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The Journal of the American Homebrewers Association



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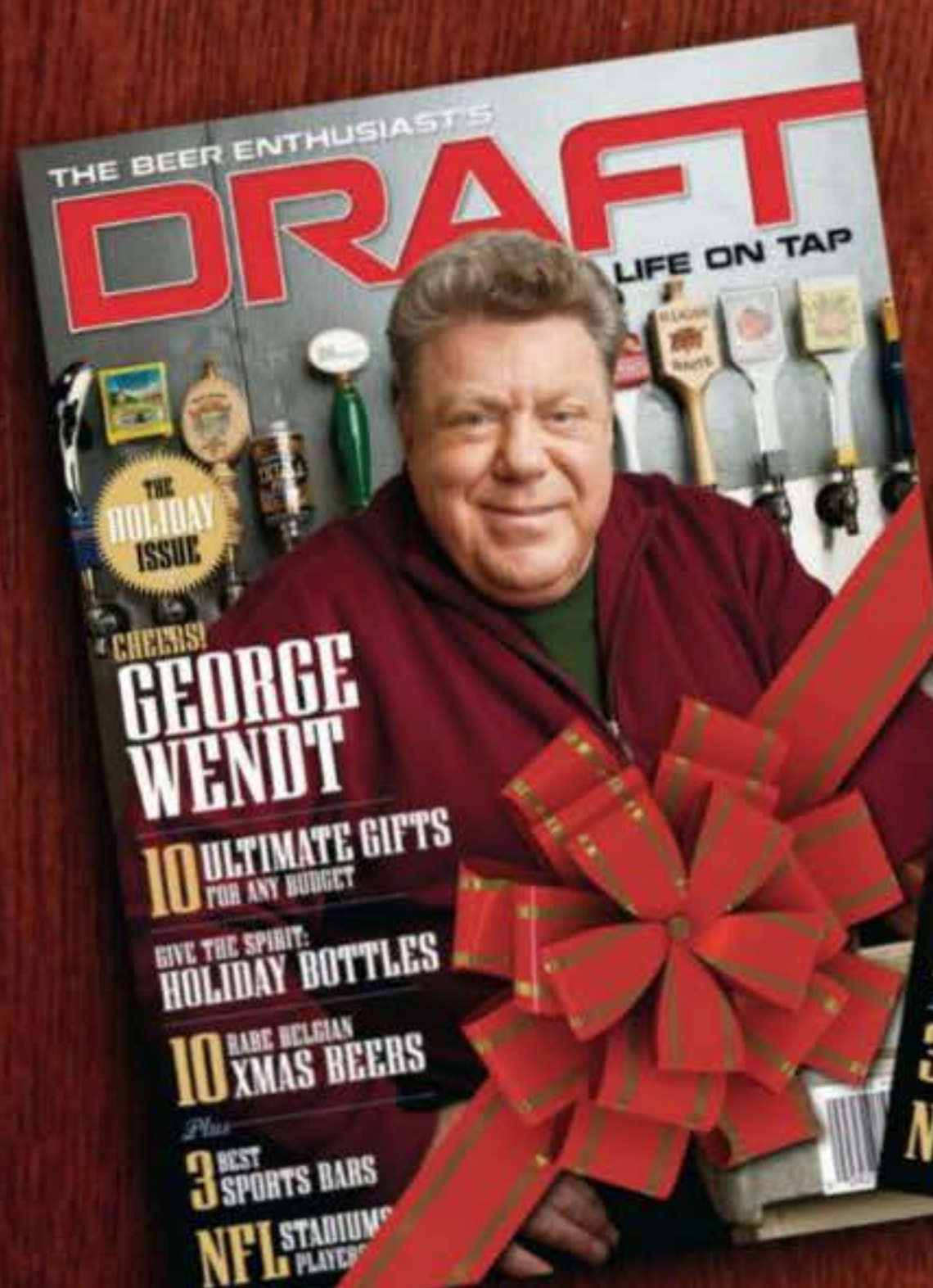
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by Jill Redding

## eZymurgy is Here!

The project has been in the works for a while, and the electronic version of *Zymurgy* is finally here! I feel like Steve Martin in "The Jerk" getting excited about the arrival of the new phone books, but in this case, unlike the now virtually obsolete print versions of phone books, *Zymurgy* has gone high-tech.

First off: don't worry! For those of you who consider themselves "old school" (like me) and still like to get a physical magazine in the mail and perhaps an old-fashioned newspaper delivered to your front doorstep (we also get weekly farm-fresh milk delivery at our house, and you can't get much more old school than that), the print version of *Zymurgy* is not going away anytime soon. e*Zymurgy* is simply another option, with the added benefit of functions such as search engines and back issues. In addition, it will be hugely beneficial to our overseas AHA members who sometimes have to wait months for their issues to arrive.

Wait... did I say back issues? That's right—log on to [www.HomebrewersAssociation.org](http://www.HomebrewersAssociation.org) and access e*Zymurgy* through a members-only page, and you'll find all five previous issues from 2011. As time and budgets permit, we plan to go back further into the archives to make past issues available online as well.

We hope you enjoy the online version and find it easy to navigate. Our magazine, web, and IT teams surfed through many electronic magazine versions and found that our current *Zymurgy* printer, Walsworth Print Group, offered a competitive option of its own that we found very appealing and user-friendly, with all the features we were looking for. Beginning next year, we plan to have e*Zymurgy* apps available for mobile devices as well.

### In this Issue...

In this issue of *Zymurgy*, we take a look at the lighter, colder side of brewing—lagers and cold-fermented ales. I enjoyed Gordon Biersch co-founder Dan Gordon's seminar at the National Homebrewers Conference so much that I asked him to write an article about his Weihenstephan training and how that translates into homebrewing German lagers, and he graciously agreed. Ted Hausotter also put together a fun experiment pitting American hop varieties versus German varieties in German Pilsners, and Mark Pasquinelli examined cold-fermented ales in an experimental nature as well.

Thinking of going pro? You're not alone—according to statistics compiled by the Brewers Association, there are at least 748 craft breweries in planning in the United States. We asked someone who's been there, done that—Matt McClung of Schooner Exact Brewing in Seattle, which went from a nanobrewery to a microbrewery in two years—to provide a primer on how to get started.

With the bustling holiday season coming up, the always innovative Drew Beechum provides a solution to the problem of needing to brew a quick batch for a last-minute party with eight delicious recipes that can be ready to drink in as few as six days.

And, if you're in the mood for a laugh or two, check out the *Zymurgy* Online Extra available at [HomebrewersAssociation.org](http://HomebrewersAssociation.org) for "So I Married a Homebrewer, Part II," by Diana Davis. Part I was our cover story in the September/October 2007 *Zymurgy*.

Happy reading, and happy brewing!

**Jill Redding is editor-in-chief of *Zymurgy*.**

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Technical Editor ..... Gordon Strong  
Art Director ..... Allison Seymour  
Graphic Designer ..... Luke Trautwein  
Graphics/Production Director ... Stephanie Johnson Martin  
Senior Designer ..... Kerry Fannon  
Sales & Marketing Director ..... Barbara Fusco  
barbara@brewersassociation.org

Business Development Manager  
for Advertising & Sponsorship (East) .... Chris Pryor  
pryor@brewersassociation.org

Business Development Manager for Advertising  
& Sponsorship (West) ..... Kari Harrington  
kari@brewersassociation.org

Advertising & Sponsorship Coordinator ..... Kate Kingsbery  
kingsbery@brewersassociation.org

Marketing Coordinator ..... Spencer Powlison  
spencer@brewersassociation.org

Circulation Coordinator ..... Ian Stevens

### American Homebrewers Association®

Director ..... Gary Glass  
Events & Membership  
Coordinator ..... Kathryn Porter Drapeau  
Project Coordinator ..... Janis Gross  
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By Ted Hausotter

For years, the German variety Hallertauer Mittelfrüh has been the standard lager hop. Why, then, would we think about using North American-grown hops in lagers?

### 32 | Lager Brewing the German Way

By Dan Gordon

The co-founder of Gordon Biersch uses his Weihenstephan training on a daily basis to produce the brewery's authentic German lagers. How does it translate to homebrewing?

### 38 | Going Pro: So You Want to Be a Nanobrewer

By Matt McClung

Your friends are drinking your homebrew faster than you can make it, and you've been toying with the idea of starting to brew professionally. Here's a primer to get you started.

### 44 | Express Brewing: From Grain to Glass in 6 Days

By Drew Beechum

The clock and calendar inexorably march us to a beer serving D-Day and, if you're like me, sometimes you wake up, realizing your party lurches near and you're short of beer.



### So I Married a Homebrewer, Part II

By Diana Davis

To read this special, online-only feature, go to the [Zymurgy](http://Zymurgy.HomebrewersAssociation.org) page on [HomebrewersAssociation.org](http://HomebrewersAssociation.org).

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## >> GET THERE!

### INTERNATIONAL GREAT BEER EXPO

This international beer tasting extravaganza, taking place November 12 in Uniondale, N.Y., will showcase more than 50 breweries from across the globe, each providing samples of their country's proudest brewing achievement.

Shoulder to shoulder with some of America's best breweries, including local Long Island favorites, will be breweries from Japan, Germany, France, Belgium, Italy, Ireland, Mexico, Austria, Nicaragua, Thailand, Poland, New Zealand, Indonesia, Sweden, China, and others.

More than 100 beers from 50 breweries will be available for tasting at two sessions, and more than 20 countries will be represented. For more information go to [www.greatbeerexpo.com/nassau](http://www.greatbeerexpo.com/nassau).



**November 4-5**  
**Maine Brewers Festival**  
Portland, ME  
[www.learnyourbeer.com](http://www.learnyourbeer.com)

**November 4-13**  
**San Diego Beer Week**  
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[www.sdbw.org](http://www.sdbw.org)

**November 5**  
**Beer, Bourbon & BBQ Festival**  
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[www.beerandbourbon.com](http://www.beerandbourbon.com)

**November 5**  
**5th Annual All Colorado Beer Festival**  
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[www.AllColoradoBeerFestival.com](http://www.AllColoradoBeerFestival.com)

**November 12**  
**2nd Annual Greater Gulf Coast Beer Festival**  
Fort Walton Beach, FL  
[www.chanswineworld.com](http://www.chanswineworld.com)

**November 12-18**  
**Dallas Beer Week**  
Dallas, TX  
[Dallasbeerweek.com](http://Dallasbeerweek.com)

**November 12-18**  
**Houston Beer Week**  
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[Houstonbeerweek.com](http://Houstonbeerweek.com)

**November 30-December 4**  
**Holiday Ale Festival**  
Portland, OR  
[Holidayale.com](http://Holidayale.com)

**December 3**  
**Orlando Holiday Brew Fest**  
Orlando, FL  
[www.floridabeerfestivals.com](http://www.floridabeerfestivals.com)

## GREAT BOOK WHAT'S NEW FROM OXFORD UNIVERSITY PRESS

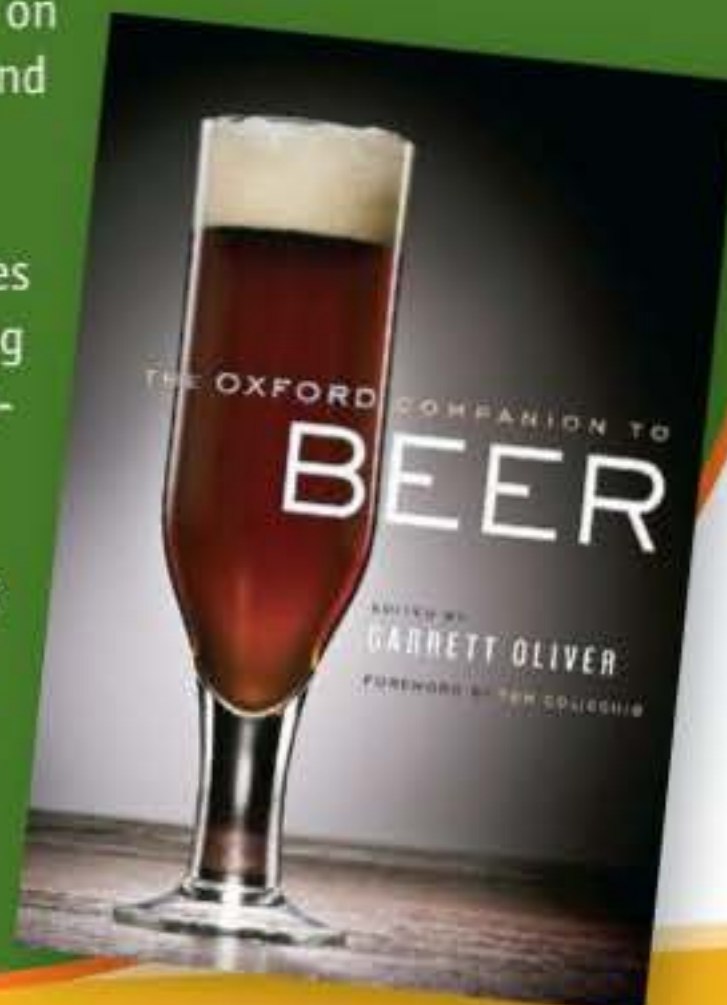
### The Oxford Companion to Beer

Hot off the presses is the first major reference work to investigate the history and vast scope of beer. *The Oxford Companion to Beer* features more than 1,100 entries written by 166 of the world's most prominent beer experts and edited by Brooklyn Brewery brewmaster Garrett Oliver.

Attractively illustrated with 140 images, the book covers everything from the agricultural makeup of various beers to the technical elements of the brewing process, local effects of brewing on regions around the world, and the social and political implications of sharing a beer.

The book also discusses brewing techniques such as dry hopping and cask conditioning and how they affect a beer's taste, texture, and popularity.

Released on October 7, *The Oxford Companion to Beer* is 944 pages and retails for \$65. It is available online and through local bookstores.



## >> BEER QUOTE

*"We have no plan and we're not following it."*

—Mike Hess, owner of San Diego's first licensed nanobrewery, Hess Brewing, regarding his business plan



## >> THE LIST

# 3 NEW BARREL-AGED BEERS TO TRY



### DESCHUTES THE STOIC

This Belgian-style Quadruple is the result of a five-year odyssey from experimental beer to coveted Reserve Series addition. The malt is all Pilsner. Hallertau, Czech Saaz, and Northern Brewer hops sustain a deftly understated flavor. Belgian candi sugars add impact and smooth body. A healthy portion of pomegranate molasses adds a tangy twist. The Stoic was aged in Pinot Noir and rye whiskey barrels, imparting notes of spice, citrus, pepper, vanilla, and toasted caramel. [www.deschutesbrewery.com](http://www.deschutesbrewery.com)

### SAMUEL ADAMS 13TH HOUR

Samuel Adams 13th Hour combines the roasted chocolate and coffee flavors of a Belgian stout with the spicy character of an oak-aged ale. Part of the Barrel Room Collection, it is aged in Eastern European oak barrels originally used to age brandy in Italy. [www.samueladams.com](http://www.samueladams.com)



### ODELL WOODCUT NO. 5

Odell Brewing debuted Woodcut No. 5, an oak-aged Belgian Quadruple, at SAVOR in Washington D.C. in June. Brewed with a blend of Belgian ale yeast and Odell's house ale yeast, Woodcut No. 5 presents a rich, spicy dried fruit essence and a deep auburn color. Vanilla from the New American Oak complements the Special B malt with hints of cherry, raisin, and plum on the palate. [www.odells.com](http://www.odells.com)

## >> YOU'VE GOTTA DRINK THIS

### SURLY SMOKE

Surly Smoke is a beer that has grown on me every year since I first tasted it three years ago. Aroma is complex maltiness with subtle smoke. It has a thick mouthfeel, but ends dry with a lingering smokiness. This is one to sip by the campfire or while hibernating away the long Minnesota winter.

