

FOR THE HOMEBREWER & BEER LOVER

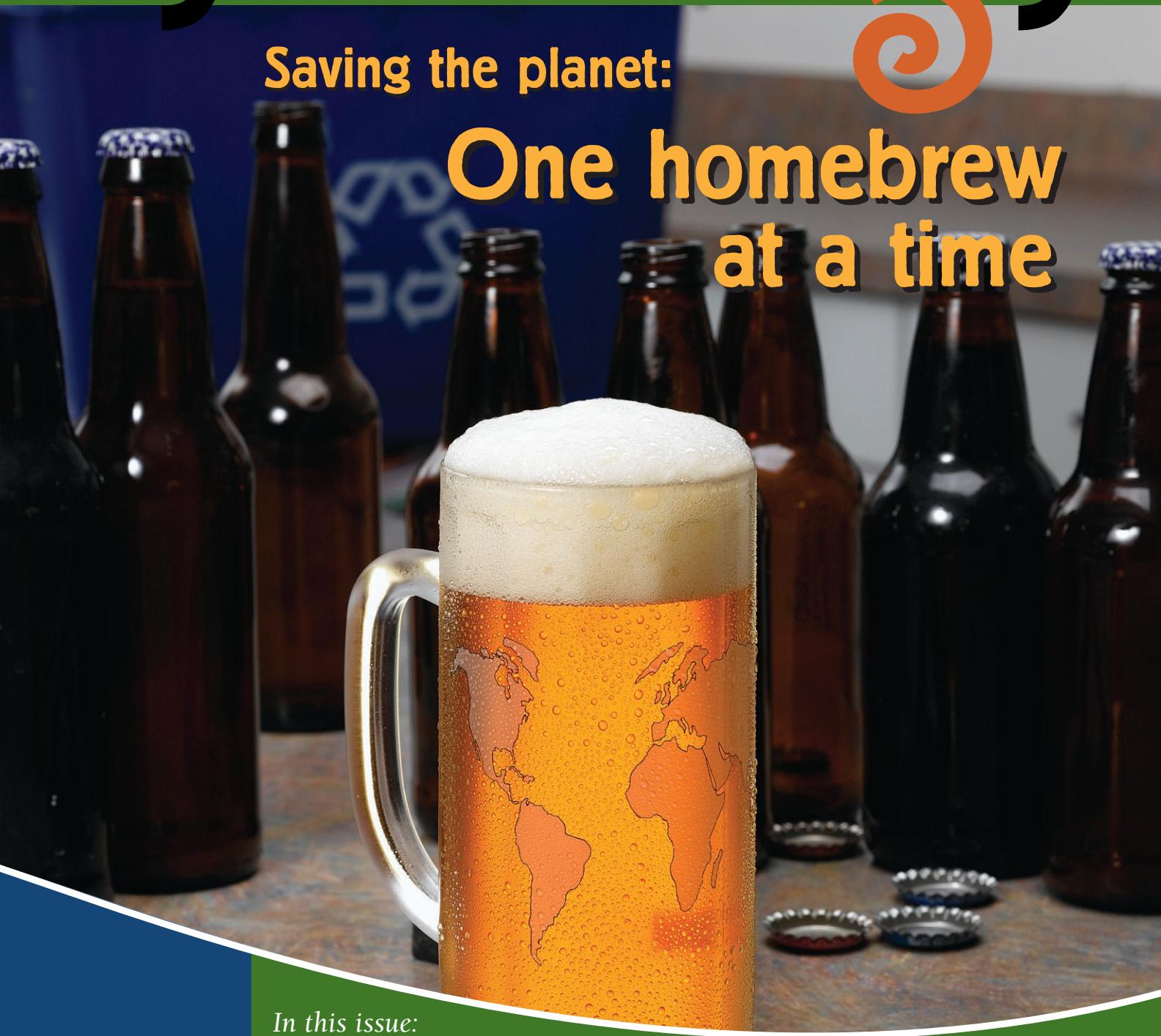
Volume 28 * No. 2 | March/April 2005

zymurgy

■ The Journal of the American Homebrewers Association ■

Saving the planet:

One homebrew
at a time



In this issue:

8 BEERS
YOU
CAN
BREW

Denmark's
Beer
Revolution

American
Artisanal Ales
and Lagers

Geeks:
Keeping it
clean



A Publication of
the Brewers Association

www.beertown.org

PLUS: Commercial Calibration: Organic beers

American Homebrewers Association 27th Annual

NATIONAL HOMEBREWERS CONFERENCE

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ale by the yard.*

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Friday, June 17

CLUB NIGHT

Saturday, June 18

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Competition Awards Ceremony

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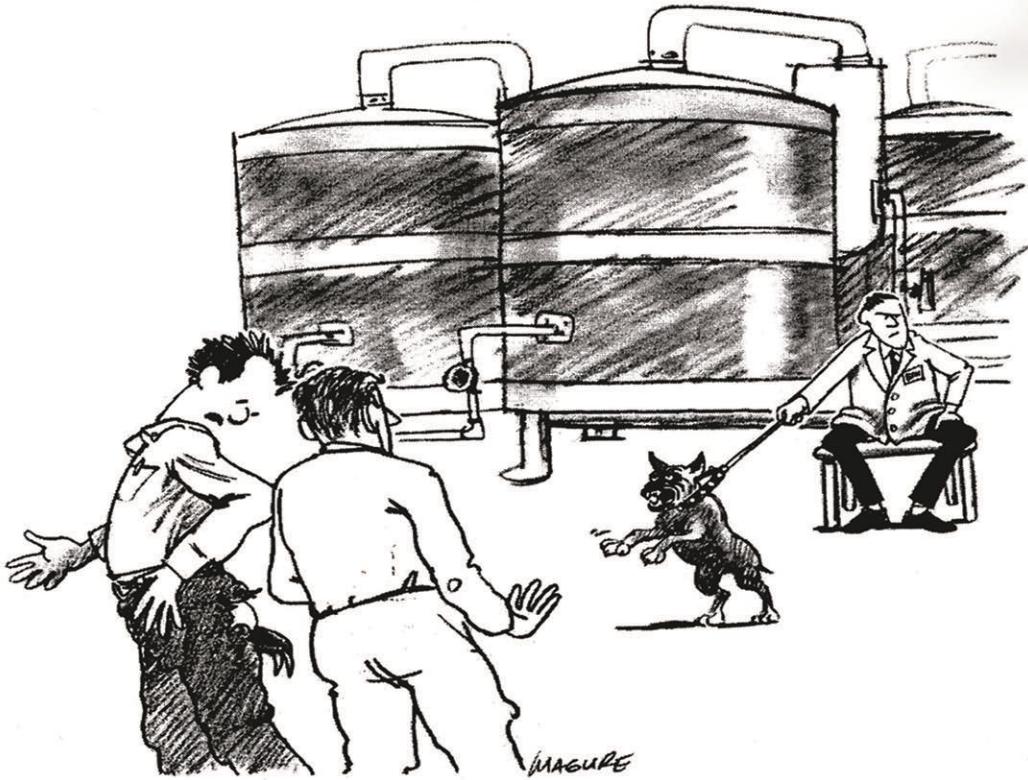
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To make quality beer and brewing knowledge accessible to all.

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>> GET THERE!

Kona Brewers Festival

Like most good parties, the Kona Brewers Festival started small, as a celebration of Kona Brewing's first birthday back in 1996.

As it marks its 10th year on March 12, the festival has grown into one of the must-go events on any beer lover's list. In one day on the gorgeous beach of Kailua-Kona, 30 breweries will pour up to 60 beers, accompanied by food from 25 local restaurants. There will be beers from the mainland as well as the islands and a dizzying selection of native and gourmet foods.

Entertainment includes local music, hula dancers and even fire dancing. The event lasts only four hours—from 2:30 to 6:30 p.m.—but a \$35 ticket gives you access to all the great beers and food you can consume.

Proceeds from the festival go to help local environmental and cultural organizations. So far, the fest has raised more than \$100,000 for these causes.

Airfare to Kona in March runs from \$500 to \$800 from just about anywhere in the United States.

For more information, call 808-334-2739 or see www.konabrewingco.com/brewfest.html.

February 21–28

Torondo Barleywine Festival San Francisco, CA. Phone: 415-863-2276

February 27–March 2

Nightclub and Bar Show Las Vegas, NV. Contact: Oxford Publishing, Phone: 800-247-3881, E-mail: theshow@oxpub.com

February 28–March 11

Beer Production and Quality Control Chicago, IL. Phone: 312-255-0705, Fax: 312-255-1312, E-mail: info@siebelinstitute.com Web: www.siebelinstitute.com

March 4–5

Boulder Strong Ale Fest Boulder, CO. Admission: \$20. Contact: Peter Archer, Phone: 303-883-0732, E-mail: peterarcher@averybrewing.com Web: www.averybrewing.com

March 14–25

Siebel Institute Packaging and ProSiebel Institute Brewing Profitability Workshop Chicago, IL. Contact: Siebel Institute of Technology, Phone: 312-255-0705, Fax: 312-255-1312, E-mail: info@siebelinstitute.com Web: www.siebelinstitute.com

March 28–29

Siebel Institute Brewing Profitability Workshop Chicago, IL. Contact: Siebel Institute of Technology, Phone: 312-255-0705, Fax: 312-255-1312, E-mail: info@siebelinstitute.com Web: www.siebelinstitute.com

March 28–April 1

Technical Case Studies Chicago, IL. Contact: Siebel Institute of Technology, Phone: 312-255-0705, Fax: 312-255-1312, E-mail: info@siebelinstitute.com Web: www.siebelinstitute.com

For a complete listing of beer festivals and events, see www.beertown.org/craftbrewing/events.asp.



April 4

Sensory Analysis for Flavor Production and Control

Chicago, IL. Contact: Siebel Institute of Technology, Phone: 312-255-0705, Fax: 312-255-1312, E-mail: info@siebelinstitute.com Web: www.siebelinstitute.com

April 4–7

Siebel Institute of Technology Master of Beer Styles and Evaluation Program Chicago, IL. Fee: \$1,150. Contact: Siebel Institute of Technology, Phone: 312-255-0705, Fax: 312-255-1312, E-mail: info@siebelinstitute.com Web: www.siebelinstitute.com

April 5–7

Master of Beer Styles Course Chicago, IL. Contact: Siebel Institute of Technology, Phone: 312-255-0705, Fax: 312-255-1312, E-mail: info@siebelinstitute.com Web: www.siebelinstitute.com

April 10–13

National Beer Wholesalers Association/Brewers Legislative Conference Washington, D.C. Fee: \$200. Phone: 303-447-0816, ext. 131, Fax: 303-447-2825, E-mail: nancy@brewersassociation.org Web: www.nbwa.org

April 10

Brewers Association Board of Directors Meeting Washington, D.C. NBWA/Brewers Legislative Conference. Phone: 888-822-6273, Fax: 303-447-2825, E-mail: info@brewersassociation.org Web: www.beertown.org

April 12–13

Weihenstephan/VLB Symposium Philadelphia, PA. Fee: 2 day, \$399; 1 day, \$249. Contact: Nancy Johnson, Phone: 888-822-6273, Fax: 303-447-2825, E-mail: nancy@brewersassociation.org Web: www.beertown.org/events/cbc/attendee/wcourse1.html

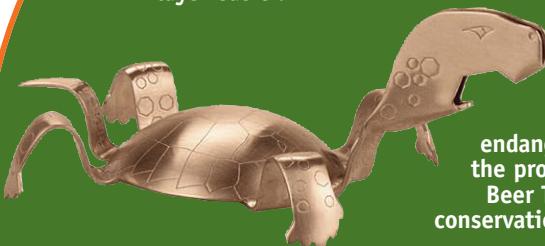
THE LIST

24 A case of great beer bumper stickers

- >Beer: The reason I get up each afternoon
- >Help! I am lost and I cannot find my beer!
- >Keep America clean...swallow your beer cans
- >Powered by beer
- >Milk sucks! Got beer?
- >Beer: It's not just for breakfast anymore!
- >Love makes the world go 'round. Beer makes it go 'round twice as fast
- >Caution: I brake for beer!
- >United we drink beer
- >Beer: Four out of five people prefer it to Prozac
- >Give a man a fish and he will eat for a day, teach a man to fish and he will sit in a boat drinking beer all day...
- >Give a man a beer, he'll waste an hour. Teach a man to brew, he'll waste a lifetime
- >Beer: Helping white guys dance since 1842
- >Beauty is in the eye of the beer holder
- >Everyone needs to believe in something. I believe I'll have another beer
- >All foam. No beer
- >Beer contains Vitamin Pee
- >Beer: Now THERE'S a temporary solution
- >Some people have six-pack abdomens. I have a keg
- >The best days to drink beer are days that end in the letter Y.
- >To some it's half empty, To some it's half full. To me it's time for a beer run!
- >To some it's a six-pack, to me it's a support group
- >24 hours in a day ... 24 beers in a case ... coincidence?
- >Beer: It's what's for dinner

GREAT GADGET BRUTUL'S LAGERHEAD BEER TURTLE

Tired of bending spoons to make a proper black and tan? Brutul (pronounced "brew-tool") has come out with the Lagerhead Beer Turtle, a device that makes layering beers a snap. The nifty tool, which is shaped like a turtle, has a bottle opener for a mouth and four legs that rest in the lip of your pint glass. The turtle's convex shell acts like an upside-down spoon to diffuse the stream of beer into tiny rivulets that layer easier.



What's even better is the folks at Brutul have founded the Lagerhead Foundation, dedicated to helping protect endangered turtle species. A portion of the proceeds from the sale of Lagerhead Beer Turtles is used for turtle habitat conservation and restoration projects.

For more information on the foundation, visit www.brutul.com.

Lagerhead Beer Turtles are available through several homebrew retailers including Beer Beer & More Beer (www.morebeer.com) and Austin Homebrew Supply (www.austinhomebrew.com). The retail price is around \$8. They are also available in black and tan kits including a bar towel, two glasses and two coasters for \$27.95.

BREW NEWS: Bogota's Brewpub Boom

Call it the "Portland of Latin America."

Bogota, Colombia is becoming a brewing mecca with seven brewpubs now operating there—more than in any other Latin American city.

But things look a little different in Bogota's brewpubs. Patrons have to get past armed guards with metal detectors and have their bags searched before they can belly up to the bar.

That's because last year rebels tossed hand grenades into two brewpubs, killing one and injuring 72.

"I have a passion for beer," Berny Silberwasser, Bogota's unofficial brewpub king, said in an interview at one of his establishments as waitresses ferried pints of red ale, porter and beer to thirsty customers.

Silberwasser, 30, invested in Bogota's first bar featuring microbrews, Palos de Moguer. And in 2002, he and his partner, Englishman John Fox, bought used brewing equipment in Portland, built a microbrewery in a gritty Bogota neighborhood and soon were serving their own beers.

BEER QUOTE

"You wouldn't want to have a beer with John, because John is not a beer drinker. He doesn't drink much period. He's boring that way."
—Teresa Heinz Kerry on MSNBC, July 25, 2004

In 2003, he opened another brewpub, the Bogota Beer Company.

Silberwasser's pubs have gleaming dark wood, brass and leaded windows. Signs—in English—offer "Handcrafted Beer." The music is a mix: The Doors, Tom Petty, U2, No Doubt. So is the clientele: young and old, Colombians and expatriates.

Customers have embraced the new suds—Silberwasser says 99 percent of what's sold in the pubs is his own. But it is a niche market. Colombian beer giant Bavaria still controls 95 percent of domestic sales.

Silberwasser has opened two new Bogota Beer Company pubs since the attacks, and they're highly popular. Palos de Moguer, the other brewpub that was attacked, recently opened a second outlet, giving Bogota a total of seven brewpubs.



BREW NEWS: Researchers Study Bees' Beer Buzz



Do mild-mannered honeybees get just a happy buzz when they drink booze?

That's one of the mysteries scientists are trying to solve in hopes of learning why some people who are normally cool and calm become aggressive and mean when they're loaded.

And believe it or not, bee brains, on a molecular level, are very much like those of humans, so studying bees can help us understand ourselves, Dr. Julie Mustard, an entomologist at Ohio State University, told Cox News Service.

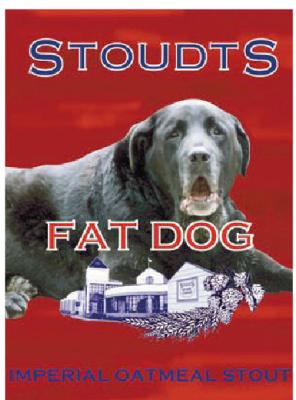
When honeybees get drunk, they become wobbly, just like people. They stick out their tongues. They spend less time flying and, if drunk enough, flip over on their backs and just wiggle their legs. Like us, bees get hangovers, but they suffer longer—48 hours or so, and not even a hair of the dog will help them. What's more, too much booze can kill honeybees, just like it can people.

"What we're really hoping to learn is why some people become addicted, and others don't," she said.



>>YOU GOTTA DRINK THIS

Fat Dog Stout
Stoudt Brewing, Adamstown, Pa.



A huge imperial oatmeal stout. This 9-percent alcohol by volume beer is deep, dark brown with a very creamy off-white head. The aromas remind me of a tour I took at a chocolate factory when I was a kid—sweet chocolate and vanilla dominate with a hint of roasted grain. This beefy brew is all about the malt! It has a silky smooth mouthfeel with a substantial body. The malt flavors come at you in waves ranging from honey to caramel to toffee to a hint of chocolate flavored coffee. There is enough hop bite to balance out the sweetness, but after that, hop presence is virtually gone. A

long finish again displays the malt flavors. I have been known to substitute this beer for food for days! It's dangerously drinkable with little alcohol presence in a huge beer. It's great on draught and even better cask conditioned.

Submitted by Mark A. Reynolds, Pittsburgh, Pa.

Available in 750-milliliter bottles and on draft in Pennsylvania, Massachusetts, New York, New Jersey, Ohio, Delaware, Virginia and Maryland.

Have you had a beer lately that you just have to tell the world about? Jot down your impressions in 150 words or fewer and send them to "You Gotta Drink This!" P.O. Box 1069, Gresham, OR 97030 or e-mail to jim@brewersassociation.org.



>> BEER JOKE

Taking the cure

Three guys are riding in their truck, drinking beer, having a good time. The driver looks in the mirror and sees the flashing lights of a police car, so he pulls over. The other two are real nervous.

"What do we do with our beers? We're in trouble!"

"No," the driver says, "Just do this: Pull the label off of your beer bottle and stick it to your forehead and let me do the talking."

So they all pull the labels off their beer bottles and stick them to their foreheads. The policeman walks up and says, "You boys were swerving down the road. Have you been drinking?" The driver says, "Oh, no officer," and points to his forehead. "We're on the patch, trying to quit."

>> BEER QUOTE

"I expressed my admiration for German flip-top beer one day, the kind with the little tops that pop off, and Joschka sent me a case and I enjoyed it very much. And the next time I saw him since he is a member of the Green party I gave him the empties back."

—Colin Powell, explaining his going-away gift of beer from his German counterpart, Joschka Fischer

by Our Readers

Don't Labor over Labels

Dear *Zymurgy*,

Like many homebrewers, I despise bottling beer and have started carbonating my beer in 5-gallon kegs. However, when friends and family ask for beer to take home, I am once again forced to go through the ordeal of cleaning and sanitizing bottles. More than anything, I do not like to remove labels from old bottles. I am always trying to find an easier method.

I have found a method that must be shared with the world. When you are ready to clean your bottles, mix up a solution of two to three scoops of Oxi-Clean to 1 gallon of hot water and soak your bottles for 45 minutes. Then, remove the labels floating at the top of your bucket, rinse your bottles thoroughly and sanitize as normal. The bottles are clean, label free and you still have time to relax and enjoy a homebrew.

Cheers,
Aaron Poole
Murphysboro, Ill.

Aaron,

Sounds like a great idea to me. Sure beats trying to peel off the labels. And from what it says on the Oxi-Clean Web site, it is a pretty environmentally friendly cleaner. But definitely NEVER forget to pop open a beer when bottling—you may just need one more empty bottle.

—Ed.

First-Year Frenzy

Dear *Zymurgy*,

The Belle City Homebrewers and Vintners held its first meeting in April 2004. It was a slow process that I felt wasn't moving fast enough to sustain itself. But members told me that it would be fine. In other words, relax and have a homebrew.

Well, here it is November, and we have officers elected, have been part of a community fundraiser with a beer club from Kenosha, Wis. and are in the process of putting on a homebrew class, which will include beer making onsite.

The site was a grain and feed mill 160 years ago. Today D.P. Wigley is still in business with new owners Mark and Christine Flynn. Today they sell seeds, feed grain, birdseed and fertilizer.

I think our club has gone far, and is living up to its mission statement: "To learn and promote all elements of brewing while establishing a positive role in our community through charity and goodwill."

We are also in the process of going on a brewery tour in Wisconsin with members and their wives. Hopefully there will be room for friends of members and potential members.

What was tenuous is now fact and all due to everyone taking part in "group therapy."

Frank Tylla
President
Belle City Homebrewers and Vintners

Geez Frank,
Not moving fast enough? If you folks moved any faster, you'd be a regular homebrewing blur. Congratulations on a very active and successful first year.

—Ed.

Black Forest Spam

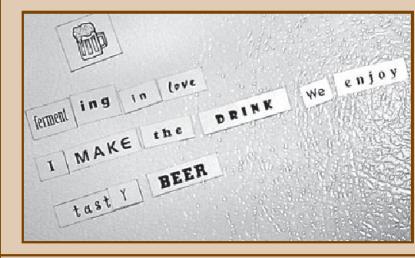
Dear *Zymurgy*,

I visited Munich in 1991 to attend Oktoberfest and met a German brewmeister in a local tavern.

When I pointed out some stark taste differences between German beer sold

BEERFRIDGE-KU

Yet another beerfridge-ku, submitted by Brett Elliot. The actual haiku was composed by his fiancée, Courtney Warner. You know what they say: The couple that brews together, haikus together.



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domestically in Germany and German beer sold internationally in places such as the United States, he explained that German malt and hops are graded according to quality and then divided into groups. That containing the highest quality is reserved for making beer that is sold for consumption in Germany. The lesser grades are used to make beer that

is exported around the world, including to the United States.

As an example of this practice, I noticed Paulaner Oktoberfest beer sold in the United States is stamped "ale" on the label. So an ale yeast was used instead of a lager yeast and lesser grade grains were used than those used for German domestic beers.

IT'S OFFICIAL!

While some homebrewers simply brewed a batch of mead to commemorate Mead Day on August 7, Bert Bingel, vice president of the Brew Free or Die homebrew club in New Hampshire, worked to get the state's governor to proclaim August 7 as Mead Day.

A PROCLAMATION

DECLARING AUGUST 7, 2004,

"MEAD DAY"

WHEREAS, sanctioned by the American Homebrewers Association, homebrew clubs across the nation, including Brew Free or Die (HFD) of New Hampshire, will be celebrating National Mead Day on August 7, 2004; and

WHEREAS, the "beverage of kings," mead is a fermented beverage made from honey, sometimes referred to as "honey wine;" and

WHEREAS, possibly the oldest fermented beverage in the world, the Greeks, Romans, Egyptians, Indians, Greeks, and Arabs used mead, both in festivals and religious ceremonies; and

WHEREAS, mead has evolved and expanded throughout the millennia to include other fermentables, such as fruit and malt, as well as various flavorings, such as herbs and spices; and

WHEREAS, it has often been said that mead imbues the drinker with attributes such as strength and courage.

