification purposes.

Summary

The motivation behind the various editions of the Reinheitsgebot hasn't changed much over the years. In the first instance it was used to eliminate competition and helped gain bigger profits, no matter if for the brew-



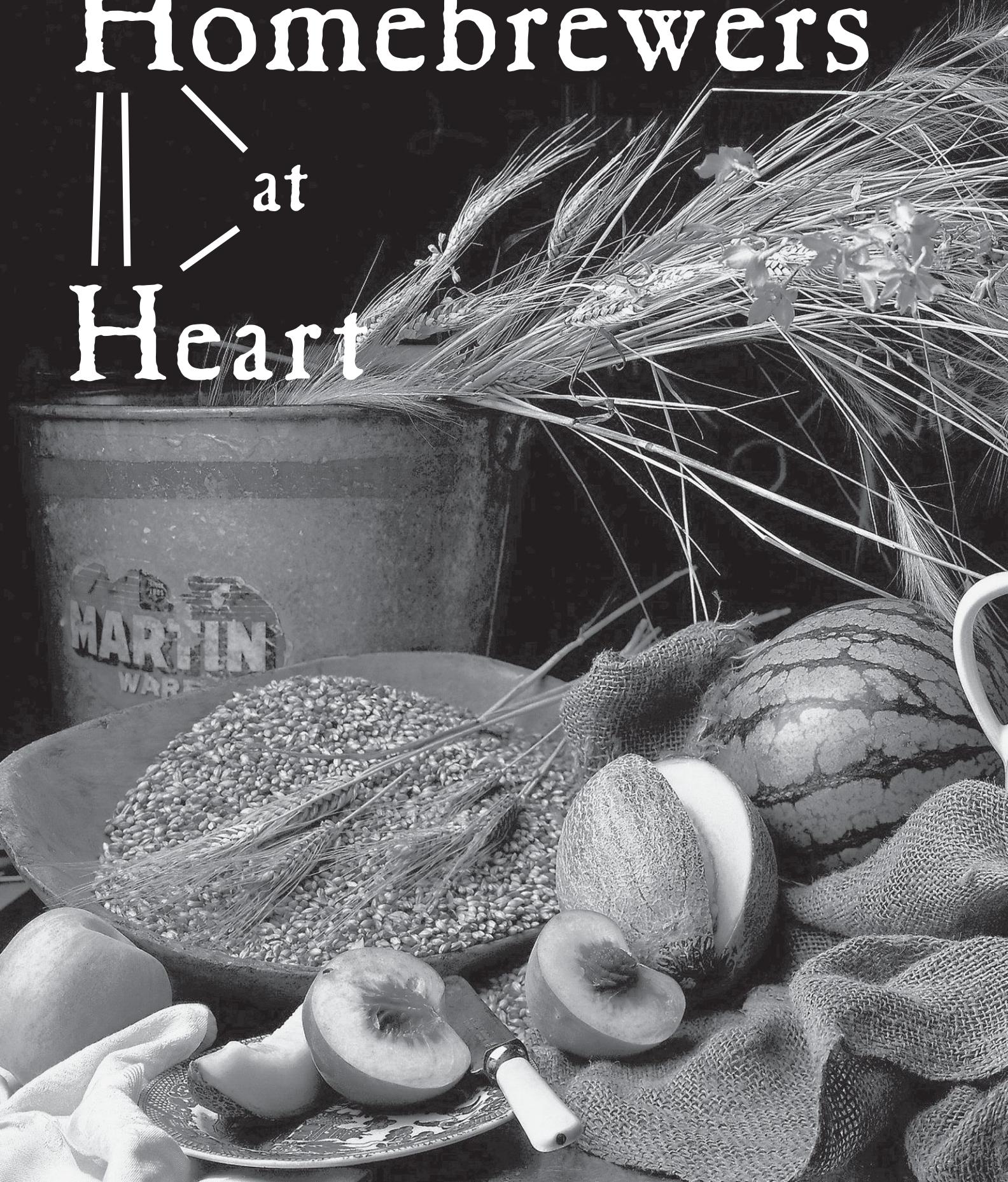
The castle brewery at Kaltenberg inspires romantic brewing notions.

ers or the rulers. Often the brewers had to be protected from themselves. But to imply that the late-medieval rulers acted consumer-consciously or intended to support public health is as ridiculous as the statement that a bottle of Corona or American Budweiser would be deleterious to health simply because of its content of corn or rice.

At the end of the day good skills, knowledge and good raw materials, whether barley, corn or rice, are more valuable than purity laws. Almost every brewery in the world can, within the means of Reinheitsgebot, brew an awful beer; and most breweries could brew a good one without Reinheitsgebot. The Reinheitsgebot has always been used as a tool by German brewers if there was an opportunity to do so. They observed it only if there was no other choice. But there also are exceptions from the rule. And on these exceptions I will now have a beer—but a pure one, of course!

Guenther Thoemmes was raised and brewery-trained in the beer town of Bitburg. After more than 10 years as a global traveler in the beer business, he has drunk plenty of good beers brewed according to the Reinheitsgebot and many good ones brewed not according to it. He is married and lives in Vienna, Austria. Personal favorites are the incomparable Sierra Nevada Pale Ale, a nice draft Czech Budweiser, a fresh Paulaner Wheat and, of course, a cool Bitburger. Contact him at thoemmi@GMX.de. ☺

Homebrewers at Heart





Keeping the Spirit While Turning Pro

By Greg Kitsock



In the world of sports, you forfeit your amateur status the first time you accept money to play. Not so in the world of brewing. The industry is rife with brewers who trade their beer for money but remain amateurs in the original sense of the word: they practice their craft primarily for love, and not because it offers the quickest avenue to riches or a generous benefits package.

They're hobbyists gone a little nuts, the antithesis of corporate brewing. Instead of pushing buttons at computer consoles, they get down and dirty with brewing equipment they've assembled from dairy tanks and plastic pails. Instead of obsessing over consistency, they continuously experiment with new ingredients and recipes and frequently invent their own styles. They like to grow their ingredients. They're tireless proselytes for craft beer, sharing their expertise with newcomers to the homebrewing hobby.

They exemplify the spirit of homebrewing. These brewers produce about 0.0001 percent of the beer brewed in this country, but they're a boundless source of enthusiasm.

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Sign of the Turnspit Terrier

Selin's Grove Brewing Co. in Selinsgrove, Pa. has a capacity of 300 barrels per year, but actual output is closer to 250. However, the beers that owners Steve Leeson and Heather McNabb turn out in dribs and drabs routinely gather the highest accolades from visitors to this central Pennsylvania town on the Susquehanna River.

Selin's Grove Brewing is in the basement of the mansion that Pennsylvania governor Simon Snyder built in 1816. The smallish brewpub has a capacity of maybe 50 to 60, not including several ghosts who are said to inhabit the premises. The place is a throwback, a local in the English sense of the word. There are no blaring TVs, deejays or video games ... just a few board and card games and live music every Thursday.

The 3-barrel brewhouse includes a mash tun fashioned from used dairy equipment and a locally fabricated brew kettle encased in brick and concrete. There are two open fermenters, supplemented by five 150- to 200-gallon wine conditioning tanks. The grain mill—the only piece of equipment that Steve and Heather have upgraded since opening in 1996—sits in a nearby garage.

The owners were avid homebrewers who took a course with Alan Pugsley in Kennebunkport, Maine, then apprenticed at New Belgium Brewing Co. in Fort Collins, Colo. They've tried their hand, successfully, at English, Belgian and German styles. Selin's Grove's Stealth Triple may be the best example of a strong, pale abbey ale on the East Coast. For such cramped quarters, the brewpub produces a remarkable number of beers that require prolonged aging. Selin's Grove will offer four to five lagers during the course of the year, as well as a barleywine, St. Fillin's, that's customarily brewed in June and released in November. As of February, the brewpub had two vintages of St. Fillin's, 2000 and 2002, on tap. "I didn't brew it in 2001 because that's when I had my son," explains Heather.

For the warm months, there's a garden with a few tables and twining hop vines—mostly Cascades, but also some Hallertau, Nuggets and East Kent Goldings. "Every fall, we have a staff party and pick an average of 20 pounds of fresh hops," says

Jeff Allen of Stone City Brewing Co. adds the finishing hops to a batch of Iowa Pale Ale. The 16-barrel system was custom-built by Stone City's four partners using old dairy tanks.



Heather. They're used to dry-hop a Hop Harvest Pale Ale.

The brewery's logo, appearing on pint glasses and apparel, is the "turnspit terrier," a dog running on a treadmill. In the early 19th century, a local citizen named Matthias App ran a distillery/brewery. He used stray dogs to turn a 15-foot flywheel, which powered a pump that drew water from a well.

Selin's Grove Brewing uses more modern forms of energy. It's quaint, but not *that* quaint.

two for the boil, and two more for fermentation. After three weeks I rack into 5-gallon Corny kegs and serve it from the tap."

White stores his set-up in the basement, but the city authorities refuse to let him brew there until he builds a hood around the apparatus. So once a month, White lugs his gear onto the patio and spends six to eight hours brewing beer. He compensates for the minuscule output by brewing "interesting styles you can't find anywhere else." His latest effort, when we called, was Gusto Gueuze. "I've developed my own strain of

Once a year, White brews his Lavender Lager using leaves and blossoms he harvests from his herb garden, along with a little honey.

Smallest Breweries in the Midwest

Despite a reputation for beer conservatism, the Midwest seems to have an unusual number of funky, "Frankenstein" breweries—those pieced together from discarded parts.

"We're the smallest brewery in the state of Michigan," announces Will Tyler White, co-owner of the Travelers Club International Restaurant and Tuba Museum in Okemos, not far from Michigan State University in East Lansing. White brews in 25-gallon batches using Pico Brewing Systems equipment. "It's almost like an advanced homebrew set-up," he says. "They're made out of half-barrels. I use one for the mash,

wild yeast that I've been experimenting with for a couple of years," he explains.

Once a year, White brews his Lavender Lager using leaves and blossoms he harvests from his herb garden, along with a little honey. "The ladies seem to like it," he says.

Incidentally, the "tuba museum" in the restaurant's name isn't merely an attempt at an offbeat moniker. He's got 50 to 60 instruments mounted on the wall. "I'm a tuba player myself," he admits. "Everybody who goes to the Oktoberfest in Germany knows that beer and tubas go together like ham and cheese."

Dragonmead Microbrewery in Warren, Mich. is the brainchild of three auto indus-

try employees—Larry Channell, Bill Wrobel and Earl Scherbarth—who were also “fanatical homebrewers.” According to Channell, “It all started when Bill bought Earl an extract homebrew kit. His beer was typically putrid, but it still tasted better than anything we’d ever had.” The trio eventually graduated to all-grain brewing, and fashioned a seven-vessel system from sawed-off barrels because “we wanted to make a whole lot more beer with a lot less effort.”

The three friends were also fanatical about Dungeons and Dragons (hence, the brewery’s name). Instead of playing the board game, they built a dungeon with moveable walls in Larry’s basement. “It was great until we started having kids and got too old for it,” says Channell. At that point they began using the area at Christmas time for wassail feasts. “We’d wear medieval costumes and eat food that we either shot or grew personally.” Of course, all the beer was homemade as well.