Reviewed by Eric Wentling, Waconia, Minn.



If you've had a beer you just have to tell the world about, send your description, in 150 words or fewer, to [jill@brewersassociation.org](mailto:jill@brewersassociation.org).

## >> BREW NEWS

### PILSNER URQUELL CROWNS MASTER HOMEBREWERS

Pilsner Urquell, the world's first golden beer, announced the winners of its 2011 Master Homebrewer competition at events held in New York City, Washington D.C., and Chicago in August. The homebrewers were tasked with recreating the iconic Czech-style Pilsner made famous by Josef Groll in 1842. Out of 125 competitors, only three were able to claim the title of Pilsner Urquell Master Homebrewer.



The winning homebrewers were Philip Jensen of State College, Pa., Aaron Hermes of Leesburg, Va. and Jeff Lewis of Hilliard, Ohio. Each winner will travel to Plzen, Czech Republic in October to tour the historic brewery and attend the International Master Bartender Competition in Prague.

"It was amazing to see the enthusiasm these homebrewers had for this competition," said Vaclav Berka, Pilsner Urquell's sixth brewmaster in the brand's 169-year history. Along with a panel of experienced beer judges, Berka judged the homebrews at each event. "I can tell you that some of the homebrews were spot-on when it came to the Czech-style Pilsner. This is not an easy style to recreate. These homebrewers are truly skilled at what they do, and it's very exciting to see this community growing throughout the United States."

The Master Homebrewer judging panel selected the top three at each event. The judges sampled each beer and selected the winners based on the following criteria:

- 70%: Accuracy to BJCP style (Czech-style Pilsner)
- 15%: Cleanliness (absence of off-flavors)
- 15%: Artistic impression

"As a homebrewer, I've always found it incredibly challenging to recreate the subtle complexity of a Czech-style Pilsner," Hermes said. "It was an honor to have my interpretation of the style judged by none other than Vaclav Berka. I'm tremendously flattered to have been selected as a winner in the Master Homebrewer competition. As an added bonus, I'm hoping this will also give me some measure of credibility with my Czech in-laws!"





rom behind monastery walls, monks have been creating unique ales for centuries.

In 2011, Sierra Nevada began in collaboration with the Abbey of New Clairvaux to bring this monastic brewing tradition to America with the release of the Ovila Abbey Ales project. Each of these unique, handcrafted ales is both an homage to, and a continuation of this ancient brewing tradition.

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# AHA: 28,000 Strong and Counting

In each issue of *Zymurgy*, this newly launched column will feature news on the latest happenings at the American Homebrewers Association. The November/December issue seems an appropriate time to look back on some of the accomplishments of the AHA over the past year.

With AHA membership now at more than 28,000 total members, the organization is the strongest it has ever been. Thank you for your support of the AHA. I have always felt that every individual member is an important part of the whole.

Besides being at an all-time high for membership, many other records were set in 2011. This year's AHA National Homebrew Competition had a record 6,996 entries, and the AHA National Homebrewers Conference had record attendance in June with 1,926 homebrewers joining us in San Diego. Next year's conference will be held June 20-23 in the Seattle, Wash. area. Space is limited and registration is sure to sell out yet again. Look for registration for the 2012 conference to kick off February 1, 2012.

In March, we hired the AHA's newest employee, Steve Parr, into the newly created position of AHA business coordinator. Steve works on getting *Zymurgy* onto the shelves of more retailers, helps equip homebrew shops and websites to sell AHA memberships (contact [steve@brewersassociation.org](mailto:steve@brewersassociation.org) if your homebrew club doesn't yet have an AHA web banner), and recruits new locations for the Pub Discount Program. Since he started, Steve has already added 100-plus locations to the more than 500 businesses that give discounts to AHA members. Check out [HomebrewersAssociation.org](http://HomebrewersAssociation.org) for the most up-to-date list of participants.



Over the last several years, the AHA has taken on the role of legislative promoter and protector of the homebrewing hobby. In the past few years, the AHA has helped legalize homebrewing in Utah and Oklahoma. We continue to work with homebrewers in the last two remaining states where homebrewing is not yet legal—Alabama and Mississippi—and hope to bring them into the legal fold soon.

In addition to homebrew legalization, we work on "fair use" of homebrew issues. In Oregon this year, the AHA worked with a dedicated group of homebrewers on legislation that ensures Oregon homebrewers can enter homebrew competitions and share their beer with fellow homebrew club members. The previous year, the Oregon Liquor Control Commission had determined that existing law did not allow for the serving of homebrew outside of the residence where it was brewed. As I write this, the AHA is working with homebrewers in Michigan, Ohio, and Wisconsin on similar fair-use issues.

In August, the AHA launched a new logo for the organization. The AHA staff spent months developing the new logo and we are proud of this new symbol for the Association. The new logo brings in elements of the hobby from raw ingredients to the finished beer. This latest version is the fifth logo in the AHA's 33-year history, according to founder Charlie Papazian. The previous logo had aptly served for more than 10 years, but the time was right for something fresh.

With this issue of *Zymurgy*, we bring you the brand spankin' new e*Zymurgy*. This electronic version of *Zymurgy* is just like the print issue, but can be accessed from anywhere you have an internet connection. It is fully searchable, including searches of individual issues or all electronically published issues. With the launch of e*Zymurgy*, we are including all of the 2011 issues, with plans to add not only all future issues, but back issues as well, making e*Zymurgy* an extremely valuable resource for homebrewers. AHA members can access e*Zymurgy* via a members-only page on





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HomebrewersAssociation.org. Check it out! Coming in 2012, we plan to add Zymurgy applications that will offer an even better user experience on mobile devices.

Speaking of online resources for homebrewers, we are constantly looking to add more resources to help homebrewers make better beer. Hopefully you have had a chance to check out all of the information posted on the Homebrewopedia ([wiki.homebrewersassociation.org](http://wiki.homebrewersassociation.org)). There are hundreds of homebrew recipes posted there, including past gold-medal winning recipes from the National Homebrew Competition. Help the AHA make this great resource even better by adding your own tried-and-true recipes. You can even send us your ProMash or BeerSmith recipe files and we will post them for download along with your recipe page on the Homebrewopedia. Send your recipe files to [AHA@brewersassociation.org](mailto:AHA@brewersassociation.org) along with a link to your recipe post on the Homebrewopedia.

Until next time, happy homebrewing!

**Gary Glass is director of the American Homebrewers Association.** 

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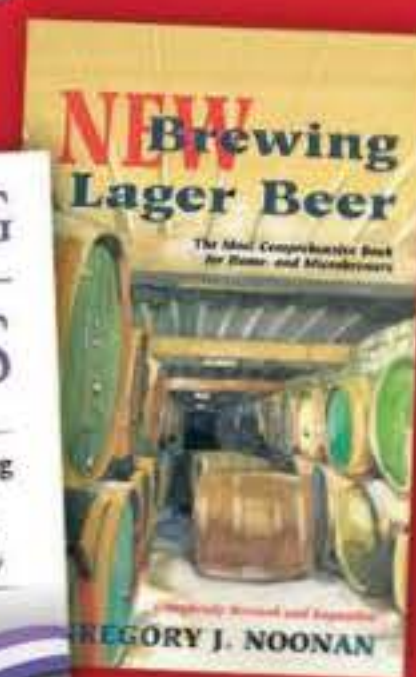
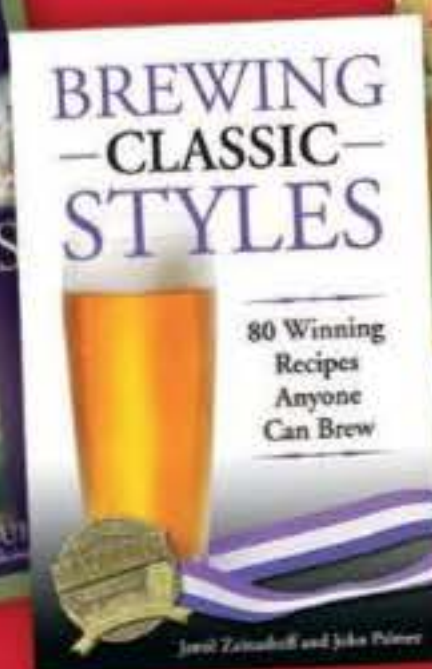
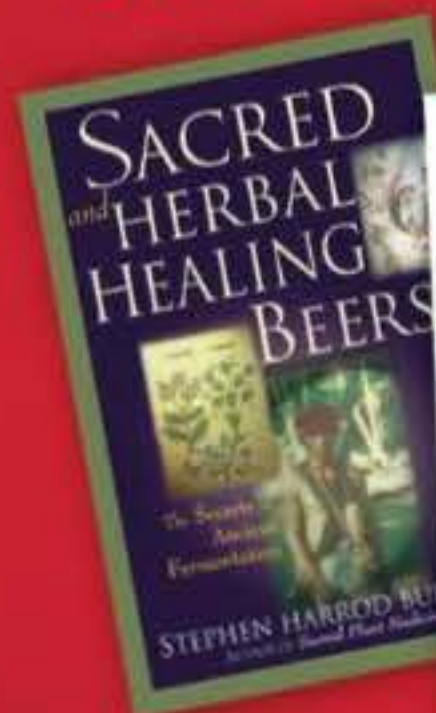


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# What's On Your Bucket List?

Dear Zymurgy,

Imagine my delight and surprise when I saw Women Enjoying Beer as No. 17 on the "25 Things to Add to Your Bucket List" in the September/October Zymurgy. Thank you very much! It's an honor to be in the pages of this fun, interesting, and helpful publication.



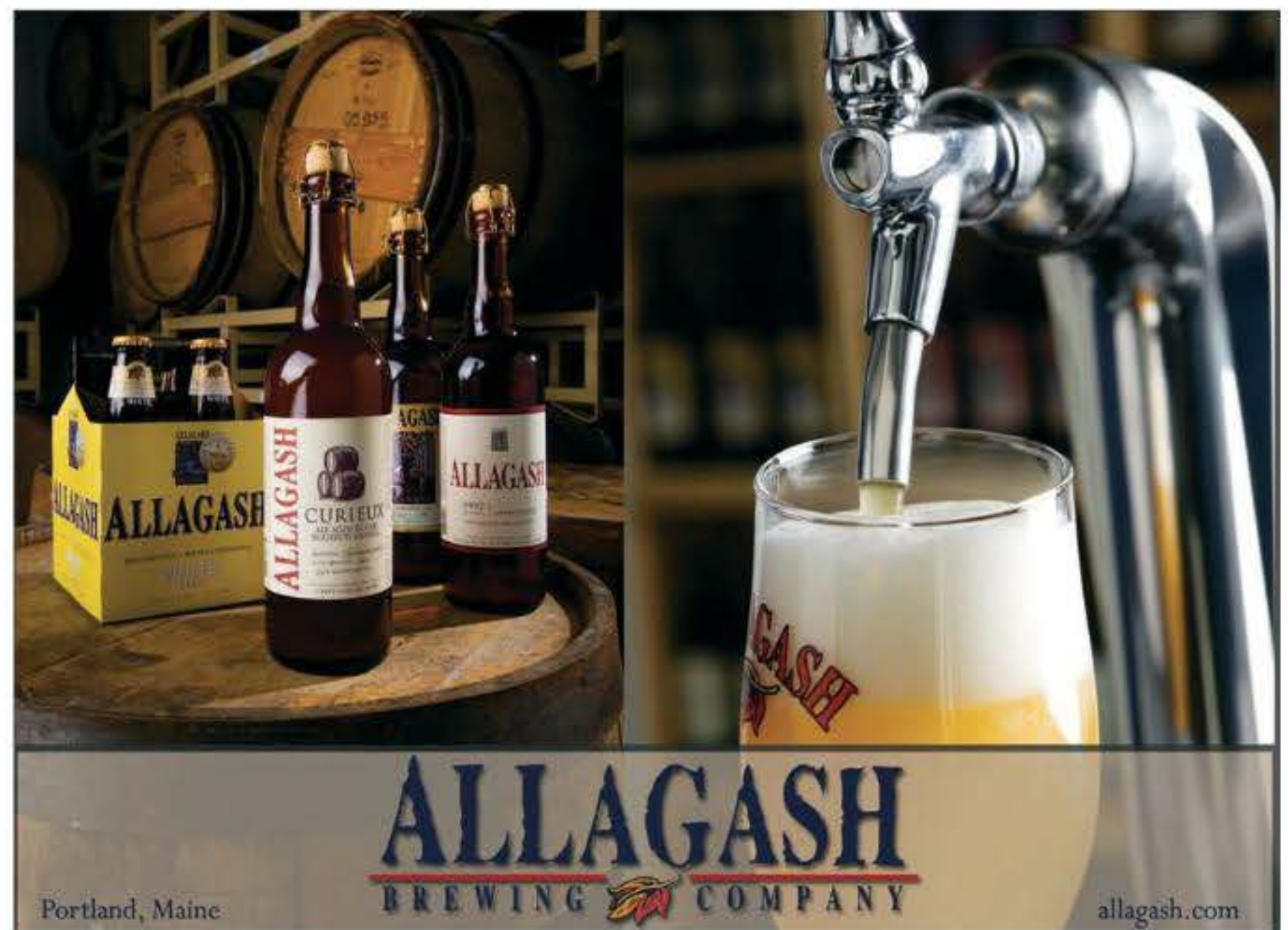
Women Enjoying Beer is an educational business and we are always looking for ways to connect with homebrewing community members. We have a few that come to our meet-ups and we'd love to have more! It's my pleasure to support the homebrewing community in any way we can—including having a local homebrewer as a special guest on a past episode of our weekly BeerRadio show. Knowing I'm in great company with Left Hand's Ales4FemAles makes it a double whammy.

Cheers!

Ginger Johnson

Women Enjoying Beer  
Ashland, Ore.

Send your Dear Zymurgy letters to [zymurgy@brewersassociation.org](mailto:zymurgy@brewersassociation.org). Hey homebrewers! If you have a homebrew label that you would like to see in our magazine, send it to Allison Seymour, Magazine Art Director, at [allison@brewersassociation.org](mailto:allison@brewersassociation.org).