WHEREAS, a precursor to other fermented beverages, such as beer, mead has gained in visibility thanks to its popularity at Renaissance Fairs and its use in such popular films as "Shakespeare In Love," "Elizabeth," and "Lord of the Rings"; and

WHEREAS, mead is enjoying a resurgence, gaining notable popularity with nearly 100 commercial meaderies operating worldwide, and more and more consumers preferring their own mead.

NOW, THEREFORE, I, CRAIG BENSON, GOVERNOR of the state of New Hampshire, do hereby proclaim AUGUST 7, 2004, as MEAD DAY in New Hampshire.



Given at the Executive Chamber in Concord, this eighth day of June, in the year of Our Lord two thousand and four, and by the appointment of the Governor of the United States of America, two hundred and twenty-eight.

[Signature]
Craig Benson
Governor of New Hampshire

In addition, this implies that the beer had little or no lagering as ales are not typically lagered. So, this could explain why Paulaner Oktoberfest sold in the United States does not taste as good as Paulaner Oktoberfest sold in Germany. Is it really made with lower quality ingredients, aged less and made with an ale yeast? If so, it's not an Oktoberfest beer.

Isn't labeling this beer as an Oktoberfest akin to labeling meat "black forest ham" when it would be more accurately labeled "black forest spam?" Most companies go to great lengths to ensure uniformity in their product no matter where they are sold.

Why are there such stark differences in quality and taste in the beer industry and why are there no regulations in place to prevent bastardization of beer labeling and to prevent labeling two completely different beers by the same

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name just because they are sold in different countries?

Sincerely,
David Zwach

Well David,

The answer to the labeling of Paulaner Oktoberfest isn't quite as sinister a plot as you may think. Some states require all beers over a certain alcohol content to be labeled as ale, regardless of the type of yeast used.

That said, many larger breweries do indeed produce an "export" version of some of their brands. And in most cases beer tastes best closest to home. So to really taste a beer at its peak, go to the source.

—Ed .

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by Ray Daniels



Barley, Spelt and Rye, Oh My!

A number of years ago, we had a pair of guys among the homebrewers in the Chicago Beer Society who took their German heritage seriously. They only brewed lagers and they strictly observed Reinheitsgebot. I remember talking to one of them about solving some problem they had—maybe poor head retention—and suggesting a simple remedy that a lot of homebrewers would try (e.g. “try adding some wheat.”). His answer: “I can’t do that, it’s not in accordance with Reinheitsgebot.”

Whoa! That's some serious homebrewing!

Of course nearly any beer drinker worth his hops can tell you that Reinheitsgebot is the Bavarian beer purity law of 1516. In truth, most of the law deals with taxation (you can easily find the complete text on the Internet these days) but at some point, it mentions that beer must be made from “barley, hops and water.” From those three simple words, published almost 500 years ago, has come an amazing—and arguably pedantic—focus on the contents of beer.

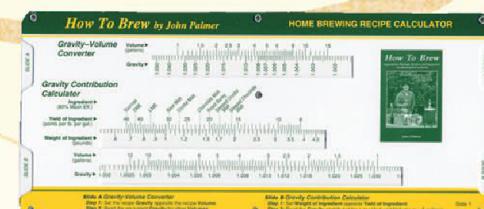
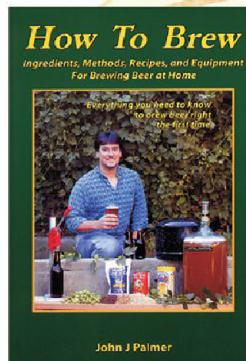
All the more surprising then that we find a well-known German observer of beer advocating the use of wheat, spelt, rye and oats more than 70 years after the enactment of the Reinheitsgebot.

The observer, commonly known by the Latinized name of Tabernaemontanus, lived life as Theodor von Bergzabern and served for more than three decades as the personal physician to the count of Heidelberg. During his tenure, he researched and collected a botanical encyclopedia cataloging suitable uses for plants and their produce. When published in 1588, it included a detailed entry on beer. When read



OF COURSE THE PROCESS HE RECOMMENDS SOUNDS SIMPLE, BUT I'M SURE IT WOULD CREATE SOME INTERESTING DEVIATIONS FROM MODERN RESULTS.

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today, the text contains some surprising revelations as well as some well-known truths. Some of the 400-year-old truths include:

- "Three great faults can lead to the spoilage of beer, namely, too little malt, too much water, and the omission of boiling."
- ". . . for the longer the boiling, the stronger and better the beer, and the longer will it keep."
- "A great wrong is perpetrated by those who reject beer without distinguishing between good beers and an adul-

terated beer produced by some greedy scoundrels."

This last one has great relevance for beer lovers and homebrewers today. If someone has a bad piece of bread, they don't swear off bread entirely. And if someone grew up with nothing but white, tasteless, air-filled, fluffy bread they are not beyond the ability to try and enjoy sourdough, wheat and multigrain breads when the chance arises. And yet those same folks, previously exposed only to beers skinny on flavor, will reject all beers with a dismissive, "I don't drink beer."

But that gets me on a soapbox that has less to do with homebrewing. The more interesting part of the Tabernaemontanus text arrives when he describes how beer was made in his day.

"In our time, most prepare beer in the following way. They take wheat, barley, spelt, rye, or oats, either one of these alone (for good beer can be prepared from all of these) or two of three of them combined."

Hey now, that sounds like something homebrewers could get into. How many of you have made beer from rye or oats—not just a small addition, but an entire grist from that grain? I'll bet most have never even seen whole oats: the stuff we consumers see is generally flaked.

Of course the process he recommends sounds simple, but I'm sure it would create some interesting deviations from modern results. He says:

"The kernels are softened in fresh well water until they burst. They are then separated from the water, dried in the sun and ground in a mill. The water in which the kernels have been softened is now mixed with the grist and the mixture is boiled for three to four hours, during which time a fair amount of hops is added."

Basically what he's describing is a crude malting of raw grains (you're up for that, aren't you?) followed by a brewing procedure for huskless grains where there is no separation of liquid and grain before the boil. Here, perhaps more than anything I can recall having read, is a procedure for making beer without specialized equipment or knowledge that would designate someone as a brewer. It ignores all the boundaries of Reinheitsgebot and indeed, ignores the sorts of boundaries most homebrewers put on themselves. But having seen it, I want to try it. Don't you?



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Ray Daniels is the author of *Designing Great Beers, Smoked Beers and Brown Ales* as well as 101 Ideas for Homebrew Fun. He is the director of Craft Beer Marketing for the Brewers Association.



by Professor Surfeit



Lambic Suds

Dear Professor,

I bought some lambic yeast mixture and am wondering if I should use unmalted wheat of unknown origin or go with malted wheat? Should I use wood chips? The biggest question of the bunch is: if I am making a raspberry lambic, how much berry per gallon should I use? I am attempting to clone a Lindemans. After 12 years of brewing I still cannot get a hold on this one, oh mighty one. What is the answer?

Cindy Grider

Dear Cindy Grider,

If you want to go the traditional lambic route use unmalted wheat from your local food shop. Malted wheat will work and make a lambic beer, but it won't be to traditional specs—but who's going to tell on you? Berries? Try this: 4 to 6 pounds of raspberries in the main fermentation. After a year add another 4 to 6 pounds in the secondary slow-aging part of the fermentation—you'll get better results. You'll have to rack a few more times, but the taste and character will be much better.

Razzing the beer,
The Professor, Hb.D.

Pffffft

Dear Professor,

Lately I have been curious as to if there is a way to predict carbonation and/or bubbly activity in batches of brew. In other words (or for example) when I open a bottle of my beloved Duvel, I get a very strong "pfft" and I know that Duvel manufactures bottles for extra pressure in their bottle condition process. And, when I open a swing top of my beloved DoppelHirsch Doppelbock, the bubbly activity is very small, tight and active.

Now, in my homebrews I have a few recipes where I can somewhat predict that the carbonation activity in the glass will be small, tight and active and a few [recipes] where carbonation is strong when opening the bottle, but others where it seems the carbonation itself is somewhat lacking and/or inconsistent from batch to batch or even bottle to bottle. Taking into consideration your assertion in your books that "you do everything right but sometimes a batch doesn't carbonate," is carbonation and bottle pressure related to the type of yeast used, as much as it is to the amount and/or type of primer used in a batch?

Thank you!

Metal Larzz

Yo Metal,

This is one of the more creative questions I've been asked in quite some time. You got me to scratch my noggin and reach for a beer as I contemplated the nuances of your essay-like question.

When you refer to the difference between Duvel and Doppelbock, I'm thinking you are referring to the "texture" of the bubbles. The doppelbock is going to be much fuller-bodied with more residual sugars floating around in the wondrous brew. Consequently the bubbles move around more slowly in a "thicker" brew. Also as this double bock caresses your tongue you feel the sensation of the sweet malt. The bubbles give the perception of being smoother and tinier. Duvel is a wonderfully attenuated ale and consequently the bubbles are more active and their "texture" more "effervescent."

You refer to "active" carbonation and I'm guessing you are referring to what you call the "pfft" when opening a bottle. Some bottles of beer will have more or less "pfft" than others. There are some logical reasons for this, even with the same batch of beer. Are serving tem-

peratures the same? Warmer beers will be more "explosive" with their release of gas when opened. The other factor has to do with the airspace in each bottle. If you have a half-inch in one bottle and 1.5 inches in another you will notice one will go "pft" and the other will go "PFFFFFT." That's because the amount of trapped gas released is relative to the volume of airspace. A small space only has to "pft" a little bit to equalize. And conversely there's more gas escaping when the bottle goes "PFFFFFT" with the larger gas space.

Capice?

Now, I almost lost you with that answer (maybe I did?), but I think I understand what you are asking: does the kind of yeast influence the texture of the bubbles and does it affect the amount of carbonation? Answer: for the most part no, unless you are making high alcohol beers. Then you need to use strains that are tolerant to alcohol to even achieve carbonation. For the other part of your last question(s) see my previous paragraphs.

Well Metal, I hope I've helped and interpreted your questions accurately.

Capice?

The Professor, Hb.D.

Insulating Advice

Dear Professor,

I recently contacted a well-known homebrew retailer to order a replacement lid for my 10-gallon Polarware pot. I used it initially as a kettle and the existing lid is notched for my chiller. I am now in the process of converting this pot to a mash tun. I was told over the phone that the notched lid is sufficient because you want to let the steam escape during the mash. Containing the steam with a sealed lid will cause the finished beer to taste like cooked corn! (DMS production, I would assume).



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I have heard of open fermentation, but leaving the steam and heat to escape the mash will obviously pose other problems. I am in the process of building an insulated box for my mash tun in order to maintain proper mash temperatures. Should I reconsider this?

Maized and Confused

Dear Maized,

Wrong! Trapping the steam during the mash will not add a cooked corn character to your beer. In fact all those types of volatiles are thrown out of the brew during the boiling process if done with a vigorous boil. I'm with you. You want to insulate a closed mashtun for best results. A small notch isn't going to be dramatic, but if you brew a lot, try to find a replacement for best efficiency.

Not so corny,
The Professor, Hb.D.

Proportioning Yeast

Dear Professor,

I don't always want to make a 5-gallon batch of beer. Often, when trying a new recipe, I want to make a 1-gallon or 2.5-gallon batch of beer.

How do I re-proportion a vial of liquid yeast accordingly? And what are the consequences of adding too much yeast if that happens? Dry packets of yeast are easier for me to figure out.

Thanks!
Peggy Dahl
Santa Barbara, Calif.

Dear Peg,
A vial would be OK for 3 gallons. I'd actually even use a vial for 1 gallon. With regard to dried yeast 23 grams seems to be an excellent amount for 5 gallons. Half of that for 2 to 3 gallons should be fine and a quarter of that for 1 gallon would be the ticket.

Simply speaking,
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@brewersassociation.org.

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by Zymurgy staff

Style Profile: Lambic

Want to try your hand at a beer that will test your patience as well as your taste buds?

Take a stab at lambic, one of the styles that make up sour beers, the category for the March/April Club-Only Competition.

When brewing lambics, keep two things in mind:

1. Unless you live in Belgium, what you make will not be a true lambic.
2. You won't know whether your brew is a success for more than a year.

Lambics are one of the most complex of all Belgian beer styles. The product of spontaneous fermentation by a whole menagerie of microflora, these tart beers come from the Lembeek area just outside Brussels. The specific yeasts, bacteria and other bugs that give lambic its distinct tartness are not known to cohabitate naturally anywhere outside this valley. So homebrewers must approximate the wild fermentation by inoculating with a variety of cultures available for that purpose. The beers produced therefore would be more correctly called "lambic-style" or "pseudo-lambic," a term that has been shortened to "plambic" by many homebrewers.



ON THE WEB

BJCP Style Guidelines

www.bjcp.org

Michael Jackson's Lambic Page

www.beerhunter.com/documents/19133-000214.html

Jim Liddil's Lambic Page

<http://brewery.org/library/LmbcJL0696.html>

Aside from the wild fermentation, lambics have two other defining characteristics. They are brewed with a high percentage—30 to 40 percent—of raw, unmalted wheat. This also contributes to their winey, tart character. And, the hops used for lambics are aged at least a year and sometimes

two to three years to remove any of their bittering characteristics.

In Belgium, freshly brewed lambic wort is pumped into shallow dish-like fermenters in the eaves of the brewery, where the microflora can inoculate the wort. The rest of the ferment-

Lambic

Malt Extract Recipe

Ingredients

for 5 U.S. gallons (19 liters)

| | |
|-----------------|---|
| I can | Coopers Light Malt Extract |
| I can | Coopers Wheat Malt Extract |
| 0.25 lb | (0.11 kg) malto-dextrin powder |
| 3.0 oz. | (85 g) aged (at least a year or more) hops, any variety (90 min) |
| | Wyeast 3278 Lambic Blend or 3763 Roeselare Yeast Culture |
| 0.75 cup | (180 ml measure) corn sugar and 1 packet dried ale yeast for bottling |

Original Specific Gravity: 1.052

Final Specific Gravity: 1.012 or lower

IBUs: 0

ABV: 5.2%



Directions

Brewing lambics calls for the use of hops aged at least a year or more depending on how they are stored (older if cold-stored). In the case of lambics, aged hops are used for their preservative qualities and do not contribute flavor, aroma or bitterness. Malto-dextrin is fermentable by beer yeast, but will be consumed by the bacteria in the lambic yeast blends.

Bring 2 gallons of water to a boil, remove from heat and stir in extract and malto-dextrin. Bring back to a boil and add hops. Boil 90 minutes then pour into fermenter with enough cold water to make 5 gallons (plastic fermenters are a good choice when brewing lambics as they allow a slow ingress of oxygen, which will help with the bacterial fermentation). When temperature is below 75° F, pitch yeast and aerate well. Forget about the fermenter for at least a year (no need to rack). Ale fermentation temperatures are good for lambic strains, but don't worry too much about maintaining a particular temperature. After a year in the fermenter, take a sample. If the beer is to your satisfaction, bottle it; if not, let it sit. When you are ready to bottle, rack the beer off the lees and let sit for a day or more to allow the beer to settle. Prime with corn sugar and a packet of dried ale yeast.

For framboise, rack beer onto 10 pounds of fresh or frozen raspberries after a year of fermentation. Age for three months before racking off the fruit and bottling.



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ARIZONA

Barley Brothers Brewery Lake Havasu City

BJ's Restaurant & Brewery Chandler

Nimbus Brewing Co. Tuscon

Old Chicago Tuscon

Rock Bottom Restaurants Glendale, Phoenix (2), Scottsdale

ARKANSAS

Boscos Little Rock Brewing Co. Little Rock

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Anderson Valley Brewing Co. Boonville

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O'Brien's Pub San Diego

Oggi's Pizza & Brewing Co. Encinitas, Escondido, Huntington Beach, Mission Valley, Mission Viejo, San Diego (3), Santa Clarita, Vista

Rock Bottom Restaurants Irvine, Long Beach, San Jose, San Diego

Rogue Ales Public House San Francisco

Russian River Santa Rosa

Santa Barbara Brewing Co. Santa Barbara

Stone Brewing Co. San Marcos

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5280 Roadhouse & Brewery Littleton

Backcountry Brewery & Restaraunt Frisco

BJ's Pizza Grill & Brewery Boulder

Dillon Dam Brewery Dillon

Flying Dog Brewery Denver

Glenwood Canyon Brewing Co. Glenwood Springs

Great Divide Brewing Co. Denver

Hops Grillhouse and Brewery Colorado Springs, Denver, Golden, Littleton, Northglenn

Ironworks Brewery & Pub Lakewood

Left Hand/Tabernash Brewing Co. Longmont

Odell Brewing Co. Fort Collins

Old Chicago Aurora, Boulder, Broomfield, Colorado Springs (3), Denver (3), Ft. Collins (2), Grand Junction, Greeley, Lakewood, Littleton, Longmont, Silverthorne, Superior, Thornton, Westminster, Wheatridge

Oskar Blues Lyons

Phantom Canyon Colorado Springs

Pumphouse Brewery & Restaurant Longmont

Redfish Brewpub Boulder

Redstone Meadery Boulder

Rock Bottom Restaurants Denver, Englewood, Westminster

Rockies Brewpub Boulder

Rockyard Brewing Co. Castle Rock

Smugglers Brewpub & Grille Telluride

Walnut Brewery Boulder

Wynkoop Brewing Co. Denver

CONNECTICUT

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Kona Brewing Co. Kailua-Kona

IDAHO

Old Chicago Boise (2)

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Elmwood Brewing Co. Elmwood

Flossmoor Station Restaurant & Brewery Flossmoor

Goose Island Brewpub Chicago (2)

Old Chicago Rockford

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Piece Brewery Chicago

Rock Bottom Restaurants Chicago, Warrenville

INDIANA

Buffalo Wild Wings Downtown Indianapolis

Rock Bottom Restaurants Indianapolis

Upland Brewing Co. Bloomington

IOWA

Court Avenue Brewing Co. Des Moines

Old Chicago Bettendorf

Raccoon River Brewing Co. Des Moines

Rock Bottom Restaurants Des Moines

KANSAS

Old Chicago Lawrence, Lenexa, Overland Park, Wichita (3)

MARYLAND

Hops Grillhouse and Brewery Owings Mills

Rock Bottom Restaurants Bethesda

MASSACHUSETTS

Rock Bottom Restaurants Boston, Braintree

Watch City Brewing Co. Waltham

MICHIGAN

Big Buck Brewery & Steak House Auburn Hills, Gaylord

MINNESOTA

Hops Grillhouse and Brewery Maple Grove

Old Chicago

Apple Valley, Blaine, Duluth, Eagan, Eden Prairie, Minneapolis (2), Minnetonka, Plymouth, Roseville

Rock Bottom Restaurants Minneapolis

MISSISSIPPI

Hops Grillhouse and Brewery Jackson

MISSOURI

McCoy's Public House Kansas City

Old Chicago Columbia

NEBRASKA

Old Chicago Lincoln (2), Omaha (4)

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Triumph Brewing Co. Princeton

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Lake Placid Craft Brewing Co. Plattsburgh

Southampton Publick House Southampton

NORTH CAROLINA

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OHIO

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Rock Bottom Restaurants Cincinnati, Cleveland

Willoughby Brewing Co. Willoughby

OREGON

BJ's Restaurant Bar & Brewery Eugene, Portland (2)

Laurelwood Public House & Brewery Portland

Old Chicago Beaverton, Gresham, Portland (2)

Pelican Pub and Brewery Pacific City



AMERICAN HOMEBREWERS ASSOCIATION

**Under the new Brewers Association bylaws, the AHA Board of Advisers has been renamed the AHA Governing Committee.
Your AHA Governing Committee representatives have a direct impact on the direction of your Association.**

Please cast your vote today!

BRIEF CANDIDATE STATEMENTS (PLEASE SEE WWW.BEERTOWN.ORG FOR FULL STATEMENTS):

MICHAEL FAIRBROTHER—LONDONDERRY, N.H.

I have been active in the homebrewing community for almost 10 years, mostly at the local level here in New Hampshire. I am extremely passionate about brewing—it's my favorite subject. Over the last 10 years, I have served twice as Brew Free or Die president, eight times as Webmaster, and now serve as the BFD treasurer. I have also published its online newsletter on numerous occasions. I started out brewing extract beers in May 1995 and then quickly branched out into all-grain. While I have never placed at the national level, I have won awards for beers, meads and ciders at many competitions in New England. I now have a 20-gallon system that's built into the basement of my home. For more details on my passion for brewing, check out my Web site www.bfd.org/mdf/index.html.

TYCE HELDENBRAND—LAS VEGAS, NEV.

I would consider it a true honor to serve on the AHA's Governing Committee. I have been homebrewing for eight years and have been a member of the AHA since 1997. I have been involved in organizing the first round AHA National Homebrew Competition for several years and have attended every National Homebrewers Conference since Kansas City in 1999. The National Homebrewers Conference is the most exciting event of the year for me as it gives me a chance to see old friends and meet new ones, besides sampling the best homebrew on the planet. I was the committee chairman for the highly successful National Homebrewers Conference in Las Vegas in 2004. As a Governing Committee member, I would like to help contribute to the success and marketability of the National Homebrewers Conference plus other issues the AHA is involved in to promote the hobby of homebrewing.

STEVE JONES—JOHNSON CITY, TENN.

As a member of the Board of Advisers for the past three years I have had the privilege of serving AHA members during a time in which many advances have been made in the organization. The AHA must appeal to all types of homebrewers, and although I'm a die-hard all-grain brewer, I stay involved with beginning and intermediate brewers through membership in our local club and by teaching homebrewing classes. I believe that I understand their needs. Communication is vital to being responsive to the membership, so I'd like to see the AHA implement an online suggestion box for members to help the Governing Committee and staff get a better feel for the needs of the membership, along with periodic reports on member feedback. Though it has improved considerably, I'd like to see even more accomplished with the AHA Web site, providing more in the way of real brewing information and member benefits. It should be the first place on the Web that someone goes to for finding information on homebrewing—not just members, but all homebrewers. I'd like to see an expanded members-only area that would be good enough in itself to be worth being an AHA member. Above all, the AHA should be a member-driven organization that exists for the benefit of all of its members. I ask you to consider sending me back to continue my work for the membership. Thank you for your support.

DAVID LOGSDON—ODELL, ORE.

I am president/director and co-founder of Wyeast Laboratories and Full Sail Brewing Company of Hood River, Ore. I have worked in all aspects of the

brewing and beverage industry from brewery startup, product formulation, brewmaster, laboratory manager, packaging development and marketing. I live with my family in Oregon where I was an honor student and 1979 graduate with a degree in Food Science Technology. I developed the Wyeast smack pack, which has been described as one of the single greatest developments in homebrewing. I continue to improve the quantity and variety of fermentation cultures available to homebrewers. Remaining an avid homebrewer, I enjoy experimenting with new cultures and sharing years of brewing experience with AHA members. I am a member of the Master Brewers Association of the Americas, American Society of Brewing Chemists, Brewers Association and have served on the board of advisers for the American Homebrewers Association and the board of directors of the Association of Brewers. I have served as captain and judge on the Professional Panel Blind Tasting for the Great American Beer Festival and World Beer Cup Competitions and have served as chief judge of BrewNZ 2002, 2003 and 2004 in Wellington, New Zealand. As an AHA member for 21 years and former AHA Board member, I have been nominated and encouraged to return to the board to help promote the interests of our membership. Thank you for your consideration and vote.