Channell and his partners turned pro five years ago this May. “Everybody we talked to said we were insane,” Channell says of the career change. “For the past five years, we’ve been investing everything we earned back into the brewery. This is probably the first year we’ll start getting money out of it.”

Initially, the partners used their homebrewing equipment, but they now brew with a specially designed 3-barrel system fabricated by Heavy Duty Products in Cambridge, Ontario. It consists of a mash tun, lauter tank, two brewkettles, six primary fermenters and eight Unitanks for secondary fermentation. The system will accommodate both infusion and decoction mashes. Channell and his crew do three brews daily, choosing from among 55 recipes representing 48 styles. They stockpile 60 varieties of grain from seven different countries, 45 types of hops and 22 yeast strains. They keep 20 to 30 beers on tap at all times in their tasting room.

“We like to do a style exactly as they would have done it when it was at its zenith,” says Channell. “Our 90 Shilling Scotch ale is twice as strong as the modern version.”

Until now, 100 percent of Dragonmead’s production has been draft beer, but the brewery was about to introduce its first 12-ounce bottles in April, beginning with

Final Absolution, a Belgian-style triple. “We have an incredibly tiny two-head bottler,” says Channell. “We do one six-pack a minute.” True to its name, Dragonmead has started producing a fermented honey beverage, although obtaining the license to sell it will take “another couple months,” says Channell.

Stone City Brewing Co. in Solon, Iowa (about eight miles north of Iowa City) is another jigsaw brewery; its 16-barrel brewhouse cobbled from cast-off dairy equipment. Brewmaster Jeff Allen and his partners scavenged the burners from old furnaces they found at a local junkyard. Originally, they bottled with a six-head wine bottler, and used glue sticks to apply the labels. “It was slow, and your elbows felt it,” recalls Sal Allen, Jeff’s wife. They’ve now invested in a more professional Meheen bottling line.

Kegging, however, is still done by hand. “There’s no pump—it’s all gravity feed,” says Sal Allen. Stone City can fill 12 to 16 kegs this way during the course of a workday, she adds.

The four partners in the business combine the necessary skills to run a do-it-yourself brewery. “Jeff is a microbiologist, Mark [Brower] is a mechanical engineer, Luke [Ames] is janitor/carpenter/electrician/plumber, and I do the bookwork and keep up morale,” says Sal. Their product line includes a Hefeweizen, an IPA (“an Iowa pale ale,” elaborates Sal), Artists Colony (an English brown ale) and the enigmatically named “aaah Bock”.

Jeff is handy at building devices other than breweries. “We have a portable hot tub that’s a revamped dairy tank,” says Sal. Then there’s the trebuchet—a kind of catapult used as a medieval siege device. “That’s been here and gone!” answers Sal when I ask about the picture that appears on Stone City’s Web site. Jeff gave it away to a local bison rancher, who uses it at feeding time to toss pumpkins at his herd. “It’ll hurl them 200 feet,” she adds.

Desert Brewing

In Las Cruces, N.M. (home of New Mexico State University and the White Sands

Missile Range), two “bitter ex-scientists” are brewing some bitter beers. At least, that’s how owner Mark Cunningham describes himself and his partner Bob Gosselin. Unhappy with the university administration, the two left their laboratory jobs to turn their homebrewing hobby into a paying proposition. Their brewpub, High Desert Brewing Co., will celebrate its sixth anniversary this June.

The two partners use a 3 1/2-barrel system that once belonged to Mission Brewing Co. in San Diego. “We heard through the grapevine about some guys who had a system sitting in a barn,” recalls Cunningham. “They were NASA engineers who had money to burn. But they didn’t want to quit their day jobs and never got around to putting up a building for the brewery.

“I have no idea who manufactured it. I’ve looked around for a nameplate but could never find one. Whenever we need hinges or gaskets, we just search around until we find something that almost fits.”

The system includes a gas-fired mash tun, kettle and hot liquor tank. There is no auger. “You lift the bag of grain, slice it and let the grain fall in,” says Cunningham. “There’s no manifold—everything is done by hand. That’s why we hire those young college guys!”

High Desert offers more than 20 varieties of beer and aims to keep as many as 11 on tap at a given time. The number one brand—outselling everything else three to one—is a 50-IBU India pale ale hopped with Cascades and Hallertau. Cunningham also serves an Oktoberfest year-round, although he admits he has to cut corners with the lagering time to keep up with demand.

Cunningham and Gosselin have been winning medals since they were active members of the Borderline Brewers, a homebrew club based in El Paso, Texas, about 40 miles away. As professionals they continue to gather plaudits. At the Southwest Brewing Competition in Angelfire, N.M. in 1998, High Desert won three gold medals and one silver. The brewpub cleans up every year at the beer judging at the New Mexico state fair, Cunningham adds.





**Bob Gosselin of
High Desert
Brewing Co. in
Las Cruces, N.M.**

Asked if he likes running a brewpub, Cunningham answers, "Parts of it. I don't like personnel problems: whose cat got run over today, who's not coming in. You wind up washing dishes yourself on a Friday evening.

"It's a daily consideration, but overall, yes."

The Little Guys in the Pacific Northwest

Can micro micros like the breweries above exist in the Pacific Northwest, the most saturated and mature market for craft beer? Ask Mike Hall and Bill Jaquish, who've been running the Ice Harbor Brewing Co. in Pasco, Wash. since 1996. Both partners used to work for the Hanford

keg and bottle out of," admits Hall.

Ice Harbor distributes largely in the Tri-Cities area encompassing Pasco, Richland and Kennewick (total population: 150,000). Half of their sales are through retail outlets, and half are made to walk-ins who visit the brewery's 20-seat pub and haul away growlers or kegs. "Last year is the first year we broke even," says Hall, who notes that homebrew supplies make up a big chunk of his sales.

Hall, in fact, is still an active member of the local homebrew club, the Mid-Columbian Zymurgy Associates. "I was the founder and first president, and I still go to all of the meetings." Ice Harbor's head brew-

"It's not quaint, it's not copper, and if they had a cream separator and a cow, they would be a dairy!"

nuclear plant, which manufactured weapons-grade plutonium. "That was like punching a clock—this is more fun," says Hall in comparing his two careers.

Hall and Jaquish bought their 10-barrel system from Dave Meheen, who is best known as a maker of bottling lines. But Meheen didn't exactly buy his equipment off the rack. One correspondent, in suggesting Ice Harbor for this article, wrote, "It's not quaint, it's not copper, and if they had a cream separator and a cow, they would be a dairy!"

"It's almost all used dairy equipment except for the three carbonating tanks we

er, Russ Corey, is a homebrewer who learned the ropes from his Siebel-educated predecessor while volunteering at the brewery. Corey likes to hold court with his fellow zymurgists. "I'll taste their beers, they'll ask me about procedure, they'll ask me how to make the transition from malt extract to all-grain," he says.

Ice Harbor sticks to basic styles—its best-seller is a Kölsch—but Corey did get to do a one-of-a-kind brew, a jalapeño IPA, for Pasco's annual Fiery Foods Festival. "I chopped up a couple pounds of peppers, pulled the seeds out, and let the peppers soak in 5 gallons of beer. After it sat for five

weeks, I blended it with my regular IPA."

It wasn't plutonium, but "it turned out a little hotter than I wanted," admits Corey.

Will Success Spoil Sam Calagione?

Support these little breweries while you can—they tend to be labor-intensive and unstable operations. Often, one of two things will happen: the owners will grow tired of the grind and get rid of the brewery. Or they will upgrade to larger, more automated equipment.

Gettysburg Brewing Co. is an example of the former. This cozy 52-seat brewpub has been operating since 1996 in a Civil War-era building that was a photographer's studio when the decisive battle took place in 1863. (A mortar round is still lodged in the front wall.) When I called owner and brewer Dave Baker, he informed me that he had sold his 4-barrel brewhouse and intended to shut down on March 15. The equipment was already crated and en route to Brisbane, Australia. Baker's last effort, an Irish red ale named Dave and Gail's Final Ale, was on tap. Baker blamed the closing on lack of local support and the fact that he and his wife had been doing all the brewing and cooking and waiting on tables for the last two years. "We're totaled," he confided. "Hopefully, I'll be able to get a job and enjoy my life again."

Delaware's Dogfish Head Brewery is an example of the latter. Founder Sam Calagione, when he opened his Rehoboth Beach brewpub in 1995, brewed in 10-gallon batches on a Sabco homebrewing system. Last year, Calagione inaugurated his new production brewery in Milton, Del., which is equipped with a 50-barrel brewhouse. Upscaling hasn't dulled Sam's passion for unusual beers. One of his more recent efforts is Olde School Barleywine, based on a circa 1920 recipe and brewed with dates and figs to pump up the fermentable sugars.

The label features a drawing of folksinger Woody Guthrie, who, Calagione reveals, was a homebrewer himself. According to a recording Calagione discovered in the Library of Congress, Guthrie and his friends tried making a batch of homebrew. The recipe called for adding one packet of yeast and waiting three days. Guthrie figured if he added three packets, he'd only have to wait one day. "I've (continued on page 57)

For Geeks Only

Reader Advisory: Warning! These pages are rated XG (eXtra Geeky) by the Bureau of Magazine Muckymucks. 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.

Tuning PID Controllers: Part 2

By Nate Wahl

In a previous "For Geeks Only!" column (January/February 2003 *Zymurgy*, p. 47) we looked at the various types of solid-state controllers that might be useful in assembling homebrew equipment. In this installment, we look at how to set up a controller on your brewing system.

Okay, you have a controller all hooked up and are ready to start tuning your system. We'll need to pick some initial settings for each portion of the controller (proportional, integral and derivative) and then talk about how to adjust things. Let's start with the easiest way to do this: by letting the controller decide for itself. If you don't have that option, then we'll discuss appropriate initial settings in all three areas.

Autotune

If your controller has an "autotune" feature, set up the system for a test run as discussed below and let the autotune do its thing. Simply see where your temperature is, and set the controller to that value for the setpoint temperature. Start the Autotune process with the appropriate sequence specified in your manual. Typically an indicator will stay on or something will flash until it completes its test. Let it do its thing, and when it's done, write down the numbers it has set itself to for P, I and D, and any other control setting not discussed here. Try it at

a few temperatures with different water volumes and target temperatures as outlined below and see how much the auto settings vary. Then you can take a good, average guess for each setting and set it there. This should get you very close.

Please note: Autotuning is just that; it tunes the system by making a change, seeing how the system responds, and picking the best values for the P, I and D settings based on an algorithm inside the unit. Not perfect, but usually the settings work well as a starting point. Autotuning is NOT for every time you run your system! Remember, it swings the temperature on purpose to test the system response, which is not what you want it doing while you're trying hard to hit that specific rest!

Without Autotune

Assuming that your controller doesn't have an autotune feature, you'll have to input some initial values for all of the controller settings and then test and tweak from there. Here's what I recommend for initial settings.

Proportional (Gain): I've found that controlling over a plus-two to minus-two degree proportional band works well. On my controller, I need to set the value to the percentage of the fullscale indication; so, for an RTD with a range from -200 to +800° F, which is a thousand-degree range, I set my gain to 0.004, which is a four-degree band.