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# Generous or Grinch-like?

Dear Professor,

Several months ago, my wife invited some of her co-workers to our home for a small get-together. A couple of them tried some of my homebrew, and one guy in particular really liked it. In fact, every time I bump into him (we live in a small town, so this occurs frequently), he brings it up and asks when he can try the next batch.

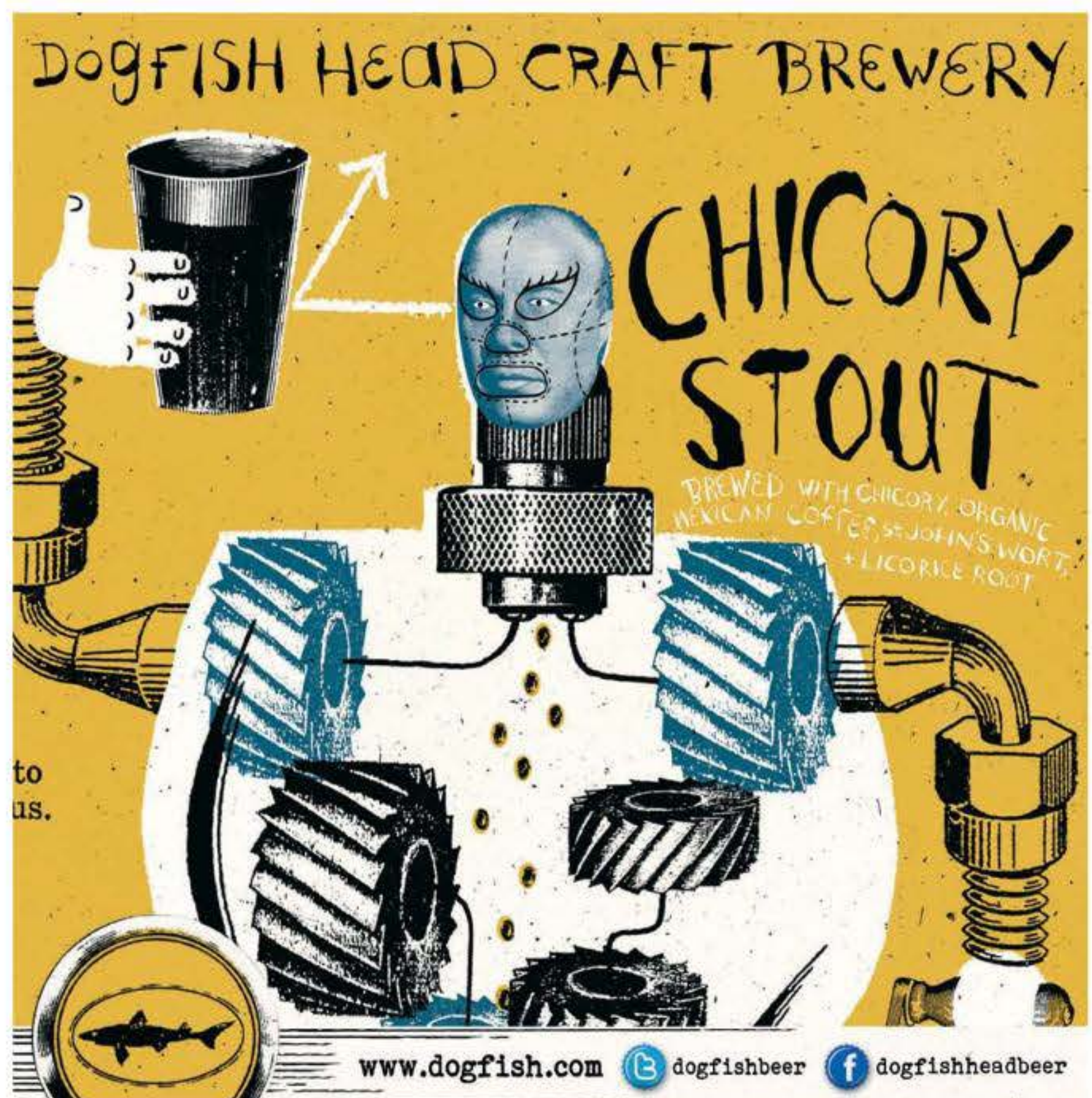
A few days ago, I ran into him at the store, and predictably, he asked about my brew. I have an IPA that just finished bottle conditioning, so I said I would swing by his office and drop off a few beers.

That night, I told my wife about my conversation and said that I was going to bring by four beers for him. My wife thought four was a tad "stingy," and a six-pack seemed like the norm for beers. To me, six seemed like too many (it represented 1/8 of my entire batch) and two seemed kind of cheap. Four felt like a good compromise. If the guy came over to the house, he could have as many as he wanted, but that would probably be two or three for the evening. So, bringing him four beers seemed adequate.

This must happen to homebrewers frequently, and I'm wondering if there is any standard etiquette here. What is the appropriate number of brews to give an acquaintance in a non-gift situation? Is a six-pack the norm? Was four OK? Could you get away with two? What has been your experience in this area?

Thanks!  
Andy Sauer  
Silver City, N.M.

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yourself into. Otherwise called a humdinger of a pickle.

It seems to me that if you are giving six-packs away to friends, they'll never brew. It's just free beer. If he likes it that much, he should get brewing himself, right?

I keg most of my beers, but when I do bottle, they are special beers, so when I give beers away, one bottle is the norm. Am I stingy? I don't think so. When at my home, my beers are on tap and people are given a course on how to pour beer and they're on their own.

---

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---

So to directly answer your question: A six-pack or not? If they are very special friends, then that might be OK, but if I were giving away a six, then it would be a mixed six, not one beer the same. And it wouldn't be a habit-forming gesture.

In your case, a couple would suffice. If he thinks that's stingy, then he may not be that much of a friend—especially one who appreciates the generosity of anyone who gives away his or her homebrew for enjoyment "offsite."

Hope my perspective is useful. Take it or leave it. Oh, by the way, my wife has unlimited rights to homebrew. But she is very good at sensing when I get grumpy.

Send homebrew,  
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 Amahl Turczyn Scheppach

# Carbonating Hefeweizen the Reinheitsgebot Way



**M**any German-style wheat beers, including Bavarian hefeweizen, are known for their explosive levels of carbonation. Three to five volumes of CO<sub>2</sub> is the typical range for bottle-conditioned versions of this style. While forced CO<sub>2</sub> in a keg prior to bottling is definitely possible, according to traditional German practice, all the carbonating CO<sub>2</sub> should come from the fermenting beer itself, not from an external source. Many German breweries get around this with CO<sub>2</sub> recovery systems, so that captured gas can be stored and then reintroduced to the finished beer in measured amounts prior to bottling, but a far more elegant and inexpensive method is available to commercial brewers and homebrewers alike: allowing the fermenting beer itself to provide the necessary CO<sub>2</sub> for carbonation.

Theoretically, this can simply be done by bottling the beer right before it reaches terminal gravity. One to 1.5 degrees Plato (or 1.004 to 1.006) above final gravity

should produce the desired carbonation, so if you know the beer will finish out at 2 Plato, bottle when the beer attenuates to between 3 and 3.5 Plato. In practice, however, this method presents some challenges. First, without lots of experience and the ability to minimize variables from batch to batch, it's hard to predict precisely what that terminal gravity will be. Second, these beers often attenuate rapidly, so constant samples must be taken to determine gravity toward the end of fermentation. It's also entirely possible that the beer could reach the correct bottling gravity when it isn't practical to package it—like in the middle of the night.

So a far more predictable and controllable method is to dose the finished beer with a measured amount of sterile, unfermented wort, called "speise." This not only allows the brewer to accurately determine the finished beer's gravity, it also allows for a period of settling and clarification after fermentation. This is advantageous for

minimizing the amount of settled yeast in the finished, carbonated beer.

Speise can be taken from mash tun runnings, but then it must be boiled for sanitation purposes, and the gravity determined. An easier method is to simply take it directly from the kettle right before knockout. Then there are no worries about deviations in speise gravity vs. wort gravity. Sanitation isn't an issue either, since the wort is essentially "canned" hot, allowed to come to room temperature, and then (ideally) stored cold until the main batch has completed fermentation. A half-gallon glass "growler" with a rubber-lined sealing lid is a great choice for the homebrewer, since it can withstand the heat of the boiling liquid (although preheating with hot water is always recommended), holds just about the right amount of wort for a standard 5-gallon batch (more on this later), and it's easy to tell from the lid that the cooled wort is under a vacuum, and is therefore in sanitary condition.

Given the standard hefeweizen original gravity of 13 to 13.5 Plato, one can approximate using about 1.5 quarts per 20-quart batch, or 1.4 liters per 19-liter batch of speise of equal gravity to achieve appropriate levels of carbonation (3 volumes) in a 5-gallon batch. If using a growler to store the speise, this allows for clean wort to be poured off the remaining pint or so (which, if taken from a vigor-



## FOR REFERENCE

Approximate degrees Plato = specific gravity points divided by 4, where 1.050 is "50 points." So a 1.054 original gravity would be approximately  $54 \div 4 = 13.5$  Plato.



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ously boiling kettle at the end of the boil, will likely contain settled break material and perhaps hops). Once measured, it needs to be mixed thoroughly, and with minimal introduction of oxygen, into the finished, settled main batch of beer. The easiest way to do this is to siphon or carefully pour the speise into a sanitized carboy. Greater protection against oxygen uptake at this stage can be achieved by piping in a blanket of CO<sub>2</sub> beforehand. Then, rack the finished wheat beer onto the speise and bottle. Failure to mix thoroughly may result in varying levels of carbonation per bottle, perhaps with some exploding bottles!

If approximations and rules of thumb are not your thing, however, Eric Warner's seminal Classic Beer Style Series on *German Wheat Beer* offers more precise measurement in the form of a handy formula.

% Speise = {[(% desired CO<sub>2</sub> content – 0.2)/0.46]/(starting °Plato – real final °Plato)} X 100

So, to get the amount of speise necessary to carbonate a given amount of beer, plug in your target weight of CO<sub>2</sub> expressed as a percentage (let's use a fairly standard 0.5 percent by weight, or about 2.57 percent



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by volume), then subtract 0.2, which is the standard amount by weight of dissolved CO<sub>2</sub> already present in a fermented batch of beer. That gives you 0.3. Divide by 0.46 (1 gram of sugar will produce 0.46 gram of CO<sub>2</sub>) and you have 0.6521739. The rest of the formula is based on apparent attenuation. Let's say our starting gravity is 13.5 °P and the final gravity is 2 °P, which brings you to 11.5 °P after subtraction. 0.6521739 divided by 11.5 is 0.0567107 multiplied by 100= 5.67. So 5.67 percent of a 19-liter batch is 0.0567107 X 19 liters, or 1.08 liters of speise.

Note that the amount of CO<sub>2</sub> here is expressed in weight (grams per liter) rather than volume. The conversion factor from volumes to weight is 0.194, and from weight to volume is 5.147. So 0.7-percent carbon dioxide by weight, a good target for a traditional hefeweizen, would be 0.7

X 5.147 = 3.6 volumes. Yes, this is a lot of CO<sub>2</sub>! So if you are not completely sure your main batch has thoroughly attenuated, adjust downward accordingly to avoid possible gushers. Personally, I find 1.6 quarts per 20-quart batch, or 1.52 liters per 19-liter batch, to be plenty—according to the above formulae, this percentage of speise will give you 3.09 volumes of CO<sub>2</sub>, which is still an impressively gassy beer. But assuming you want to go all-out and 3.6 volumes is the target for a beer with a starting gravity of 13.5° Plato and a finishing gravity of 2° Plato, the formula yields 1.09/11.5 = 0.9 X 100 or 9 percent of the total wort volume. For a 20-quart batch, this means 1.8 quarts, or for a 19-liter batch, it's 1.71 liters.

For reference, approximate degrees Plato = specific gravity points divided by 4, where 1.050 is "50 points." So a 1.054

original gravity would be approximately 54 ÷ 4 = 13.5° Plato.

More information on the application of this formula can be found in Warner's book in Chapter 5, "Fermenting, Conditioning and Packaging Weissbier." For the hefeweizen enthusiast intending to use this natural, Reinheitsgebot-accepted, and economical method of carbonating wheat beer, reading *at least* this chapter is highly recommended! And adventurous brewers needn't be limited to hefeweizen for this method of carbonation. Known as "kraeusening," it can be applied to any beer style, with its advantages particularly suiting British real ales. Just change "speise" to "gyle," and you're good to go—the formula works just as well.

**Amahl Turczyn Scheppach is a former craft brewer and associate editor for *Zymurgy*, and now brews at home in Lafayette, Colo.**

## Weizenbock

This recipe is based on "Trick or Treat Bock" from *Brewing Classic Styles* by Jamil Zainasheff and John J. Palmer

### INGREDIENTS

for 5.25 U.S. gallons (20 liters)

<b>3 cans</b>	(9.9 lb, or 4.5 kg) Coopers Wheat Malt Extract (5° L)
<b>1.5 lb</b>	(680 g) Light Munich Liquid Malt Extract (10° L)
<b>0.5 lb</b>	(227 g) Special B Malt (120° L)
<b>0.5 lb</b>	(227 g) Crystal Malt (40° L)
<b>0.25 lb</b>	(113 g) Light Chocolate Malt (350° L)
<b>1.5 oz</b>	(43 g) Hallertau Hersbrucker (or similar German noble hops) pellet hops, 4.75% alpha acid (60 min)
<b>3 packages</b>	Wyeast 3068 Weihenstephan Weizen Yeast, or 3 vials White Labs WLP300 Hefeweizen Ale Yeast, or make an appropriate sized yeast starter
	Coopers Brewery Carbonation Drops for bottling

**Original Specific Gravity:** 1.078

**Final Specific Gravity:** 1.021

**IBU:** 18.4

**ABV:** 7.6%

### DIRECTIONS

Steep the grains in 1.75 gallons (6.6 L) of water heating up to 170° F (77° C). Strain the water from the grain and sparge with 0.5 gallons (1.9 L) hot water. Stir in malt extract for a total volume of 3.54 gallons (13.4 L), and bring to a boil. Add bittering hops and boil for 60 minutes. Cool the wort, and pour it into the fermenter with enough cold water to make 5.25 gallons (20 liters). Aerate and pitch yeast when temperature drops to 60° F (15° C). Ferment at 62° F (17° C) for one or two weeks or until fermentation is complete. Prime with Coopers Brewery carbonation drops at bottling (at room temperature) for 2.5 to 3 volumes of CO<sub>2</sub>.

### Resource

Warner, Eric. *German Wheat Beer*. Classic Beer Style Series Vol. 7. Boulder, Colo: Brewers Publications, 1992.