ROB MOLINE—AMES, IOWA

Many things have changed in the six years since I became the first elected board member...now we have a fully membership-elected Governing Committee that is not only more reflective of the membership, but also more responsive to your needs. The Governing Committee has sound leadership. The AHA has a brilliant staff, a new structure of Zymurgy, and no more days of alienating the membership and our alliances with shop owners, wholesalers, the BJCP and the HBD with the battle cry of "We don't need them, we're the AHA." Indeed, now we are building new alliances with the merger, but we need to continue to protect the AHA's position in the new organization. It has been a great honor for me to be associated with this organization, and to seek your vote to be the first elected member to serve three terms. To that end, I have resigned my position as secretary, so as to decline to exercise the option allowed to officers of the Board of automatic extension of term. I have unsuccessfully argued in the past to remove this part of the bylaws. Allow me to finally close this loophole. If I can't garner enough votes from the membership to retain my position on this board, why should I remain?

JEFF RENNER—ANN ARBOR, MICH.

I am pleased to submit my name for re-election to the AHA Governing Committee. In the past two-and-a-half years I believe that I have represented AHA members' interests and have worked with other committee members to make the AHA stronger. I have been an avid homebrewer for more than 30 years and an active participant in many online brewing forums. I am probably best known for having started the movement to resurrect the classic American Pilsener. I have written several articles for Zymurgy and Brewing Techniques, and have spoken at conferences in the United States, Canada and South Africa. I am an active beer judge with the rank of BJCP national judge, and a charter member (1986) of the Ann Arbor Brewers' Guild. I am in touch with homebrewers and their interests and can continue to represent them well. If re-elected, I will continue the committee's

GOVERNING COMMITTEE ELECTION!

efforts to make the AHA more relevant to homebrewers so that all homebrewers will want to join for its benefits. This will strengthen both the hobby of homebrewing and the AHA as well.

PHIL SIDES—SILVER SPRING, MD.

I'm just completing my first three-year term of service to the American Homebrewers Association Governing Committee and I am delighted to ask for your vote for re-election to a second term. It's been an exciting and dynamic three years with the two best Homebrewers Conferences in our organization's history in Chicago and Las Vegas. I'm currently working hard with 14 other area coordinators to plan and stage our next great conference this June in my neck of the woods in Baltimore. Membership growth has been and will continue to be an area of focus and I have been a charter participant and supporter of our liaison program, which has helped us achieve some of our membership goals. In June 2004, my BOA peers elected me to represent the AHA on the Association of Brewers board of directors. I served on what became the final board of our parent organization, as our dedicated task was to plan and manage the merger with the Brewers Association of America and the birth of our new combined organization known as the Brewers Association. The AHA needs to continue to broaden its appeal to homebrewers and grow membership. Our newly redesigned Zymurgy magazine and the aforementioned liaison program will help in that regard but additional focus is necessary. Identifying opportunities to support members and bolster benefits, both individually and at the club level, is of paramount importance. I plan to support an agenda that will accomplish these goals. Thank you for your consideration of my candidacy.

TONY SIMMONS—PAGOSA SPRINGS, COLO.

I am running for the Governing Committee because I fervently believe in the AHA and want to support it the best way I know how. Beyond my 17 years as a marketing professional, I am a homebrewer, homebrew shop owner, AHA liaison and Siebel graduate. I was also recently invited to judge at the GABF and was selected to serve as a U.S. brewing representative at the Slow Foods Conference in Turin, Italy. My agenda as a Governing Committee member will be to encourage new memberships and continue to develop enthusiasm with our current member base. Our liaison program, in conjunction with local clubs, has been an excellent step in addressing these issues. However, there is still more work to be done and I believe I can help. Our Association is only as strong as its members. Active involvement and participation are crucial to staging more successful events and, ultimately, to our future. This election is but one example of that. Whether you decide to vote for me or not, I urge every member to vote and encourage your homebrewing friends to do the same. This year, let's break records for election participation the same way we broke records for the NHC!

JAMIL ZAINASHEFF—ELK GROVE, CALIF.

I've spent my life as an educator and an engineer, which have both been very rewarding, but being a homebrewer has been an even richer experience. Like many of you, it is the camaraderie, technical wanderlust, sharing and kindness of homebrewers that has turned my interest in brewing into a true passion. I've used my knowledge of software development to help drive membership for the AHA, resulting in more than 300 new members, and I've created Web-based applications to allow the BJCP to run more efficiently. I am a BJCP national judge and have helped run several large competitions, including serving as judge director of the NHC first round and finals. I won the 2004 Ninkasi Award, the 2002 and 2003 Sierra Nevada Homebrewer of the Year and have placed first in every style category in competition. Although I am an

enthusiastic participant in competitions, I know that competition is not the most important thing for most brewers and it is not a prerequisite for brewing great beer. As a Governing Committee member, my focus will be the best interests of the membership and the health of the AHA. While growth in membership needs to be encouraged, providing the best possible benefits and support to the existing membership should be the highest priority. If we improve the overall satisfaction of the existing members, signing up new members will be that much easier. I would also like to use technology to improve the AHA's ability to serve its members.

VOTE NOW! AMERICAN HOMEBREWERS ASSOCIATION
2005 GOVERNING COMMITTEE
OFFICIAL BALLOT

SELECT UP TO FOUR (4) CANDIDATES YOU FEEL ARE BEST QUALIFIED TO SERVE ON THE AHA GOVERNING COMMITTEE.

Michael Fairbrother David Logsdon Phil Sides

Tyce Heldenbrand Rob Moline Tony Simmons

Steve Jones Jeff Renner Jamil Zainasheff

Enter me in the Lallemand Scholarship Drawing

Name _____ Membership # _____
Signature _____

Mail completed ballot to:
AHA Election
c/o Susan Ruud
5605 56th Ave N
Harwood, ND 58042

Or fill out the online ballot
at www.beertown.org.

ELECTION GUIDELINES:

Read the statements; see www.beertown.org for full candidate statements. Vote online at www.beertown.org or photocopy the ballot (that way you don't have to cut your Zymurgy). Vote for up to four (4) candidates by marking the box next to the candidates' names. Fill in your name and membership number in the appropriate place. If you do not know your member number, or would like to become a member, call us toll free at 888-822-6273 or e-mail info@brewersassociation.org. Sign your ballot.

Mail completed ballots to: AHA Election, c/o Susan Ruud, 5605 56th Ave N, Harwood, ND, 58042; or fill out the online ballot at www.beertown.org. Ballots must be postmarked no later than April 1, 2005.

Only one ballot per member will be accepted.

All AHA members voting in the election are eligible for an additional entry in the Lallemand Scholarship drawing for Siebel Institute's two-week Concise Course. Check the "Enter Me" box on the ballot to submit your entry. The drawing will take place June 18, 2005 at the AHA National Homebrewers Conference in Baltimore, Md.



Earth-Friendly Brewing:

HOW HOMEBREWERS CAN HELP SAVE THE PLANET

BY CHRIS O'BRIEN

Homebrewing is an excellent way for beer drinkers to help save the planet. Even without any special practices or products, homebrewing is usually gentler on the world's ecosystems than consuming mass-produced industrial brews.

Brewing at home reduces the environmental footprint of beer drinking in two significant ways: it limits the use of fossil fuels and reduces packaging. The former is a result of the decrease in transportation needs achieved by brewing in the same place as you drink. The latter is due to the reuse of bottles and other containers, elimination of cardboard carriers and cases, and reduction of plastic and paper bags.

But these are just the easiest and most obvious ways in which most homebrewers are already eco-friendly. There are many more simple ways to live more lightly by choosing the right equipment and ingredients and practicing techniques that are better for your beer and for the world.

BETTER BEER FOR A BETTER WORLD

The most immediately rewarding and least controversial path toward environmental sustainability is to make sure your homebrew tastes good. Throwing an unpalatable batch down the drain is the most wasteful, not to mention heartbreaking, behavior any homebrewer can practice.

Avoid bad batches by following standard practices of cleaning and ingredient storage, and ensure a hearty fermentation by using liquid yeast or a yeast starter.

If you do make a beer that you find hard to swallow, but you don't mind swallow-

ing a little pride, test it out on a friend or two before you dump it. Who knows? They may like it!

If even your least discriminating beer buddies can't stomach it, pour the stuff on a flowerbed or lawn rather than introducing it to your municipal water authority. Better still is to add it to a compost heap where you also dump your spent grains and hops.

EVALUATING YOUR IMPACT

In *Ecology of Commerce*, environmental business entrepreneur Paul Hawken describes a useful approach for evaluating the environmental impact of any product. Using his model, homebrewers should look at what we "Take, Make and Waste."

We take ingredients such as water and grains; equipment like kettles, fermenters, containers and heating and cooling machines; cleaners and sanitizers; and finally, energy, which is mostly fossil fuels. From all this, we make beer. Some brewers make ancillary products too, which we'll discuss in the sidebars.

Unfortunately, a great deal of what we take does not end up as beer, but instead is discarded without performing any useful function. We waste water, CO₂, spent grains and hops, plastic and paper packaging, obsolete equipment and energy.

In Hawken's equation, the goal is simple: eliminate waste. Three guiding principles can help homebrewers achieve this.

▪ Reduce what you take. Take only what you really need. Use resources that have a renewable supply and that don't require

exploitation or destruction of nature or the people who inhabit it.

▪ Make things that contribute to the health and happiness of the world. Focus on characteristics like quality, durability and non-economic attributes of products, like how they strengthen local community or help to protect or rehabilitate natural resources.

▪ Eliminate waste by improving efficiency, and by transforming a would-be waste into a useful byproduct. For example, reuse wash-water for watering the lawn. Keep in mind that it is better to reuse a waste product than to recycle it, and when recycling it is better to create a new product of equal value than to "downcycle" it into a product of lesser value.

A further guideline, though perhaps not a principle per se, is that environmentally friendly brewing practices are usually economical as well. Resource efficiency often pays off for the wallet as well as the world.

The good news is that homebrewers often follow these guidelines already!

HEALTHY BEER DRINKER, HEALTHY PLANET

Remember that people are part of the environment too. Keeping beer drinkers healthy is important, and homebrew can help. Unfiltered organic homebrew is high in B vitamins, carbohydrates, niacin, pyridoxine, riboflavin, magnesium and potassium. When consumed in moderation, beer has been proven to reduce the risk of heart disease. Toward that end, here's one of my favorite real ale recipes brewed with organic and local ingredients. (see page 20)

Smart PACKAGING CHOICES

Let's use homebrew containers to illustrate the principles of eco-friendly brewing.

First, choose containers that take few resources. Evaluating a container requires looking at its whole life cycle.

For example, a thin glass bottle requires fewer input resources than a thick one, but a thick one lasts longer, thereby reducing its overall impact when adjusted for its lifespan. But if you're transporting the bottle over great distances, a lighter one uses less fuel. In other words, a reusable bottle that doesn't travel is better than a recyclable one, which is better than a disposable one.

Swing tops are better than crown caps since crown caps are single-use and not recyclable. I've collected great swing cap bottles from restaurants. They are glad to give them away since it helps reduce their disposal expenses, and this lengthens the life of a product that was about to become landfill.

Bigger is better, depending on end-use requirements. If you plan to drink a lot of beer all at once with friends, then use large containers since they are more resource-efficient than individual serving containers. For example, a keg has a very long lifespan and uses less raw material, cleaning water and sanitizer than 50 beer bottles.

Reviewing Paul Hawken's model, an ideal homebrew container should:

- Take practically nothing by reusing what would have otherwise been a waste, like a bottle or keg that was headed for landfill.
- Make a suitable storage vessel for beer, which is easy since that's what bottles and kegs were designed for already.
- Waste almost nothing, since good bottles and kegs can be reused almost infinitely and their maintenance is minimal.

Homebrewers can have close to zero environmental impact in their packaging choices. In a best-case scenario, homebrewers can actually have a net positive impact by channeling waste into new, productive uses.

Organic Juniper Porter

(based on the Robust Porter recipe from Seven Bridges)

Ingredients

for 5 U.S. gallons (19 liters)

| | |
|----------------|--|
| 4.4 lb | (2 kg) organic pale malt extract |
| 2.0 lb | (0.9 kg) Hugh Baird pale two-row organic malt |
| 1.0 lb | (0.45 kg) Briess Organic Munich malt |
| 0.75 lb | (340 g) Briess Organic caramel 60°L malt |
| 0.75 lb | (340 g) Briess Organic chocolate malt |
| 0.5 oz | (14 g) New Zealand Pacific Gem organic hops, 31 IBU (60 min) |
| 0.25 oz | (7 g) New Zealand Hallertauer organic hops, bittering, 7 IBU (60 min) |
| 0.75 oz | (21 g) New Zealand Hallertauer organic hops (0 min) |
| 1.0 oz | (28 g) organic juniper berries (available from Seven Bridges, but I sometimes pick my own from a nearby park) White Labs English Ale liquid yeast |

For bottling:

| | |
|----------------------|----------------------|
| 1 cup | organic malt extract |
| 0.25 teaspoon | Irish moss |
| 2.0 teaspoons | gypsum |

Original Target Gravity: 1.059

Final Target Gravity: 1.015

IBUs: 38

Directions

Mash all the grains in 1.75 gallons 152° F (67° C) water. Sparge with 1.25 gallons water. Add the extract to the water collected and enough water to make 5.5 gallons of liquid, and bring to a boil. Add 0.5 ounce NZ Pacific Gem and 0.75 oz NZ Hallertauer and boil for 60 minutes. Add 0.75 ounce NZ Hallertauer and Irish moss and juniper berries. Turn off heat. Rest for 10 minutes and have a homebrew.

Chill wort to 70° F (21° C) and transfer to primary. Pitch the yeast and ferment for up to a week at 65 to 70° F (18 to 21° C). Transfer to secondary and ferment for another one to two weeks. Bottle the beer, and condition in the bottle for one to three weeks. This beer improves for up to a year. The cedar flavors of the juniper berries mellow slightly but become more complex. Tastes like the smell of sitting around a cedar campfire.

INGREDIENTS

Water is a high environmental priority in brewing for a couple reasons. First, beer is about 95 percent water. It is essential that it be high quality in order to produce good beer, but it is also imperative that we don't waste it since it is the primary resource required—as we run out of water, brewing could become more expensive.

Second, conflict experts claim that access to clean water will be the main cause of the world's next wave of wars. At the risk of stating the obvious, war is one of humankind's most environmentally destructive practices. Drastically reducing water waste therefore plays a powerful role in environmental protection, and can be easily achieved by homebrewers.

Zero-waste in this case means that all the water used for making beer ends up being the same quality that it was at the beginning of the process. Remember, down-cycling is better than completely wasting, but to be sustainable we must replace our resources with ones of equal value to nature. Again, this is pretty easy for homebrewers to achieve concerning water usage.

Zero-Waste

To begin with, small-scale brewing already tends to be slightly more water-efficient than macro brewing. Still, it can take 5 to 10 gallons of water to make 1 gallon of beer. Finding ways to limit water requirements is not hard, and reusing wastewater is simple. In fact, just like the bottle example, homebrewing has the potential for a net positive eco-impact concerning water use.

Most of the water needed for brewing is actually used for cleaning, not for making the beer itself. A major water-related environmental problem is rainwater runoff in urban areas. The infrastructure required for handling and cleaning rainwater is enormous. A simple way to reduce this runoff and achieve a productive result is to install a rainwater catchment system. This can be as easy as putting a big empty trash barrel under your downspout. Let

bags of ice from the convenience store. This one is a no-brainer. Fill some empty plastic water bottles with rainwater and store them in the freezer until you need them. I have used the same water in the same bottles for my last 10 brews! Another benefit to this practice is that it helps keep your freezer full, and a full freezer is more energy efficient than an empty one.

Fixing leaks and turning the tap off when you're not using the water are common-sense water-saving practices.

For the more dedicated, build a pond in your yard. It may sound radical (hey, we are homebrewers) but that pond can be designed as a "living machine" containing beneficial microbes that clean your brewing wastewater, creating a completely renewable and closed loop water sup-

ative impacts from the chemically intensive agro-industry. Seven Bridges Cooperative specializes in organic brewing supplies.

It doesn't get any more local than home-grown. Growing your own hops is easy, economical and significantly reduces transportation and packaging impacts. It is also fun and very rewarding. Drinking a beer made with your own homegrown hops can be a sublime experience.

Once you've made your beer, you also get to do something with the leftover

BREWING USES LESS THAN 10 PERCENT OF YOUR MALT. THE REST IS JUST TRASHED. A NO-BRAINER IS COMPOSTING THESE SPENT GRAINS AND HOPS.

the barrel fill with rainwater, clarify it by letting it sit for a couple weeks, and then use it for cleaning your brewing equipment. Remember the economical guideline? Since rainwater is free, it lowers your water bill. In the long run it reduces the capacity requirements of your municipal water authority, which could ultimately mean lower taxes.

But don't stop there. We can't just pour that used cleaning water down the drain, right? Here's an easy way to reuse it. Do your cleaning in the same barrel that you used to collect the water. When you're done you can use it to water your garden or lawn, or wash your car. If you are using a wort chiller, keep the spent water and use it for cleaning your kettles and utensils before using it on the lawn. Or direct your hot used chiller water into the washing machine, taking advantage not only of the water itself but also the heat!

If you're using ice to chill your wort, stop wasting money and resources on

ply. Several commercial scale microbreweries have already been built using these living machines as water cleaners. Check out the works of John and Nancy Jack Todd for details: www.livingmachines.com, or Gunter Pauli's innovative brewery designs: www.zeri.org.

The water that is actually used for brewing should be filtered with an activated charcoal filter. This type of filter removes chlorine, chloramine, heavy metals and toxic compounds but does not remove the basic minerals such as calcium that are beneficial to the brewing process. If using distilled water, you may want to add minerals according to the beer style you are brewing.

MALT, HOPS, ADJUNCTS AND MORE
The rule of thumb with ingredients is to use local, fresh and organic whenever possible. These criteria help reduce transportation and storage costs (both environmentally and financially), and reduce toxic agricultural inputs and neg-



ingredients. Brewing uses less than 10 percent of your malt. The rest is just trashed. A no-brainer is composting these spent grains and hops. Composting in the yard is very simple, but if you don't have one, check out the classic book *Worms Eat My Garbage*, which explains how to build an indoor compost bin that has no smell and produces great, rich soil to give to friends or to use for house plants.

Small amounts of spent grain can also be used for bread baking. I've eaten some delicious soft pretzels made from spent brewing grain. For more advanced projects, look into mushroom farming and fish farming. Spent grains happen to be perfect for both.

Other ingredients like herbs, spices, fruit and vegetables are all easy to grow at home (use the nutrient-rich soil from your compost), or source locally and organically. Harvesting honey from your



own beehive is another fun project that can reduce eco-impact while playing a vital role in pollinating flora in your local ecosystem. World bee populations are in critical decline. Playing your part in the name of beer can have a positive effect and help reverse this trend. There are plenty of good books on home gardening, hop growing and beekeeping. I recommend *The Homebrewer's Garden* and the manual *Small Scale & Organic Hops Production* (available for free online at www.crannogales.com).

Likewise, culturing yeast at home can be straightforward and cheap while reducing shipping and packaging impacts. Most any homebrewing book covers this topic. It's fairly easy to keep a high-quality yeast in functioning order for a year or more by storing and re-culturing samples. Better yet, save yourself a lot of time and eliminate some cleaning by transferring to a secondary, or bottling, on the same day you brew. This allows you to pour a new wort right on top of the healthy yeast cake that is already on the bottom of your primary fermenter—an elegant simplification in your brew process that saves time, money and effort while reducing your impact on the environment.

White Labs liquid yeasts come in recyclable #1PET vials that are handy for storing your own cultures or other brewing supplies like cleaners, herbs and spices, gypsum and Irish moss, or for giving a friend a sample of one of your own cultures.

A tip that applies universally to ingredients (and other supplies) is to buy in bulk. This reduces shipping and packaging and can be much cheaper. Here's just one example: a 2-ounce packet of Five Star cleaner retails for about \$1.80, or 90 cents per ounce. A 4-pound jar retails for about \$30. Sounds like a big number, but it actually works out to just 50 cents per ounce—close to half the price. Buying this cleaner in bulk just saved you more than \$25. Picking up a big jar can also reduce the number of trips to your homebrew store, saving you time and money as well as lowering your eco-footprint due to fuel and packaging.

Green Cleaning

SUPPLIES AND EQUIPMENT

Let's deal with the nastiest and perhaps most controversial cleaner first: chlorinated bleach. This stuff is, plain and simple, an environmental and health disaster. Unfortunately, many homebrewers use it regularly.

First, chlorinated bleach shouldn't be used on stainless steel because it wears it down. Environmentally, chlorinated bleach has both short-term and long-term problems. Immediate impacts include eye, lung and skin damage to the user. Chlorine is the chemical most frequently involved in household poisonings in the United States. A further risk—one that should instantly convert a family brewer to a non-toxic alternative user—is the fact that one accidental sip of bleach can send a child to the hospital. Get this stuff out of your house and never let it back in.

In the long term, chlorine is responsible for some devastating impacts on the environment. For example, amphibian extinction rates are increasing exponentially. Chlorine is one of the main causes because it reduces the sperm count of amphibians and alters their genitalia. Frogs have been around for well over 100 million years. Humans have been here just one-tenth of 1 percent of that time. Suddenly, frogs are disappearing, due in part to our use of chlorine. Give the frogs a break and switch to a non-chlorinated cleaner.

Hydrogen peroxide, Iodophor and other bleaches that use oxygen or peroxide are cheap and effective alternatives to chlorinated bleach, and they lack the nasty consequences. Iodophor is also highly concentrated, which has the side benefit of reducing packaging and transportation, and, because it is no-rinse, saves water too.

Before you sanitize, you'll need to clean. Simple and cheap citrus-based cleaners work fine. Some cleaners are made specifically for homebrewing, without toxic side effects. Five Star markets products specifically to brewers and has a lower eco-impact than others. Their cleaner (Powdered Brewery Wash) and sanitizer (Star San) are both used widely by microbreweries and are highly regarded for their effectiveness. Because of their success, they are marketed in convenient sizes for homebrewers. PBW works great on brewpots, carboys, kegs, lines and copper.

The cheapest option is Straight A cleaner, an oxygen-based cleaner with no harmful phosphates, and therefore very low impact.

EQUIPMENT

The key with brewing equipment is to focus on salvaged or used pieces and consider durability. Many important pieces of equipment can be acquired for free from people who no longer need them and are going to chuck them into the trash otherwise. A classic example is the 5- or 6-gallon plastic bucket, universally available in mass quantity from restaurants. Since restaurants have so many of them, it's usually easy to find one that is clean and free of abrasions (which are breeding grounds for infections, so it's best to steer clear of the scratched ones, even if they are free).