This means that if the temperature is two degrees below setpoint the heat is set to full on, and at two degrees above setpoint the heat is set to full off. Keep in mind the basics we covered in the last article: this proportional output will be modified by the integral and derivative circuits of the controller.

Other controllers may have the band set in degrees or other units; refer to your manual and set accordingly.

Integral: I use about a third of what the unit is capable of taking for a setting here; my controller has some strange things going on as it's set to minutes per repeat (bass-awards units); I set it to about 1500, and it can be set up to 4000. Again, consult your manual, and set your integral to a low-mid range value.

Derivative: I use just 1 percent of the amount the unit is capable of, and am not really sure that I need that much. Start out small; unless you have a lot of power for your system size, you probably won't need much derivative action.



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 2.

I also have my controller set up to trigger a solenoid valve based on 15-second intervals, which seems to be a good compromise between too short of a time and too long for good control. Longer times seem to make the system hunt around the setpoint as if it can't control temperature fine enough. Too short of a time results in unnecessary wear to the components (valves, relays, etc.).

This setting should be adjustable for your controller, and it may be called sample time, cycle time or some other time-related name. It typically is set in seconds; look for that cue in your documentation.

Doing a Test Run

Now it's time to get the system operating and see how well our initial values worked.

Fill your system with as much water as you would use for a normal batch; so as not to ruin any grain, you can then add enough water to substitute. Add another half pint of water for each pound of grain you would normally have in a typical batch. Set up your pump flow for what you anticipate will be normal system flow, and set your hot liquor tank to the anticipated level and temperature for a HERMs system. In general we are trying to get as close to actual brewing conditions as possible.

First, make sure that your controller is sensing the proper temperature. Even new digital instruments may need to be calibrated. Use a known good thermometer to see how close your displayed temperature is. It may be possible on some units to provide an "offset" value that is used to make the indicated temperature match the true temperature. Or you may have to fudge the setpoint to accommodate for a difference.

I suggest that you take lots of notes during this timeframe; write down the settings

you use, and trend the ramps over time. This can help quantify whether your settings are "too fast" or "not enough" and help you judge how your changes are affecting the system.

Stick to tests with an increase in setpoint; typically we are not worried about temperature going down on purpose. If the system gets too warm, let it cool down for a while and start over. You should test in the normal range where your mash steps would take place.

"Tweaking It In" (Fine Tuning)

It is important to remember that we are trying to get the best compromise between rapid temperature changes and the ability to attain and hold a specific temperature. All adjustments should be made to get a good balance between the two.

At this point, you want to run the system with the integral and derivative settings dialed down temporarily, change the setpoint up a few degrees, and see if it stabilizes at or near the new setpoint; some offset is okay. If not, try changing the gain (proportional) one way or the other and see if it settles down. If it gets worse, well, then go the other way! The idea is to set the proportional so that if you change the setpoint the system tries to respond in the direction you want in a timely fashion, but doesn't undershoot or overshoot by much or cycle too often. A small offset from desired temperature is fine. You want to get the proportional right, so play with it a while.

Once the proportional is set, you can now increase the integral setting back to about three-fourths of where you had it set before. The temperature offset should start to go away. Make a setpoint change, and see if the temperature follows. Keep increasing the integral until the setpoint is achieved rather

quickly but the system is still stable. If you get "hunting" or big overshoots around the setpoint, back off on the integral a bit.

Finally, give the controller a bit of derivative if you want and do some large setpoint increases. The system should be starting to handle it well, without running your temperature all over the place. A little derivative will help prevent overshoots when nearing the setpoint or on long ramps. But if the system starts to cut back too soon, or starts cycling around the setpoint, the derivative value is probably set too high. Try several tests and see how close you can get it.

Now is a good time to change each of the settings a little and see what happens to how the system responds. That way when you use different batch sizes, grain/water ratios and ambient conditions, you can see how the system is responding and make any corrections if needed. Perhaps more important than getting the settings exactly right is gaining the knowledge and experience to make wise decisions later when making changes.

Oh, and do try your settings the first time with a not-so-expensive grainbill, just in case the thing goes wild for some strange reason. But with proper tuning, it should be very close.

Final Adjustments

Here are some suggestions for adjustments based on errors you find when actually using the system; by now they should start to make sense.

No matter what, once your controller is close to being set up ideally, make any changes in small increments.

Since the system response depends on the system itself, different size (mass) batches or different grain/water ratios may act differently; by (continued on page 58)

Final Adjustments

Problem	Solution
Starts backing off way before setpoint is reached.	Increase Gain (Proportional Span) a little.
Comes up close to setpoint but stops.	Increase the Integral.
Overshoots a bit and stays there.	Increase Integral a bit and possibly lower the Gain if that doesn't help.
Gets to setpoint quickly and then hunts.	Lower the Integral setting a tad. If it still hunts, back off on the Derivative.

BY CHARLIE PAPAZIAN

English-style Summer Ale

Each year hundreds of beer industry professionals, journalists and enthusiasts throughout the world take the challenge of evaluating at beer competitions very seriously. Since the Association of Brewers' first national competition in 1979 it has undertaken the serious responsibility of developing beer style guidelines and methods of evaluating beer. Where none existed 24 years ago the Association of Brewers, with its active network of knowledgeable members, has succeeded in developing and maintaining very accurate style guidelines representing the analytical and sensory characters of more than 90 popular, meta and historic beer styles. (It is certainly worth noting here that Michael Jackson contributed to the foundation of these guidelines in the early years of its development and to this day is still involved in contributing to this work in progress.)

Each year as I participate in various competition judgments I delight in the offerings that grace my table—not only because of the quality, but also because of the opportunity for discovery. I continue to derive much of my appreciation for beer cultures of the world through the sensory experiences of traditional and historically brewed beers. This is the foundation for my sense of beer's well being.

The Association of Brewers maintains its Beer Style Guidelines to be as current as possible. Each year in November and December the styles are reviewed and considered for revision, reflecting the current state of beer culture evolution and marketplace dynamics by enlisting the valued comments from judges, professionals and enthusiasts throughout the world. The complete Association of Brewers' Beer Style Guidelines can be found on our Web page www.beertown.org/education/styles.html. (Note that BJCP style guidelines are used for



Darron Welch was instrumental in the addition of "English Style Summer Ale" to the Beer Style Guidelines.

homebrew competitions.)

While certainly not a new style of beer, an addition was recently made to the list of styles, thanks to Darron Welch, head brewer at Pelican Pub & Brewery, the "Small Brewpub of the Year" at the 2000 Great American Beer Festival. Welch had discovered the reemerging tradition of English-style Summer Ale. Brewing it at his Pacific City, Ore. brewpub, he was delighted with its popularity and success with consumers. Welch advocated the addition of "English Summer Ale" to our inventory of beer styles at the Great American Beer Festival and the World Beer Cup. He not only provided a few pub-filled bottles of his most excellent Summer Ale, but also offered a tremendous amount of research he had compiled on the style. Data on 69 Summer Ales from 58 different English breweries were assessed.

Because of Welch's efforts we have added this English Style wheat beer as "English-style Summer Ale" to our guidelines. The description follows.

English-Style Summer Ale

English Summer Ale is light straw to golden colored with medium-low to medium bitterness, light to medium-light body, and low to medium residual malt sweetness. Torrefied and/or malted wheat are often used in quantities of 25 percent or less. Malt flavor may be biscuit-like. English character or Noble-type hop flavor and aroma are evident but not at all assertive. Mild carbonation traditionally characterizes draft-cask versions; for the purposes of the bottled entries entered in this competition, normal or a slight increase in carbon dioxide content is acceptable. The overall impression is refreshing and thirst-quenching. Fruity-ester characters are acceptable at low to moderate levels. Chill haze is allowable at cold temperatures.

- Original Gravity: 1.036 to 1.044
(9 to 11° Plato)
- Apparent Extract/Final Gravity: 1.006 to 1.012 (1.5 to 4° Plato)
- Alcohol by Weight (Volume): 2.9 to 3.6 percent (3.6 to 4.5 percent)
- Bitterness (IBU): 20 to 28
- Color SRM (EBC): 4 to 8
(8 to 16 EBC)

Welch's Notes on English-style Summer Ale

I found most of this information on the Internet from brewery Web pages. Specifications were taken from official brewery Web sites. The most common number was ABV [alcohol by volume], which nearly every brewery gave for their beer. On average, the English Summer Ales I surveyed averaged out to about 4.3 to 4.4 ABV. Some were as low as

3.6 percent, and others as high as 6.5 percent. Most were about 4 to 5 percent ABV. Other information was harder to get. Very few breweries gave OG specifications, but given the alcohol range of most of the beers, that can be pretty reasonably inferred backwards.

Of more interest, perhaps, is the consistency of grain bills and hop bills. Most of the breweries that gave such information mentioned

I have done enough research to go ahead and design a beer in this style for the Pelican Pub & Brewery here in Pacific City, Ore. I will be using Maris Otter or Golden Promise as a base malt, about 25 percent malted wheat, and about 5 percent torrefied wheat. Hops will be English First Gold exclusively, with a bitterness level of around 28 IBU, and dry hopped at about 4 ounces per barrel.

"My favorite thing to do is add a small amount, say 5 percent of the fermentables, of dark Brazilian rapidura."

Maris Otter malt and wheat malt. And for hops, the most commonly mentioned varieties were Goldings and Fuggles. There are several ales made with Continental hops such as Saaz and Hallertauer, but these seem to be in the minority. Many other English varieties were also mentioned as ingredients. Here is a summary of hop varieties and malts mentioned:

Hops

Golding:	7
Fuggle:	7
Saaz:	4
Styrian Goldings:	3
First Gold:	2
Hallertauer:	2
Challenger:	1
Target:	1
Progress:	1
Pacific Hallertau:	1

Malts

Wheat malt:	14
Maris Otter:	6
Crystal:	2
Pipkin:	1
Pale ale malt:	1
Lager malt:	1

In all, I found 68 beers made especially for the summer that fit the general guidelines of light color, emphasis on drinkability and 4 to 5 percent ABV. Additionally, many of the descriptions mentioned hop character and hop aroma, while emphasizing refreshing qualities. This leads me to believe that these beers are generally well attenuated, and only moderately bitter. The highest IBU number that I saw was 28.

"sugar" or other soft brown sugar
 0.8 oz. (22 g) 8.8% alpha UK North-down whole hops
 (7 HBU/197 MBU) 60 min
 0.75 oz. (21 g) 5.9% alpha UK East Kent Goldings whole hops
 (4.5 HBU/126 MBU) 10 min
 0.33 oz. (9 g) Kent Goldings or Crystal hop pellets, dry hopping in the secondary fermentation
 1.5 tsp Gypsum (calcium sulfate) if your water has a low mineral content.
 0.25 tsp powdered Irish moss
 0.75 cup (180 ml measure) corn sugar (priming bottles) or 0.33 cups (80 ml) corn sugar for kegging

Your favorite ale yeast of English origin. My favorite is Wyeast 1275 English Thames Valley. White Labs English Ale yeast is very good too.