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# COLD FERMENTED ALES

## **BREWING BETWEEN THE DOG AND THE WOLF**

**BY MARK PASQUINELLI**

When I began brewing, I was almost overwhelmed by the sheer volume of information. It was a brave new world, and my thirst for knowledge was as unquenchable as my desire to drink quality homebrew. There were so many questions about how to brew, but the question of what to brew was every bit as vexing. Each category of the BJCP Style Guidelines had several subcategories, which only added to the confusion.

However, after a few deep breaths (and a few barley-wines), I realized that I was making things difficult for myself. There were only two kinds of beers: ales and lagers. Beers made with ale yeast fermented at room temperatures and were better choices for beginners. Beers using lager yeast needed lower fermentation temperatures and should be attempted only after acquiring some homebrewing acumen.

As I acquired that knowledge, I became a firm believer that fermentation is everything when it comes to brewing a great beer. Most recipes for a particular style are

similar, varying only by one or two different ingredients or amounts. What makes or breaks a recipe is having the proper yeast strain, pitching enough healthy cells, and fermenting at the recommended temperature.

Much has been written—and agreed upon—by homebrewing literati about the perils of brewing at higher-than-recommended temperatures: fusel alcohol headaches and those funky “homebrew flavors” that plague so many beginner beers.

Of course, some strains of yeast are outliers and can be fermented at temperatures considered warmer than normal. The Wyeast California Lager and White Labs San Francisco Lager strains used for brewing California Common can be fermented at up to 65 °F (18 °C) and still retain lager characteristics. Saisons and other Belgian styles are routinely fermented warm. However, many of those Belgian fermentations in the 80 °F (27 °C) range are done under carefully controlled conditions that are not available to most homebrewers.



But what about fermenting homebrew at temperatures lower than recommended? I had seen little information on this topic. Perhaps it was time for an investigation.

Lager yeasts weren't candidates for this treatment since they're already fermented cold. That left ale yeast as the only viable choice for experimentation.

All this conjecture led to my premise: Would certain ale yeast strains fermented in that gray area between ales and lagers—a region similar to the French expression

*l'heure entre chien et loup* ("between the dog and the wolf," referring to the hour when it becomes twilight)—taste superior to their warmer fermented brethren? This working hypothesis—deliberately disobeying the manufacturers' recommendations—was not only intriguing from a homebrewing standpoint, it also appealed to the anarchist in me.

### THE GERMAN INVASION

Next, I needed to determine the candidates for the comparison studies. Homebrews like pale ales, porters, and stouts that

used the venerable Wyeast 1056/White Labs WLP001 California Ale/Safale US-05 weren't candidates. Although it's dependable and is a personal favorite, that strain has a clean, neutral flavor profile at a wide temperature range. I needed homebrew styles whose flavors were heavily influenced by their yeast, but had a simple grain bill with minimal hopping that would not cloud my taste buds. As it turned out, the choices were right under my nose.

For the past few years, I've used the Harold Gulbransen and Jamil Zainasheff method of fermenting Bavarian hefeweizen at 62 °F (17 °C). The results have been excellent. Previous hefeweizens fermented at the recommended 68 °F (20 °C) had proven to be inconsistent at best—great one batch and so-so the next. The lower fermentation temperature seemed to consistently produce a better balance between clove and banana notes. But I had always wondered if the improvement was solely due to a lower fermentation temperature, or the step mashing regimen that I had instituted at approximately the same time.

Choosing hefeweizen would also allow me to answer another nagging question: which yeast manufacturer to use? I've been a strict disciple of the WLP300 yeast. However, the first hefeweizens I brewed many years ago were made with Wyeast 3068. I had been disappointed with the results, but maybe the problems were caused by my faulty brewing and fermentation techniques, and not the yeast. The Wyeast 3068 deserved another chance, especially since I've seen homebrew forums touting it over the WLP300. The passion and vitriol between the rival camps in the forums is reminiscent of the great East versus West Carolina barbecue sauce debate.

Kölsch proved to be a no-brainer for the second choice. The style's unique yeast, simple grain bill, and low bitterness fit my requirements perfectly. As an added benefit, my wife had been begging me to brew one.

Wyeast recommends a cold, lager-like fermentation temperature of 55-60 °F (14-16 °C) for its Kölsch 2565 yeast.

An insulated cooler filled with cold water and ice packs was used to ferment at lower temperatures (top). Let the tasting begin! (bottom)





White Labs prefers a much warmer range of 65-69 °F (18-21 °C) for its WLP029 Kölsch yeast, with the admonition not to drop the temperature under 62 °F (17 °C) unless the yeast is actively fermenting. Since Wyeast already recommends a cold fermentation and White Labs goes out of its way to warn against it, I chose to use the White Labs strain for my experiment.

Local professionals couldn't seem to agree on proper fermentation temperature for Kölsch either. At the two brewpubs I consulted, one used WLP029 and fermented at 68 °F (20 °C) before crashing the temperature down to 38 °F (3 °C) for a week's worth of lagering. The other brewpub compromised, mixing the Wyeast and White Labs strains, and fermenting in the low 60s before lagering. Even many of the experts, the Kölsch brewers of Cologne (Köln), have flip-flopped, according to the BJCP Style Guidelines, fermenting at 70° F (21° C) and lagering for no more than two weeks.

### WE HAVE RULES AROUND HERE

I needed to have parameters for my comparison studies to be valid. Everything had to be uniform, with temperature being the only variable. In addition, I had to design the experiment so that I could repeat the results in future batches. I had the ability to ferment in a refrigerator with a temperature probe placed directly into the fermenting wort. Unfortunately, most homebrewers don't have that luxury. That led to my other consideration: I had to design the experiment so that my results could be duplicated by those very homebrewers. Thus, I took a decidedly low-tech approach for brewing both the Kölsch and the hefeweizen.

I used the old standby method of controlling fermentation temperature with insulated coolers filled with cold water and ice packs. I've used this technique successfully for several years. My 3-gallon carboys fit nicely inside the coolers, and I had dozens of ice packs left over from online yeast orders.

Deciding on the temperature difference between the split fermentations was also important. I needed a large-enough gap between the warm and cold fermentations

for the taste difference to be discernible, but not so large that the cold portion wouldn't ferment to completion. This was a comparison study, not an experiment about ale yeast performance at extremely low temperatures. I settled on the ranges of 60-62 °F (16-17° C) and 68-70 °F (20-21 °C) for the hefeweizens; and 54-56 °F (13-14 °C) and 68-70 °F (20-21 °C) for the Kölsch.

### THE RUBBER MEETS THE ROAD

The Kölsch brewing went smoothly. I had brewed a trial batch a few weeks earlier to

familiarize myself with the style and made only a few changes, dropping the mash temperature down a degree to 149 °F (65 °C) and slightly increasing the IBUs from 25 to 30. The trial batch also provided a large yeast slurry that I split as evenly as possible between the two portions. The original gravity was 1.050, exactly where I wanted it to be. Predictably, the warmer fermentation started bubbling within 12 hours, while the colder one needed until the next morning to kick into gear. This was actually impressive since the fermentation was starting from a standstill at a

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# KAROL'S KÖLSCH

## Ingredients for 6 U.S. gallons (27.3 liters)

9.50 lb (4.3 kg) German Pilsner Malt  
0.50 lb (227 g) Vienna Malt  
1.75 oz (50 g) Hallertauer hops (4.20% a.a.) 60 min  
WLP029 Kölsch yeast (1500 ml starter)

Original Gravity: 1.050 (84% efficiency)

Final Gravity: 1.008

SRM: 3

IBU: 21

## Directions

Mash at 149 °F (65 °C) for 60 minutes. Sparge to collect 7.5 gallons (34 liters) of wort. Mash out at 168 °F (76 °C) for 10 minutes (optional). Boil for 90 minutes. Chill to 54-56 °F (13-14 °C) and pitch Kölsch yeast. Ferment to completion. Keg or bottle carbonate at 2.0-2.5 volumes of CO<sub>2</sub>. Lager for 3-4 weeks (if you can wait that long) before serving.

**Extract version:** Substitute 8.4 lb (3.8 kg) liquid Pilsner extract for the grains. Add to water, bring to a boil, and proceed with recipe as written.

low temperature. Both portions produced some sulfur—normal for this yeast—that eventually dissipated. The warmer fermentation finished within two weeks. The colder one needed an additional week. However, both batches of the Kölsch finished with the same final gravity: 1.008.

The homebrews were then kegged, force carbonated to 2.5 volumes of CO<sub>2</sub>, and lagered at 40 °F (4 °C) for three weeks before tasting.

The volume of hefeweizen needed—approximately 12 gallons—required dou-

bling my recipe and some adjustments to my brewing system. A friend came to the rescue and offered his 15-gallon boiling kettle since my system is designed to brew only 5 gallons. Fortunately, my mash tun holds enough grain, about as much as I need for a barleywine, so I was in business. The OG was a little high for the style: 1.065 (although no one complained at the tasting). I'm not sure what accounted for the higher efficiency of the double batch. I made starters for both the WLP300 and Wyeast 3068. Even though I purchased both yeasts at the same time, the Wyeast was two months past its "best by" date, while the White Labs yeast was fresh. In spite of this, the Wyeast 3068 at 68-70 °F (20-21 °C) started fermenting within six hours. The WLP300, by comparison, needed well over a day to begin active fermentation at 60-62 °F (16-17 °C). Like the Kölsch, the colder fermentations needed an extra week to hit their final gravities, which ranged from 1.013 to 1.015 for the four hefeweizens. I bottle carbonated all four portions in 22-ounce bottles at 2.5 volumes of CO<sub>2</sub> and aged them for two weeks before the tasting.

## JUDGMENT DAY

I gathered several homebrewer friends (including one BJCP certified judge) for the tasting. The six homebrews were paired off and arranged into three tiers. No one knew the fermentation temperatures, and, in the case of the hefeweizens, which yeast strain was used. My wife and I had made our tasting notes earlier so we could focus on our friends' responses. I supplied BJCP Style Guidelines sheets for consultation during the tasting. Everyone was familiar with hefeweizen, but Kölsch was new to a few of them.

Here are some of the comments. I omitted the duplicates, and, naturally, there were some conflicting opinions.

**Kölsch 1:** WLP029 Kölsch, 54-56 °F (13-14 °C)

Very slight fruity aroma and flavor (pear?). A little sweet with a puckering finish. The mouthfeel is the same as #2. Has more hop character than #2.

**Kölsch 2:** WLP029 Kölsch, 68-70 °F (20-21 °C)

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None of the judges knew the fermentation temperatures or which yeast strain was used for the hefeweizen.

Maltier aroma and taste than #1 and not as sweet. Better head retention. Pear aroma, fruitier than #1. Not as clean as #1. Slight winery character.

**Hefeweizen 1:** Wyeast 3068, 60-62 °F (16-17 °C)

Good banana flavor and aroma. Very estery, banana bread and bread notes. Minimal clove. Lingering phenolics. Creamy mouthfeel. Better finish than #2. This has to be the White Labs 300 yeast.

**Hefeweizen 2:** Wyeast 3068, 68-70 °F (20-21 °C)

Minimal banana flavor. Slight clove flavor, about the same as #1. Less phenolic, more balanced banana/clove than #1. Slight astringency. More bubble gum aroma than #1.

**Hefeweizen 3:** WLP300, 60-62 °F (16-17 °C)

Phenolic, less banana than #1, #2, or #4. Better mouthfeel than #4. More bread,

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## HANDS-DOWN HEFEWEIZEN

**Ingredients** for 6 U.S. gallons (27.3 liters)

7.50 lb (4.3 kg) German Wheat Malt  
4.0 lb (1.8 kg) German Pilsener Malt  
0.50 lb (227 g) Munich Malt  
0.25 lb (113 g) Rice hulls  
1.25 oz (35 g) Hallertauer hops (4.2% a.a.) 60 min  
Wyeast 3068 or WLP300 Hefeweizen yeast (1500 ml starter)

Original Gravity: 1.060 (81% efficiency)

Final Gravity: 1.013

SRM: 4

IBU: 14

### Directions

Mash at 104 °F (40 °C) for 10 minutes. Raise mash to 125 °F (52 °C) for 20 minutes. Raise mash to 150 °F (66 °C) for 60 minutes. Mash out at 168 °F (76 °C) for 10 minutes (optional). Collect 7.5 gallons (34 liters) of wort. Boil for 90 minutes. Chill to 60-62 °F (16-17 °C) and ferment to completion. Keg or bottle carbonate at 2.5-3.0 volumes of CO<sub>2</sub>. Drink and refrigerate as soon as carbonated.

**Extract version:** Substitute 10 lb (4.5 kg) liquid weizen extract (wheat/pils blend) for the grains. Add to water, bring to a boil, and proceed with the recipe as written.

banana, and wheat character than #3. Is this the higher temperature one? Sweeter and fruitier than #4.

Hefeweizen 4: WLP300, 68-70 °F (20-

21 °C)

Drier, not as fruity as #1, #2, or #3. Classic nose, cleaner flavor than #3. Very spicy, maybe a bit too much on the tongue. Not breadly enough. More clove

than the others. Less banana than #3, tart finish.

### THE ENVELOPE, PLEASE

I'd like to think each homebrew was a winner, but decisions had to be made. I tallied the votes, and the results were surprising. The Kölsch fermented at 54-56 °F (13-14 °C) narrowly edged the one fermented at 68-70 °F (20-21 °C). However, the differences between the two were slight at best, and as the warmer fermented Kölsch continued to lager, the differences grew even less discernible.

The voting on the hefeweizen was decisive. The hefeweizens fermented at 60-62 °F (16-17 °C) were unanimous favorites, with the Wyeast 3068 preferred over the White Labs—although one participant still doesn't believe he liked the Wyeast better. The hefeweizen fermented with Wyeast 3068 at 68-70 °F (20-21 °C) finished third, and the WLP300 fermented at 68-70 °F (20-21 °C) finished fourth.

It appears that fermenting certain ale yeasts at lower-than-recommended temperatures can indeed improve flavor. I always thought that higher fermentation temperatures produced more esters, which meant more fruitiness. Not necessarily so. The WLP029 Kölsch yeast performed admirably in the mid 50s, despite the manufacturer's warning. Kölsch will be a regular in my summer homebrewing repertoire.

Wyeast 3068 is a viable contender with WLP300 for the hefeweizen yeast of choice. The great debate will continue in homebrew forums everywhere, but my next batch of hefeweizen will be made with the Wyeast when I ferment cold, in that gray area of twilight between the dog and the wolf.