Both aluminum and stainless steel brew kettles are safe, durable and can ultimately be recycled given the proper facilities. Bauxite mining for alu-

uminum manufacturing has some very negative environmental effects, but so does the coal mining required to make steel. However, most steel these days is manufactured from other steel products. A disadvantage is the much bigger price tag on stainless steel compared to aluminum. Aluminum's lighter weight is a shipping advantage. In the end, a more detailed study is required to determine whether a new steel or aluminum kettle is environmentally preferable—a long way of saying look for a used one. Check the classifieds in homebrew magazines, Web sites and your local newspaper. Restaurants are also a good source, particularly when they are changing ownership or selling off old supplies.

GROUP BREW—THIS SAVES YOUR FRIENDS FROM BUYING ADDITIONAL BIG KETTLES THEMSELVES AND IT MAKES FOR A FUN DAY OF BREWING CAMARADERIE.

A great used kettle alternative is the modified keg. Cut off the top and you have an excellent kettle big enough for upgrading to 10- or 15-gallon batches. A side benefit to this is the ability to do a group brew. This saves your friends from buying additional big kettles themselves and it makes for a fun day of brewing camaraderie. This same principle holds true for investing in more serious fermenters that hold larger batches. An ideal way to go light on resources is to buy a small advanced brewing system with a group of friends that can accommodate 20 gallons or more at a time. Remember, within the small scale, relatively bigger is better. Another benefit is that a system used by several people is likely to be used more often, which is better environmentally than allowing value-added resources to sit around and collect dust. For all the same reasons, visiting a brew-on-premises can be a fun option for those so inclined.

ENERGY

We have already covered some ways to reduce energy use through smart choices about shipping and transportation, packaging and equipment, and ingredient selection. Whether you're using gas or electricity, your energy is generated from the burning of fossil fuels—a major contributor to

climate change (see more on this later). You could go all the way and solarize your house or erect a residential wind turbine (these are now available and are becoming quite cheap), or just try to minimize your energy use. An increasing number of Americans now also have "green" energy choices available right from the conventional utility companies. Other companies, like Green Mountain Energy, are going national with green residential energy options.

REFRIGERATION, CO₂ AND GLOBAL WARMING

There is wide agreement by climatologists and other experts that global warming is the biggest environmental crisis humans have faced. Unfortunately, refrigerators are



adding to the problem. Chlorofluorocarbons were once used in all fridges, but they are so bad for the ozone layer that they have been banned and replaced with the slightly less disastrous hydro-chlorofluorocarbons. But even these deplete ozone, and loss of ozone contributes to global warming.

For starters, make sure your refrigerator is running efficiently. If you're buying a new one, look for the EnergyStar logo indicating high efficiency. The fridge is often the most energy intensive appliance in the house. Replacing old, inefficient refrigerators can have an immediate payoff in the form of lower utility bills, allowing you to recoup the cost of the new unit in a short period of time.

A somewhat more radical idea is to cool your beer naturally and not bother with a refrigerator at all. This is pretty easy if you have a basement. Just store your beer on the cool cement floor and drink it at "cellar" temperature. People have been doing this for hundreds of years and have been quite happy with it. A hopeful sign is the emergence of a "real ale" (as cellar-temperature beer is called) movement in the United States—not surprisingly being led by homebrewers. The U.K.-based Campaign for Real Ale is work-

ing hard to maintain this traditional style of storing and serving beer and their Web site has loads of useful information.

If you don't see real ale in your future, then try something just as easy and practical—plant a tree. This helps sequester the carbon and reduce global warming.

That brings us to the related issue of CO₂, a necessary byproduct of fermentation. The earth is processing as much CO₂ as it can at the moment but this isn't fast enough to prevent climate changes that are drastically altering just about every complex system on the planet. Climate change has important implications for brewers in that it is affecting growing conditions and the geography of arable land, and this impacts crops like barley and hops. For example, the Pacific Northwest could become unsuitable for hop growing. I would rather not try to imagine an American brewing scene without Cascade hops.

Homebrewers lose less CO₂ than commercial breweries since carbonation takes place naturally in the bottle, whereas commercial breweries force additional carbonation into the bottle. For kegged beer, real ale can be a partial solution again since there is no forced carbonation involved, only the natural amount of CO₂ created through fermentation. There are some innovative programs available that allow homeowners to offset their CO₂ emissions by investing in sustainable energy development. Check out www.nativeenergy.com to learn how to enroll.

RESOURCES

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- Five Star Chemicals, www.fivestarchemicals.com/homebrew/products.html
- Hawken, Paul. *The Ecology of Commerce*. HarperCollins, 1994.
- Seven Bridges Cooperative, www.breworganic.com

Chris O'Brien lives, brews and drinks homebrew in Addis Ababa, Ethiopia, from where he also publishes the online newsletter BeerActivist.com. He is part owner of Seven Bridges organic homebrew cooperative.



DANISH

*A*live and Well *By Gregg Glaser*

HOME BREWING

DENMARK MAY BE THE LAND OF LAGER BUT DANISH HANDBREWERS, AS THEY ARE KNOWN, ARE PRODUCING ALES. HOMEBREW BOOKS FROM THE UNITED STATES ARE READILY FOUND IN THE AVERAGE DANISH HANDBREWER'S LIBRARY, AS ARE YEASTS FROM WYEAST AND WHITE LABS AND HOPS FROM THE PACIFIC NORTHWEST. GLOBALIZATION OF HOMEBREWING IS A REALITY, AND THE CRAFT IS ALIVE AND WELL IN DENMARK.

The third annual Danish National Handbrew Competition, which took place last May during the annual Danish Beer Festival in Copenhagen, drew 150 homebrew entries—a huge jump from 66 entries in 2003 and 30 in 2002.

The competition planners, a loosely organized group of homebrewers from all over Denmark, are known as Håndbryggerne. A panel of selected experts, chosen from specialist beer importers and microbreweries, pre-judged the 150 entries the day before the final competition judging. Eight judges, two each in four teams, judged the 48 beers that made the final cut. The judges included Danish brewers, Danish and U.S. beer journalists and several beer enthusiasts. One of these enthusiasts was Per Samuelson, a young Swedish man who is the author of more than 4,000 beer ratings on RateBeer.com.

The first-prize winner of the competition was Thomas Hoelgaard with a Belgian-style dubbel. The second and third place prizes went to a foreign extra stout and an ESB—not a lager in the top three.



The Danish Beer Festival



Hoelgaard's beer went on to compete the next day in the Scandinavian Homebrew Competition. Sweden took first place with an Eisbock, Norway was second with a Belgian tripel and Denmark's entry took third place.

A Loose Connection of Handbrewers

Dan Temple, an Englishman living in Denmark since 1997 who organizes the Scandinavian Homebrew Competition, explained that Danish homebrewers are not organized as a formal club. "It's more controlled anarchy," said Temple. "An effort to promote homebrewing."

Three years ago Temple, an electrical engineer, resumed homebrewing in Denmark after having brewed in the United Kingdom. Homebrew supplies at that time could only be obtained in Sweden, he said, and there wasn't much of a Danish homebrew community.

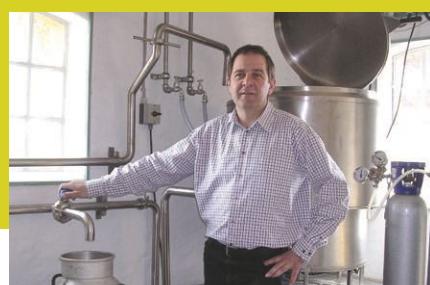
"Most homebrewers brewed solo and had cozy arrangements with professional brewers for supplies," explained Temple. "I found a mailing list of Danish homebrewers and started a Web site for beginners with easy recipes."

Temple's first Danish homebrew, My First Ale, was a malt extract brew to which he added crystal malt and liquid yeast. "I

wanted to get away from a kit beer, which doesn't allow for creativity," he said. As of last May, Temple had 38 brews under his belt.

The Web site Temple created includes a homebrew recipe database and recipe calculator with more than 2,400 recipes listed. There are 750 registered users of the database, 3,500 visitors a month and 270 homebrewers on the mailing list. But that's pretty much it as far as organization goes. These homebrewers have no formal club and no meetings, although the mailing list has helped small clubs form in other parts of Denmark. In the last few years a homebrew supply shop opened in Jutland in the western part of Denmark (Internet sales only) and there is now a small homebrew shop in Copenhagen.

The biggest annual project of these loosely affiliated Danish homebrewers is an impressive booth at the Danish Beer Festival. The Håndbryggerne booth, manned by brewers in matching T-shirts with the Håndbryg logo, is always a big draw at the beer festival. The brewers design and build a professional-looking, highly technical booth, demonstrating firsthand to festival-goers how beer can be made at home and offering plenty of samples from Cornelius kegs.



Tange Lake Whiskey and Beer Guild Headquarters / Fermenters / Peter Baggerman, Tange Lake Whiskey and Beer Guild Homebrew club member

"MOST HOMEBREWERS BREWED SOLO AND HAD COZY ARRANGEMENTS WITH PROFESSIONAL BREWERS FOR SUPPLIES"

Homebrewing on the Farm

In a beautiful, rural part of mid-Jutland, about 200 miles west of Copenhagen, is a Christmas tree farm. The owner of the farm has allowed one of the unused buildings to be taken over by a group of homebrewers. The Tange Sø Whisky og Øl Laug (Tange Lake Whiskey and Beer Guild) has 251 members, about 40 of whom meet each Saturday to brew. They also conduct beer and whiskey tastings through the year and take tours of Danish and Belgian breweries. "It's an extremely social club," explained member Peter Baggerman.

The farm owner lets the homebrewers use the old horse stables. The brewers laid a

concrete floor and built brewing quarters in half of the stables. They grind their grains in an unfinished area with a dirt floor and carry the grist by hand to the finished brewing area. Here they've installed a 175-liter (46.2-gallon) mash/lauter tun, which used to be a soup kettle in an old age home. After sparging they run-off into four dairy kettles 40 to 50 liters (10.5 to 13.2 gallons), each of which sits on an electric burner. When the boil is over, they chill the wort, siphon it into large plastic buckets and place these in a temperature-controlled room for fermentation and conditioning.

Baggerman said that usually two to six people split a 40- to 50-liter batch and

On the Web

Danish National Handbrew Competition
www.haandbryg.dk

Tange Lake Whiskey and Beer Guild
www.tawoel.dk

that the club members brew for themselves as well as for parties and anniversaries. Across the farm's courtyard from the brew-stables, the club has an upstairs tasting room in another building.

Hand Brewers Guild of Århus

The granddaddy of Danish homebrew clubs is the Hand Brewers Guild of Århus, located in Denmark's second largest city, not far from Ans. Founded in 1970, the club

HOMEBREWER'S RYE IPA HAS UNIVERSAL APPEAL / By Jim Parker

Denny Conn doesn't aspire to make the jump from homebrewer to professional. "I like the freedom of homebrewing too much," he says.

But beer drinkers from Oregon to Denmark can attest to the marketability of Conn's beers.

During 2004, both the Rogue Ales brewery of Newport, Ore. and Ølfabrikken (The Beer Factory), a new microbrewery in Vejby, Denmark, brewed Conn's favorite homebrew recipe, his Rye IPA.

"It was a good year for Rye IPA," Conn, an audio technician from Noti, Ore. said with a laugh. "I was just blown away."

But not surprised.

"With all due modesty, not that I am that modest a person, my wife and I both think it's the best beer we've ever had."

The two professional brewers came across Conn's beer in different ways, but both came to the same conclusion: They had to brew it for a larger audience.

Rogue's John Maier was visiting friends in Eugene and stopped by Conn's house where the Cascade Brewers Society was holding its Big Brew celebration. One taste of Conn's Rye IPA and Maier asked for the recipe. Two months later, his interpretation, named Gone Awry IPA, was Rogue's offer-

ing at the Oregon Brewers Festival. The following month, the same beer, renamed Two Tier Beer, was a monthly installment of Rogue's 15 beers celebrating its 15th anniversary.

Ølfabrikken's Christian Skovdal Andersen had run across Conn's recipe on the Internet and had been brewing it at home before opening his brewery in November.

"I have for a long time been interested in brewing with rye, since bread made with rye is the mainstay of nutrition of the Danish population and has been so for centuries," says Andersen, who has been homebrewing since 2001 and is a past medal winner at the Danish National

has had more than 750 members through the years. Currently there are about 50 members in the club (30 of whom are active members) with yearly dues of about \$67.

Club members meet once a week on a Tuesday or Thursday evening. During these weekly sessions they transfer beer from primary fermenters to secondary or lagering vessels, keg finished beer and socialize (drink beer, of course) in the upstairs meeting hall. One Saturday a month the active brewing members meet to brew.

The club has space in a building owned by the city of Århus. Rent is free, and so is electricity. For this reason, each brew pot (used dairy kettles) sits on an electric burner. This is a slower process than a gas-fired burner, but free is free, after all.

(continued on page 37)

On the Web

Ølfabrikken Brewery
www.ølfabrikken.dk

Rogue Ales
www.Rogue.com

Brewing Science Institute
www.brewingscience.com

Handbrew Competition. He purchased a used 7-barrel brewery from the United Kingdom and installed it inside an old barn he and some friends remodeled.

His earlier efforts leaned heavily on citrusy hops, which he says are popular in Danish homebrew circles, and he feared a commercial version with the same hops would prove redundant.

"Some random Googling ended up in me stumbling upon Denny's recipe, which was very much like my own in the grain bill, but very different in the hopping scheme, so it was perfect for my purpose," he says. "Later, I found out that it has already been brewed by Rogue."

Denny Conn's Rye India Pale Ale

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

| | |
|---------|---|
| 11.0 lb | (5 kg) pale malt (two-row) |
| 3.0 lb | (1.36 kg) rye malt |
| 1.25 lb | (0.56 kg) Crystal 60° L |
| 0.50 lb | (227 g) Cara-Pils® Dextrine Malt |
| 0.50 lb | (227 g) wheat malt |
| 1.0 oz | (28 g) whole Mt. Hood hops, 4.9% alpha acid (first wort hop) |
| 1.0 oz | (28 g) whole Columbus hops, 15% alpha acid (60 min) |
| 0.5 oz | (14 g) whole Mt. Hood hops, 4.9% alpha acid (30 min) |
| 1.5 oz | (42 g) whole Mt. Hood hops, 4.9% alpha acid (0 min) |
| 1.0 oz | (28 g) whole Columbus hops, 15% alpha acid (dry hop) |
| 1.0 tsp | Irish moss (15 min) |

BrewTek CL-50 California Pub Brewery Ale
Yeast (Can substitute Wyeast 1272
American Ale Yeast II)

Target Original Gravity: 1.073

Target Final Gravity: 1.013

IBUs: 75.1

Directions

Single infusion mash at 153° F (67° C) for 60 minutes. Total boil time of 70 minutes. Boil 10 minutes, then start hop schedule. Gypsum should be added to the boil to accentuate the hops, not to the mash to adjust mash pH. Ferment in the low 60s. I try to keep it 62° F-65° F (16.6° C-18.3° C). Usually, with a fresh culture of CL50, I can be drinking this beer 11 days after I brew it! Of course, that will depend on yeast strain and health, as well as your own personal tastes regarding aging. I like this one fresh; others may want to age it. In general, let it complete fermentation in primary, then transfer to secondary with the Columbus dry hops for a week. I usually throw another ounce of Columbus in when I keg it.

He e-mailed Conn asking permission to use the recipe for one of his flagship beers.

"How could I say no?" Conn asks with a laugh.

Andersen named the beer Rug IPA. Rug is Danish for rye, not—as some of Conn's online beer brethren joked—a reference to hairpieces. He credits Conn on his Web site for inspiring the brew, as does Rogue.

Conn has been brewing for seven years and has won his share of homebrew competitions. He is perhaps best known on the Internet, where he is a frequent contributor to the Homebrew Digest, rec.crafts.brewing and the Tastybrew Web site.

Both breweries made minor tweaks to the recipe and neither used what Conn says is the key ingredient—Brew-Tek CL50 yeast. Brew-Tek has gone out of business, but the yeast is still available from the Brewing Science Institute in Colorado. "That yeast makes all the difference in the world," Conn insists. "But Wyeast 1272 is a good second option."

He tasted the Rogue version and called it "very close" to his homebrew. He is still waiting for samples of the Danish version to make their way to him.

In the meantime, he'll stay busy with beers like his Bourbon Vanilla Imperial Porter. And wait for the next professional brewer to ask for one of his recipes.



A BEER *in* Denmark *By* Gregg Glaser REVOLUTION

THE DANES ARE WELL ON THEIR WAY TO EXPERIENCING THE BEER REVOLUTION THAT TOOK PLACE IN THE UNITED STATES, CANADA AND THE UNITED KINGDOM OVER THE PAST TWO DECADES. THOUGH FEW INDEPENDENT BREWERIES ARE IN EXISTENCE (THOSE NOT OWNED BY CARLSBERG OR THE SECOND-LARGEST BREWING COMPANY, THE DANISH BREWERY GROUP), CRAFT BREWERIES ARE POPPING UP AROUND THE COUNTRY. IN SEPTEMBER 1998, A CONSUMER GROUP OF BEER LOVERS AND HOMEBREWERS JOINED FORCES TO FORM DANSKE ØLENTUSIASTER, A GROUP THAT HAS BEEN DEMANDING SPECIAL BEERS FROM OTHER COUNTRIES INCLUDING BELGIUM, THE UNITED KINGDOM AND GERMANY.

Danske Ølentusiaster is today the second-largest beer consumer organization in Europe, with more than 9,000 members. Only CAMRA in the United Kingdom is larger.

As Martin Stuart Nielsen, the former head of Danske Ølentusiaster, wrote in the foreword to the 2002 Ølfestival program, "This creates unutterable joy for the Danske Ølentusiaster and it confirms that the Danish now show beer the respect and interest it deserves with the millennium-long brew tradition we have in Denmark."

Beginning in 2001, Danske Ølentusiaster has produced the Ølfestival (Beer Festival)



Christian Firtal / Herslev Bryghus



in Copenhagen each May. The three-day festival in 2004 attracted almost every brewery in Denmark, several Swedish breweries, importers (Sam Adams and Brooklyn Brewery), special beer bars and cafés, beer shops and homebrew guilds. Two hundred volunteers headed by a phenomenally well-organized and efficient Danske Ølentusiaster staff helped more than 9,500 attendees enjoy 700 beers they would probably never get a chance to try at their local bar or café. A major goal of Danske Ølentusiaster is to fight for Danish consumers to have the right to buy and drink a great range of beers, both Danish and imported.

Independent Danish Breweries

Denmark's independent breweries carry on the tradition of brewing traditional Pilseners and special lagers, including low-alcohol children's beers, high-alcohol Easter and Christmas beers and truly unique beers such as Limfjords Porter, a high-gravity lager from the Thisted Brewery, and Skobsøl, an old Danish ale from the Refsvindinge Brewery brewed with strongly smoked malt.

In addition to Thisted (established 1899), Refsvindinge (1885) and the Hancock brewery founded in 1876, Fuglsang remains as an independent, family-owned brewery since 1865, brewing standard Pilseners as well as excellent special beers.

Fuglsang is also a large supplier of malted barley to small Danish breweries and other breweries around the world.

Föroya Bjór is an independent brewery founded in 1888 that is located in the middle of the North Atlantic on the Faroe Islands, a part of Denmark. Einar Waag and his daughter Annika (trained at a German brewing institute) are the brewers.

Craft Brewing Boom in Denmark

In the last several years, a small micro-brewing boom in the Danish beer world has resulted in the opening of several breweries. Some are astonishingly small (150-liter batches) and almost all are concentrating on ales.

- Brøckhouse opened near Copenhagen in 2001. Owner Allan Poulsen is a homebrewer-turned-professional and a former IT consultant. His beers include American- and Belgian-style ales.
- Ørbæk, an organic brewery, opened in 2002 in the village of Ørbæk on the central Danish island of Funen. The owners are father and son Niels and Nicolai Rømer. Niels owns a large organic products wholesale business and the Ørbæk beers and sodas are all organic, brewed by a German-trained brewer, Lief Schnoor.
- Wintercoat opened in 2003 in the



Brockhouse Brewhouse owner Allan Poulsen / Brockhouse Brewhouse Shop



village of Sabro, just outside Århus. Owner Niels Thomsen is another homebrewer-turned-professional and a former landscape architect. Wintercoat specializes in British- and American-style ales, with an occasional foray into Belgian-style beers, brewing on an 8-hl system from ABUK.

- Grauballe opened in 2003 in Silkeborg, west of Århus. Owner



Grauballe



Skands brewhouse

William Frank is a former brewery manager, having worked for breweries such as Ceres, Sandwells and Falkon and trained at Tuborg, Carlsberg, Hansa and Thor. His wife, Elsa Berk, is a food technician. At the 2004 Danish Beer Festival, Grauballe won the People's Choice Award with a beer named Honey Gold, a 7.5-percent abv beer brewed with Tasmanian leather tree honey.

- Skands opened in 2004 near Copenhagen. Owner Birthe Skands is a former Carlsberg brewer. She's brewing both lagers and ales.
- Herslev opened in 2004 in the village of Roskilde, west of Copenhagen. Brewer Tore Jørgensen is a former farmer and economist. He's brewing both lagers and ales.
- Also new in 2004 is Ølfabrikken (The Beer Factory) in Vejle, which produces unpasteurized and unfiltered ales, including a rye IPA based on a recipe by American homebrewer Denny Conn (see sidebar, p.26).
- A new Danish brewery on the horizon is the Fur Bryghus located on the small island of Fur in Jutland.

Danish Brewpubs

The three original Danish brewpubs are in

On the Web

Danske Ølentusiaster
<http://ale.dk>

Grauballe
www.xs4all.nl/patto1ro/denbrew.htm

Breweries with English Web sites
Wintercoat
www.wintercoat.dk/

Grauballe
www.grauballe-bryghus.dk

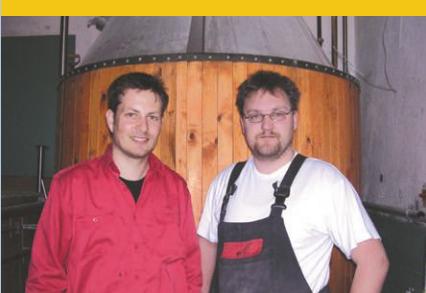
Ølfabrikken
www.olfabrikken.dk/

the Aage Damgaard restaurant group. These are the Apollo in Copenhagen, St. Clemens in Århus and Herning in the town of the same name in Jutland. Henrik Damgaard has a hand in the brewing at these brewpubs, along with his brewer Tommy Stender. In addition to standard Pilseners these brewpubs feature a special beer—usually an ale—each month.

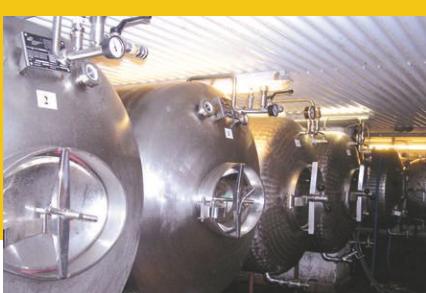
Svaneke is located in the town of Svaneke on the small island of Bornholm, located about 100 miles east of Copenhagen in the Baltic Sea.

Nørrebro Bryghouse opened in 2003 in the Nørrebro section of Copenhagen. Owner/brewer Anders Kissmeyer is a former Carlsberg brewer who has made many trips to U.S. craft breweries for research. His upscale brewpub features lagers and ales (both American- and Belgian-style).