- Target original gravity: 1.040 (10 B)
- Approximate final gravity: 1.010 to 1.012 (2.5 to 3 B)
- IBU's: about 28
- Approximate color: 8 SRM (16 EBC)
- Alcohol: 4.0 percent by volume

Place half pound of crushed crystal malt in 2.75 gallons (10.5 L) of 150° F (68° C) water and let steep for 30 minutes. Strain out and discard the crushed grains, reserving the approximately 2.5 gallons (9.5 L) of liquid to which you will now add malt extract, gypsum and "60 minute" hops. Boil for 50 minutes. Add Irish moss, Kent Goldings hops and boil for 10 more minutes. Turn off 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 has been added. If necessary add cold water to achieve a 5-gallon (19 L) batch size.

Pitch your yeast when temperature of wort is about 70°F (21° C). Once visible signs of fermentation are evident primary ferment at temperatures between 65 and 70°F (18 to 12.5° C) for about one week or when fermentation shows signs of calm and stopping. Rack from your primary to a secondary and add the hop pellets for dry hop-

Zymurgy English-style Summer Ale

(Malt Extract Recipe)

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

2.25 lb. (1 kg) Extra light dried English malt extract (or 2.75 lbs (1.25 kg) light malt extract syrup)
2.0 lb. (454 g) Briess Wheat malt extract
0.5 lb (225 g) Crystal malt (15-30 degrees L in color)
0.5 lb. (225 g) dark Brazilian rapidura

HOMEBREW BITTERING UNITS (HBU)s 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: $(2 \times 9) + (3 \times 5) = 18 + 15$. Bittering units per gallon would be 3.3 in a 10-gallon batch or 6.6 in a five-gallon batch, so it is important to note volumes whenever expressing bittering units.

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

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

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

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

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

ping. If you have the capability, cellar the beer at temperatures between 50 and 55° F (10 to 13° C) for seven to 10 days.

Prime with sugar and bottle or keg when complete.

Zymurgy English-style Summer Ale

(All-Grain Recipe)

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

Note: Because the full amount of wort is boiled, better hop utilization is achieved, thus less bittering hops are needed to achieve the same bitterness as the mash-extract recipe.

- 5.0 lb. (2.3 kg) English 2-row malt (Maris Otter if available)
- 0.25 lb. (112 g) Belgian (or other) aromatic malt
- 0.5 lb. (225 g) Wheat malt
- 0.75 lb. (340 g) torrefied wheat
- 0.5 lb. (225 g) dark Brazilian rapidura "sugar" or other soft brown sugar
- 0.7 oz. (19 g) 8.8% alpha UK North-down whole hops
(6 HBU/168 MBU) 60 min
- 0.7 oz. (19 g) 5.9% alpha UK East Kent Goldings whole hops
(4 HBU/117 MBU) 10 min
- 0.33 oz. (9 g) Kent Goldings or Crystal hop pellets, dry hopping in the secondary fermentation
- 1.5 tsp Gypsum (calcium sulfate) if your water has a low mineral content.

- 0.25 tsp powdered Irish moss
- 0.75 cup (180 ml measure) corn sugar (priming bottles) or 0.33 cups (80 ml) corn sugar for kegging

Your favorite ale yeast of English origin. My favorite is Wyeast 1275 English Thames Valley. White Labs English Ale yeast is very good too.

- Target original gravity: 1.040 (10 B)
- Approximate final gravity: 1.010 to 1.012 (2.5-3 B)
- IBU's: about 28
- Approximate color: 8 SRM (16 EBC)
- Alcohol: 4.0 percent by volume

A step infusion mash is employed to mash the grains. Add 6.5 quarts (6 L) of 145° F (63° C) water and gypsum to the crushed grain, stir, stabilize and hold the temperature at 132° F (53° C) for 30 minutes. Add 3.25 quarts (3 L) of boiling water and add heat to bring temperature up to 155° F (68° C) and hold for about 30 minutes. Raise temperature to 167° F (75° C), lauter and sparge with 4 gallons (15 L) of 170° F (77° C) water. Collect about 5 gallons (19 L) of runoff. Add water to bring total volume to about 5.25 gallons (20 L) for the boil. Add "60 minute" hops, rapidura sugar and bring to a full and vigorous boil.

The total boil time will be 60 minutes. When 10 minutes remain add the Kent

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Goldings hops and Irish moss. After a total wort boil of 60 minutes turn off the heat and place the pot (with cover on) in a running cold-water bath for 15 minutes. Continue to chill in this immersion or use other methods to chill your wort. Then strain and sparge the wort into a sanitized fermenter. Bring the total volume to 5 gallons (19 L) with additional cold water if necessary.

Pitch your yeast when temperature of wort is about 70° F (21° C). Once visible signs of fermentation are evident primary ferment at temperatures between 65 and 70° F (18 to 25° C) for about one week or when fermentation shows signs of calm and stopping. Rack from your primary to a secondary and add the hop pellets for dry hopping. If you have the capability, cellar the beer at temperatures between 50 and 55° F (10 to 13° C) for seven to 10 days.

Prime with sugar and bottle or keg when complete.

Charlie Papazian is president of the Association of Brewers.

Attack of the Brew Clubs! This month in Winners Circle, our talented medal winners from the 2002 National Homebrew Competition prove that it pays to join your local club.

John Aitchison, representing California's Maltose Falcons, reverently tips his hat to the late, great Dr. George Fix with his rendition of an American pre-Prohibition lager. A member of a famous Texas brew club, Knights of the Brown Bottle, Dr. Fix was long a champion of the style, and graced the pages of *Zymurgy* for many years with articles and winning recipes.

A member of the Washington D.C. club Brewers United for Real Potables (better known as BURP), Bob Maher brings home a medal with his Dusseldorf Altbier, "Alt 50."

The Austin Zealots, also hailing from the Lone Star State, are represented by Keith Bradley, who snags a silver with his lusciously rich, chocolate raspberry "Lover's Stout." This is one beer recipe that will have chocolate lovers drooling!

Another California club fights back with Jamil Zainasheff's take on the classic ordinary bitter. The Quality Ale Fermentation Fraternity, also known as QUAFF, claims another silver for Zainasheff's efforts. The judges were particularly impressed with the balance of this version of the English session ale, and at an original gravity of 1.034 it must have been no small feat!

Rounding out the roster is veteran NHC medalist Joe Formanek. Lucky to have Formanek in their ranks, Illinois' Urban Knaves of Grain take a bronze for his "Veronica's Tupelo Mead." With nothing more than good quality honey, water and yeast, Formanek makes it look easy.

Give these award-winning recipes a try. But if you really want a continuing source of local support, knowledge, competition and camaraderie, find a homebrew club near you and join the fun.

American Lager/ Pre-Prohibition Lager

BRONZE MEDAL

AHA 2002 NATIONAL HOMEBREW COMPETITION

John Aitchison, Northridge, Calif.

"In Honor of George"

American Lager/Pre-Prohibition Lager

Ingredients for 5 U.S. gal (18.93 L)

5.0 lb (2.5 kg) 6-row malt
5.0 lb (2.5 kg) 2-row malt
2.5 lb (1.1 kg) corn
1.0 oz (28 g) Hallertauer pellet hops,
3.7% alpha acid (60 min)
0.6 oz (17 g) Northern Brewer pellet
hops, 8.1% alpha acid (50 min)
0.5 oz (14 g) Tettnanger pellet hops, 4.5%
alpha acid (15 min)
White Labs Pilsner lager yeast

- Boiling Time: 70 min
- Original specific gravity: 1.063
- Final specific gravity: 1.018
- Primary fermentation: 21 days at 48° F (9° C) in glass
- Secondary fermentation: 30 days at 48° F (9° C) in glass

Brewer's Specifics

Double decoction mash with rests at 122° F (50° C) and 155° F (68° C). Add corn after first decoction.

Judges' Comments

"Slight sulfur, pale golden, clear, full head, dry finish. Medium body. Needs more hop flavor."

"Malty sweet, DMS detectable, dry finish. Good beer, lacking in hop flavor."

Dusseldorf/Altbier

BRONZE MEDAL

AHA 2002 NATIONAL HOMEBREW COMPETITION

Bob Maher, Falls Church, Va.

"Alt 50"

Dusseldorf/Altbier

Ingredients for 5 U.S. gal (20.845 L)

1.0 lb (0.45 kg) Durst Pilsener malt
3.0 lb (1.36 kg) Durst Munich malt
1.0 lb (0.45 kg) Durst Vienna malt
5.0 oz (142 g) 43° L caramel malt
1.0 oz (28 g) Perle pellet hops 7.1%
alpha acid (60 min)
0.25 oz (7 g) Northern Brewer
pellet hops 6.5% alpha acid (60
min)
0.6 oz (17 g) Spalt pellet hops 5.3%
alpha acid (15 min)
0.6 oz (17 g) Spalt pellet hops 5.3%
alpha acid (steep)
Wyeast 1033 European Ale yeast

- Boiling Time: 90 min.
- Original specific gravity: 1.050
- Final specific gravity: 1.014
- Primary fermentation: 13 days at 63° F (17° C) in glass
- Secondary fermentation: 3 weeks at 55° F (13° C) in glass
- Aging: 3 weeks at 35° (2° C)

Judges' Comments

"Clean finish is appropriately dry. I'm not sure the bitterness is high enough for the style. Very clean but the roasted malt is too apparent. Well balanced and very drinkable."

"Slightly astringent aftertaste with residual bitterness, malt aroma larger than flavor."



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Fruit Beer/Raspberry Chocolate Stout



SILVER MEDAL

AHA 2002 NATIONAL HOMEBREW COMPETITION

Keith Bradley, Austin, Texas

"Lover's Stout"

Fruit Beer/Raspberry Chocolate Stout

Ingredients for 5 U.S. gal (18.93 L)

10 lb (4.5 kg) Briess 2-row malt
1.0 lb (0.45 kg) chocolate malt
0.5 lb (0.23 kg) 90° L crystal malt
0.5 lb (0.23 kg) 60° L crystal malt
0.5 lb (0.23 kg) flaked barley
0.5 lb (0.23 kg) dextrin malt
0.25 lb (0.11 kg) roast barley
1.0 oz (28 g) black patent malt
0.25 lb (0.11 kg) unsweetened Bakers chocolate (15 min)
12 Tbs (177 mL) Dutch cocoa (15 mL)
6 12oz packages (336 g) frozen raspberries (steep)
0.5 oz (14 g) Challenger whole hops
8.2% alpha acid (60 min)
0.5 oz (14 g) Northdown pellet hops
8% alpha acid (15 min)
White Labs WPL 002 English ale yeast

- Boiling Time: 60 min.
- Original specific gravity: 1.070
- Final specific gravity: 1.016
- Primary fermentation: 10 days at 68° F (20° C) in plastic
- Secondary fermentation: 10 days at 40° F (4.4° C) in steel

Brewer's Specifics

Mash all grains at 153° F (67° C) for 60 minutes.

Judges' Comments

"Smooth and clean with a nice butter chocolate bite. Some alcohol warmth, long complex finish. No question—the best chocolate flavor and aroma I've ever tasted. Not sure the raspberry intensity makes it a great fruit beer, but this is a knockout beer anyway."