**Mark Pasquinelli resides in Elysburg, Pa. with his wife and four cats. He's a member of the PA-Alers Home Brew Club and has been homebrewing since 1995. He likes to brew pale ale, pumpkin ale, and an imperial stout with hallucinogenic qualities.**

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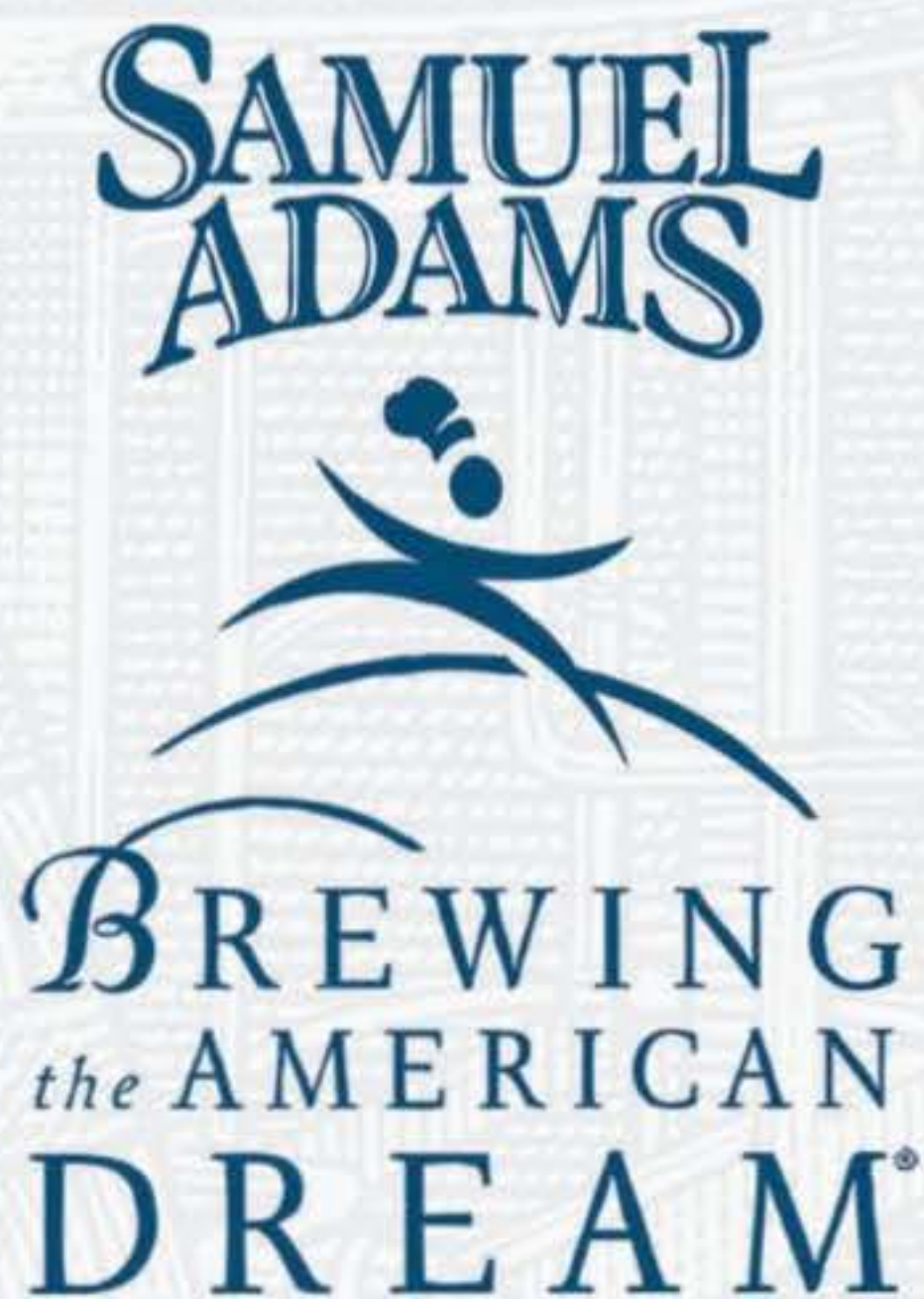


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## HOP EXPERIMENT:

# North American

BY TED HAUSOTTER

**F**or years, Hallertauer Mittelfrüh has been the standard lager hop. In fact, it's a classic hop that defines what a good lager should taste like. Why, then, would we think about using North American grown hops in lagers? The answer differs for each of us. Some want to support local farmers; others just want a backup if the European crop fails. For me, I want the freshest hops available. If the hops don't climb out of the glass and say "Drink me, drink me!", then why are we using them?

Historically, North American industrial brewers used European hops for their premium lines of beer for flavor and aroma additions. During years when the European crop fell short, they had to make do with American hops such as Cluster to keep up with production demands. While a good hop, Cluster is not in the same class as the noble hops and their beer was not consistent. Other American hop options were limited at the time, back in the day before Cascade and Willamette were released and accepted by the brewing industry.

The solution to the hop crisis was to contact the hop industry about growing classic German hops here in North America. From a farming





## *German Hops* **IN GERMAN PILSNER**

standpoint, this was not very feasible, as only one of the hop growing districts has similar growing conditions, so yields would suffer. The industry turned to Al Haunold, a USDA hop scientist, to breed hops similar to the German noble hops that can be grown in North America. This would solve the climatic issues, but still provide the same German hop character that brewers expected.

The outcome of the breeding program was four hops that mimic Hallertauer Mittelfrüh and one each for Saaz and Tettnanger. They are Liberty, Crystal, Mount Hood, and Ultra for Hallertauer Mittelfrüh, Sterling for Saaz, and Santiam for Tettnanger. All are unique in character and have a strong sensory profile linked to a beer their German counterparts are known for. Other criteria in the breeding program included yield, disease resistance, alpha acid, and total oil content. Mount Hood, Santiam, and Sterling have considerably higher alpha acid levels than their respective European hop. All the hops with the exception of Liberty clearly have higher total oil levels, with Santiam and Sterling nearly double their European counterparts. With higher oil levels in the hop flowers, flavor and aroma additions can be reduced, as well as bittering additions.







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I first started using Hallertauer back in 1983. Over the years I found the hops to vary greatly between batches. What was going on? Turns out, it's no wonder they varied since I did not always get the same hop variety. Hallertauer Hallertau, for example, is not the same variety as Hallertauer Mittelfruh, even though they are grown in the same region (Hallertau). Other hop growing regions in Germany are Spalt, Tettnang, and Hersbruck. Today you can get Nugget, Tradition, Hersbruck, and Mittelfruh all from the Hallertau region. "Er" is added to the end of the region to designate where the hops came from, e.g. Hallertauer is from Hallertau and Spalter is from Spalt. To put it into North American terms, Oregon-grown Cascades would be "Oregoner Cascades" versus "Idahoer Cascades" from Idaho.

While I have been happy using Hallertauer Mittelfruh, a brewer wanting the best for his or her beer has to wonder about the effects of shipping on imported hops. Like in North America, the German hop harvest starts in late August, but the hops do not arrive in North America for sale from the distributors until the middle of December. Most are shipped in large ocean containers, which involves sitting on docks waiting for the boat and waiting to clear customs. Then they have to be shipped to the distributor. Meanwhile, the hops slowly degrade while waiting to be delivered to the brewer. Weather, the location they are stored on the boat, and port of entry can all make a difference, especially with current research showing that temperatures above 86° F (30° C) quickly degrade hop quality. Taking this into consideration, could North American hops be better, then, than using German hops?

### The Experiment

A beer tasting of five single-hopped beers was in order to test which were suitable for brewing German style beers that would traditionally use Hallertauer Mittelfruh. German Pilsner was chosen as the beer style; it is a hop showcase for German beers. The North American hops chosen were Liberty, Crystal, Mount Hood, and Sterling. Santiam and Ultra were not part of this experiment due to processing limitations of 25 gallons of lagers in my brew-



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ery. This is by no means a determination of lack of suitability of these hops.

The mash was large: 39 pounds (17.7 kilograms) of malt was stuffed into a 15-gallon (57-liter) mash tun. To fit, the grist-to-water ratio was dropped from a normal 38 to 35 ounces (1,007 to 992 grams) per pound (454 g). The mash temperature was lowered to 149 °F (65 °C), as the thicker mashes favor the production of body-building dextrins, and the cooler-than-normal mash temperature would help counteract that. The sparge was stopped at 1.010 and the wort was split into five 5-gallon (19-liter) boils after thoroughly mixing.

Each would have a single hop variety. Hop oils were reviewed against normal ranges and the amount of all flavor and aroma additions adjusted to keep the same oil level as the control beer, which used Hallertauer Mittelfrüh. Bitterness additions were calculated last and designed to give the same overall bitterness level. Fermentation was carried out in 5-gallon (19-liter) corny kegs on the same shelf of my fermentation freezer. Fermentation temperature was set at 50 °F (10 °C) and allowed to rise to 55 °F (13 °C) during week two. All beers were pitched with 1.25 pounds (567 grams) of yeast slurry.

While tasting the beers, three important questions kept coming up. Does it smell and taste like a German beer? Is it a good hop for Pilsners? If not, in what styles should a brewer use this hop? The tastings were performed three times: the first a sneak preview and very informal, the second a blind tasting at a Good Libations club meeting, and the last an impromptu blind tasting with club members. At the second tasting, we determined that the beers had picked up too much sediment, detracting from the hop character. They were clearly not as good as we remembered two days prior. It required a third tasting where the beers were drawn from the keg with a short beer tube to take the beer off the top, away from the sediment. The results were clear tasty beers, each one unique.

### *Our Tasting Notes*

#### *Hallertauer Mittelfrüh*

A solid hop. It's easy to see why it is a

## German Pilsner

### INGREDIENTS

for 5 U.S. gallons (19 liters)

7.1 lb	(3.2 kg) German Pilsner malt
0.4 lb	(181 g) German Vienna malt
0.4 lb	(181 g) Wheat malt
1.75 oz	(50 g) German Hallertauer Mittelfrüh hops, 3.2% a.a. (60 min)
1.65 oz	(47 g) German Hallertauer Mittelfrüh hops, 3.2% a.a. (30 min)
0.55 oz	(16 g) German Hallertauer Mittelfrüh hops, 3.2% a.a. (5 min)
1	2278 Wyeast Czech Pils yeast

Original Gravity: 1.047

Final Gravity: 1.008

IBU: 36

80% efficiency

### DIRECTIONS

Infusion mash at 150 °F (66 °C). Sparge until runoff is 1.010 to 1.015. Boil for 60 minutes and cool to 50 °F (10 °C). Pitch yeast.

**EXTRACT VERSION:** Substitute 6.33 lb (2.9 kg) Pilsner malt extract syrup for all malts and proceed with the recipe as written.

**HOP SUBSTITUTIONS:** See page 31.



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classic. It took first place for using it in Pilsner-style beer. The flavors had spice and some herbal notes but earthier—not garden earth like the English hops tend to be, but a deep, dark forest earth. Light lemon and lemon peel was found. It had the highest “German” character. No loss of flavor despite its travels to America!

#### Mount Hood

Took second place for using in Pilsners. It had the second highest level of forest earth and German character. It also had the highest level of floral character. Lemon was in modest amounts, slightly higher than Hallertauer Mittelfrüh. Moderate

spice. In discussing this hop, we thought it would also work well in Munich dunkel, German weizen, and schwarzbier. With the much smaller quantity of hops in these styles, the higher floral character should not be an issue.

#### Sterling

Bred to be a clone of Saaz, it was surprising how well it fit in with German Pilsners. It just made third place by one point. Good German character with lower forest earth. Spice was moderate, and citrus in the form of lemon and light grapefruit was found at levels just above Hallertauer Mittelfrüh. Flavors were not

as crisp and clean as the other hops, which could be a hop quality versus a varietal issue. It did have the most Saaz character of all five hops.

#### Liberty

Another fun hop. It showed more citrus notes than the Hallertauer Mittelfrüh. It was the second highest of the group, but a large distance behind the citrus leader Crystal. For German character, it tied for third place. Forest earthiness was low, along with spiciness. It came in fourth for using it in Pilsners, but when we blended it with Mount Hood, the synergy brought both hops to greatness. It has found a space in my hop arsenal for brewing Pilsners and other light-colored lagers.

#### Crystal

Commonly noted as a substitute hop for Hallertauer Mittelfrüh, but I think not. It is too American to work well in a German Pilsner. It would work well in a Classic American Pilsner or go beautifully in blond ales and American wheat beers. Tasting the hop made all of us want to brew again; it is unique and won all of our hearts, a clear favorite—but not for German Pilsners. It exhibits much more citrus than the rest with strong levels of lemon. Very clean tasting hop character. No forest earth character.

Overall, I would not hesitate to use Liberty, Mount Hood, or Sterling in a bock, Munich dunkel, German weizen, Oktoberfest, Vienna, or other beer that traditionally uses Hallertauer Mittelfrüh hops. Crystal is a beautiful hop that will give a solid performance in blond ales, bitters, and hop blends.

Special thanks to Al Haunold for hop insights, Brewcraft for donating the malt and hops for this experiment, Silver Moon Brewing in Bend, Ore. for donating the yeast, and Good Libations brew club from Baker City, Ore. for helping with the tasting of the beers.

**Ted Hausotter is an award-winning homebrewer from Baker City, Ore. and the Mountain/Northwest regional representative for the Beer Judge Certification Program.**



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## Hop Substitutions

Hop additions for the other test hops are below. Oil level for Hallertauer Mittelfrüh is 1 mls/100grams. At this time, total hop oils are not listed on most packaging for homebrewers. Use the mean of the range given in hop varietal data.

**Mount Hood:** Oil level 1.15 mls/100grams

0.80 oz (23 g) Mount Hood hops, 5.3% a.a. (60 min)

1.45 oz (41 g) Mount Hood hops, 5.3% a.a. (30 min)

0.50 oz (14 g) Mount Hood hops, 5.3% a.a. (5 min)

**Liberty:** Oil level 0.9 mls/100grams

1.65 oz (47 g) Liberty hops, 3.2% a.a. (60 min)

1.80 oz (51 g) Liberty hops, 3.2% a.a. (30 min)

0.65 oz (18 g) Liberty hops, 3.2% a.a. (5 min)

**Sterling:** Oil level 1.6 mls/100grams

0.90 oz (26 g) Sterling hops, 5.7% a.a. (60 min)

1.00 oz (28 g) Sterling hops, 5.7% a.a. (30 min)

0.35 oz (10 g) Sterling hops, 5.7% a.a. (5 min)

**Crystal:** Oil level 1.25 mls/100grams

2.40 oz (68 g) Crystal hops, 2.7% a.a. (60 min)

1.35 oz (38 g) Crystal hops, 2.7% a.a. (30 min)

0.45 oz (13 g) Crystal hops, 2.7% a.a. (5 min)



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Here is the  
Guido Sarducci  
boildown of  
some of the  
“takeaways”  
I learned from  
my brewing  
education.

Dan Gordon , co-founder of  
Gordon Biersch Brewing Co.



# Lager Brewing the German Way

By Dan Gordon

I was fortunate growing up to experience Austria, Germany, and Switzerland at an early age. The exposure enabled me to acquire a penchant for beer (under parental supervision, of course) at the ripe age of 15. My favorite beer moment back then was at a town festival in Isny, Germany drinking helles from a half-liter ceramic mug and eating grilled sausage. I was hooked.

The next harbinger of my future profession was as a rotary exchange student in Austria. My host family, the Schachingers, had two sets of neighbors in their town of Ried im Innkreis that owned breweries. I definitely took advantage of that situation on a daily basis.