A brewpub under construction in May 2004 in the northern Jutland city of



Orbaek owner Nicolai Romer and brewer Lief Schnoor / Orbaek lagering tanks / Wintercoat owner Niels Thomsen and wife Disa Fink





Herslev brewer Tore Jorgensen / Charlie's Bar / Ølbaren



IN THE LAST SEVERAL YEARS, A SMALL MICROBREWING BOOM IN THE DANISH BEER WORLD HAS RESULTED IN THE OPENING OF SEVERAL BREWERIES. SOME ARE ASTONISHINGLY SMALL (150-LITER BATCHES) AND ALMOST ALL ARE CONCENTRATING ON ALES.

Aalborg is Søgaard's Bryghus, planned by businessman Claus Søgaard.

The Best Danish Pubs

There are a few special places for beer in Denmark that can't be overlooked.

Copenhagen

Charlie's Bar: Located in central Copenhagen, owner Iain Russell (a Scotsman) calls Charlie's the "first truly independent bar in Denmark." Charlie's serves only unpasteurized and unfiltered beers and at any given time carries 23 to 25 keg beers, four cask ales and 60 to 70 bottled beers in a cozy 62-square-meter pub.

Ølbaren: Located in the Nørrebro section of Copenhagen, Ølbaren is a 75-

square-meter special beer bar that serves 12 keg beers, 60-plus bottled beers and 506 whiskeys. Co-owner Lars Nørregaard (an excellent homebrewer) hopes to open a brewpub in central Copenhagen.

The Tattooed Widow: Located in central Copenhagen, this is a white-linen restaurant that serves excellent food and the best Belgian beers available.

BarleyWine: This is the premier beer shop in which to buy special beers in central Copenhagen.

Funen

Christian Firtal (IV): Located in the city of Odense, this pub carries two cask ales, 17 keg beers and 15 bottled beers.

Jutland

You'll Never Walk Alone: One of the best beer bars/cafés in Denmark isn't in Copenhagen but in the small provincial city of Kolding in mid-Jutland, serving about 250 beers on tap and in bottles. Owner Torben Matthews is a pioneer in bringing imported beer to Denmark.



Keg tapping at The Wharf



The Cockney Pub

The Wharf: Located in Aalborg and owned by Charlie's, this excellent large pub carries 18 cask beers (served from an ingenious and wonderful temperature-controlled glass unit behind the bar, fully visible to all customers), 26 keg beers, 18 cask beers and 120 bottled beers.

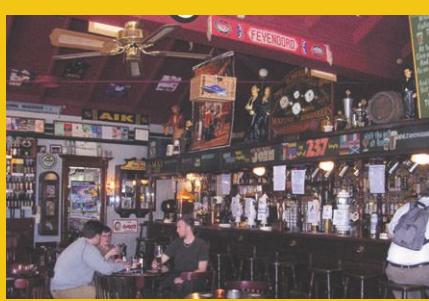
The Cockney Pub: Located in Århus, the cozy Cockney Pub serves two cask ales, about 17 keg beers, 50 bottled beers and 60 to 70 single malt whiskeys. There is a "Carlsberg Fine Box" at the Cockney. Anyone who mentions Carlsberg must deposit DKK5 into this box. The proceeds go to charity.

Incidentally, most of the above pubs will not serve any Carlsberg beer whatsoever.

Gregg Glaser is a beer writer living in Wilton, Conn. He is news editor of All About Beer magazine, regional editor of Yankee Brew News and a columnist in Modern Brewery Age and Beverage Media. He also serves as competition director of the Great International Beer Competition. 



Christian Firtal (IV) / You'll Never Walk Alone



DON'T



CALL IT A BELGIAN...

BY TOM NICKEL AND TOMME ARTHUR



America has always been obsessed with bigger/better/faster than the next guy. Our love of things large is well documented, from the rise of the skyscraper at the turn of the last century, to the rise of the world's largest thermometer on Route 66. And for an unfortunate while, this was the only philosophy available to the American beer drinker. Although no one questions the quality of the large breweries, they lack the flavor and diversity that have become the hallmarks of the 21st-century American craft brewer.

Today, we have nationally recognizable standards across many beer styles that were reserved only for imports just a few decades ago. Think pale ale, and Sierra Nevada probably comes to mind. Fill in the blank for ESB. Did you guess Red Hook? How about hefeweizen or lager? And every region has a different player providing beer drinkers all over the nation with something great to drink every day.

So as American brewers look to the future and the new frontiers of brewing, we see a niche for the non-everyday beer, the small-batch, hand-tooled beer that is not for everyone. Likely to be stronger and well aged, these beers are meant to be enjoyed sitting down with a snifter, not standing at the bar with a straight sided pint glass. Many of these beers take inspiration from history or use traditionally Belgian brewing yeasts. However, this new breed of American artisanal beers is not a re-creation of Belgian beers or styles.

It is with this thought in mind that we are proposing a new style of artisanal ale or lager. As brewers strive to stay on the cutting edge, they often outpace category guidelines. By promoting a category that is not simply experimental but truly art inspired, we can begin to more clearly define these beers and their particular brewing contexts. We have chosen to call these beers Artisanal Ale and Lager as many of them are crafted on a very limited scale. We offer the following category definition with four subcategories to begin our discussion.

ARTISAN: A PERSON WHO DOES SKILLED WORK WITH HIS OR HER HANDS.
ARTISANAL: TRADITIONAL; (A FOOD PRODUCT) HOMEMADE.

ARTISANAL ALE OR LAGER

Recognizing the unique and experimental nature of brewing, beers entered in this category may deviate too far from traditional beer styles to be included in judging flights and as such merit a category of their own. These beers tend to be idiosyncratic, process-driven beers made with a regional bias or historical context. Often crafted in smaller batches than market-driven beers, they are defined by their expressive natures and their lack of stylistic limitations. Brewers seeking to recreate traditional or historical ales will find a home for their products here. A wide range of parameters governing these products is possible and as such the standard judging wide-range parameters for brewing would be included here.

1A. WILD ALE OR LAGER

Within the last five years in the United States, there has been an explosion of brewers looking toward wild yeast, microbial cultures and even blending multiple yeast strains in an effort to produce new and more interesting beers. Many of these beers derive their inspiration from Belgian brewing methods or yeasts while remaining distinctly American in their creation.

Russian River Brewing in Santa Rosa, Calif. does what almost no commercial brewery would ever allow—growing *Brettanomyces* in the brewery. Owner/brewer Vinnie Cilurzo grows the *Brettanomyces* in 5-gallon carboys for use in his barrel-aged beers and recently created Sanctification using a 100-percent *Brettanomyces* fermentation.

And although *Brettanomyces* is traditionally used in Belgian brewing, this beer had no particular Belgian inspiration.

Brettanomyces cultures and other organisms including *Lactobacillus* and *Pediococcus* are readily available from Wyeast. Most of these packs are already blends of several yeasts to produce a consistent flavor profile and they can be used for primary fermentation. Expect longer fermentation times and realize that yeasts like *Brettanomyces* will continue to ferment if left above 55 degrees. If used post fermentation, it may be weeks or even months before the full flavor effect kicks in.

1B. MERITAGE ALE OR LAGER

Beers entered in this subcategory would be produced from a winemaking inspiration centered on blending or fusion production methods. Meritage beers would feature winemaking techniques including the use of oak wine barrels (including specific types of oak flavor from red or white wine barrels, specific grape variety barrel, French vs. American oak), grapes, blending and possibly sur lees (aging on yeast) production methods.

Examples of Meritage Ale or Lager would include Pizza Port Solana Beach Late Harvest and Southampton Publick House Peconic Country Reserve. Russian River Brewing Co. makes a muscat grape beer, Depuration, which it uses to blend into another beer, Temptation. These beers have all been made with the addition of grapes and/or freshly crushed grape juice added to barrels or fermenters. The key to a blended beer category is depth of flavor seemingly coming from several different sources.

Many small wineries offer grapes or fresh grape juice for sale. There are many fine winemaking concentrates on the market and these are perfect for blending into beers. Why not a true Champagne Pilsener? Or a cabernet imperial stout? Small wine barrels can be purchased to help add an authentic oak character, though oak chips are a great and inexpensive way to add depth to your beer. You can even flavor the oak chips yourself by toasting or charring them to your own liking or soaking them in your favorite spirit or liqueur.

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VINNIE CILURZO PULLING A SAMPLE FROM AN OAK BARREL.

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1C. HISTORICAL ALE OR LAGER

Beers in this subcategory owe their inspiration to Old World recipes and techniques that have been passed by or forgotten. Included in this style would be early American historical beers like Thomas Jefferson-style porter and dunkel. Gruit beers and other pre-hop spiced beers along with recreations of a myriad of historical styles from all over the globe would fall into this category.

There are not many commercially available historical beers outside of the brewpub setting. Both Dogfish Head and Anchor Brewing recreated Sumerian beers from ancient tablets and historical references. However, Dogfish Head's Midas Touch is the only one of the two that is readily available. Victor Novak at Taps

Fish House and Brewery in Brea, Calif. brewed a dunkelweizen taken from the memoirs of Thomas Jefferson, and Dave McLean in San Francisco brewed a gruit beer at his pub, Magnolia.

This is an area where homebrewers have a massive advantage over commercial brewers. While historical beers are fascinating, they often do not fit the normal taste profile of beer for most consumers. These beers were often driven by regional necessity, like the use of wormwood in Scotland where they could not grow hops. Taking advantage of local resources is a great way to get started on these beers. The Campaign for Real Ale (CAMRA) in England publishes several excellent books on lost beers and breweries. And check out www.beerbooks.com for a great listing of regional and national beer histories.

1D. SPECIALTY PROCESS DRIVEN ALE OR LAGER

This is a subcategory that embraces the blending of Old World production

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SPF 8 Artisanal Ale from Pizza Port, Solana Beach

Homebrew recipe by Tomme Arthur and Tom Nickel

All-Grain Recipe

Ingredients

for 5 U.S. gallons (19 liters)

| | |
|---------|--|
| 13.0 lb | (5.89 kg) total grain assuming 85% mash efficiency |
| 9.5 lb | (4.30 kg) Pilsener malt |
| 1.25 lb | (0.56 kg) wheat malt |
| 1.0 lb | (0.45 kg) 30-40L caramel malt |
| 0.75 lb | (0.34 kg) Dingeman's Special B |
| 0.5 lb | (0.23 kg) flaked barley |
| 3.0 oz | (84 g) Dingeman's Debittered Black Malt |
| 1.0 lb | (0.45 kg) light local honey |
| 8.0 oz | (0.23 kg) caramelized raisins |
| 0.5 g | fresh rosemary |
| 1.0 oz | (28 g) Challenger hops, 7.7%alpha acid (60 min) |
| 1.5 oz | (42 g) German Tettnanger hops, 4.5% alpha acid (0 min) |

Original Gravity: 1.082

Final Gravity: 1.013-1.018

Directions

For extract use wheat malt extract in place of flaked barley and wheat, 2 to 3 pounds (0.9 to 1.35 kg) and steep remaining grains.

150° F (65.5° C) mash. Heavy 90-minute boil (add 30 minutes if boil is not vigorous). Caramelize raisins per article. Add honey, rosemary and raisins at knockout. Ferment at 75 to 85° F (24 to 29.4° C) with White Labs Saison yeast—yeast nutrient is recommended and a large starter culture is essential. Expect a two-week primary fermentation. Bottle condition and savor.

methods with New World experimentation. An example would be blending the old German technique of stein beer with a new style, creating a stein beer porter. A New World example of a specialty process beer would be fresh hop ales that use wet hops in the kettle before they are dried. It is up to the brewer to define what process or technique sets the beer apart.

New World examples are being created as we speak across the country and one that has been produced for several years at Pizza Port in Solana Beach is SPF 8, a Belgian farmhouse style ale brewed with the addition of caramelized fruit to darken the color of the beer. California raisins are blackened on a skillet and caramelized at the finish with a flash addition of port wine helping to sear the raisins and seal in the flavors. This cooking technique adopted for the brewing world produces a smoky sweet flavor of dried fruits.

This is a catchall subcategory to allow for an unusual technique in a beer that may not taste experimental. A wet hop beer tastes more or less like a pale ale and could get lost in that category. But here, that beer could be judged as a wet hop beer and all of the subtle nuances of the hop flavors could be taken into account. Cave aged beers could find a home here as well as méthode champenois beers like Deus or Malheur Brut.

Inspiration is the name of the game when it comes to making Artisanal Ale or Lager. Beers entered into this category would be flavor forward creations with an emphasis on newfound processes, techniques or adaptations from culinary or spirit producing ideals. The ability to harmoniously blend and integrate as well as perceive these flavors in Artisanal Ales and Lagers will be paramount to their success. One of the best things about these guidelines is that they are flexible and will change as the beers and the people who make them change.

The hope from proposing these guidelines is that in the future more brewers begin to look at their beers from new

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perspectives. These beers are limited only by imagination and brewing acumen. It is obvious that as more brewers think outside the box of established style guidelines, we will continue to challenge stylistic limitations and categories. With breweries and homebrewers creating flavor forward beers, the proliferation of Artisanal Ale and Lager is sure to grow. What the future holds, no one knows. But we can't wait to get there, given where these beers have already taken us.

Tomme Arthur of Pizza Port Solana Beach, Calif. was named Small Brewpub Brewmaster of the Year for the second straight year at the 2004 Great American Beer Festival.

Tom Nickel is the proprietor of O'Brien's Pub in San Diego.

Danish Homebrewing (continued from 27)

Downstairs is the brewing area, a large room with a series of burners. Another piece of old dairy equipment, a 200-liter (52.8-gallon) vessel, is the mash/lauter tun. Separate rooms off to the side are used for fermenting, kegging and storage of malts, hops and yeast.

Fermentation of most club beers is done at 5° C (41° F). The fermenters are milk pails and the "air-locks" are the shoe coverings worn by hospital operating room doctors and nurses. There is often no secondary fermentation or lagering; instead, when fermentation is complete the beer is transferred to Cornelius kegs. The kegs are pressurized either with CO₂ or with a bicycle pump attached to a special fitting on the top of the keg. In this operation, the milk pails are covered with a rubber seal and a heavy cover is clamped on. A bicycle air stem is then placed on the cover, the bicycle pump is attached and someone starts pumping away.

For many years club members obtained their yeast from the local commercial brewery, Ceres, but today most club brews are pitched with purchased liquid yeast.

Upstairs the large meeting hall can accommodate at least 50 people. A bar at one end of the room has taps connect-

ed to the kegging room directly underneath. A few club beers sampled from this tap during a visit included a 1-percent abv Saaz-accented Pilsener; a rauch beer made from hand-malted, beech-wood-smoked malt; a Negra Modelo clone; and a Belgian-style wit beer pitched with Wyeast.

Gregg Glaser is a beer writer living in Wilton, Conn. He is news editor of All About Beer magazine, regional editor of Yankee Brew News and a columnist in Modern Brewery Age and Beverage Media. He also serves as competition director of the Great International Beer Competition. 

Christian Skovdal Andersen's "Ølfabrikken Brown Ale"

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

| | |
|----------------|---|
| 7.4 lb | (3.4 kg) Pale Malt (Fawcett Maris Otter if possible) |
| 1.0 lb | (0.5 kg) Munich malt |
| 3.0 oz | (0.07 kg) dehusked chocolate |
| 0.35 lb | (0.16 kg) malted wheat |
| 0.7 lb | (0.3 kg) crystal malt (120 EBC) |
| 0.5 lb | (0.2 kg) amber malt |
| 0.35 lb | (0.16 kg) oatmeal |
| 0.35 lb | (0.16 kg) Cara Munich (100 EBC) |
| 0.6 oz | (16 g) whole Northern Brewer hops, 9.8% alpha acid (60 minutes) |
| 0.2 oz | (6 g) whole Cascade hops, 7.0% alpha acid (15 minutes) |
| 0.2 oz | (6 g) whole Fuggle hops, 4.7% alpha acid (15 minutes) |
| 0.4 oz | (12 g) whole Cascade hops, 7% alpha acid (at knock out) |
| 0.2 oz | (6 g) whole Hallertauer hops, 2.8% alpha acid (at knock out) |
| 1 tsp | Irish Moss (15 min) |

Wyeast 1098 British ale

Target Original Gravity: 1.056

Target Final Gravity: 1.014

IBUs: 24

Directions

Our water is very hard. If you have soft water, adjust the water or use a bit more bittering hops.

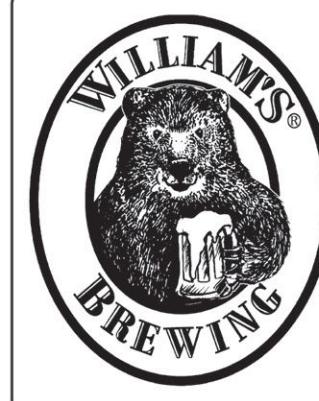
Mash thick at 66 to 67° C for 90 minutes.

Ferment at 22° C ambient temp. (yes, I know this is high!)

I like this beer because it has a lot of flavor and some sweetness from the relatively large quantities of crystal, also making it too filling to be considered a session brown ale.

The combination of dehusked chocolate malt and Cara-Munich gives this beer a caramelly/cocoa like flavor that some consider overwhelming—I love it though.

Northern Brewer is just there for bitterness, and could probably be substituted. The Hallertauer and Cascade at knock-out provide a flowery nose that blends nicely with the cocoa from the malt bill.



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It's A MEAD, MEAD, MEAD, MEAD WORLD



By DAN RABIN

Mead can be a beverage of great character, diversity, subtlety, complexity and even controversy. At least that appeared to be a dominant, if unstated, theme of the 2004 International Mead Festival. Billed as "the largest collection of meads ever served under one roof," Meadfest '04 showcased an extensive collection of commercial honeywines from North America and abroad.

The fledgling event, which has grown every year since its inception three years ago, took place in November at Boulder, Colo.'s Outlook Hotel. Coincidentally, the first Great American Beer Festival was held at a neighboring hotel almost 25 years ago. This bit of trivia was not lost on some longstanding members of the local homebrew community, who volunteered their time to help stage the well-organized 2004 Meadfest. In all, 32 meaderies participated in the 2004 festival, a substantial increase from the 23 of the prior year.

Sampling took place in three separate tasting zones around the hotel, adding a welcome bit of variety to the affair. In addition, members of the National Honey

Board—active supporters of the mead-making craft—were on hand, distributing samples of a dozen varietal honeys.

While the tastings were the weekend's featured event, the festival also included a number of well-attended educational sessions. Gary Glass, project coordinator for the Brewers Association, discussed the uncomplicated process of producing homemade meads. Ken Schramm, author of *The Compleat Meadmaker*, conducted a lively lecture on Advanced Mead Making, emphasizing the importance of proper yeast maintenance.

Mead historian Dan McFeeley theorized that the festival's featured beverage had origins dating back at least 9,000 years. Representatives from several established meaderies conducted an enlightening, if somewhat sobering, panel discussion entitled "Mead as a Business."

As in previous years, Meadfest '04 included a blind judging. With Ray Daniels, director of craft beer marketing for the Brewers

Association, serving as director of judges, a dozen experienced tasters evaluated a festival-record 88 entries and awarded medals in nine categories. The awards ceremony took place adjacent to the hotel's indoor pool during the Saturday evening session.

In addition to the impressive number of American-made honeywines available at Meadfest '04, festival-goers had the opportunity to sample a variety of imported meads from Canada, England, France, Poland, New Zealand and Australia. Several of these were among the gathering's most distinctive offerings, generating considerable interest within the eclectic congregation of festival attendees.

The sampling station of Quebec's Intermiel Meadery stayed busy throughout the weekend, and for good reason. Their black currant, rose and raspberry meads took gold, silver and bronze medals in the melomel (fruit-flavored mead) category. The Couchen oak-aged mead, from the Brittany region of France, was another attention-grabber with its distinct and complex woody character.

Canadian producer Miel Nature served a maple-flavored concoction that could add a new dimension to a stack of flapjacks. Flavorful and intensely sweet, a little bit of this unique dessert mead went a long way.

The most discussed and debated of the festival vintages were the five idiosyncratic offerings of Polish derivation. These dark-hued honeywines possessed an unusual mustiness that intrigued some tasters and turned off others. According to a representative of Chicago's Stawski Imports, the beverages' curious character is partly derived from a fermentation of buckwheat honey. The judges were obviously impressed, awarding silver and bronze medals in the metheglin (spiced mead) category to two of the Polish entries.

Tequila aficionados found an ally in the agave mead from California's Mountain Meadows. Dissimilar but equally tantalizing, Tennessee's Shady Grove offered a sparkling pear mead with a tongue-tingling, palate-cleansing effervescence that would please a Champagne devotee.

Delaware-based Dogfish Head, known primarily for its bold and innovative beers, served up a gold medal braggot (malt-based mead) in its Midas Touch Golden Elixir. The brewery claims the recipe for this beguiling beverage is based on residue found on drinking vessels in King Midas' tomb.

Boulder-based Redstone Meadery, host of all three Mead Fests, fared well in the medal count, garnering four awards in three categories including dessert mead, pyment (mead made with grapes) and hydromel (low alcohol mead).

For fans of the most ancient of alcoholic beverages, the emergence of mead from near-obscurity to increasing acceptance is indeed a welcome occurrence. With the International Mead Festival as a catalyst, it seems inevitable that fine-crafted honeywines will continue to become a more visible entity in the world of fermented beverages.

Dan Rabin writes about travel, beer and other adventures from his home in Boulder, Colo.

2004 INTERNATIONAL MEAD FEST WINNERS



The 2004 International Mead Festival, held November 5 and 6 in Boulder, Colo., set records for attendance, meads judged and medals awarded.

More than 600 people attended the festival, held at the Boulder Outlook Hotel and Suites. They were treated to 85 commercial meads from seven countries, "by far the largest sampling of commercial meads ever under one roof," said David Myers of Redstone Meadery, which hosted the event.

A panel of 12 judges deliberated for two days before awarding 27 medals to 18 companies from five countries. Included this year was a category for Braggot, or beer made with honey.