"Very well balanced with moderate hop bitterness. This beer lived up to its expectations. Good balance of chocolate, fruitiness and base beer."

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Bitter & English Pale Ale/Ordinary Bitter

SILVER MEDAL

AHA 2002 NATIONAL HOMEBREW COMPETITION

Jamil Zainasheff, Elk Grove, Calif.

Bitter & English Pale Ale/Ordinary Bitter

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

8.0	lb (3.63 kg) British Halcyon pale malt
0.63	lb (0.28 kg) US 120° L crystal malt
1.0	oz (28 g) Goldings pellet hops 5.9% alpha acid (60 min)
0.50	oz (14 g) Goldings pellet hops 5.9% alpha acid (30 min)
0.5	tsp Irish moss (Whirlfloc) 20 min White Labs WLP 002 English ale yeast

- Boiling Time: 90 min.
- Original specific gravity: 1.034
- Final specific gravity: Unknown
- Primary fermentation: Unknown
- Secondary fermentation: Unknown

Brewer's Specifics

Mash grains at 152° F (66.6° C) for 60 minutes. Mash out at 168° F (75.5° C) for 10 minutes.

Judges' Comments

"Nice use of crystal (not overdone)—good hop balance. May be pushing the upper limit for an ordinary bitter, but what the heck—nice job (you're obviously a very clean brewer.)"

"Good malty start with a balance of hops—slight but acceptable diacetyl. Finishes a bit warm for style, but good. A most drinkable beer that combines good malt/hop balance. Sneaks close to a special."

Still Traditional Mead/Varietal Honey

SILVER MEDAL

AHA 2002 NATIONAL HOMEBREW COMPETITION

Joe Formanek, Bolingbrook, Ill.

"Veronica's Tupelo Mead"

Still Traditional Mead/Varietal Honey

Ingredients for 5 U.S. gal (18.93 L)

15	lb (6.8 kg) tupelo honey
2.0	tsp (9 mL) Sparkaloid to clarify White Labs WLP 720 Sweet Mead yeast

- Original specific gravity: 1.108
- Final specific gravity: 1.010
- Primary fermentation: 110 days at 68° F (20° C) in glass
- Secondary fermentation: 71 days at 68° F (20° C) in glass

Brewer's Specifics

Use an active carbon filter for brewing water. Steep must at 180° F (82° C) for one hour.

Judges' Comments

"Nice honey expression, some tupelo spiciness, but subdued; some alcohol warmth, dry powdery finish, some higher alcohols, soft mouthfeel, medium body. Well made, clean."

"Quite good. May improve with age—alcohol is almost burning. Acid/tannin levels a bit high too. Fermentation characteristics clean."

Former Zymurgy associate editor Amahl Turczyn still finds time to brew on weekends.



DEAR PROFESSOR

BY PROFESSOR SURFEIT

Clearly Much to Do About Clarity

Dear Professor,

After making many batches of what I thought was fairly clear beer, I am now wondering what is the right way to use polyclar? I have searched high and low for instructions on the proper dose and usage but they all leave out details. I now read that it should be stirred in the racked beer for one hour. Is this correct? It seems excessive. I have been adding it, stirring until it is dispersed and sealing the carboy. I'm not so sure now. Any recommendations?

Pete Precario

Hi Pete,

There aren't a whole lot of homebrewers using polyclar as it is more suitable for use by brewers brewing American style light lagers with a filtration system. Here's what Charlie Papazian says in his "Complete Joy of Home Brewing":

PVP (polyvinylpyrrolidone)/Polyclar—Plastic! This substance is an insoluble white plastic powder that, like a statically charged balloon clinging to the ceiling, will electrostatically attract tannin molecules as it drifts to the bottom. This process is called adsorption. It is a physical phenomenon. There is no chemical reaction of the plastic with the beer. After the polyclar has settled, the beer is drawn off, leaving the sediment behind. Because there are no longer any tannins in the beer, its combination with protein is prevented—no chill haze.

Polyclar should be added to the beer after the yeast has sedimented. The addition of polyclar (consult the directions on the packaging for the correct dosage) for every 5 gallons (19 liters) of beer should effectively remove tannins within a few hours. Polyclar is available at many homebrew supply stores.

Quite frankly, it seems like a lot of extra work, just to help reduce chill haze. Polyclar

doesn't work very well if there is yeast in suspension—it interferes with the process. That means your beer needs to be very well sedimented in the first place; in other words, pretty clear of yeast.

Me, I simply don't worry about it. I don't mind a little chill haze in my very cold beer. But then I don't chill my beer near freezing either.

*Hope this gives you some valued perspective,
The Professor, Hb.D.*

Wooden You Know It

Dear Professor,

Do you know of any specific guidance on using wooden casks to mature beer in a similar manner as is done in England with their "real" beer? I am interested in trying it but I am somewhat concerned with sanitizing the keg. Kegs appear to be available (lined with paraffin). I have seen some rec-

ommended ways to clean up a keg in guidance for winemaking but I don't know if that is appropriate or needed for beer.

Forrest Rhodes

Dear Forrest,

In England, the "real ale" really doesn't come in contact with the wood. The casks are lined with brewer's pitch. There are more important factors than the wooden keg that influence the "real" character of traditional English Real Ale. Brewing, cellaring, serving, caring and so many other factors enter into the final authenticity of character.

If you still want to make a go of it, try using some of the great new oxidizing sanitizers now available in homebrew supply stores. Two brands to look for are Star San (active ingredients are dodecylbenzenesulfonic acid and phosphoric acid) and Oxine (active ingredient is chlorine dioxide). These products sanitize without leaving nasty residues in or on equipment. Take a look at the March-April 2001 issue of Zymurgy for some excellent advice on sanitation.

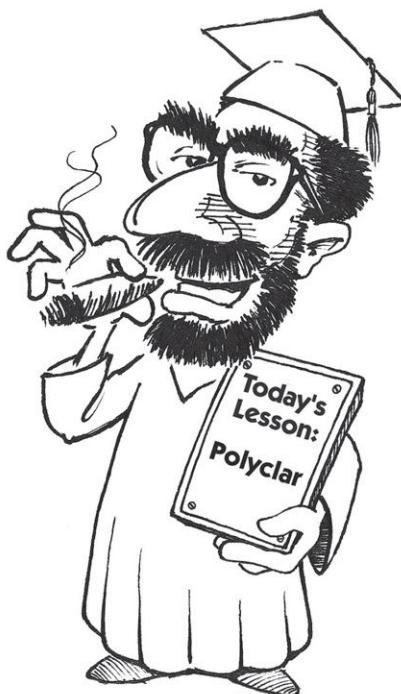
Forget about any methods for cleaning kegs you might have read about in wine-making literature. Winemakers aren't as concerned as brewers with sanitizing barrels because wine has more alcohol, which tends to inhibit bacteria naturally.

*Wouldn't you know it,
The Professor, Hb.D.*

Taking the Guess out of Gueuze

Dear Michael,

I recently built a cellar below my homebrew shop specifically to make a Gueuze. I need help with the fermentation schedule and treatment of the oak barrel I will be using. If Mr. Jackson does indeed see this request, I would appreciate a response. I understand



that Mr. Jackson is not a brewer, and is surely busy, but probably has absorbed enough Belgian facts to help me in my quest to make a Cantillon-style acidic Gueuze.

My two brewing partners and I are serious brewers who appreciate the historical significance of Gueuze brewing and are adamant in keeping this tradition alive. Our call for advice and help is real and is only to emulate making a true Gueuze by basic homebrewing methods, and not for production or other monetary reasons. I am truly passionate about this quest. Life is short, and there is only so much Gueuze. Please respond if you can share your knowledge.

Thanks,
Zok

Yo Zok,

Michael Jackson received your question and passed it on to me for answering. There has been quite a bit discussed on e-mail forums about lambic style beers. Brewing and capturing the true character of this legendary beer is about achieving the height of the brewer's art. Even though most beer drinkers don't appreciate the balanced acidity of this exquisite style of beer, it represents a complex series of actions and decisions, all of which, if done correctly, is quintessentially the fine art of brewing.

Now then, let's get on with some guidance. The first thing I'd advise is to see if you can

get abold of "Lambic" by Jean-Xavier Guinard, a volume in Brewers Publications' Classic Beer Style Series. It is currently out of print, but certainly worth trying to find as a used copy on eBay or amazon.com. It discusses the barrels used in lambic brewing. Briefly it refers to the use of used casks, of oak or chestnut, from wines of the Cognac, Porto, Sherry and Madeira regions; and the need to keep casks clean and in good condition, preserving certain microorganisms while protecting the beer against unwanted infections.

Fermentations are varied and quite involved, yet within the means of homebrewers. Over the years there have been several articles and discussions about making Lambic-Gueuze type beers in Zymurgy magazine.

To simply get you started I'll briefly recommend getting abold of some used wine barrels. Sanitize them before you use them for the first time. Formulate your own recipe based on information in "Lambic" or other publications. Introduce a lambic blend of yeasts and other microorganisms, easily available at most homebrew supply stores. While this blend does not represent a complete "registry" of all the wild stuff that gets blown in to lambic worts in the area around Brussels, it is a good start and will begin to capture the character of the lambic style.

After you have established yourself as a lambic-style brewer you will encounter friends who will bring you gifts of Lambic, Gueuze

and Kriek. If it's homemade and tastes great, all the better. There is no harm in adding the sediments of the sour beers you taste along your journey to become a master of the fine art of brewing.

Eventually after several cycles of brewing and reusing your wooden barrels you will establish colonies of your own lambic-style blends of yeasts and bacteria.

*May your beer turn naturally sour,
The Professor, Hb.D.*

One Fine Gallon at a Time

Dear Professor,

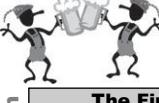
I was wondering if you could shed a little light on something for me. I have been brewing for several years now, and have found that for me, making small 1-gallon batches is ideal. You may think this is somewhat of a waste of time, but two of the main reasons I do this are: a) it allows me to continually brew and experiment with different types/styles, and b) would you rather wash and prepare 50 bottles, or eight? All I do is divide a recipe for a standard 5-gallon batch by five.

My question has to do with yeast and pitching rates. So far, I have been using dry yeast with some very good results. However, using a pure liquid yeast culture would obviously improve things. Is it possible to make a starter and use only a small amount? How could I do this while still keeping the culture pure? If not, what are some of the better strains of dry yeast? So far I have been using Nottingham.

Michael Moriarty

Dear Michael,

Hey, if you've got the time, then you'll have the experience. Keep on brewing and perfecting your beers the 1-gallon way. I'll bet you're also noticing that fermentation takes a lot less time than at 5 gallons. Theoretically, using one-fifth of the container of liquid yeast will suffice. How many squirts do you get out of a tube of Wyeast? With White Labs you can mark one-fifth measures on the side. Either way, don't worry and err on the side of a bit too much liquid yeast than too little. If you culture your own in a pint jar the sediment on the bottom will do for 1,



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2 or 3 gallons of wort just fine. While the friendly homebrew geeks might encourage you to count your cells, I'll recommend that you relax, not worry and make homebrew. The beer will be excellent.