As an undergraduate at UC Berkeley, I spent a year abroad at Georg August University in Göttingen, Germany. One day, I was sitting outside in the courtyard

of my dorm with some classmates drinking an Einbecker Maibock, thumbing through a catalog of all of the various majors at German universities. *Brauwesen und Getränketechnologie* (Brewing Science and Beverage Technology) jumped off the pages. I asked one of my classmates if the major was legitimate—he stated that not only was it for real, but at the highly esteemed, world famous Technical University of Munich at Weihenstephan. The pivotal moment had occurred. I had worked in canneries during college and loved manufacturing, and here was a chance to combine my love of beer and manufacturing. I applied for admission to the five-year brewing engineering program and was accepted.

After some hands-on experience as a brewer at Anheuser-Busch in Fairfield, Calif., I was on my way to Freising, a suburb of Munich and the location of the

Weihenstephan Campus. I was quickly oriented to find out the curriculum was grueling and that the attrition rate was approximately 85 percent. It consisted of a lot of chemistry, microbiology, mechanical, electrical, and process engineering with some business classes thrown in to mix it up. The famous professors Narziss, Dornhauser, Piendl, and Back didn't really come into the mix until the third and fourth years. Exam time was grueling: all exams for the entire year's worth of curriculum were held in September during a three-week timeframe. In any case, I survived. During my studies, I was also able to do internships at Spaten and Nerb Engineering while also working as a technical translator for Steinecker and Löwenbrau.

After returning to California with my Weihenstephan brewing degree, I partnered up with Dean Biersch, and we





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opened the first Gordon Biersch Brewery in Palo Alto in 1988 with a 20-hectoliter (17-barrel) used brewhouse. Our focus was to produce authentic German-style beers in accordance with the strictest interpretation of the German Purity Law of 1516 (Reinheitsgebot), and pair it with contemporary cuisine in a unique atmosphere.

Now, I operate a 100,000-plus-barrel brewery in San Jose and have been able to maximize the use of everything I learned

in Germany. All of our beers are brewed in accordance with the Reinheitsgebot. We use imported malted barley and Hallertau aroma hops from Bavaria. Our yeast, from Bavaria, is produced at our brewery and used only once. Our lagers are aged for six weeks—longer than any craft brewer in the country—and are naturally carbonated.

Here is the Guido Sarducci boil-down of some of the “takeaways” I learned from my brewing education.

## What They Teach You at Weihenstephan

- > Nature has provided the enzymes to do the work naturally.
  - *Malting*
  - *Mashing*
  - *Fermentation*
- > Yeast selection, propagation, and management is tantamount to good beer.
- > Energy conservation is something that should be engineered up front and not as an afterthought.
- > Temperature control is critical throughout every stage of production.
- > It's all about sterility and a lot of that comes down to how the brewery is engineered and built as well as operated.
- > **Mashing**
  - *Graduated Step Infusion or Decoction*
    - Protein level and modification levels of the malt
    - Protein fractionation between low, middle, and large molecular structures
    - Amount of dark, caramel, or crystal malt over 25 percent leads to decoction. Also for wheat beers.
  - *Protein Rest*
    - Dialed in based on FAN levels.
    - Ranges between 5 minutes and 25 minutes at 52 and 62 °C (126 and 144 °F)
  - *Amylase Rests*
    - Sugar yield
    - Ranges between 20 and 30 minutes at 68 and 72° C (154 and 162 °F)
  - *Mash out at 78 °C (172 °F) to deactivate the enzymes*
  - *Hops 3 percent alpha Hallertau 1.5 g/l of wort for a 30 IBU Pils.*



## Enzymes

Enzymes are the most important workers a brewery can employ. These molecular-sized protein workhorses are involved with every aspect of the malting and brewing process.

During malting, the entire germination process is controlled by enzymes, and the modification level of the malted barley is dependent on the enzymatic power. The quality of the malt is as much a result of effectiveness of the maltster in steering the enzymes as it is the chemical composition of the barley or wheat.

For us brewers, we want to optimize the mashing process by taking advantage of the temperature optimums of each of the specific enzymes. The mashing process, graduated step infusion or decoction, will be predicated on the types of malt as well as the style of beer being brewed. A step infusion mash is always incorporated in the process of brewing German-style beers whether a decoction is included or excluded. The point of the decoction mashing process historically was to “explode” or disintegrate the starch chains using thermal energies. It is still used effectively to break down heavily crystallized dark roasted malts in bocks, weizen, and Märzen beers.

Dialing in the times and temperatures of the mashing process will take some experimentation for the homebrewer who doesn't have the luxury of a lab and a photospectrometer. The German way of controlling the final attenuation of a given beer is by regulating the quantity of free amino acids (FAN) in the wort. This will vary based on malt protein content of the malt as well as the modification level. The protein rests are generally at 52 and 60° C (126 and 140 °F) and can range from five minutes to 30 minutes. The goal is to create a level of 240 mg/ml of FAN in the wort assuming a 12° Plato (1.048 SG) wort. For a low protein malt with a protein content of 10-11 percent that has a normal level of modification, a protein rest of 20 minutes at 52 °C (126 °F) would be a good starting point. The idea would be to add or subtract in five-minute quantities if the final attenuation of the beer is too high or too low. The

60° C (140° F) rest will likewise impact attenuation and would also be one to start with a 20-minute rest.

The amylases are the enzymes that break down the starch into glucose, maltose, and maltotriose, the primary sugars the yeast will ferment into alcohol and carbon dioxide. These have temperature optimums of 68 and 72° C (154 and 162 °F). A good starting point for these rests is 20

and 30 minutes respectively. Remember that the mash will continue to rise in temperature after the heat is turned off, so plan on a 1 to 2° degree rise in mash temperature after turning off the flame.

After lautering and wort boiling, hot break removal should happen as quickly as possible. To prevent wort oxidation, hot break removal and cooling should be complete in less than an hour. Once the

## Blonde Bock

### Ingredients

for 5 U.S. gallons (19 liters) at 70% efficiency

12.5 lb (5.7 kg) Pilsner malt  
0.7 lb (318 g) light Munich malt  
0.7 lb (318 g) Carapils® malt  
1.0 oz (28 g) Hallertauer, 5% a.a., whole hops @ 60 min.  
1.0 oz (28 g) Tettnanger, 4% a.a., whole hops @ 30 min.  
0.5 oz (14 g) Tettnanger, 4% a.a., whole hops @ 10 min.  
Wyeast 2124 or WLP830 yeast (Weihenstephan 34/70)

Original Gravity: 1.070  
ABV: 7%  
IBU: 23

### Directions

Graduated step infusion mash: 20 minutes at 126 °F (52 °C), 20 minutes at 140 °F (60 °C), 20 minutes at 154 °F (68 °C), 30 minutes at 162 °F (72 °C). Mash out at 172 °F (78 °C). 90 minute boil. Ferment at 48 °F (9 °C) for two weeks, then lager at 39 °F (4 °C) for two weeks, then lager at 32 °F (0 °C) for four weeks.

**Extract version:** Substitute 8.75 lb (4 kg) liquid Pilsner extract for the Pilsner malt and 0.5 lb (227 g) liquid Munich extract for the Munich malt. Steep the Carapils in 158 °F (70 °C) water for 30 minutes, strain, add malt extracts, and proceed with recipe as written.

## Märzen

### Ingredients

for 5 U.S. gallons (19 liter) at 70% efficiency

6.5 lb (3 kg) Pilsner malt  
5.0 lb (2.3 kg) light Munich malt  
0.33 lb (150 g) Caramunich® malt  
1.1 oz (31 g) Hallertauer, 5% a.a., whole hops @ 60 min.  
0.4 oz (11 g) Hallertauer, 5% a.a., whole hops @ 10 min.  
Wyeast 2124 or WLP830 yeast (Weihenstephan 34/70)

Original Gravity: 1.058  
ABV: 5.8%  
IBU: 18

### Directions

Decoction mash with rests at 104 °F (40 °C), 126 °F (52 °C), 144 °F (62 °C), 155 °F (68 °C), 162 °F (72 °C). Step by pulling 25% of mash, boiling for 10 minutes, and remixing with main mash to hit step temperatures. Mash out at 172 °F (78 °C). Boil 90 minutes. Ferment for seven days at 48 °F (9 °C), lower to 43 °F (6 °C) for four days, then reduce temperature by 2 °F (1 °C) a day until at 32 °F (0 °C). Lager for six weeks.

**Extract version:** Substitute 4.6 lb (2.1 kg) liquid Pilsner extract for the Pilsner malt and 3.3 lbs (1.5 kg) liquid Munich extract for the Munich malt. Steep the Caramunich in 158 °F (70 °C) water for 30 minutes, strain, add malt extracts, and proceed with recipe as written.



## Translating Weiherstephan to Homebrewing

### > Hot Break Removal, Cooling, and Aeration

- Decant as thoroughly as possible.
- Cool as quickly as possible (less than 45 minutes) to a temperature 2 degrees below fermentation temp.
- Aerate vigorously by shaking. O<sub>2</sub> injection is not necessary and can create too high of a content that can kill the yeast.

### > Yeast

- Feed it once you receive it and keep it fed and growing.
- Save some sterile wort. Boil and cool it.
- Get a microscope and make yeast your hobby.
- Use a hemocytometer and count cells before pitching.

### > Rig your fridge with a thermostat that can control to a tolerance of 1-2 degrees °C (2-4 °F)


### > Cornelius Canisters for Aging

- Rig it up with a pressure gauge and maintain at 9 PSI.
- Have bottom of pipe 2" short of reaching the bottom.

wort is chilled to pitching temperature, it needs to be effectively, but not overly, aerated. Most homebrewers will not have the budget for a digital oxygen meter (unless you really have a serious bank account and are a possessed brewer). The dilemma of using pure oxygen versus aeration via agitation is easy to resolve. Use aggressive shaking if you are strong enough to do so. If it is too heavy for you, then use pure oxygen. It is easy to over-oxygenate the wort in a small vessel with pure O<sub>2</sub>, so tread carefully. Levels of oxygen over 12 mg/l can have a toxic effect on the yeast and result in stopped fermentation.

## Yeast Runs the Brewery

Yeast management—the selection, growing, and handling—is what dictates operations for both the large scale brewer and the homebrewer. The strain selection is tantamount to the beer quality. If you can afford to buy a liquid live culture from a yeast bank, then do it. Once you receive the strain, grow it on sterile wort that you have set aside from a previous brewing session, and grow it at pitching temperatures before using it.





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Buy a microscope and a hemocytometer and make yeast growing part of the fun of homebrewing. Rig your fridge with a thermostat so you can control the temperature plus or minus a couple of degrees. This will enable you to have yeast that is well acclimated to fermentation temperatures and also give you the ability to have consistent controlled fermentation.

## Winter Bock

### Ingredients

for 5 U.S. gallons (19 liters) at 70% efficiency

9.0 lb (4.1 kg) Pilsner malt  
 8.0 lb (3.7 kg) light Munich malt  
 0.9 lb (408 g) Caramunich® malt  
 0.2 lb (91 g) Carafo® malt  
 0.02 lb (9 g) Black malt  
 2.25 oz (64 g) Hallertauer  
 Mittelfruh, 5% a.a., whole  
 hops @ 60 min.  
 0.75 oz (21 g) Hallertauer  
 Mittelfruh, 5% a.a., whole  
 hops @ 10 min.  
 Wyeast 2124 or WLP830 yeast  
 (Weihenstephan 34/70)

Original Gravity: 1.089  
 ABV: 7.5%  
 IBU: 27

### Directions

Decoction mash with rests at 104 °F (40 °C), 126 °F (52 °C), 144 °F (62 °C), 155 °F (68 °C), 162 °F (72 °C). Step by pulling 25% of mash, boiling for 10 minutes, and remixing with main mash to hit step temperatures. Mash out at 172 °F (78 °C). Boil 90 minutes. Ferment for 9 days at 48 °F (9 °C), lower to 43 °F (6 °C) for four days, then lager for two weeks at 39 °F (4 °C) and three weeks at 32 °F (0 °C).

**Extract version:** Substitute 6.3 lb (2.9 kg) liquid Pilsner extract for the Pilsner malt and 5.3 lb (2.4 kg) liquid Munich extract for the Munich malt. Steep the other malts in 158 °F (70 °C) water for 30 minutes, strain, add malt extracts, and proceed with recipe as written.

## Aging

Don't rush the aging process. The classic German lagering is two weeks at 4° C (39 °F) and four weeks at freezing (32 °F). During the first two weeks, the beer will go through a diacetyl degradation and begin naturally carbonating. Keep a half-bar (9 PSI) head of pressure on the beer. The best vessel for this is the old fashioned Cornelius canister used by the soda industry for syrups. Rig a pressure gauge on one of the fittings and bleed off the pressure to maintain the half-bar. Then keep it at a half-bar (9 PSI) while

at freezing. Cut the stand pipe in the canister 2 inches from the bottom so the yeast is not sucked out from the bottom when the beer is finished and is being racked off.

Included are a few recipes from our regular Gordon Biersch lineup for you to perfect your German lager brewing techniques. Prosit!

**Dan Gordon is the co-founder of Gordon Biersch Brewing Co. in San Jose, Calif.**

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# So You Want to Be a ▶▶▶▶ Nanobrewer

By Matt McClung

Your friends are drinking your homebrew faster than you can make it, and you've been toying with the idea of starting to brew professionally, on a nano level. Here's a primer to get you started down the right path.

First, you might want to consider getting practical experience at an established brewery. Applying for an entry-level position at your local brewery has plenty of advantages, including a mostly livable salary; a foot in the door to a great industry; brewery training from the bottom up; pilot brewing opportunities; and potentially, professional education funded by your employer.

If time and money are no object, enrolling at UC-Davis or the Siebel Institute may allow you to reach the brewhouse quicker, especially if you are willing to relocate.

Of course, there's always the trial-by-fire approach: diving right in and starting your own nanobrewery.

## ▶ **Nanobrewing Advantages and Disadvantages**

The nanobrewing approach will challenge you in surprising ways. Above all else, you must actively avoid destroying your passion for brewing because of unrealistic expectations, goals, and time commitments. Be aware that a nanobrewery will not support you financially unless you are extremely creative, so don't plan on quitting your day job.

On the sunnier side, one of the greatest advantages to starting a nanobrewery is the low capital investment needed to get your brewery producing beer. The total capital investment during our first two years was under \$30,000, compared to our microbrewery's first year require-

ing over \$250,000. Other advantages include ease of equipment setup, small batch creativity, lower time commitment, and the buzz generated by being the little guy.

How do you get started? Here are some tips on licensing, equipment, selling your craft, and industry networking to help avoid common pitfalls along the way.