DESSERT MEAD

GOLD Maxwell Dessert Mead
Maxwell Wines, McLaren Vale,
South Australia

SILVER Lurgashall Special Reserve Mead
Lurgashall Winery
West Sussex, England

BRONZE 2002 Reserve
Redstone Meadery,
Boulder, CO, USA

TRADITIONAL

GOLD Honeymoon Nectar Sweet Honeywine
Mountain Meadows Mead,
Westwood, CA, USA

SILVER Dry Mead
Munro's Meadery, Alvinston,
Ontario, Canada

BRONZE Pirtle Mead
Pirtle Winery, Weston, MO, USA

MELOMEL

GOLD Honeywine and Blackcurrants
Intermeli Inc., Mirabel,
Quebec, Canada

SILVER Rosee
Intermeli Inc., Mirabel,
Quebec, Canada

BRONZE Honeywine and Raspberries
Intermeli Inc., Mirabel,
Quebec, Canada

HYDROMEL

GOLD Verge D'Or
Intermeli Inc., Mirabel, Canada

SILVER Black Raspberry Nectar
Redstone Meadery
Boulder, CO, USA

BRONZE Sunshine Nectar
Redstone Meadery
Boulder, CO, USA

CYSER/TEJ/SPECIALTY MEADS

GOLD Cyser
White Winter Winery,
River, WI, USA

SILVER Axum Tej
Saba Tej Co. aka Heritage Wines,
Rutherford, NJ, USA

BRONZE Sheba Tej
Brotherhood Winery,
Jarrettsville, MO, USA

BRAGGOT

GOLD Midas Touch Golden Elixir
Dogfish Head Brewing
Milton, DE, USA

SILVER Mountain Sun Hummingbird
Mountain Sun Pub & Brewery
Boulder, CO, USA

BRONZE Premium Oak Brackett
White Winter Win-

Iron River, WI,

VARIETAL

GOLD Spurgeon Vineyards Mead
Spurgeon Vineyards & Winery
Highland, WI, USA

SILVER Rabbit's Foot Sweet Mead
Rabbit's Foot Meadery,
Sunnyvale, CA, USA

BRONZE Traditional Honey Wine
Spruce Mountain Meadery
Larkspur, CO, USA

PYMENT

GOLD Blanc de Fleur
Wild Blossom Meadery,
Chicago, IL, USA

SILVER White Pyment Mountain Honey Wine
Redstone Meadery,
Boulder, CO, USA

BRONZE Gronowy Poltorak
Stawski Imports, Chicago, IL, USA





2005 National HOME BREW Competition

ENTRY FORM

Send this filled-out form with your entry to your regional site. Entries submitted to the wrong site will be disqualified. Check the Locator Map in March/April 2005 issue of **Zymurgy** or online at www.beertown.org. Questions? Contact Gary Glass, NHC Director, at gary@brewersassociation.org or call (888) 822-6273 or (303) 447-0816 x121. Please read the instructions in PART II of the rules and regulations found on www.beertown.org.

Section A: Brewer Information

1. Name _____
2. Additional Brewer(s) _____
3. Address _____
4. City _____ State/Province _____ Zip/Postal Code _____
5. Country _____ Phone (H) (_____) _____ (W) (_____) _____
6. E-mail _____
7. Homebrew Club (Please spell out full name of the club. Do not abbreviate.) _____
8. AHA Membership Number (if you are already a member) _____
9. Join the AHA and save on entry fees! Or renew your membership (enclose a separate \$38 check) New Membership Renewal
10. Entry Fees Enclosed.

AHA Member AHA members pay \$8 per entry : _____ no. of entries x \$8 = \$ _____ total
 Non-member Non-members pay \$12 per entry: _____ no. of entries x \$12 = \$ _____ total

11. If you are a BJCP judge, please include your BJCP Number here _____



Section B: Entry Information

12. Name of Brew (optional) _____
13. Category and Subcategory (Print full names) _____
14. Category Number (1-29) _____
15. Subcategory Letter (a-e) _____
16. For Mead and Cider (check one): Dry Semi-Sweet Sweet
17. For Mead and Cider (check one): Sparkling Petillant (lightly sparkling) Still
18. For Mead (check one): Hydromel (light mead) Standard Mead Sack (Strong Mead)
19. SPECIAL INGREDIENTS:
If you have entered in any of the following categories 6d, 16e, 17f, 20, 21, 22b, 22c, 23, 25c, 26a, 26c, 27e, 28b, 28c, 28d, 29 refer to part II of the Rules and Regulations and the NHC Style Guidelines at www.beertown.org for instructions on filling out the spaces below. The judges will use this important information for evaluating entries in these categories. Leave these spaces blank if you have not entered the above categories. Entrants of Historical Beers are asked to provide the historical beer style and information on the style profile and history as an aid to judges.

Classic Style _____

Special Ingredient(s) _____

VISIT WWW.BEERTOWN.ORG FOR MORE INFORMATION.

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Entries Due:
April 4–15, 2005

Second Round & Awards Ceremony:

June 16–18, 2005
27th Annual

AHA National Homebrewers Conference
Baltimore, Maryland

For complete rules and regulations, visit www.beertown.org or
call 1.888.822.6273 (U.S. and Canada only) /+1.303.447.0816.

To find your entry site, check the Site Locator Map
in the March/April 2005 issue of *Zymurgy*.



American Homebrewers Association
A Division of the Brewers Association
www.beertown.org



National Homebrew Competition 2005

Entries due April 4-15, 2005



Entries must be submitted to the proper regional site for your state.
*Competition site organizers and judge coordinators are required to send their entries to a site other than their own.

NHC 2005
F.H. Steinbart Inc.
234 S. E. 12th
Portland, OR 97214

CIDER

All cider entries should include 3 bottles and should be sent to Red Hook regardless of where you live:

NHC 2005
Party Creations

345 Rokeby Road
Red Hook, NY 12571
DO NOT SEND BEER OR MEAD ENTRIES TO RED HOOK, NEW YORK!

International Entries

Please send all international beer and mead (but not cider) entries other than Canadian entries, to:

NHC 2005
F.H. Steinbart

234 E. 12th
Portland, OR 97214

NHC 2005
Rohrbach Brewing Co

3859 Buffalo Road
Rochester, NY 14624

NHC 2005
J.W. Dover

24945 Detroit Road
Westlake, OH 44145

NHC 2005
Defalcos

8715 Stella Link Road
Houston, TX 77025

NHC 2005
Northern Brewer

1945 W County Rd C2
Roseville, MN 55113

Contact: Gary Glass • 1.888.822.6273 • +1.303.447.0816 ext. 121 • gary@brewersassociation.org • www.beertown.org

Businesses receiving NHC entries cannot answer questions regarding the competition. All competition questions should be directed to Gary Glass.



COMMERCIAL CALIBRATION

One way beer judges check their palates is by using commercial "calibration beers"—classic versions of the style they represent. Zymurgy has assembled a panel of four judges who have attained at least the rank of Master in the Beer Judge Certification Program. Each issue they will score two widely available commercial beers (or meads or ciders) using the BJCP scoresheet. We invite you to download your own scoresheets at www.bjcp.org, pick up a bottle of each of the beverages and judge along with them in our Commercial Calibration.

If the craft beer market is a niche market, then the organic craft beer market is a tiny fissure within that niche. But it is growing. In 2002, U.S. sales of organic non-dairy beverages were up 61 percent, making it the fastest growing segment of the organic food market.

Brewers from coast to coast have gone organic—some producing only organic beers, some one or two organic brands.

As of October 2003, any brewer wanting to label a beer as "organic" had to be certified by one of the agencies recognized under the National Organic Program administered by the Department of Agriculture. A beer labeled organic must contain at least 95 percent organic ingredients by weight.

But the true test of whether organic beers are a viable market for the future lies not within the realm of testing, but at the bottom of the glass. Organic beers will need to sell on their taste, not their labeling.

So in honor of our Earth-friendly theme this issue, we decided to put a couple of the leading organic brands to the test.

Wolaver's has been committed to organic brewing since day one, when it created partnerships with breweries on each coast to brew organic beers. In 2002, the Wolaver family bought one of their partner breweries, Otter Creek of Middlebury, Vt. and centralized all brewing operations.

Wolaver's Brown Ale is one of the brewery's year-round beers. It is brewed in the style of northern English brown ales, keeping with brewmaster Steven Parkes' U.K. heritage. English brown ales are noted for their nutty malt character, with the northern English browns being slightly lighter in color, less sweet and with a bit more hop balance.

Fish Brewing Company in Olympia, Wash. makes a lineup of organic bottled ales under the Fish Tale Ales brand. The brewery also produces draft only, non-organic ales and lagers. It also produces a number of beers under the Leavenworth Beers label, after merging with that brewery in 2002.

Wild Salmon Organic Pale Ale is brewed in the style of American pale ale—specifically a Northwest pale ale. These beers put a premium on hop aroma, bitterness and flavor.

One of the more difficult ingredients for a brewer to source is organic hops. The number of pests and diseases that hops are subject to make them a tough crop to grow organically.

Fish donates a portion of the proceeds from the sale of each case or keg of Wild Salmon Organic Pale Ale to the Save Our Wild Salmon Coalition, helping to rebuild healthy runs of wild Pacific salmon and steelhead.

Our expert panel includes David Houseman, a Grand Master II judge and competition director for the BJCP from Chester Springs, Pa.; Beth Zangari, a Master level judge from Placerville, Calif. and founding member of Hangtown Association of Zymurgy Enthusiasts (H.A.Z.E.); Scott Bickham, a Grand Master II judge from Corning, N.Y., who has been exam director or associate exam director for the BJCP since 1965; and Gordon Strong, a Grand Master II judge and principal author of the new BJCP Style Guidelines who lives in Beavercreek, Ohio.



THE SCORES



Wolaver's Brown Ale—Wolaver's Brewing Co., Middlebury Vt.
BJCP Category: 11C Northern English Brown Ale

THE JUDGES' SCORES FOR WOLAVER'S BROWN ALE



Aroma: Chocolate and caramel malts dominate aroma. Some fruity esters, reminiscent of plums. Moderate floral hop aroma, more American hop in nature than English. No to low diacetyl. No off aromas. Other than the malt, fairly neutral and pleasant aroma. (10/12)

Appearance: Brownish amber in color; appropriate to the style. Thin head with fairly rapid dissipation. Clear. Very lightly carbonated. (3/3)

Flavor: Chocolate malt with hints of caramel. Moderate hop bitterness. Moderate floral hop flavor. Clean, fruity esters denote this as an ale. No to low diacetyl. Dry finish with some lingering astringency. Malt fades in a thin finish from malt to hop bitterness and astringency. (14/20)

Mouthfeel: Dry with lingering bitterness and astringency. Medium-light body. No alcohol warming. Low carbonation. (3/5)

Overall Impression: Very nice aroma and initial flavor, both with a pleasant chocolate malt character, yield to lingering bitterness and astringency that is overly dry, even for this style. Cutting back a bit on bittering hops and using fewer, but higher alpha, hops would help to control astringency. Fits closely to the Northern English Brown Ale style. The organic nature of this beer is not evident, neither adding to nor detracting from its drinkability. This brown ale would go well with a light quiche and green dinner salad. (6/10)

Total Score: (36/50)



Aroma: Moderate sweet toasted malt aroma, with very light citrus hop aroma. A little tinny note hints at some oxidation. A little "fishy" DMS at first, but otherwise clean. (10/12)

Appearance: Amber with golden highlights, red undertones. Brilliant clarity. Head forms with medium bubbles, dissipates quickly to a thin but lingering layer of foam. (2/3)

Flavor: Nutty, toasted malt flavors, with currant richness. A little DMS mid-palate comes across as almost salty, but adds interest. Hints of molasses surprising to find in so light a beer. Citrus hop character is just enough to balance, adding interest to the finish. Quite pleasant, though it has more hop bitterness and aroma than many of the English imports I have tasted (Newcastle, Sam Smith's Nut Brown). (16/20)

Mouthfeel: Body is surprisingly light, with prickly carbonation. Clean malt finish, ever-so-slight bitterness and astringency. Almost disappears. Could have fuller body. (2/5)

Overall Impression: A flavorful and enjoyable beer that is a little bigger than its English counterparts, which seems to be typical of American examples of many classic styles. The toasted and sweet malt character supports the restrained hop bitterness. As it happens, I had a couple extra bottles in my refrigerator, each from different sources, and each was consistent with this sample. A wonderful beer to have with food, as the hop character is not overwhelming to the malt complexity. Goes well with Ak-mak flatbreads and garlic hummus, or cheddar and dark rye. (7/10)

Total Score: (37/50)



Aroma: Slightly musty at first with some papery notes later—some oxidation is present. Yeast character is similar to Fuller's, giving a nice balance among ethanol, esters and higher alcohols. Toasted, bready malt rather than the caramel and roasted notes in many English browns. Hop aroma is restrained relative to malt and fermentation character. (8/12)

Appearance: Deep copper color with a beige head. Head retention is a little weak but clarity is excellent. (3/3)

Flavor: Malty sweet up front with components from both pale and dark crystal malts. Hop bitterness is enough to balance and blend with light roasted notes in the finish. Hop flavor is subdued but alcohol and esters add complexity. I would like to see more malt depth and richness. (15/20)

Mouthfeel: Some alcoholic warmth and a slight mineral character similar to some strong milds I have tasted. A bit over-attenuated for style. (4/5)

Overall Impression: Well-made beer with good malt complexity. Fermentation flavors from esters and alcohols add enough depth to overcome a minor oxidation problem. A little more roasted malt would give an extra dimension to the flavor, but it could easily pass for a strong mild or winter warmer. (6/10)

Total Score: (36/50)



Aroma: Pleasant mix of spicy, earthy hops along with toasty, nutty, somewhat grainy malt. Some caramel sweetness and a hint of chocolate follows. Clean yeast character. Maybe a bit of alcohol. (9/12)

Appearance: Deep amber/light copper color—just hinting at brown. Crystal clear. Tall, creamy, long-lasting head. (3/3)

Flavor: Nice caramel, toasty, nutty malt flavor with a somewhat dry and chocolate-flavored finish. Medium bitterness; clean without any harshness. Moderately high noble hop flavor—unusual but tasty. Clean yeast character. Base malt has an appealing bready character. (15/20)

Mouthfeel: Medium-light body. Medium-high carbonation. Slightly warming. Might be a bit big for the style. (4/5)

Overall Impression: Lovely malt profile—quite complex. Hop flavor and aroma seem high for an English brown and have an unusual noble character. Not citrusy or aggressive like an American brown. An interesting, tasty and drinkable beer. Clean and well made. Should be good with a wide range of foods; I had it with a steak. (8/10)

Total Score: (39/50)



THE JUDGES' SCORES FOR WILD SALMON ORGANIC PALE ALE



Aroma: Toasted malt aroma with floral and spicy hop character and noticeable alcohol. Fruity, pear-like esters. Hop aroma, although very pleasant, is understated for an American Pale Ale. (7/12)

Appearance: Orangish-amber color, appropriate to style. Thin head with low retention but some lingering lace around the glass. Hazy, although not served cold. Light carbonation. (2/3)

Flavor: Toasted malt with hints of caramelization. Alcohol, although not strong, seems to stand out in the flavor profile. Balancing hop bitterness that's moderately high. Dry finish. Spicy hop flavor is medium but not assertive. No diacetyl. Moderate fruity esters. Lingering bitterness and astringency in aftertaste. (13/20)

Mouthfeel: Soft, medium-light bodied beer that finishes with lingering bitterness and astringency. Alcohol isn't warming even though it's so much a part of the aroma and flavor profile. (4/5)

Overall Impression: Quite drinkable. The toasted malt is a very nice characteristic for an American Pale Ale but the hop aroma and flavor are under-assertive for the style. Hop bitterness is appropriate but additional finish hops, particularly American hops with some citrus notes, would be welcome. This beer may be organic, and particularly appreciated by those who care, but it doesn't lend any special character to the beer; it is however enjoyed by those who just like good beer. It goes well with peanuts, chips and salsa while watching a ball game. (6/10)

Total Score: (32/50)



Aroma: Alcohol evident at first, caramel malt at low level, medium to low orange blossom hop aroma. Develops a bready character as the beer warms. Missing the citrus hop aroma I am more accustomed to finding in this style. (8/12)

Appearance: Deep golden with slight haze. Fine white head dissipates quickly, but fine film of foam lingers to the end. (3/3)

Flavor: Bready malt with the same hint of caramel detected in the aroma. Hop character leans toward a lingering bitterness. Faint smoky character. Light, squeaky-clean flavor with some grassy notes as the beer warms. For my taste, I prefer a little more hop flavor and aroma from late additions. (12/20)

Mouthfeel: Spritzy carbonation, with light body. Alcoholic warmth accentuates a numbing sensation. Lingering hop bitterness. (4/5)

Overall Impression: This beer fits well in the style guidelines for American Pale Ale, but leans to the lighter side, almost watered down. Crisp and refreshing, better for a summer afternoon than mid-winter night. Would pair well with carnitas tacos or ceviche. (7/10)

Total Score: (34/50)



Aroma: Slight graininess, but caramel malt is evident with a pleasant fruitiness in the background. Northern Brewer hops come through with earthy, tobacco notes but Cascades are hidden. (8/12)

Appearance: Light copper with a tightly formed head that lasts. Very slight haze could be chill haze. (2/3)

Flavor: Pleasant malt with toffee, caramel and biscuit notes. Hop flavor is on the light side, but there is a faint lemon character along with the earthy character. Hop bitterness takes a little time to develop, but evolves into a long finish that attenuates the malt nicely. Esters and ethanol add complexity as background components. (14/20)

Mouthfeel: Medium body—a little cloying for a pale ale. I would guess that the grain bill includes wheat malt. Slight astringency but not an issue for the overall impression. (4/5)

Overall Impression: Nice beer with a good balance between malty sweetness and hop bitterness. Lacks the fresh hop character and crispness of the classic American pale ales, but would score better as a California Common. Very well made technically. (6/10)

Total Score: (34/50)



Aroma: Malty sweetness with a moderate amount of citrusy hops. Hops are fairly complex and have some grassy, earthy notes as well. No esters. Just a bit of alcohol. Hops seem muted in intensity for style. (7/12)

Appearance: Appropriate golden-amber color. Large white head that settled slowly. Fairly clear but not brilliant (OK for style). (3/3)

Flavor: Muted flavors—some grainy malt with a sweet finish. Some muddy, indistinct malt flavors; earthy, woody and citrusy hops (again, not clean). Thick, heavy finish steps all over hop flavor. Some of the harsh, woody, piney flavors linger into the finish. No esters. "Heavy" malt finish tends to overwhelm the moderate hop bitterness. (9/20)

Mouthfeel: Medium-full body—fairly thick in the mouth. High carbonation provides fizzy, mouth-filling bubbles. Some hop-derived astringency. (3/5)

Overall Impression: Not a very good pale ale. Not as crisp, refreshing and clean as expected. Flavors are somewhat "muddy" and hard to distinguish. Lacks the clean and vibrant flavors of many of the better examples. Not sure if it's the combination of ingredients, the freshness or just the brewing process, but the heavy and indistinct character of this beer makes it difficult to finish. (6/10)

Total Score: (28/50)

...Dana Johnson

Dana Johnson is one of the lucky people who has been able to parlay his love for great beer into a great career. As the Brewery Technical Representative for Birko Corp., Johnson gets to hobnob with brewers throughout the country, helping them pick the proper chemicals for their operation.

At home, he is a member of the Keg Ran Out Club, a Broomfield, Colo. homebrew club that puts on the annual World Beer Forum during the Great American Beer Festival.

He took time out from visiting breweries to mash in with *Zymurgy*.

Name: Dana Johnson

Age: 45

Occupation: Brewery Technical Representative for Birko Corp.

Resides: Broomfield, Colo.

Hobbies: Brewing and winemaking

How often do you homebrew?

Three to four times per year minimum. (It used to be more until I started getting so much free beer from customers.)

What was your first brew?

A "Canadian ale" malt extract recipe with no hops added. It wasn't very good.

What did it taste like?

It was too sweet but for the first batch at least it was drinkable.

What is the first beer you brewed you shared with friends?

My first batch, even though it wasn't very good. I enjoyed the feedback.

What did they say?

"It's sweet." "Tastes funny."

What is the highest award your beers have won?

I'm not a competitive brewer, so I've never actually entered any of my homebrew in any contests. Having said that, however, I'm not bashful about giving my brewing customers my homebrew.

What is one piece of brewing equipment you can't live without?

My brewkettle. I've been using an Oklahoma Joe's turkey cooker. I love it.

What is your favorite beer book?

Beer Blast: The Inside Story of the Brewing Industry's Bizarre Battles For Your Money by Philip Van Munching. (continued on page 48)



Grape Nuts Pale Ale

Partial Mash Recipe

Ingredients

for 5 U.S. gallons (19 liters)

| | |
|------------------|---|
| 3.3 lb | (1.5 kg) light liquid malt extract |
| 1.5 lb | (0.68 kg) extra light dry malt extract |
| 0.75 lb | (0.34 kg) pale malt |
| 1 cup | Post Grape Nuts Cereal (liquid only added to boil) |
| 1 cup | corn sugar (at bottling) |
| 2.0 oz | (56 g) Cascade whole hops, 5.5% alpha acid (60 min) |
| 1.0 oz | Cascade pelletized hops, 5.5% alpha acid, (5 min) |
| Optional: | Dry hop with 1.0 oz (28 g) East Kent Goldings pelletized hops, 4.75% alpha acid, in secondary White Labs WLP002 English Ale Yeast |

Directions

Steep specialty grain in one-half gallon 150° F (65.5°C) water for 30 minutes. Sparge with one quart 170° F (76.6° C) water to brewpot. In a separate pan, steep Grape Nuts in a pint of water until soft, strain liquid into the brewpot. (Yeast nutrient). Boil one hour total, adding finishing hops the last five minutes of the boil. One week in primary, one week in secondary, then bottle.

by Charlie Papazian



Crossbreeding Beer

I get regular requests to talk about beer styles. I can see why. Beer culture in America is vibrant, and people are talking about beer. Brewers and beer enthusiasts hang their beer hopes on every competition. Great beers are being made and better beers being brewed with every cycle. Old styles are returning and new styles are cutting the edge of beer talk. Flavor and diversity reign.

I've been involved with style development and evaluation for several competitions, including the Great American Beer Festival and the World Beer Cup, and founded the basis of the American Homebrewers Association and Beer Judge Certification Program style guidelines.

I admire history and tradition. My University of Virginia nuclear engineering senior thesis was on the history of the engineering school. The teacher most influential in my life and whom I most admire is Joseph Jacques, my ninth- and 10th-grade world history and modern European history teacher.

The source of creativity and new ideas is in my opinion rooted in the past. An understanding of beer history is essential to making great beer. If you want me to talk about beer styles and relevance to beer culture I will do so with enthusiasm.

But if you let me digress, I will throw my hands up in the air with a "why not?" gesture and propose wild. In the early 1970s my first brewed honey lager met with flabbergast when introduced to friends and beer lovers. At the time the outrageousness of combining honey and malt to make a beer was unheard of. I recollect the sneers of professional brewers—it was interesting, but not really



BEER CULTURE IN AMERICA IS VIBRANT, AND PEOPLE ARE TALKING ABOUT BEER. GREAT BEERS ARE BEING MADE AND BETTER BEERS BEING BREWED WITH EVERY CYCLE.

beer. Now Rocky Raccoon's Honey Lager wins awards for many brewers.

My life has been all about going down a path, looking from side to side and behind, admiring all that surrounds and has passed. But I keep walking forward equally admiring the prospect of a horizon that never seems to finish.

Admire and respect tradition, but also leave yourself vulnerable to new ideas:

A foreign-style stout brewed with Czech Saaz hops and lager yeast?

A robust porter brewed with Hallertauer, Mount Hood and orange peel?

An India Black Ale brewed to an IPA guideline but with roasted malts and barley, perhaps even dry hopped with Simcoe or Crystal?

A Pils brewed to German-style Pilsener specification but with the addition of yarrow and fruity aromatic New Zealand hop varieties?

An Oktoberfest lager late hopped with Fuggles and Goldings?

A super strength bock beer fermented with ale yeast?

We know about oatmeal stout. What about rice stout, rye stout, wheat stout, corn stout? Roasted corn porter?

An India Pale Ale dry hopped with all the "wrong" hops: Hallertauer, Liberty, Hersbrucker, Mittelfrüh, Santiam, German Spalt, Saaz?