Dried yeasts? Nottingham has a good reputation. So do Safale and Saflager (a dried lager yeast that will indeed ferment at very cold temperatures) by DCL.

I'd love to see a photo of all those jugs,
The Professor, Hb.D.

Goats, Oats and Barley

Dear Professor,

Some of my brewing grain purchases are dictated by the dietary needs of my goat Casper (he is black and unfriendly). Every couple of months I get him a 50-pound bag of dried corn, goat feed, etc. Since this is the beginning of my brewing season, I got 50 pounds of flaked barley. I usually add three pounds to a 10-gallon all-grain batch (15 percent of the grain bill.) Is it possible to brew an all flaked barley batch of beer? If not, how much of the grain bill can I use?

Ralph Bucca
Huntingtown, Md.

Hi Ralph,

I just want to say that a true-to-the-heart homebrewer would do well to go through every issue of Zymurgy since about 1980 and look for all these great questions that you've been asking the dear professor for well over 20 years now. You are the quintessential experimenting homebrewer. You've always been on the cutting edge. And you've even brewed a batch of Cock Ale (see the question below).

So you want to try brewing an all flaked barley beer. It is possible, but you'll need some enzymes. Brewers the world over use special enzymes to produce an extract of barley sugars derived by the enzymatic process of breaking down starch to sugar. For some commercial brewers this cuts the cost and time. It eliminates the need for barley malt. Passionate purists get really bent out of shape over these kinds of things. They could justifiably say that the beer really doesn't taste quite as good as beer made from malt. But the fact is that you can do it. And that indeed was your question.

I'd recommend going to the home page of some enzyme companies such as Novozymes (www.novozymes.com) or DSM Food Specialties in the U.K. (www.dsm-foodspecialties.com). There you will find enzyme products that are suitable.

And what's with the "Oats" in the title of this question? Beats me, but it rhymed so I used it. (Oat malt—there is such a thing, by the way).

Malt or nothing,
The Professor, Hb.D

A Little Chicken With Your Ale?

Dear Michael,

When I first started brewing beer I borrowed a book on brewing from the local library. It covered all the basics and gave some standard recipes.

It also had a section on unusual beers and one of these was a beer of supposedly French origins. From memory, it was open brewed. But the unusual thing about it was that they put a sterile stocking filled with a fresh (plucked and cleaned) chicken and some herbs into the brew while it was fermenting.

The name of it had the word "Coq" in it somewhere but now I can remember neither the book I used, the name of the beer, nor find the recipe.

Am I having myself on or is there a beer made like this somewhere? If so, do you

know the recipe or if it is any good? It's been bugging me for years now.

Cheers,
Ian Johnston
Colorado

Dear Ian,

Michael Jackson received your question and passed it on to me for answering. The recipe for Cock Ale is an authentic one taken from a book by Edward Spencer published in 1899 entitled "The Flowing Bowl: A Treatise on Drinks of All Kinds and of All Periods, Interspersed with Sundry Anecdotes and Reminiscences." I actually have an original edition of this book, so it is quite authentic.

Yes, I agree you wouldn't want to brew this beer or be known for sucking it down.

Cautiously,
The Professor, Hb.D.

Beer Lunch in Chile

Dear Professor,

I have a friend who worked as a baker in Chile in the early 60s. His last delivery of the day was a bar where they would give him his breakfast/lunch of a black beer mixed with a couple spoons of toasted flour. Are you familiar with this meal/drink, and if so what is its history or any other information you may know?

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Dear Gino,

I posted your question on the American Homebrewers Association e-mail forum and got back two intriguing answers, both of which are food for thought. Here they are from AHA members:

A common practice in Chile is to add ground, lightly toasted whole wheat with the shell (called barina) to the dark beer (called malta). The flour is rich in a precursor for vitamin A, iodine and a low amount of vitamin B.

The barina is also used to flavor fruits such as watermelon and a non-alcoholic drink (also called malta). Legend has it that it helps women who are breastfeeding to produce more milk. I also found several chili recipes that called for barina.

John Schwab

As someone who has lived in South America (mainly Brazil), I would guess that it was not flour as we know it, but rather "farofa" (the Portuguese word for fried manioc flour).

I've actually seen this in small, isolated villages in the extreme south of Brazil (not that far from Chile). You would get a black beer (think of Xingu) with a little farofa. I always thought of it as an attempt to make the beer more nourishing, much like in the occasional

small town in Belgium or northern Germany where you can get a shot glass of yeast sediment as a side order to your glass of beer in some bars close to the local brewery.

Sorry I can't provide more detail on the history, but this is something I've seen, back in the 80s. Of course, your correspondent may be referring to something else entirely.

Ed Westemeier

Season to be Jolly

Dear Professor,

Last year I made a Wee Heavy and kegged it for Christmas, with the intention of drawing off just the amount I drink on that day and New Years and then adding another Wee Heavy to refill. The plan is to use it as described in Zymurgy, January/February 2002. Whenever I keg a beer I always add some priming sugar and dry yeast and never force carbonate. My question to you is, should I still add yeast and sugar, and if so, how much?

Trev Cox

Reading, Pa.

Dear Trev,

You leave one important question begging to be answered: How much is "the amount I

drink on that day and New Years?" A couple of pints? A couple of liters? A gallon? Two? I'll just suppose that you're a wee heavy enjoying wee heavy and get right to the point of answering your question. If you are going to add any amount of new, finished, uncarbonated beer to your keg, I'd dissolve a proportionate amount of sugar to the keg. One-third cup for 5 gallons. That's one-sixth cup for 2.5 gallons. 3 teaspoons for 1 gallon. Your new beer should have enough yeast to carry on fermentation up to a desired level by the time it's the season to be jolly once again.

Ho Ho Homebrew,
The Professor, Hb.D.

A Whole Lot of Shakin' Goin' On

Dear Professor:

I too have experienced the same thing in many of my batches that Wild Willy (Dear Professor, Pooped Out Yeast, January/February issue) has experienced: final gravities that end up in the high 20s to low 30s. Your recommendation was to aerate the wort better before pitching the yeast.

And then I read on in Zymurgy and came across the article "Seat of the Pants Brewing." Open fermentation was discussed in the article. Now with both discussions in mind more questions come up:

1. Will aerating the wort only before you pitch the yeast really solve the problem? Will it really supply all the oxygen needed for, say, seven days of fermentation? (I brew simply and don't have oxygen or CO₂ tanks around, in case you are about to recommend a shot of one to help things along).

2. And how much shaking needs to be goin' on: five, 10, 15 minutes?

3. The idea of open fermentation piqued my interest—would it be a good idea to also leave the bubbler off the carboy to allow oxygen uptake?

After reading these discussions I now believe the lack of oxygen is my problem because in at least a couple of batches I know I pitched active 800-milliliter starters (5-gallon batch) at good fermentation temperatures, and they still didn't ferment down enough.

Thanks in advance for your help,
Scott Johnson

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Dear Scott,

Yes, aerating the wort sufficiently before pitching the yeast will provide all the oxygen needed for fermentation. A few things to keep in mind: 1) The cooler the wort, the easier it is to get the oxygen dissolved into your wort. 2) If brewing all-grain wort and transferring chilled wort to the fermenter, let it enter with a lot of splashing. 3) If you are brewing from extract and transferring concentrated boiled wort into cold water, really splash that cold water into the carboy when you introduce it to the fermenter. 4) If you are using a carboy and the carboy is filled nearly to the top, you aren't going to get enough air dissolved into your wort by simple agitation. Agitate your fermenter before you top it off. Leave about 20 to 25 percent vacant space in your carboy, so that when you shake, you are really creating a lot of agitation and foam. 5) An alternative would be to brew 5 gallons in a 6.5- to 7-gallon carboy.

I've never heard of any legitimate benefit of what you would be inferring as open fermentation, i.e. leaving the bubbler off of the carboy. There will not be any oxygen uptake of idle wort with the bubbler off. You increase your risk of contamination in my opinion.

We're on the right track. And you aren't alone. In fact my brother in Lexington, Mass., after several successful fermentations, had a stuck fermentation. He kegged the brew and it tasted good, but going from a gravity of 1.050 to 1.028 isn't what you should expect. I imagine the carboy was too full and there wasn't enough agitation. He's brewing 5 gallons in a 5-gallon carboy. That's easy to under-aerate.

Shake that baby,
The Professor, Hb.D.

Yeast You Can Depend On

Dear Professor,

I bought Papazian's book about 10 years ago and made a few batches of beer and loved it. But: too much work and not enough free time. I am now retired and getting back to the hobby. Last night I boiled a batch of wort and hydrated my yeast and pitched. Followed the instructions closely, but today there is no activity in the jug. I used a lager yeast, (two packages) Superior brand. I feel I may not have aerated my wort enough before pitching the yeast.

Can this batch be saved at this point? I keep going through the book but can't find an answer. I made a similar batch today and used ale yeast (so the box I got them from said). It looks like it is working from the bottom to me). But I aerated with much enthusiasm (sloshing in jug) and it is working after a couple of hours. I sure hope to hear from you.

Terry Burns
Michigan

Dear Terry,

This is strange. Lager yeasts are not as temperature sensitive as ale yeasts, but I have never heard of Superior brand lager yeast, so don't really know if it is true lager yeast. If it isn't a true lager yeast (which I suspect) and temperatures are below say 65° F, then it may be too cool to get a start. Raise the temperatures to 70° and see if it kicks in. If there's no activity and days have passed, then I'd recommend bringing the whole wort to a boil for a brief period in order to kill any contamination. Then cool it once again. Use another yeast that you have more confidence in. Lager or ale.

If it happens again,
The Professor, Hb.D.

Reply from Terry: Professor, I want to thank you very much for replying and I can use the

information should the problem arise again. It sure seemed like I should see some sort of activity within 12 to 36 hours after pitching the yeast. After 48 hours a little foam started to appear on the surface of the wort and now after 72 hours it is foaming and bubbling nicely.

Irish Red Ale

Dear Professor,

I was surprised by your reply to "Mike and Shelly" in the November/December 2002 issue of Zymurgy when they asked what was responsible for the "key" flavor of an Irish Red Ale. My first suggestion would have been an ounce or two of roasted malt. Seems pretty standard, at least the ones I've brewed.

Paul Miranne
Pensacola, Fla.

Dear Paul,

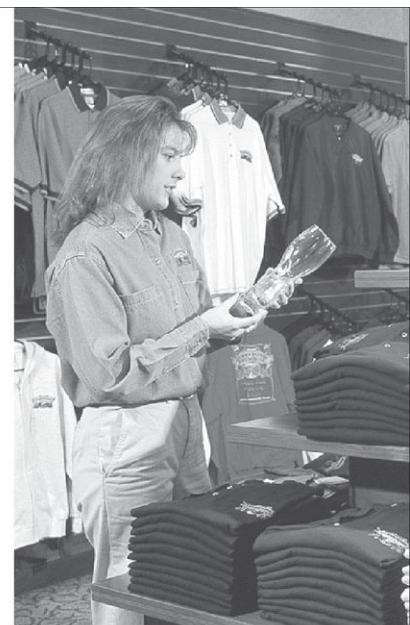
Thanks for roasting me. Your comments are well received and worthy of praise.