## ▶ **Licensing**

The majority of questions about building a brewery center on licensing requirements. Overcoming the hurdle of the licensing process was the most difficult obstacle in our first year of business. In addition to your state and city's general business licensing process, you will need to get



additional liquor licenses. Requirements vary from state to state, so quickly determining the proper liquor licensing agency is essential. Find your state's licensing agency at [www.ttb.gov/wine/state-ABC.shtml](http://www.ttb.gov/wine/state-ABC.shtml). Obtaining your state and federal liquor licenses will be time-consuming, so savor the small victories as they come.

Our process in obtaining our federal liquor license is a good example of what not to do. Having little knowledge of our industry, we were surprised when our state liquor agent asked us for a copy of

our Brewer's Notice. I had no idea what she was talking about and embarrassingly had to ask her to explain. I quickly learned that a Brewer's Notice is a form that must be filed with the Alcohol and Tobacco Tax and Trade Bureau (TTB) to get started setting up your brewery.

Our first experience with the TTB easily set us back five months. If you take one piece of advice from this article, begin by filling out your TTB paperwork as soon as you have a location and signed lease. You will need personal information for any owner

over 10 percent, power of attorney, bylaws and articles of incorporation (corporations/LLC), partnership agreement (partnerships), an environmental impact statement, water quality information, security and legal descriptions for your premises, and a dimensioned diagram of your brewery. You will have to post a bond of \$1,000 or more and receive label approval on each beer you plan to release. And yes, label approval applies to keg collars too.

After you submit your TTB application, estimated processing times are currently at 114 days, so having someone with experience proof your application before submission is a good idea. If you make any kind of mistake on your application, including printing on the incorrect size paper, they will send it back to you to edit and resubmit. Add an extra six weeks processing for each time your application is returned for corrections. Remember that city business license? Enjoy the simplicity!

### ► Equipment

For gear-heads, equipment is probably the single most contemplated component in the brewery. When sourcing your system, don't overlook the following factors: size, temperature-controlled fermentation, and finding a local metal fabricator. Search for a system that is a multiple of a half barrel. Our original system was capable of producing exactly one-half barrel of beer. Although production volume per brew was small, we had very little waste per batch; most of the time, there was less than a pint of finished beer in the brite tanks after racking into kegs.

Our system, found on Craigslist, came with two 20-gallon, jacketed stainless conical fermenters complete with tri-clamp fittings and temperature controllers. After a year of experimenting with various homemade glycol chilling contraptions, we spent the \$1,300 on a ½ horse draft line chiller. One of our best investments, this little unit, with a few modifications, could handle all four of our fermenters during the hottest part of the summer and our fermentation temperatures were always consistent.



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When purchasing used equipment, making modifications and being resourceful is essential, and finding a good stainless fabricator or enrolling in a welding course at your local community college will help tremendously. Our fabricator has saved us numerous times and it is invaluable to know how to TIG weld, be it for repairs or improvements.

### ► Selling Your Craft

Once your brewery is producing beer, the next step is to move it out the door. The number one issue to avoid is over-committing and under-delivering. It is easy to be excited to bring the world your beer and even easier to forget you are producing only on a nano level. Supply is limited! You must consider how to bring that supply to market. Selling draft only, packaging, on-premise through a tasting room, or a combination will likely depend on state and distributor regulations as well as system size.

Each format has its advantages and disadvantages. While keg cleaning late into the night, I often thought that bottle sales would have been a great approach to entering the market. Simply fill, deliver, and never see the package again. I no longer share that enthusiasm now that we are packaging. Bottles are expensive to purchase, ship, and fill while maintaining product integrity. However, bottles reach an entirely different market. Consider whether or not to bottle condition for product longevity as well as which size format fits your brands' needs. Larger format bottles such as 750ml and 1.5 liter are always an attention getter, especially for non-mainstream styles.

For draft sales, the two primary considerations are keg management and tap handle design. Upon our release, our keg inventory consisted of eight kegs and quickly increased to a total of 20 with additional kegs whenever funds were

available. Carefully consider your keg cleaning regime to avoid damaging your brewery's reputation. Create a method that is quick, consistent, and leaves your kegs clean and sanitized so as to not spoil new product as soon as it is racked. Your brewery's reputation is also influenced by your tap handle. It represents your brand even when not in use; it should be clearly visible from a distance, be sized to not interfere with adjacent handles, have an ease of manufacturing or ability to source, and be cost-effective.

Selling your beer at the brewery will certainly create the most intimate customer interactions along with the highest margin. After confirming the ability to sell on-premise, your location will require more square footage to accommodate a tasting area. Hours of operation will be longer and might require staffing, which will need to be factored into your operating budget and time commitments.



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## ► Industry Networking

It is common to feel that as a nanobrewery or even a small microbrewery, you are on your own solving problems and unaffected by state and national legislation trends. You will soon realize how important it is to get networked and stay involved. Joining state and national organizations can develop important relationships as well as keep you aware of opportunities and threats to the industry. Your state and national organizations will keep you informed when a single call to your legislator could mean paying half as much in federal excise tax.

With all the wonderful personalities in the beer industry, I enjoy every opportunity I have to interact with my colleagues and industry leaders. We attended our first state guild meeting within the brewery's first six months and were warmly welcomed into the group. If your state has an active guild, they likely promote the industry through festivals and keep an eye on state legislative issues. If you have not already joined, do so now. Our early involvement in the guild facilitated relationships that resulted in keg washing opportunities; borrowing of hops, grains, and yeast pitches; as well as plenty of access to used equipment.

The Brewers Association (BA) and Master Brewers Association of the Americas (MBAA) are also worthy trade organizations to consider joining. The BA functions like a state guild would, but on the national level. They support the beer industry through promotional events such as the Great American Beer Festival and American Craft Beer Week, compiling industry statistics, and providing educational opportunities through the Craft Brewers Conference each spring. The BA supports legislative interests by assisting guilds at the state level and lobbying in Washington, D.C. The MBAA holds district meetings throughout the nation each fall and spring where a single topic is discussed in great detail from a variety of perspectives. The meetings cover two days and include hospitality events where you can mingle and network with other brewers and brewery owners.

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## ► The Nanobrewing Experience: Start to Finish

It all starts with homebrewing, and a seed planted may take years to fully germinate. While pursuing my undergraduate degree in 1999, I began casually homebrewing with a college buddy, once or twice a year. Six years later in 2005, while brewing with my wife Heather and friend Marcus, our hobby began to rapidly change. Our brewing went from extract to all-grain; the batches and equipment demanding more and more space, overflowing into our living room and small garage. In the spring of 2006, we found the perfect location; the brewery-to-be was a 250-square-foot ground-level commercial work space with a concrete floor, rollup door, and all utilities included in the rent. In the fall, our recipes were established, so we turned our focus to licensing the brewery.

In January 2007, we organized an event at our local watering hole, releasing our beer to the public. The success of the evening with pub regulars, distributors, retailers, and press in attendance gave us confidence that we were onto something. Seattle's first nanobrewery, Schooner EXACT Brewing Company, was born and we were excited to see where we could take it! After our release in 2007, we brewed for two years as a nanobrewery, developing our reputation in the Seattle market.

With our success brewing on a small scale, we decided to go micro, and purchased a 10-barrel system, extra 30-barrel fermenters, and found a source of funding. All in all, we have grown from selling 55 barrels a year to nearly 2,000. In June 2010, my wife and I left the teaching profession and took the leap to brewing full-time.

When you start a brewery, the hours are long and the pay will not make you rich, but that's not why we went into business. We are craftsmen who take great pride in the beers we create. We are honest, creative, and hard working. We go the extra distance to make sure that every drop of beer that leaves our brewery will be enjoyed by our community. This is why we brew.

**Matt McClung is co-founder of Schooner EXACT Brewing Co. in Seattle, Wash.** 🍺

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1



2



3



4



5



6





# *From Grain to Glass in 6 Days* *Express Brewing*

**P**arty season always seems right around the corner with the insatiable demands of friends, family, and other interested drinkers. Self-help books encourage us to find our “no” voices and remove the burden from our lives. But there’s no need for such drastic measures because it’s another excuse to do our favorite thing—brew. Still, the clock and calendar inexorably march us to a beer serving D-Day and, if you’re like me, sometimes you wake up, realizing your party lurches near and you’re short of beer.

For times like these, there’s always the express way of brewing. I’m not talking the thousand and one ways to make your brew day quicker; there’s been plenty written on squeezing in more brewing in less time. This is all about collapsing that period between grain and glass in a way that allows us to meet the needs of our thirsty constituents.

When I first mentioned this idea to friends, the general consensus was “But I won’t ever serve anything not up to my own quality standards.” I’m not standing here waving a flag to proclaim that it’s all right

to brew crappy beer. People drink plenty of that without our help. So we have two factors to keep in mind—time (10 or fewer days) and quality.

## **Characteristics of an Express Beer**

Reviewing what we know about the art of fermentation and how the pros manage their quick turnarounds, a few things become clear.

- The lower the gravity, the greater chance of success.
- Big flavors (specialty malts and hops) overpower green beer syndrome.
- Clarity? Bah! Bring on the wheat, the rye!
- Ales. No time for lagers, Doctor Jones.
- Force carbonation is key.

**By Drew Beechum**



## Single Shot

I'm a huge fan of simple Belgian beers that use interesting ingredients to shine. Using candy syrup is a perfect example of interesting simplicity. In this case, this was an experimental base for exploring the new products of Candi Syrup, Inc. (Not to be confused with Dark Candi, Inc)

### INGREDIENTS

for 5.5 U.S. gallons (21 liters)

<b>7.0 lb</b>	(3.2 kg) Pilsner Malt
<b>0.5 lb</b>	(227 g) Flaked Wheat
<b>0.5 lb</b>	(227 g) Candi Syrup D-90 (half a pouch)
<b>0.33 oz</b>	(9 g) Magnum 12.9% a.a. (60 min) Belgian yeast of your choice (I used French Saison)

**Original Gravity:** 1.037

**Efficiency:** 70%

**IBU:** 15

**SRM:** 7

**ABV:** 3.5%

### DIRECTIONS

Single Infusion mash at 150 °F (66 °C) for 60 minutes. 90 minute boil. Ferment at 68 °F (20 °C).

**Extract version:** Substitute 5.25 lb (2.4 kg) pale liquid malt extract for the first two grains. Add malt extract and syrup to water, bring to a boil, and proceed with the recipe as written.

Virtually all of the classic British session ales (mild, bitter) fall perfectly in line with these goals. I'll throw the American pale ales and extra pales in there as well. The bigger English ESBs seem to suffer despite the modest increase in gravity. While a bigger beer may finish primary fermentation in three days, there are too many hang-over-, taste bud suicide-causing chemicals floating around to be consumption-ready.

Dark beers, like stout, and bold, hoppy beers do the trick, thanks to the giant wallop of flavor. There's something about the coffee/chocolate combo that wipes out bad sensations. And if you like hops, then why not get the full-force effect?

Hands down, the best hefe I ever had was barely 12 days old when I drank it. Even a rye IPA served after 10 days was shockingly perfect. (OK, maybe not the haze.)

Even lower gravity Belgians aren't out of reach. You will need a less "Belgians" yeast, though. Finally, if you develop a technique for finishing a lager in 10 days, patent it and become filthy stinking rich.

### Yeast

More than anything, your yeast choice determines how successful your speedy beer will be. For instance, even I, the lover of all things Saison, would run screaming from WLP565 and Wyeast 3724 if I knew I needed a beer in a precious few days.

What we need is a yeast strain that gets the job done and gets the hell out of the way. In other words, it needs to be a fast fermenter with great attenuation to destroy the wort's sugar supply. We don't have time (or the yeast) for obnoxious characters to fade, so favor low ester, phenol, and diacetyl production. Lastly, since people mostly like "clear" beer and don't like dealing with the intestinal aftermath of appalling quantities of live brewer's yeast, we need strains that like to stick together (flocculate) like a band of drunken revelers all looking to fall into the same gutter. Sadly, that last factor almost rules out the ubiquitous reliable trio of WLP001/Wyeast 1056/US-05. All three have issues settling, but none worse than the US-05, which can leave your carboy obnoxiously cloudy for days or weeks

## Expressway Mild

This is the beer that started the whole thing. This year, I found festival season rapidly approaching with no beer to serve. I traditionally bring a mild to fest so folks have a sessionable alternative to the cannon strength ales most brewers bring. I brewed on Sunday and pitched at 4 p.m. The beer was tapped five days and 18 hours later at 10 a.m. on Saturday. The result was a smooth, lightly roasty quaff of a beer. (Alastair Hewitt beat my record with his 90 Hour Mild.)

### INGREDIENTS

for 5.5 U.S. gallons (21 liters)

<b>6.0 lb</b>	(2.7 kg) Maris Otter
<b>0.5 lb</b>	(227 g) Thomas Fawcett Oat Malt
<b>0.25 lb</b>	(113 g) British Crystal 55
<b>0.25 lb</b>	(113 g) Weyermann Carafo II
<b>0.25 oz</b>	(7 g) Target 11.5% a.a. (60 min)
<b>0.12 oz</b>	(3 g) Progress 8.1% a.a. (20 min)
<b>5.0 g</b>	Calcium Chloride (added to start of boil) Whirlfloc Yeast Nutrient Wyeast 1882 Thames Valley II

**Original Gravity:** 1.034

**Efficiency:** 70%

**IBUs:** 12

**SRM:** 15.7

**ABV:** 3.2%

### DIRECTIONS

Single infusion mash at 153 °F (67 °C) for 60 minutes. 60 minute boil. Ferment at 65 °F (18 °C).

**Extract version:** Substitute 4.6 lb (2.1 kg) pale liquid malt extract for the first two malts. Steep the last two malts in 158 °F (70 °C) water for 30 minutes, strain, add malt extract, bring to a boil, and proceed with recipe as written



## The Procedure

Here's the basic six-day outline for express beer brewing. We have only one or two more steps than the sort of lackadaisical brewing we usually perform. Packing it all into a shorter span just feels like a ton more effort.

### Day 1: Pitch

Nothing new here, but a cautionary tale is needed. Assuming you have one, a yeast cake is pure money. No cake? You'll need a big, healthy starter. I still cold crash my starters and decant even when in a hurry.

Don't try for the land-speed record in lag times. I've never understood the fascination with the contest that has people proclaiming "Ha ha! My beer took off in two hours and 75 minutes!" You'll be missing out on flavors and more importantly, you're probably pitching hot, which is a big no-no.

On that note—cool your wort completely. I try for a few degrees under fermentation temperature to compensate for fermentation-generated heat. As tempting as it is, don't cool your beer to the mid-70s F (20s C) and pitch. Your fermentation will be faster, true, but the resulting noxious soup of a beer won't be worth it.

### Day 2-3: Fermentation

Let the ferment ride. For my express beers, I tend to push the ferment up to the higher end of the preferred range after the lag phase is complete. At high kräusen, the majority of ester, phenol, and fusel production has passed, so we can safely goose the accelerator. Just a touch—we're not leaving rubber stripes on the road.

### Day 4: Crash Day 1

By this point, your kräusen should start falling naturally. We're just going to kick it in the pants. At the end of Day 3, set your fermentation temperature to as close to 32 °F (0 °C) as you can get. Let it sit overnight. In the morning, rack to a keg.