A Czech-style Pils brewed and lagered to exception with crystal malt, British Challenger, Northdown or Progress and

perhaps a bit of American Amarillo, Cascade and Horizon? Perhaps you've added a touch of roasted barley or Belgian Special-B malt?

Yeast choices? Need I go there? Altbier for Pilseners and stout? Pilsener for an IPA? Strong Belgian for coriandered English-style brown ale?

My quick calculation takes me to millions of combinations when you consider all the varieties of hops, malt, yeast, fermentation temperatures and hop schedules.

Will you win any competitions based solely on traditional style categories? No. Will you become a better brewer? Absolutely. Will you enjoy your results? No doubt about it.

So let's cut the shuck and jive and get on with a recipe.

Charlie Papazian is president of the Brewers Association.

Mashing in with... (continued from 46)

What is your favorite style to brew?
Pale ale.

What is your favorite style to drink?
India Pale Ale (I think it is more than coincidence).

What is the best beer you've ever brewed?

My favorite beer that I make is my Grape Nuts Pale Ale. I use a cup of Grape Nuts and steep it, then add the water to the brewpot. It tastes good and it is good for you!

What is your most memorable "beer moment"?

Going to the 1995 AOB Craft Brewers Conference in Austin and knowing immediately what I wanted to do when I grew up. I've been doing it ever since.

What six beers are in your "desert island six-pack"?

1. Avery India Pale Ale; 2. New Belgium Trippel; 3. Flying Dog Doggie Style Pale Ale; 4. Great Divide Denver Pale Ale; 5. My Grape Nuts Pale Ale; 6. Oskar Blues Dale's Pale Ale (I wonder if I'll ever get tired of pale ale).

Finish this sentence: "The best thing about beer is..."

It nourishes the body, restores the soul and keeps me from divorcing my wife. (Just kidding, honey). ☺

Maverick India Black Ale

Malt Extract Recipe

Ingredients

Recipe for 5 U.S. gallons (19 liters)

| | |
|-----------------|--|
| 6.0 lb | (2.7 kg) wheat malt syrup extract |
| 2.0 lb | (908 g) melanoidan malt |
| 1.0 lb | (454 g) crystal malt (75°L) |
| 8.0 oz | (225 g) German black malt |
| 1.75 oz | (49 g) German tradition hops 6.7% alpha (11.7 HBU/328 MBU), 60 min |
| 1.0 oz | (28 g) Liberty hops 5.2% alpha (5.2 HBU/146 MBU), 30 min |
| 0.5 oz | (14 g) New Zealand B Saaz hop pellets 7% alpha (3.5 HBU/98 MBU), 5 min |
| 0.5 oz | (14 g) New Zealand B Saaz hop pellets, dry hopping |
| 0.25 tsp | (1 g) powdered Irish moss |
| 0.75 cup | German ale yeast (175 ml measure) corn sugar (priming bottles) or 0.33 cup (80 ml) corn sugar for kegging |

Target Original Gravity: 1.062 (15.5 B)

Approximate Final Gravity: 1.016 (4 B)

IBUs: about 61

Approximate Color: 30 SRM (60 EBC)

Alcohol: 6.2% by volume

Directions

Place crushed grains in 2 gallons (7.6 liters) of 150° F (68° C) water and let steep for 30 minutes. Strain out (and rinse with 3 quarts/3 liters hot water) and discard the crushed grains reserving the approximately 2.5 gallons (9.5 liters) of liquid to which you will now add malt extract and 60 minute hops. Bring to a boil.

The total boil time will be 60 minutes. When 30 minutes remain add the 30-minute hops. When 10 minutes remain add the Irish moss. When 5 minutes remain add the 5-minute hops. After a total wort boil of 60 minutes turn off the heat. Immerse the covered pot of wort in a cold water bath and let sit for 30 minutes or the time it takes to have a couple of homebrews.

Strain out and sparge hops and direct the hot wort into a sanitized fermenter to which 2.5 gallons (9.5 liters) of cold water has been added. If necessary add cold water to achieve a 5-gallon (19-liter) batch size. Aerate the wort well.

Pitch the yeast when temperature of wort is about 70° F (21° C). Ferment at 70° F (21° 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. Lager the beer at temperatures between 35 and 45° F (1.5 to 7° C) for about two weeks.

Prime with sugar and bottle or keg when complete.

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Queen of Beer



Annie Johnson wears her Queen of Beer crown, which was made by Lost Coast Brewing's Barbara Groom and Wendy Pound.

Annie Johnson was at home when she got word that she was 2004's Queen of Beer.

"I was in the middle of baking ziti for our boy and was pretty stoked," she says. "Best of Show—you always remember your first time."

Johnson's Porch Monkey Ale, a clone of her favorite chocolate stout, was judged Best of Show in the seventh annual Queen of Beer competition, sponsored by H.A.Z.E. (Hangtown Association of Zymurgy Enthusiasts).

The Queen of Beer is a BJCP-sanctioned competition open to female brewers only. In its seventh year, the competition drew 59 entries from brewsters in 11 states.

Johnson is the first Californian to win the Queen of Beer title. She made the short jaunt from her home in Sacramento to Placerville to attend a "coronation" at one of H.A.Z.E.'s monthly meetings, where

she received a crown made by Barbara Groom and Wendy Pound, founders of the Lost Coast Brewery in Eureka, Calif.

Johnson began brewing in 1999 and has entered Queen of Beer several times, but had never medaled. She made up for lost time in 2004, landing four beers on the Best of Show panel.

Her other first-place beers ranged from American lager to American pale ale to

American IPA. She also enjoys brewing American brown ales and Belgian styles, "Because they taste so darn good."

But she gets the biggest kick out of experimenting, like she did with Porch Monkey.

"The brew really comes alive after it has sat in your glass for a few minutes, even more so when it warms to a good drinking temp," she says. "Brewing with chocolate isn't easy, as my

Porch Monkey

**Bittersweet Chocolate Stout
with Espresso Beans
All-Grain Recipe**

Ingredients

for 6.5 gallons (24.6 liters)

| | |
|-------------------------------------|---|
| 9.2 lb | (4.17 kg) pale two-row malt |
| 0.5 lb | (226 g) Crystal malt 90L |
| 0.9 lb | (48 g) Carafa chocolate malt |
| 0.7 lb | (318 g) roasted barley |
| 1.1 lb | (0.5 kg) rolled oats |
| 1.1 lb | (0.5 kg) Muscavado sugar (in kettle) |
| 0.6 oz | (17 g) East Kent Goldings hops, 6% alpha acid (60 min) |
| 0.75 oz | (21 g) Fuggles hops, 5% alpha acid (60 min) |
| Last 15 minutes of the boil: | |
| 7.0 oz | (198 g) melted bittersweet bakers chocolate bar. Stir well so as not to scorch. |
| 10 Tbs. | plain unsweetened cocoa powder |
| | WLP002 British Ale yeast |

Directions

Mash at 155° F (68.3° C) for 50 minutes. Mash out, sparge with 170° F (76.6° C) water. Primary fermentation seven days. Secondary 28 days. At bottling or kegging, add a small bottle of fat-free chocolate essence/extract and five shots of your favorite espresso. Johnson uses Peets. Add more to taste!

Target Original Gravity: 1.052

Target Final Gravity: 1.015

IBUs: 25

Boil Time: 70 minutes



CALENDAR

For complete homebrew event listings, see www.beertown.org/homebrewing/events.asp.

February 26

Best of Brooklyn VII Brooklyn, NY. AHA/BJCP SCP. Fee: \$5. Contact: Jennifer Traska Gibson, Phone: 917-664-1743, E-mail: jennifertraskagibson@yahoo.com Web: <http://hbd.org/mbas/bob.html>

February 27

AHA Members' Party—Saint Arnold Brewery Houston, TX. Fee: Free for AHA members. Contact: Brock Wagner, Phone: 713-686-9494, E-mail: brock@saintarnold.com Web: www.saintarnold.com

March 12

Great Arizona Homebrew Competition Phoenix, AZ. AHA/BJCP SCP. Fee: \$6. Entry Deadline: 2/25-3/8. Awards Ceremony: 4/30. Contact: Norman R. Naff, Phone: 623-386-0656, E-mail: normanna@starband.net Web: www.Brewarizona.org

March 12

15th Annual Hudson Valley Homebrew Competition Hyde Park, NY. BJCP SCP. Fee: \$5. Entry Deadline: 2/19-3/5. Awards Ceremony: 3/12. Contact: Al Alexa, Phone: 845-229-8277, E-mail: aalexa@aol.com Web: www.hbd.org/HVHB

March 12

Werthogs Annual Homebrew Competition Lethbridge, AB. BJCP SCP. Contact: Vervy Todd, Phone: 403-381-8314, E-mail: toddvi@telusplanet.net

March 12

Shamrock Open Cary, NC. AHA/BJCP SCP. Fee: \$5. Entry Deadline: 2/12-3/5. Awards Ceremony: 3/12. Contact: Jim Brewer, Phone: 919-465-2045, E-mail: brewer27513@hotmail.com Web: <http://www.hbd.org/carboy/>

March 19

8th Annual Eastern Connecticut Homebrew Competition Willimantic, CT. AHA/BJCP SCP. Fee: \$5. Entry Deadline: 3/5. Awards Ceremony: 3/19. Contact: Paul Zocco, Phone: 860-456-7704, E-mail: zoks.homebrewing@snet.net Web: www.homemadebrew.net

March 19

March Mashness St. Cloud, MN. AHA/BJCP SCP. Fee: \$6. Contact: Bruce LeBlanc, Phone: 320-251-0229, E-mail: brewski@astound.net Web: www.cloudtownbrewers.org

March 26

South Shore Brewoff Braintree, MA. BJCP SCP. Contact: Geoffrey McNally, Phone: 401-624-3953, E-mail: mcnallyga@npt.nuwc.navy.mil Web: www.southshorebrewclub.org

April 2

8th Annual Slurp N Burp Open Estacada, OR. AHA/BJCP SCP. Entry Deadline: 3/1-31. Awards Ceremony: 4/2. Contact: Duane Younger, Phone: 503-557-8245, E-mail: younger@hevanet.com Web: www.members.aol.com/slurpnburpor

April 22–May 1

2005 AHA National Homebrew Competition 10 Regional Judging Sites in United States and Canada. AHA SCP. Awards Ceremony during Grand Banquet of the AHA National Homebrewers Conference. Fee: \$8 Members, \$12 non-members. Entry Deadline: 4/4-15. Awards Ceremony: 6/18. Contact: Gary Glass, Phone: 303-447-0816 x 121, Fax: 303-447-2825, E-mail: gary@brewersassociation.org Web: www.beertown.org/events/nhc/index.html

April 23

U.S. Open Charlotte, NC. BJCP SCP. Contact: Clay Ferguson, Phone: 704-619-7592, E-mail: fclayferguson@yahoo.com Web: www.caronlinebrewmasters.com

April 23

Bluff City Brewers 17th Annual Homebrewers Memphis, TN. AHA/BJCP SCP. Fee: \$5. Entry Deadline: 4/9-16. Awards Ceremony: 4/23. Contact: Jody Kane, Phone: 901-373-8395, E-mail: jkane@midsouth.rr.com Web: www.memphisbrews.com

April 25–30

ALES Home Brew Open and AHA/NHC Canada Qualifier Competition Regina, Saskatchewan, Canada. AHA/BJCP SCP. Fee: \$6 for 6 entries, \$1 each additional. Entry Deadline: 4/5-22. Awards Ceremony: 4/30. Contact: Barry Bremner, Phone: 306-721-5666, E-mail: bbremner@accesscomm.ca Web: www.alesclub.com

May 7

AHA Big Brew—National Homebrew Day Each year on the first Saturday in May, homebrewers unite non-brewing and brewing friends and family to celebrate National Homebrew Day, joining with thousands of homebrewers from around the world in brewing the same recipes and sharing a simultaneous toast at noon Central Time. Contact: Gary Glass, Phone: 888-822-6273 x 121, Fax: 303-447-2825, E-mail: gary@brewersassociation.org Web: www.beertown.org/events/bigbrew/index.html

May 22

Sunshine Challenge XVI Orlando, FL. AHA/BJCP SCP. Fee: \$7. Contact: Mark Williams, Phone: 407-696-2738, E-mail: bachian@juno.com Web: www.cfhb.org/

June 1

Mondial de la Bière Montreal, Quebec, Canada. Fee: free. Contact: Marie-Josée Lefebvre, Phone: 514-722-9640, Fax: 514-722-8467, E-mail: mbiere@globetrotter.net Web: www.festivalmondialbiere.qc.ca

June 2–4

EHG 2005 Aurora Brewing Challenge Edmonton, Alberta, Canada. BJCP SCP. Fee: \$6. Entry Deadline: 5/8-27. Awards Ceremony: 6/4. Contact: Arnold Moerth, Phone: 780-455-9369, Fax: 780-452-3966, E-mail: amoerth@armourvalve.com Web: www.ehg.ca

very first attempt yielded a sludge with no head. It tasted like beer-soaked dead candy bars if you can imagine such a taste. Yuck."

She didn't give up, though, and some research yielded sweet success.

"This is what I love about the brewing community and magazines [and] literature like *Zymurgy*," said Johnson. "Shared information is key for brewing successes." 



ON THE WEB

Queen of Beer Competition

<http://hazeclub.org/QOB/QOBResults.html>

June 4

San Joaquin Fair Homebrew Competition Stockton, CA. AHA/BJCP SCP. Fee: \$6. Contact: Rick Stanton, Phone: 209-745-3397, Fax: 209-744-2644, E-mail: rogسام@softcom.net Web: www.brewangels.com

June 4

11th Annual BUZZ Boneyard Brewoff Champaign, IL. AHA/BJCP SCP. Fee: \$6 for 1st, \$4 for additional entries. Contact: Britt Weiser, Phone: 217-352-7441, E-mail: weiser@insightbb.com Web: <http://netfiles.uiuc.edu/ro/www/BoneyardUnionoFZymurgicalZealots/>

June 4–5

9th Annual Celtic Brew-Off Arlington, TX. AHA/BJCP SCP. Fee: \$6. AHA/BJCP SCP. Contact: Larry Land, Phone: 214-712-3358, Fax: 214-712-3357, E-mail: larry.land@merrillcorp.com Web: www.hbd.org/kobb/celtic9.htm

June 16–18

AHA National Homebrewers Conference Baltimore, MD. Come join other homebrewers for seminars from professional brewers and highly experienced homebrewers, discussions of the latest brewing techniques, plus a lot of good old-fashioned fun! Contact: Kathryn Porter, Phone: 888-822-6273 x 123, Fax: 303-447-2825, E-mail: kate@brewersassociation.org Web: www.beertown.org/events/hbc/index.html

July 1–31

American Beer Month Celebrate the flavor and diversity of American-made beer. Contact: Ray Daniels, Phone: 303-447-0816 x 125, Fax: 303-447-2825, E-mail: ray@brewersassociation.org Web: www.americanbeermonth.com/index.php

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.

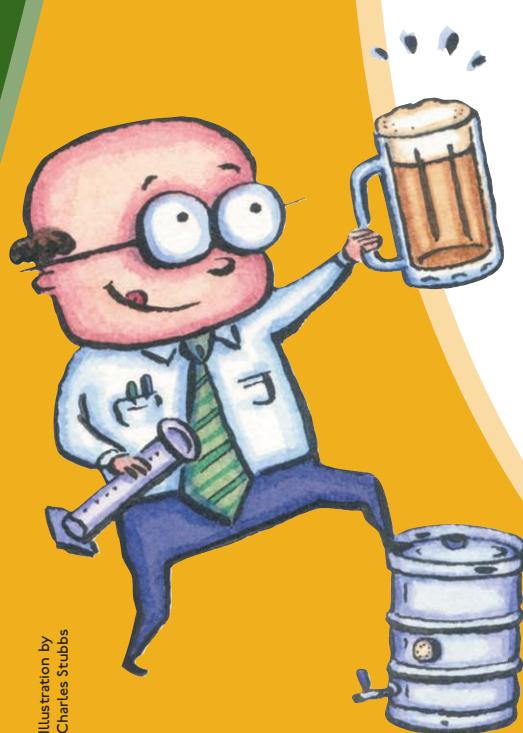


Illustration by
Charles Stubbs

Cleaning and Sanitizing

By Chris Bible

Of all of the skills needed to brew good beer, perhaps the single most fundamental and important skill a brewer can have is the ability to properly clean and sanitize brewing equipment¹. This is a skill so basic that it often gets little attention by the typical homebrewer. Many describe this step in the brewing process as “boring” or “tedious” when compared with the other more engaging aspects of our hobby. That said, no other step in the brewing process can undo the damage that can result from poor attention to detail in the cleaning and sanitation steps of the brewing process.

There are countless types of bacteria that would dearly love to wreak havoc with your lovingly prepared wort! And since, like yeast, bacteria thrive in a warm, moist environment, your wort makes an ideal home for both. To be a successful brewer, you must be a successful bacteria killer.

There are three levels of activity that can be undertaken to eradicate bacteria:

1. Cleaning
2. Sanitizing
3. Sterilizing

Cleaning is simply removing the dirt, scum and filth from your brewing equipment. Detergents and soaps are commonly used to assist in this step and are able to help remove things that water alone will not.

Soap and detergent molecules are composed of long chains of carbon and hydrogen atoms (see Figure 1). At one end of the chain is a configuration of atoms that is soluble in water (hydrophilic). The

remainder of the chain is not soluble in water (hydrophobic) but attaches easily to grease or other organic matter. The non-water soluble portion of the soap or detergent molecule attaches itself to the organic matter on your brewing equipment. The particles of grease or organic matter are pried loose and then surrounded by the soap or detergent molecules. The grease or organic matter is then carried off into the water. It is, effectively, emulsified by the soap or detergent molecules. An illustration of this process is shown in Figure 2.

Sanitizing is the act of applying either chemicals or heat (e.g. by boiling wort) to your equipment to greatly *reduce* the numbers of spoilage organisms. Sterilizing is the *complete eradication* of all spoilage organisms. Sterilization is not a practical option for homebrewers; it is just not possible to *kill* all bacteria with the equipment that is typically available to a homebrewer.

Sanitation, however, can be easily achieved. Many chemicals are available to help the homebrewer achieve the goal of sanitation of the brewing equipment. These chemicals will only be effective if they are actually able to contact the

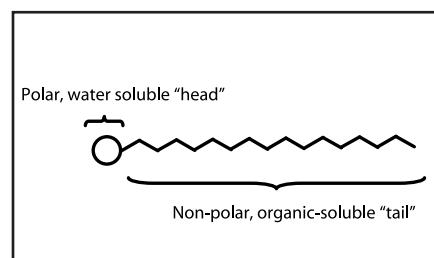


Figure 1: A Single Molecule of Detergent or Soap

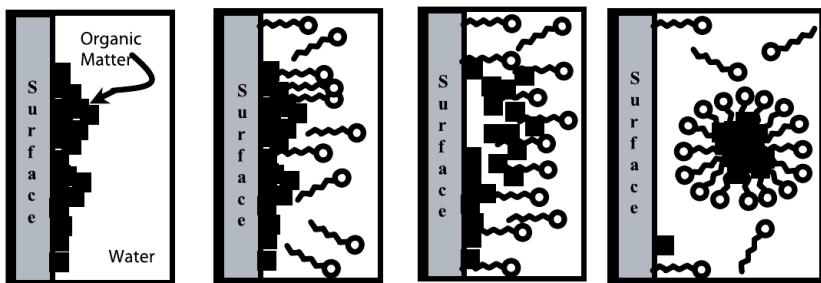


Figure 2: Illustration of Action of Soaps and Detergents on Organic Matter

spoilage organisms. Spoilage organisms can easily "hide" under organic matter that adheres to brewing equipment. In addition, the presence of organic deposits may

actually inactivate or reduce the effectiveness of some types of sanitizers (such as hypochlorites), rendering the procedure ineffective. This means that all residual

dirt and gunk must be removed from the brewing equipment before using these chemicals; first we clean, then we sanitize.

There are several definitions that may be helpful at this point in the discussion².

Sanitizer

In general, to sanitize means to reduce the number of microorganisms to a safe level. One official and legal version states that a sanitizer must be capable of killing 99.999 percent, known as a five log reduction (note the five nines in 99.999 percent) of a specific bacterial test population, and to do so within 30 seconds. A sanitizer may or may not necessarily destroy pathogenic or disease-causing bacteria, as is a criterion for a disinfectant.

An alternate definition is that a hard surface sanitizer is a chemical agent that is capable of killing 99.9 percent (three log reduction) of the infectious organisms that may be present in a bacterial population, within 30 seconds.

Disinfectant

A disinfectant is a chemical agent that is capable of destroying disease-causing bacteria or pathogens, but not spores and not all viruses. From a technical and legal sense, a disinfectant must be capable of reducing the level of pathogenic bacteria by 99.999 percent during a time frame greater than five but less than 10 minutes. The main difference between a sanitizer and a disinfectant is that at a specified use dilution, the disinfectant must have a higher kill capability for pathogenic bacteria compared to that of a sanitizer.

Sterilant

Sterilants are specialized chemicals, such as glutaraldehyde or formaldehyde, that are capable of eliminating all forms of microbial life, including spores. The term sterilant conveys an absolute meaning; a substance cannot be partially sterile. These types of chemicals are generally not applicable for use in homebrewing due to their toxic and potentially dangerous nature.

Since we, as homebrewers, are primarily concerned with spoilage organisms in our wort but not necessarily with pathogenic

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bacteria or spores, we will focus our discussion on sanitizers and, to a lesser extent, disinfectants.

So how do sanitizers exert their germicidal activity? When bacterial cells are exposed to a sanitizers or disinfectant, irreversible damage occurs to the various physical structures within the cell². In general, sanitizers and disinfectants exert their effect by either attacking a specific part of the bacterial cell or causing damage to some of its components. Sanitizers and disinfectants (or germicides in general) fall into three classifications, based on their method of bacterial attack:

1. Cell membrane destruction
2. Inhibition of food uptake and waste excretion
3. Inactivation of critical enzymes

Cell Membrane Destruction

Germicides such as sodium hypochlorite or peroxyacetic acid (PAA) are strong oxidizing agents and can cause total destruction of the cell membrane, resulting in vital bacterial components leaking out into their surrounding environment. This process results in a true microbial death.

Inhibition of Food Uptake and Waste Excretion

Some germicides, such as the quaternary ammonium compounds (quats), have the capacity to attach themselves onto specific sites on the bacterial cell membrane. They do this by virtue of the fact that the quats carry a positive electrical charge in solution and are attracted to the negatively charged portions of the bacterial membrane. The end result is that quats block the uptake of nutrients into the cell and prevent the excretion of waste products. These waste products then accumulate within their structure. The cell is effectively both starved and internally poisoned from the accumulated wastes.

Inactivation of Critical Enzymes

Biocides, such as phenolics, that exert their activity in this manner actually enter the cell and chemically react with certain key enzymes that support either cell growth or metabolic activities, which supplies the bacteria with the energy needed for growth and multiplication. If inactivation is incomplete the injured bacteria can

regenerate several hours later and re-contaminate the surface.

A discussion of the specifics within several categories of sanitizing and disinfecting chemicals is given below.