Keep those letters coming,
The Professor, Hb.D.

Hey homebrewers! If you have a brewing-related question for Professor Surfeit, send it to "Dear Professor," PO Box 1679, Boulder CO 80306-1679; fax 303-447-2825; or e-mail professor@aob.org.



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Swedish University Plagued by Drunk Birds

Thousands of drunks are smashing into windows at Karlstad University in Sweden—but it isn't students blowing off steam. Instead, birds feasting on fermented berries are getting drunk and playing chicken with the glass.

It's not the first time that birds and beasts have become inebriated in this Scandinavian country of 8.9 million. In December, police in Karlskoga in central Sweden had to kill an intoxicated big-horned elk after it charged an 8-year-old boy. The elk got drunk by munching on fallen alcohol-filled apples that fermented on the ground.

Homebrew Supplier Certified Organic

Seven Bridges Cooperative, a small company in Santa Cruz, Calif., reached a big milestone for the homebrew supply industry by becoming the first homebrew retailer in the world to be certified organic. The Cooperative became fully certified under the USDA National Organic Program (NOP) by California Certified Organic Farmers on December 13, 2002. The products sold by Seven Bridges that are now certified organic include barley malt, hops, malt extract, brewing herbs and adjunct grains, cotton straining bags, green coffee beans (for home coffee roasting) and the Co-op's own line of organic beer ingredient kits.

"This is a great milestone for our cooperative," said Amelia Slayton, Co-op president and general manager. "We have worked really hard for the past five years to provide an organic alternative to homebrewers. Being certified organic will make our mission to edu-

cate consumers about the benefits of choosing organic and provide better brew for a better world a little easier."

The new USDA federal organic rule, which came into effect on October 21, 2002, guarantees the consumer that organic products are grown without toxic pesticides, herbicides or fertilizers. Products labeled organic cannot contain genetically modified organisms (GMOs) and are free from irradiation. In addition, buying certified organic means all of the equipment and storage facilities have been inspected to make sure no harmful chemicals are used in cleaning equipment or pest management, and no chemical or other potentially harmful processing aids or additives are used in the processing of organic foods.

Becoming certified organic has created some new challenges for Seven Bridges, now in its sixth year of business. The additional administrative costs including careful record keeping and the implementation of a lot numbering system plus the annual certification fees will require price increases of organic products. This is a cause for concern because of the current economic downturn, especially in the Silicon Valley area. Despite these concerns, the Co-op members are optimistic, because with the USDA organic seal on its products, Seven Bridges hopes to attract new customers.

Seven Bridges Cooperative Micro Brewery Inc. was founded in 1996 to produce organic beer and mead. Currently the cooperative specializes in selling organic ingredients for homebrewers and home coffee roasters through its mail order catalog, online store and retail store in Santa Cruz. Persons interested in Seven Bridges products can find the complete catalog of products and online shopping at www.breworganic.com. A printed catalog is available by calling 1-800-768-4409.



Thomas Hardy's Ale to Return

Phoenix Imports Ltd. recently announced that the well-known vintage-dated beer Thomas Hardy's Ale will soon return to retail distribution worldwide.

The original brewer, Eldridge Pope, ceased production in 1999 but last summer sold the brand to Phoenix Imports along with Royal Oak Pale Ale and Thomas Hardy Country Bitter. Phoenix has now contracted with Devon, England-based brewer O'Hanlon's Brewing Co. Ltd. Head brewer Alex Bell promises to make the beers "true to the original recipe and ingredients."

Phoenix plans to begin production of Thomas Hardy's Ale soon, with the possibility that it will be available before fall 2003 in U.S. beer stores.

Belgian Beer Group OBP Disbands

In a February letter to members and supporters, Pete Crombecq, co-founder and first chairman of the Objective Beer Tasters (De Objectieve Bierproevers) or OBP in Belgium, announced that his organization would disband effective June 2003.

A number of administrative difficulties had beset the organization in recent years and indications were that the organization might lose its non-profit status. As loss of the non-profit status would make the group's officers personally liable for the beer festivals the group ran, this was a serious impediment to future operations.

A group of 42 beer lovers founded the organization in 1984 as a consumer advocacy group dedicated to the preservation of Belgium's beer culture. One of the best-known components of this effort was the "24 Hours" beer festival held each November to



exhibit and celebrate traditional Belgian beers. In his letter, Crombecq called on others to form an organization to take over the activities of OBP—and perhaps the “24 Hours” festival. Whether any organization will appear to take these roles remains unknown as of this writing.

Belgian Beer Selections Offered

International beer authority Stephen Beaumont and Internet beer retailer BelgianShop.com have teamed up to create a new service known as “Stephen Beaumont’s Belgian Beer Pack.”

Designed specifically to complement the season, each edition of the new beer pack features six great Belgian beers, specially selected by Stephen Beaumont, author of “The Premium Beer Drinker’s Guide” and other books on beer. Also included are exclusive tasting notes and serving suggestions specially prepared by Beaumont, custom glassware for one or more of the beers as well as some “extras.”

“It’s no secret that I’m passionate about Belgium and its beers,” says Beaumont. “So when BelgianShop.com, the Internet’s leading retailer of Belgian beers, approached me with the idea for ‘Stephen Beaumont’s Belgian Beer Pack’ I leapt at the opportunity. For me, this is a chance to share with the world the uniqueness of Belgian beers, their incredible flavors, aromas, characters and food-friendliness.”

Each beer pack can be shipped as either 12 or 24 bottles. The Winter Pack, currently for sale at BelgianShop.com, features:

- Rader Blonde, a golden ale flavored with genever, the Belgian precursor to gin
- Hapkin, an elegant, dry and remarkably appetizing strong golden ale
- Montagnarde, a rich strong ale from the impressive Brasserie de l’Abbaye des Rocs
- Floreffe Dubbel, one of Belgium’s great food-friendly ales
- Rochefort 8, perhaps the world’s finest beer for serving alongside chocolate
- Bush, the outstandingly complex and 12-percent alcohol ale better known in some districts as Scaldis.

“These are ales well-suited to the colder months of the year,” says Beaumont. “And with Easter in mind, I even included the Rochefort 8 for pairing with a chocolate bunny.”

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“Stephen Beaumont’s Belgian Beer Pack” is available at BelgianShop.com. A spring edition of the pack will be available in May.

Mendocino Brewing Company Turns 20



Mendocino Brewing Company has announced the release of its Red Tail Ale Reggae commemorative 22-ounce bottle. This limited edition bottle, with an exciting “Reggae on the River” label, was designed by artist Jesse Miller and will be distributed in select markets including California, Washington, Oregon, Arizona and Texas. Part of the proceeds will go to the Mateel Community Center.

Mendocino Brewing Company started brewing beer in Hopland, Calif. in 1983, the same year that the Reggae on the River Festival started. From humble beginnings in its Hopland Pub, Mendocino now distributes beer in 37 states and produces more than 500,000 case equivalencies per year. The Reggae Festival is Aug. 1-3 and has grown to more than 20,000 people in attendance, making it the largest in North America. For more on the festival, see www.reggaeontheriver.com.



The Brew Cruise Too

Having raised the celebration of the world’s best beers to a high art through the inception of last year’s first-ever Brew

Cruise, *All About Beer* magazine recently announced that a second Brew Cruise will sail in July through the inside passage to Alaska. Thanks to a partnership that *All About Beer* initiated with Carlson Wagonlit Travel/Magic Happens Travel & Cruises (Cary, N.C.) for its first Brew Cruise through the Pacific Northwest last September, another incredible journey coupled with a unique beer experience is once again on tap aboard one of the greatest new cruise vessels afloat, Royal Caribbean’s Radiance of the Seas. Participating beer enthusiasts will enjoy a special beer tasting and educational experience during the July 26-August 2 roundtrip cruise from Vancouver through the inside passage to Juneau, Ketchikan, Skagway and Hubbard Glacier.

“The Radiance was again selected as the ideal Brew Cruise venue because it not only offers amenities that meet with our brew crews’ standards, but it provides us with an opportunity to enjoy incredible scenery, great beer and a special camaraderie that a common interest group like this possesses,” stated Julie Johnson Bradford, editor and publisher of *All About Beer*.

Some of the region’s finest microbreweries will be featured onboard along with a variety of other beer-related activities such as lectures on beer and brewing. Since more than 10 hours will be provided through the itinerary in each of the Alaska ports, optional shore excursions to local breweries will be offered in both Juneau and Vancouver.

Brew Cruise reservations are now being accepted. For more information, including how to book space on this distinctive cruise, visit *All About Beer*’s Web site www.allaboutbeer.com.

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Redfish Raises Money for Charity

The 5th annual Boulder Brewfest, held Saturday, January 25 at Redfish New Orleans Brewhouse, raised \$2,200 for a local rescue unit called the St. Vrain Rapid Intervention Team.

The St. Vrain group is an elite, all-volunteer Boulder County firefighter unit that rescues trapped and injured firefighters from dangerous fire situations.

"Firefighters are a fearless, brave group, and the St. Vrain men and women are some of the bravest," Redfish owner Dale Katchis said. "They need our support and we're glad to be able to help them with this donation." The donation was made in honor of the late Gordon Knight, who founded Wolf Tongue Brewery (Nederland, Colo.) and High Country/Estes Park Brewing (Estes Park, Colo.) and was part owner of Twisted Pine Brewing. A rescue pilot, he died in a helicopter crash while fighting the Big Elk fire near Boulder last July 30.

Detonator Doppelbock Swims Upstream

One of Fish Brewing's specialty oak-aged beers, Detonator Doppelbock Lager, is dedicated to the removal of salmon-killing dams and the restoration of free-flowing rivers in the great Pacific Northwest.

The 2003 Detonator Doppelbock is a very strong lager (1.083 OG Plato, 8 percent abv) that has been aged in American oak wine barrels before being bottled in cases of 24 12-ounce bottles and kegged in 1/6 barrels. The barrels come from one of Washington State's premier wineries and have already been used by the Fish Brewing Company to age its 2002 Vintage Leviathan Barleywine and Poseidon's Imperial Stout.

The oak-aged Doppelbock is a full-bodied lager with a dark reddish-brown color. It was brewed in the classic German tradition, with noble Hallertauer hops and a large portion of Munich malt. As a result, Detonator offers a malty aroma and palate, balanced by its relatively dry finish. The flavors of Detonator Doppelbock meld with the subtle character of the robust ales and fine wine which previously filled the barrels.

Ray Daniels is editor-in-chief of *Zymurgy* magazine.

Homebrewers (from page 38)

never been sicker in my life," he reportedly said of his efforts.

Truth be told, the spirit of homebrewing thrives in places you wouldn't expect it. Take brewpub chains. Purists consider them the brewing equivalent of Burger King. Yet some multi-units give their brewers an unusual amount of leeway to express their creativity. At the John Harvard's Brewhouse in Washington, D.C., each year for the last four years, brewer Terry Rowell has made a Thanksgiving-time trip to the Outer Banks of North Carolina. There he gathers the fruit of the prickly pear cactuses that grow wild on his in-laws' property. In December, he brews a beer with the pureed fruit, and puts it on tap in January.