Hypochlorites

Household bleach is a hypochlorite (generally it is a solution of 3 to 6 percent by weight sodium hypochlorite). Because of their effectiveness and relatively low cost, hypochlorites are widely used in a multitude of sanitization operations, and have become a standard to which other sanitizers are compared. Hypochlorites exert their germicidal activity by destroying cell walls and inactivating vital bacterial enzymes.

Their main disadvantage is that they are corrosive to metal surfaces including stainless steel. Hypochlorites also degrade in strength with time and are affected by the presence of organic matter and the pH or alkalinity of the water from which their use-solutions are prepared. Hypochlorites function best within the narrow pH range

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around neutrality (pH 5 to 7), since hypochlorous acid formed at that pH is the chemical component that exerts the germicidal activity. High pH water (>9.0) inhibits the sanitization effect of hypochlorites, requiring longer exposure times to achieve the desired results.

Hypochlorites (bleach) have been used for years as a sanitizer by homebrewers. In order to avoid off-flavors in the finished beer, it is important that the sanitizer solution be rinsed well from the brewing equipment.

Iodophors

Iodophors exert their bactericidal activity in a manner similar to that of hypochlorites but do not act as quickly. They attach themselves to proteins, specifically those containing sulfur in their composition (cysteine), and inactivate them. Iodine solutions usually consist of elemental iodine, which is complexed to carriers such as PVP (polyvinylpyrrolidone) or a non-ionic surfactant.

The iodine carrier provides a sustained-release reservoir of iodine, and the iodine

stays bound to the carrier until the free iodine concentration in solution falls below a certain equilibrium level, before additional free iodine is released into solution. The main disadvantage of iodophors is that they can be highly staining on virtually any surface, work only within the acidic pH range and tend to evaporate away at temperatures greater than 85° F (35° C).

Iodophors are often used as a no-rinse sanitizer by homebrewers. In order to avoid off-flavors in the finished beer, it is important that the sanitizer solution be allowed to fully drain from the brewing equipment.

Quaternary Ammonium Chlorides (QUATS)

The quats have varied germicidal activity and are generally used in low-level sanitization. Their main advantages are that they are odorless, non-staining, non-corrosive to metals and are relatively nontoxic at use-dilution concentrations. As sanitizers they exhibit wide latitude in germicidal activity when used in hard water and are effective over a wide pH range.

Quats leave a non-volatile residue on surfaces to which they are applied, rendering the surfaces bacteriostatic for a given time. For this reason they are probably not the best choice for use on brewing equipment.

Acid Sanitizers

Acid sanitizers have a broad-spectrum germicidal activity and are very cost-effective to apply. They are also relatively unaffected by organic matter. Because of their low pH, acid sanitizers have the added advantage of being able to react with hard water deposits and for this reason are ideal for use under hard water conditions. Because of their combined acid cleaning, free rinsing and sanitization properties, they are ideal for use in the clean-in-place (CIP) systems that are typically found in commercial breweries and food processing plants, but are probably not the best choice for homebrewers.

Aldehydes (Formaldehyde and Glutaraldehyde)

Aldehydes are extremely reactive chemicals that combine with and irreversibly denature key bacterial proteins. They are generally not used for routine sanitization and

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|------------------|-----------------------------------|-------------------------------------|---|--|---|--|--------------|---|
| Hypochlorites | 5-7 | 200 max (50-100 ppm recommended) | Moderate tolerance | Inactivated | High | •••• •••• | 3-5 min | Household bleach. Rinse required. |
| Iodophors | 1-5 | 25 | Activity reduced More sanitizer required | Reduced activity; more stable than hypochlorites | Moderate, less effective than hypochlorites | •••• •••• | 10-15 min | No rinse required. Drain equipment well. |
| Quats | 8-11 | 200 | Activity reduced | Moderately stable | Varied | •••• •••• | Varies | Not recommended for home-brewing |
| Acid Sanitizers | 1-3 | 200 | Activity reduced More sanitizer required | Low reactivity | Very Good | •••• •••• | 5-7 min | Good for commercial brewing applications |
| Aldehydes | 6-8 | 2% for sterilization | No effect | Activity reduced | High | •••• •••• | < 1 min | Not recommended for home-brewing |
| Alcohols | 5-8 | 70% | No effect | Loss of activity | Moderate | ••• •••• | 5-10 min | Some limited application for home-brewing |
| Phenolics | 10.5-11.5 | 200-400 | Moderate tolerance | Moderately stable | Very good | •••• •••• | 5-7 min | Not recommended for home-brewing |
| PAA | 3.5-5.5 | 150-200 | Limited effect | Reacts and loses activity | High, better than hypochlorites | ••• •••• | 2-3 min | No rinse required. Drain equipment well. |
| Chlorine Dioxide | 2-5 | 5-15 | No effect | Little influence | High, better than hypochlorites | •••• •••• | 2-3 min | Not recommended for home-brewing |

•••• Highly Effective ••• Moderately Effective •• Slightly effective • Ineffective

Table I: Properties of Chemical Sanitizers and Disinfectants

their application is restricted mainly to high-level disinfection. A 2-percent solution of either compound exhibits sterilization properties over a given period.

Formaldehyde can leave residual films on the surfaces with which it comes into contact and therefore its use poses a potential health hazard. Formaldehyde films can also combine with certain food-containing components and impart an undesirable medicinal flavor. Because formaldehyde has been identified as a potential carcinogen, its use is declining and limited to specific applications. For all of these reasons, aldehydes are not recommended for use on brewing equipment.

Alcohols

Alcohols exert their germicidal activity by denaturing bacterial proteins. In the absence of water, proteins are not readily

denatured by alcohol and therefore a 70 percent solution of isopropyl alcohol is a much more effective sanitizer than the pure (99 percent) product. Isopropyl alcohol is capable of killing most bacteria within five minutes of exposure but is ineffective against spores and has limited virucidal activity. The main disadvantages of the use of isopropyl alcohol are that it is flammable, and cannot be diluted as quats or iodophors can and therefore is relatively expensive to use. Ethyl alcohol is a fairly effective germicide and is often used by homebrewers for disinfection of smaller pieces of equipment (e.g. equipment used for culturing yeast or small items such as hose fittings, couplings, etc.).

Phenolics

Phenolics are effective at sanitization and disinfection in the presence of biological fluids and are tolerant toward a

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certain level of organic presence. Their main advantage is that they are highly effective in destroying the bacteria that causes tuberculosis. Phenolics suffer from the disadvantage that they are relatively expensive to use, and react with certain types of plastic surfaces. They are also difficult to oxidize and therefore difficult and expensive to dispose of in an environmentally suitable manner. Phenolics are not recommended for use by homebrewers.

Peroxyacetic Acid (PAA)

Peroxyacetic acid or peracetic acid as it is commonly referred to is manufactured by reacting acetic acid with hydrogen peroxide. PAA has grown in popularity because of its effectiveness and environmental compatibility. Upon degradation, PAA breaks down to acetic acid (vinegar), water and oxygen. One of the major advantages in using PAA is that it also functions extremely well under cold conditions (39° F or 4° C) and unlike other sanitizers does not experience cold temperature failure. PAA solutions are generally used at 150 to 200 parts per million and are highly



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effective against a broad spectrum of bacteria and spores. A major disadvantage of PAA is that it is more expensive to apply than hypochlorite, but it is rapidly gaining in popularity among commercial institutions and homebrewers. It is a good choice for use as a no-rinse sanitizer for homebrewers.

Chlorine Dioxide

Chlorine dioxide is a powerful sanitizer and disinfectant that is produced by reacting sodium chlorite in solution with an acid. The yellowish-green gas produced in this reaction is allowed to remain in a closed system until it dissolves in the solution from which it was generated. The aqueous solution of chlorine dioxide is subsequently used for sanitization.

Chlorine dioxide is three to four times as potent as sodium hypochlorite as a sanitizing agent and is generally effective against all bacteria and viruses. It does not have the disadvantages that sodium hypochlorite has with respect to corrosivity of metal surfaces. Its main disadvantage is that the extremely reactive nature of sodium chlorite from which chlorine dioxide is generated poses a serious and potential fire hazard. The complex and expensive equipment required to generate and safely handle chlorine dioxide requires a significant capital outlay and therefore its use is unattractive for routine sanitization to the majority of end users (including both commercial and homebrewers).

Table 1 summarizes some of the properties and characteristics of commercially available sanitizers and disinfectants².

Although sanitization is distinct from disinfection, common elements exist between the two. The differences are often related to the concentrations of the chemical used and length of exposure of the product on the surface. Both the required dose of the sanitizer chemical and the required exposure time are very important considerations for homebrewers. Although there are no-rinse sanitizers available (e.g. Star-San and the various iodophors), using a too-high dose of either a no-rinse or a rinse-required sani-

tizer (e.g. hypochlorite) may result in off-flavors in the finished beer.

So which of the chemicals that are available are best at helping a homebrewer achieve the goal of sanitizing the brewing equipment? As with almost all things, it depends. To be a successful brewer you must be a successful bacteria killer. To achieve success:

Step 1: All brewing equipment needs to be cleaned before it is sanitized. There are many ordinary and enzyme-enhanced soaps, detergents and cleaning products commercially available¹ (PBW, Sparkle-Brite, Pro-Zyme) but none of these is a substitute for good old-fashioned elbow grease and attention to detail.

Step 2: On brewing day, sanitize all brewing equipment that will contact cooled wort. Achieve this sanitation by using one or more of the chemicals previously described. None of them are absolutely perfect for every brewer's situation, but there are plenty of options from which to choose. Pick the one that is right for you

Step 3: Perform "preventive cleaning" as necessary for your equipment. It is much easier and less time consuming in the long run to keep your brewing equipment clean rather than having to chisel off the left-behind gunk from previous brewing sessions. Less time spent cleaning the gunk from previous brew sessions means that there may even be enough time available to enjoy an extra homebrew on brew day!

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- 1.Bader, Steve. "Beer Minus Bacteria." *Brew Your Own*, Jan-Feb 2003, 37-40.
- 2.Schiff, Nathan. "Choosing the Proper Sanitizer or Disinfectant." www.schiff-consulting.com/choosing.html

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Last Drop (continued from 64)

A.J.: "Well, there's this Sterno burner for my fondue pot."

Jake: "Ha! You expect to bring 12 gallons of wort to a boil with that wussy thing? I've got a 125,000 BTU propane burner out in the truck that we can haul in. Neil?"

Neil: "Before we turn you over to Bill for some tasting, let's see what you know about beer. Fill in the blanks in these sentences. The pilgrims landed at Plymouth Rock because they were running low on _____. "

A.J.: "Bordeaux?"

Neil: "No, beer. The first paved road in America was out the back door of _____. "

A.J.: "Trader Joe's?"

Neil: "No, a brewery. Continental Army troops during the Revolutionary War received as part of their ration, a quart of _____. "

A.J.: "A sassy but assertive Chablis?"

Neil: "No! Spuce beer or cider. I give up. Bill?"

Bill: "Grab a seat, A.J. I have a few of the major beer styles here for you to taste. Ernie will help you with food pairings for each and Rocco will make sure you don't commit any beer drinking faux pas. First, let's start with a Czech Pilsener. You'll notice the very floral hop aroma, the subtle malt... hey, wait!"

Rocco: "What do you think you're doing? Put down those pretzels. And don'tgulp."

A.J.: "I thought this was beer, not wine."

Rocco: "It is, but you're trying to evaluate this beer, not Guzzle it. Treat it with the same respect you would a fine chardonnay."

A.J.: "You know, this is kind of tart like a chardonnay. Light-bodied, fairly aromatic."

Ernie: "And, like a chardonnay, this would pair well with a white fish, chicken or even pork."

A.J.: "This is great. Where's the spit bucket? I'm ready for the next beer."

Rocco: "A.J., this isn't wine. No spitting."

'Nuff said."

Many Hours Later

A.J.: "I don't know, Ernie, I think the use of American hops in that last barleywine would make it pair better with a dark chocolate torte. Stilton cheese, fresh fruit and roasted nuts would pair better with a rounder, smoother English barleywine."

Bill: "Boys, I think our work here is done. He's ready."

Final Scene

A.J., decked out in his Dead Guy T-shirt with his beer glass holder around his neck, discusses proper bittering hops for an imperial IPA with Nadine at the Hopapalooza as the Six Pack watch proudly on their closed circuit TV.

Fred: "And they lived happily ever after."

The Six Pack all jump to their feet, clink beer mugs and indulge in a group belly bash.

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Beer Eye for the Wine Guy

Editor's Note: Imagine, if you will, that homebrewers were in charge of programming network TV. We might get shows like this.

Beer Eye for the Wine Guy

Episode 143: A.J., the college professor
Age: 43

Height: 5-foot-9

Weight: 155

Status: Single (but trying)

Occupation: College English professor

Event: Local homebrew competition and festival

Poor A.J. The chardonnay-sipping English professor has fallen head over loafers for Nadine, the homebrewing biology instructor at tiny Thrushwillow College in Oregon's Willamette Valley. He knows the only way he can win her heart is to impress her with his beer acumen at the Hopapalooza Homebrew Competition and Beer Festival. But he doesn't know Märzen from merlot, Kölsch from cabernet and the event is only a day away.

Desperate, he calls in the Six Pack, a homebrewing SWAT team of beer geeks out to change the world...one pint at a time.

- **Bill, The Style Nazi:** If you don't know hefeweizen from wee heavy, he'll straighten you out.
- **Ernie, Beer and Food Pairer Extraordinaire:** From filet mignon to fille gumbo, he'll find the right beer for your meal.
- **Jake, The Homebrew Hero:** His kettle boils over with helpful hints and gadgets.
- **Neil, The Beer History Maven:** Need a clever conversation starter? He's your man.
- **Fred, The Baron of Beerware:** From just the right brewery T-shirt to the proper glass for a Belgian lambic, he's got you covered.
- **Rocco, The Beer Etiquette Master:** "Swallow, don't spit. 'Nuff said."

Our team arrives at A.J.'s tidy two-bedroom cottage just off campus, with a white picket fence and a grape arbor.

Fred: "OK, first things first: the grapes gotta go. Hops grow much faster and they don't drop squishy fruits all over the table when you're trying to relax and drink a beer."

A.J.: "But these are pinot noir rootstock from the Napa Valley."

Fred: "Pinot, schmino! We'll plant some nice Cascades from the Willamette Valley. Chicks dig native plants. And by the way, what's that thing around your neck?"

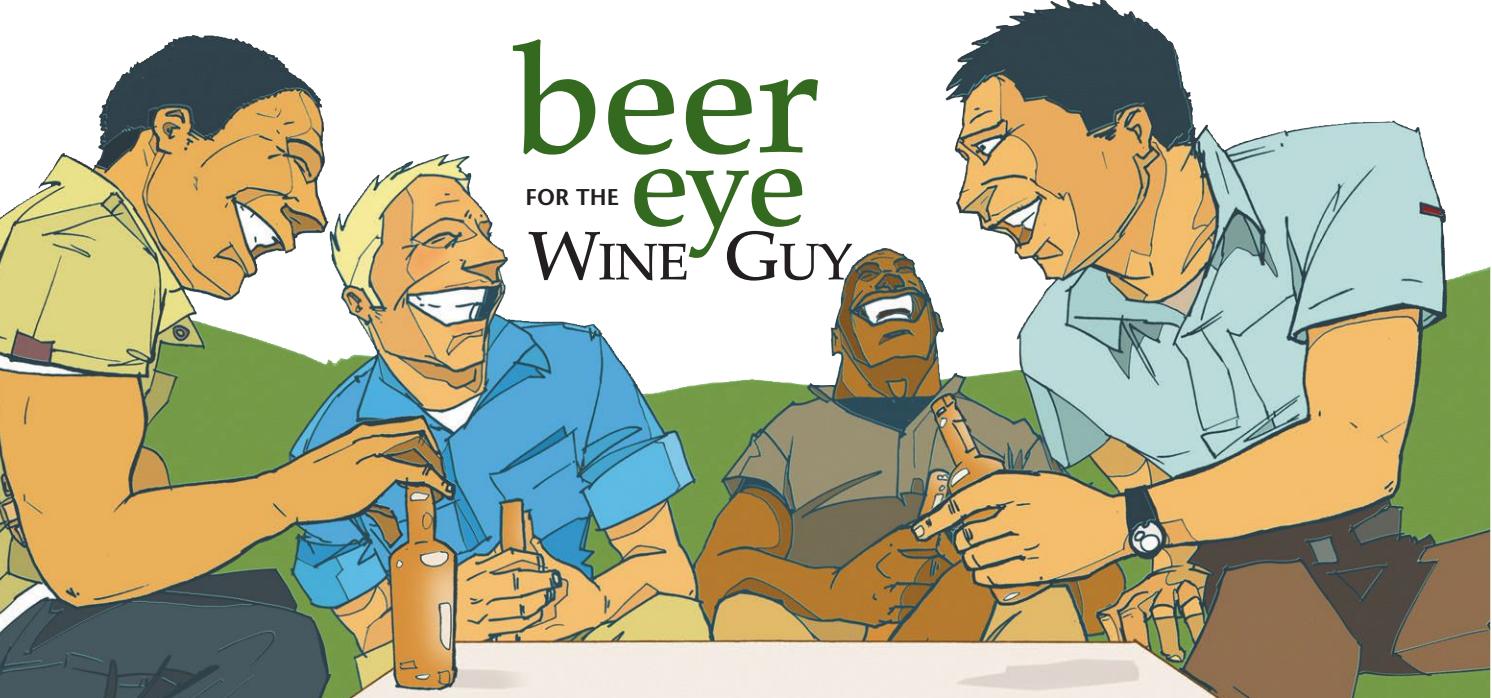
A.J.: "Why, it's my ascot. It's French silk."

Fred: "Ass-WHAT? Gotta go. Here's a nice beer glass holder. See? Fits around your neck, holds a festival glass or a pint and leaves both hands free. It's good old US of A nylon. Oh, and get that white, ruffy shirt off, this ain't no pirate convention. Here's a Rogue Dead Guy shirt. The design glows in the dark. Jake?"

Jake: "OK, let's see what we have in the way of equipment. This cooler might make a good mashtun."

A.J.: "But that's for keeping my sauvignon blanc chilled on picnics."

Jake: "Nope. We're gonna slap a copper manifold false bottom in there and a sparge arm attachment up top. Do you have any portable burners?" (continued on page 57)





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| Friday Seminars Only | \$50 After May 13 - \$55 | \$60 After May 13 - \$65 |
| Keynote Luncheon - Friday | \$35 After May 13 - \$40 | \$40 After May 13 - \$50 |
| Club Night - Friday Evening | \$25 After May 13 - \$33 | \$30 After May 13 - \$41 |
| Saturday Seminars Only | \$50 After May 13 - \$55 | \$60 After May 13 - \$65 |
| Grand Banquet/Awards Ceremony Only - Saturday Evening (AHA National Homebrew Competition Awards Ceremony) | \$65 After May 13 - \$75 | \$75 After May 13 - \$85 |
| American Homebrewers Association Membership (1 year) Join or renew. See the difference you save when you join! | \$38 | \$38 |



Commemorative 2005 AHA National Homebrewers Conference t-shirts. (Pickup t-shirts at the conference.)

\$15 (Size Required) -or- 2 for \$25
S, M, L, XL, XXL S, M, L, XL, XXL

TOTAL

Reproduce this form for additional registrants. Each member may register one guest at the member rate.
Call 888.822.6273 or 303.447.0816 x123 with questions regarding registration.

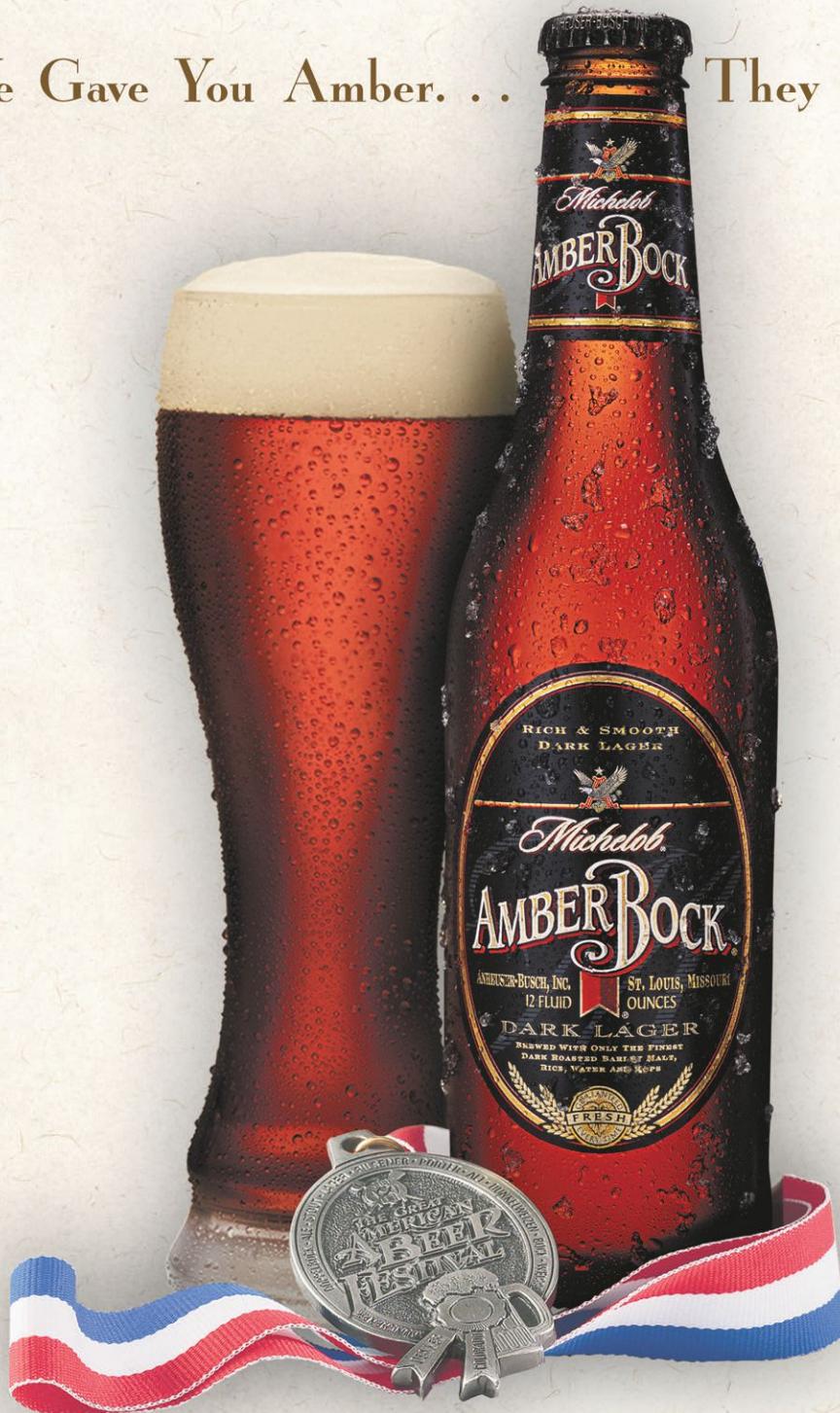
For more information, visit www.ahaconference.org

American Homebrewers Association
A Division of the Brewers Association
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Silver Medallion Winner, Great American Beer Festival®.

2004 American-Style Dark Lager Category

©2004 Anheuser-Busch, Inc., Michelob® AmberBock® Dark Lager, (Ale in TX), St. Louis, MO