The fruit gives the beer—a wheat-based ale—a delicate aroma and flavor, somewhere between a mango and a melon. It also lends the brew a neon-bright reddish-pink color, a hue most customers would not believe exists in nature.

Rowell has used different methods to prepare the fruit for brewing; this year he and his assistant Matt Borer placed it in a burlap grain sack and stomped the daylights out of it, letting the juice bleed through the fabric while the seeds and skins stayed inside. "I'm glad nobody was around to see it," laughed Tim Morse, John Harvard's director of brewing operations.

At Capitol City Brewing Co. in Arlington, Va., head brewer Bill Madden isn't afraid to tap into the expertise of the local homebrewing club, Brewers United for Real Potables (BURP). When Madden arrived in 1996, he inherited a Kolsch from his predecessor. "There wasn't much information about the style at the time, or any true Kolsch in the country I could find," recalls Madden.

Several members of BURP had recently visited Germany and brought back half a dozen examples of Kolsch in bottles and cans. Madden arranged a meeting, and brought along a 5-gallon keg of his version. After sipping and swapping notes, "I realized I was completely off," says Madden.

"The Monday morning afterwards, I ordered a pallet of German pilsner malt. I got German light wheat malt. I took the hop profile down substantially."

And the result? Madden's Kolsch won a silver medal at the 2001 Great American Beer Festival, and a gold medal the following year.

Once a year, Madden invites several female members of BURP over to his brewery and together they brew an Oktoberfest beer called Hitzig Frau (low German for "hot woman"). This year presents a special challenge. Capitol City has sold off the brewing equipment at one of its D.C. sites, and Madden is now brewing for two locations. He'll have to manage his tanks judiciously to fit in a lager. But, he insists, "We've made it a tradition, so we'll do it again this year."

The spirit of homebrewing will get the job done somehow.

Greg Kitsock is editor of *American Brewer* and *Mid-Atlantic Brewing News* as well as a regular contributor to *Zymurgy*. 

For Geeks Only (*from page 40*)

paying attention and making judicious changes, a reasonable setup can be had that will respond as desired to almost any mass or ambient temperature differences.

On my system, if I put in a 10-degree

step change, the system will modulate my hot liquor tun coil/bypass 3-way solenoid valve to achieve a 2-to-3 degree per minute heatup, and then will back off cycling the valve open/closed to slow the rise when near setpoint. It then gets right to the setpoint

after another few minutes and holds it very steady, so that the indicated temperature doesn't change at all even during a 45-minute rest. No overshoot, no wandering. I have not had to change the settings for probably 20 or so batches, and those have varied greatly in the amount of grain used.

The controller makes large changes for a large difference between setpoint and actual temperature, but then lowers its output as it approaches the setpoint. Finally it adjusts itself to hold the temperature steady when at setpoint. This is the desired performance you should be able to achieve!

Setting up my PID took a few batches and a lot of trial and error, but now I'm very satisfied with its performance. It hits a target rest temperature "dead-on" every time, and set-and-forget step changes are awesome! With a little understanding of how the controller works, and a little patience in setting it up, you can successfully use a PID controller in your system, too.

Nate Wahl has been homebrewing for six years, and cranks out all-grain brews on a PID-controlled HERMS system that "will absolutely nail a mash step within a degree, every time." In real life, he is a computer-based training and technology instructor involved with a curriculum that covers all aspects of engineering. Contact him at cruiser@coastalwave.net

Homebrew and Beyond (*from page 7*)

with the tasting."

"You're not serious, are you?" she asks.

"Of course, I'm serious," I said, suppressing a smile. "My people have very sensitive noses and the slightest whiff of perfume or chemical can upset their enjoyment of the event. That's the reason that the entire waitstaff and all their clothes need to be rinsed in chlorine-free water immediately before dinner. You have a dipping pool for that, right?"

Here at last I could no longer suppress a telltale smile and she laughed with relief.

"The oil lamps will be okay as long as my people can't smell them," I said.

Ray Daniels is editor-in-chief of *Zymurgy* and occasionally pulls together an event for tasting beer or beer and food together in his hometown of Chicago.

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Homebrewer Meets Mother of Invention: Tote-A-Keg is Born

Brewing has always been a lot more about socializing than science for Chicago-based homebrewer Tim Brent. Of course, he enjoys tinkering with challenging beer styles—Belgians lately. But since he began brewing in 1989, Brent's beer making has been more about gathering with a group of good buddies every Thursday night in a basement. In that weekly gathering, they share laughs, swap recipe ideas and, until recently, lament that other friends couldn't easily sample their creations.

"People kept asking me when they'd get to taste some of that great homemade beer I'm always talking about. I'd get invited to a party or barbecue and the host would ask if I could bring some beer along," said Brent. "You know, you hate to say 'no' to friends, but bringing my beer was just such a pain in the neck."

Like most homebrewers, Brent didn't relish the idea of spending the time, energy and money it takes to bottle. Nor was he interested in running around at parties trying to retrieve empty bottles before they could be tossed in the garbage. So, several years ago, he resorted to bringing a keg, keg parka, picnic faucet and 5-pound tank of CO₂ with him to friends' houses. What Brent refers to as his "rig" served its purpose, but hauling around all of the equipment and assembling it on-site was a real production.

Swapping a CO₂ injector for the tank was an improvement, but the condensation that collected around the keg meant the rig had to remain outdoors. And in extreme heat, the keg parka was only good for a couple of hours. Brent knew there had to be a better way. An amateur handyman and avid hobbyist, he wasn't ready to give up.

Then in early September, during a routine trip to the hardware store, it hit him. Brent spied a big, orange cooler and "Tote-A-Keg" was born.



Beer-to-go:

Powered by small CO₂ cartridges, these Tote-A-Keg setups ease the challenge of serving homebrew away from home.

"Over the next few weeks I tried several different designs. The place where I purchased my CO₂ gas helped with parts and hoses. Soon I had an orange cooler that worked great," Brent recalls. The finished product was big enough to house a 2.5-gallon soda keg with a dispenser tap on the outside.

For Brent, the completed project solved his party problem: "There was no setup needed and no mess because once I had the keg inside the cooler, I'd just top it with ice and shut the lid. It even had a cup dispenser converted into a drip tray."

After testing out Brent's new invention, brewing friends began asking if he could make one for them. Other friends wanted one to stash on the back of golf carts, to take to tailgate parties and to give as gifts. "My friends were all telling me what a great idea it was and that I should make them to sell," Brent said.

So he applied for a patent on his creation, began sourcing materials and has been building all-in-one keg totes in the evenings after work. Those who prefer to

buy rather than make can go that route, but for those who want to tackle making one of their own, here's the basic approach. Brent simply drills two holes into a 5- or 10-gallon cooler—one opening houses the connection for a removable CO₂ cartridge, the other allows for beer output. He puts fiberglass in the first hole to protect and hold the cartridge in place and to ensure that the one-way valve connecting the keg to the cartridge is secure. The second hole has a commercial shank with a soldered tailpiece and 3/16" interior diameter beer hose. All that's left is to put a full keg in, clip the fittings in place and load with ice.

Whether Tote-A-Keg becomes the homebrewers' beer transport vehicle of choice is too early to say. For now, Brent's just happy to be able to serve his German and Belgian beers in style to some very appreciative friends.

Laura O'Shea is a freelance writer based in Chicago. She most likely wrote this article in exchange for free homebrew.

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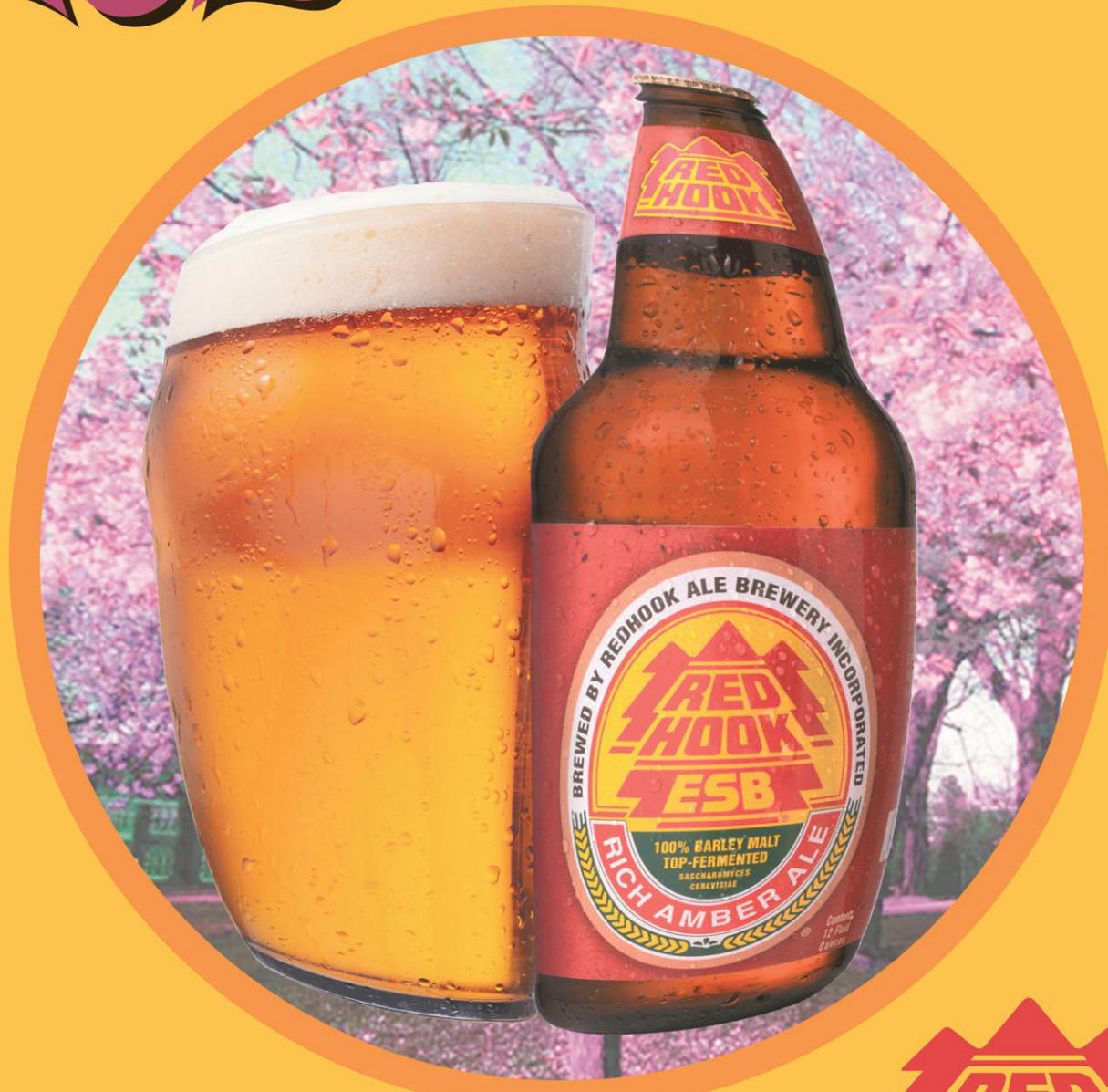
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