### Day 5: Keg Day (aka Crash Day 2)

On the evening of Day 5, hook up your transfer hose to the keg and blow out the first pint or so of sediment. Hook the transfer line to a second clean and sanitized keg and transfer again. Marvel at the amount of yeast left in the first keg. Carbonate the beer and let it sit overnight.

### Day 6: Drink!

Bleed the head pressure. Hook up your favorite dispensing device and revel in the miracle of quick turnaround beer.

Have 10 days? Spread the love and spend an extra day fermenting and some extra time crashing/fining the beer.

longer than the others. If you have no other option than to use a murky yeast, look for my evil serving tip later in the article to get away with it.

Taking our cue from Express Beer characteristics (British Session Ales), I encourage everyone to find a reliable British strain that you enjoy. For me, that means choices like White Labs Essex, Wyeast West Yorkshire and, since I can't keep those around (sadness abounds), my old standbys of Wyeast 1275 Thames Valley and WLP005 British Ale Yeast. If you're daring, take a cue from many East Coast brewers and use Ringwood, but beware the buttery stink of diacetyl the strain can throw. I avoid any strain that mentions "ESB" for the same reason.



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## So Very Cherry White

One last Belgian for the mix—a nice wit beer. It may just be me, but I find the average wit beer tedious. So in this case I juiced it with a little Sour Cherry Juice concentrate and a little mahlab, a ground Middle Eastern sour cherry pit spice. If you want some of the cherry sweetness, make sure to keep it cold and drink the keg in short order.

### INGREDIENTS

for 5.5 U.S. gallons (21 liters)

<b>6.0 lb</b>	(2.7 kg) Pilsner Malt
<b>2.0 lb</b>	(907 g) Flaked Wheat
<b>1.0 lb</b>	(454 g) Flaked Oats
<b>0.4 oz</b>	(11 g) Magnum, 12.9% a.a. (60 min) Wyeast 3944 Belgian Witbier/ WLP400 Belgian Wit Ale
<b>1.0 oz</b>	(28 g) mahlab (added 5 minutes remaining in boil)
<b>1 pint</b>	(473 ml) Sour Cherry Juice Concentrate (added in keg or secondary)

**Original Gravity:** 1.041

**Efficiency:** 70%

**IBU:** 18

**SRM:** 3

**ABV:** 3.8%

### DIRECTIONS

Single Infusion mash at 148 °F (64 °C) for 60 minutes. 60 minute boil. Ferment at 68 °F (20 °C).

**Mini-mash version:** Mash 3 lb (1.4 kg) pilsner malt with the flaked wheat and oats at 148 °F (64 °C) for 60 minutes. Strain, add 2.1 lb (1 kg) pale liquid malt extract, bring to a boil, and proceed with the recipe as written.

Wheat beer brewers, including wit makers, don't suffer the same flocculation concerns. Anyone tackling a quick Belgian needs to be aware of the phenol and alcohol characters of their chosen workers. A strain like Wyeast 3787 Trappist High Gravity works better with time to let an initially brassy nature recede and meld into something beautiful. Instead, use WLP510 Bastogne or Wyeast 3522 Ardennes.

Regardless of which yeast you choose, make a starter! Heck, make a double-sized starter. Going into an express situation without plenty of yeast is like trying to win the Daytona 500 with a Yugo!

### Fermentation

Nothing special here, but a few reminders and caveats—use healthy yeast and don't try to push your fermentation speed via heat. All you'll have brewed is a batch you don't want to drink. Chill the wort properly, oxygenate properly, pitch properly, and maintain your temps properly, or King Gambrinus will properly kick your shins.

### Clarification

We may not aim for crystal-clear beer that makes a Teutonic heart sing, but we don't want to serve beer reminiscent of a bog, either. On a super tight schedule, that leaves two choices: rapid cold crashing or active filtering.

Cold crashing is as simple as it gets. Yeast hibernate when things get chill. Bad for fermentation, great for forcing clarity. As the krausen drops, dial your cooling down as low as it will go. Reasonably flocculent yeast will mostly settle within a day. Push it for another day and you'll be reasonably assured of a non-swampy beer.

Filtering requires additional equipment, but the expense assures clarity. I don't filter because I don't like the hassle and expense of sanitizing/cleaning the cartridges, but don't let my hang-ups affect you. Plenty of people filter their beer with great results. For the swampy beers we're dealing with here, a two-stage filtering process is best. Use one rough filter to catch the major gunk, and a finer filter to grab the remainder without clogging.

## Falcons Gyre Rye IPA

Yes, an American IPA can be turned around in a few days, if you're not obsessed with dry hopping the style. This beer was 10 days getting to the glass. I did two portions, one with Thames Valley and the other with US-05. Even after crashing and fining the carboy hard for two days, the US-05 carboy refused to clear completely. It tasted fantastic, so I still served it and no one noticed because of my evil Randall trick.

### INGREDIENTS

for 5.5 U.S. gallons (21 liters)

<b>10.0 lb</b>	(4.5 kg) Domestic Two Row
<b>2.0 lb</b>	(907 g) Rye Malt
<b>2.0 lb</b>	(907 g) Munich
<b>1.0 oz</b>	(28 g) Warrior 15.5% a.a. (60 min)
<b>1.0 oz</b>	(28 g) Falconer's Flight 10.5% a.a. (5 min)
<b>1.0 oz</b>	(28 g) Falconer's Flight 10.5% a.a. (0 min) Safale US-05 Whirlfloc Gypsum
<b>5 g</b>	

**Original Gravity:** 1.067

**Efficiency:** 70%

**IBU:** 47

**SRM:** 7

**ABV:** 6.6%

### DIRECTIONS

Single Infusion mash at 152 °F (67 °C) for 60 minutes. 90 minute boil. Ferment at 65 °F (18 °C).

**Mini-mash version:** Mash 2 lb (907 g) two-row with the rye malt at 152 °F (67 °C) for 60 minutes, strain, add 5.6 lb (2.5 kg) pale liquid malt extract and 1.3 lb (590 g) Munich liquid malt extract, bring to a boil, and proceed with recipe as written.



## Bastage English Summer Ale

From the AHA Forum and Tristan comes this easy drinking English Summer Ale. Think a bitter of a different stripe.

### INGREDIENTS

for 5.5 U.S. gallons (21 liters)

<b>5.12 lb</b>	(2.3 kg) Maris Otter
<b>14.0 oz</b>	(397 g) Vienna Malt
<b>5.0 oz</b>	(142 g) White Wheat Malt
<b>3.0 oz</b>	(85 g) Simpsons Caramalt 30
<b>0.56 oz</b>	(16 g) Magnum 12.5% a.a. (60 min) Wyeast 1028 London Ale
<b>1.85 ml</b>	Phosphoric Acid
<b>3.00 g</b>	Calcium Chloride
<b>5.00 g</b>	Gypsum Gelatin finings

**Original Gravity:** 1.031

**Efficiency:** 70%

**IBU:** 26

**SRM:** 4

**ABV:** 3.2%

### DIRECTIONS

Single infusion mash: 151 °F (66 °C) for 50 minutes. Mash out: 168 °F (76 °C) for 15 minutes. 90 minute boil. Ferment at 65 °F (18 °C).

**Extract version:** Substitute 3.4 lb (1.5 kg) pale liquid malt extract for first three grains. Steep crystal malt in 158 °F (70 °C) water for 30 minutes, strain, add malt extract, bring to a boil, and proceed with recipe as written.

## Pliny the Toddler

Back in 2005, brewing partner Jonny Lieberman and I decided to brew a smaller beer (1.055) inspired by Pliny the Elder called Pliny the Toddler. Oddly, we had a grain mishap and ended up brewing "Pliny the Unwanted" at 1.097. Damn good beer, but we never made the Toddler until this year when I wanted a nice "Session IPA" for San Diego. It's a revised edition at 1.048 and 56 IBUs and 100% delicious, and it uses my favorite IPA base mix of Maris Otter and domestic two-row.

### INGREDIENTS

for 5.5 U.S. gallons (21 liters)

<b>3.5 lb</b>	(1.6 kg) Maris Otter
<b>3.5 lb</b>	(1.6 kg) Domestic 2-Row
<b>1.0 lb</b>	(454 g) Cara-Pils Malt
<b>0.5 lb</b>	(227 g) Table Sugar
<b>0.75 oz</b>	(21 g) Warrior 15.5% a.a. (60 min)
<b>0.75 oz</b>	(21 g) Columbus 11.4% a.a. (10 min)
<b>0.75 oz</b>	(21 g) Centennial 8.5% a.a. (10 min)
<b>0.75 oz</b>	(21 g) Cascade 8.5% a.a. (0 min) WLP001 – Slurry. Whirlfloc
<b>5 g</b>	Gypsum

**Original Gravity:** 1.048

**Efficiency:** 80%

**IBU:** 56

**SRM:** 37

**ABV:** 4.7%

### DIRECTIONS

Single Infusion mash at 152 °F (67 °C) for 60 minutes. 90 minute boil. Ferment at 65 °F (18 °C).

**Extract version:** Substitute 5.6 lb (2.5 kg) pale liquid malt extract for first two grains. Steep the Carapils in 158 °F (70 °C) water for 30 minutes, strain, add malt extract and sugar, bring to a boil, and proceed with recipe as written.



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Have more time? Take another cue from the Brits and fine your beer. There are a number of traditional options out there, for instance gelatin and isinglass. I've been playing recently with Super-Kleer, a two-stage fining that works wonders. Serving beer to vegetarians? Be kind: Biofine Clear and Polyclar both lack animal parts.

### Packaging

Short of borrowing a friend's kegging rig and bottling carbonated beer, I don't see a way around the mandatory waiting period for your bottles to become fully gassy.

Given the way keg supplies are dwindling rapidly these days, break open the piggy bank with whatever excuse you can find and get your rig started today. Repeat after me: "It was important because I couldn't disappoint {beloved friend/boss/relative/the dog} by not having beer ready."

### Drew's Carbonation-rama

I know many of you believe in the old-fashioned "set it and forget it" method of carbonation—digging out the table of desired carbonation/temperature to determine the correct psi for your keg. I don't

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## Ball-A-Holic Hefe

The winner of the 2010 Mayfaire competition was in the bottle eight days after brewing and was so clean and fresh that it eclipsed everything on the table. Of five cranky veteran judges, not a one could think of anything bad to say about it. Too bad we didn't know it was from then-president Steve Cook—we could have found something!

### INGREDIENTS

for 6.5 U.S. gallons (25 liters)

<b>10.5 lb</b>	(4.8 kg) German Pilsner Malt
<b>4.5 lb</b>	(2 kg) German Wheat Malt
<b>1.17 oz</b>	(33.4 g) Hallertauer 4.7% (60 min)
<b>0.53 oz</b>	(15.10 g) Tettnanger 4.7% (30 min)
<b>0.53 oz</b>	(15.0 g) Saaz 3.20% (1 min) Hefeweizen IV Ale (White Labs 380)
<b>3.5 tsp</b>	yeast nutrient (20 min)

**Original Gravity:** 1.060

**Efficiency:** 70%

**IBU:** 64

**SRM:** 4.3

**ABV:** 5.7%

### DIRECTIONS

Single decoction. Protein Rest: 120 °F (49 °C). Pull and rest decoction portion at 120 °F (49 °C), 140 °F (60 °C) and 150 °F (66 °C) for 20 minutes each step. Boil decoction for 30 minutes (adding liquid as needed) and return to main mash. Beta Rest: 140 °F (60 °C), 20 minutes. Sac Rest: 150 °F (66 °C), 90 minutes. Mash out: 168 °F (76 °C), 20 minutes. 90 minute boil. Ferment at 62 °F (16 °C).

**Extract version:** Substitute 10.5 lb weizen extract (wheat/pils blend) for the malts, add to water, bring to a boil, and proceed with the recipe as written.



## Beer Diva Stout

From the inimitable MB Raines, this beer, brewed a few years back, was the reason I knew the whole express idea was possible. This lovely stout went from grain to glass in four days for a St. Patrick's Day party. How? By building a healthy army of yeast using the techniques that MB has disseminated to the homebrewing world.

### INGREDIENTS

for 5.0 U.S. gallons (19 liters)

<b>5.5 lb</b>	(2.5 kg) Maris Otter
<b>2.0 lb</b>	(907 g) Flaked Barley
<b>1.0 lb</b>	(454 g) Roasted Barley
<b>6.0 oz</b>	(170 g) Acidulated Malt
<b>0.25 oz</b>	(7 g) Perle 6.5% a.a. (60 min)
<b>0.25 oz</b>	(7 g) Magnum 12.9% a.a. (60 min)
<b>0.10 oz</b>	(3 g) Progress 8.0% a.a. (60 min)
<b>0.60 oz</b>	(17 g) Phoenix 9.0% a.a. (15 min)
	Whirlfloc
	Yeast Nutrient
	Wyeast 1056 (slurry from a previous batch)

**Original Gravity:** 1.045

**Efficiency:** 70%

**IBU:** 30

**SRM:** 26

**ABV:** 4.4%

### DIRECTIONS

Rehydrate flaked barley, then mash with other grains, reserving acidulated malt. Single infusion at 155 °F (68 °C) for 60 minutes. Add acidulated malt during last 15 minutes of mashing. 60 minute boil. Yeast pitched at 60 °F (16 °C). Wort was oxygenation prior to pitching and after 12 hours.

**Extract version:** Substitute 5.25 lb (2.4 kg) pale liquid malt extract for first two grains. Steep last two grains in 158 °F (70 °C) water for 30 minutes, strain, add malt extract, bring to a boil, and proceed with recipe as written.

usually have a week or two to wait. I used to be a preacher of the "slam and shake" method, but I got tired of the imprecision and taunting from fellow brewers about the ridiculous foaming.

My hybrid method combines that beloved pressure chart and the shaking workout. I find my target pressure for my desired carbonation and set my regulator to that psi plus 1. (Say 14.5 psi for 2.5 volumes at 42 °F or 6 °C). I attach the gas to the chilled keg, lay it sideways on my workbench, and gently rock back and forth

until the bubbles stop flowing loudly. It takes about 10 minutes, but once done, the beer can be served immediately.

### The Steve Scott Method of Carbonation

An infamous method of truly last-minute carbonation was developed by Steve Scott of Crown of the Valley. Packing up for the Southern California Homebrewers Festival, Steve, in a fit of necessity, threw a keg of cold beer in the back of his car and hooked up his CO<sub>2</sub> tank. The gentle sway of the car buzzing over a freeway

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was enough to bring serviceable levels of fizz. Imprecise, but it did manage to combine beer and the California obsession with driving!

### Drew's Evil Serving Trick

If despite your best efforts you end up with a beer that's ugly with haze and

yeast, take advantage of Dogfish Head's gift to the beer world—the Randall (aka the draft hopback). There are easy-to-follow instructions scattered across the web (see [maltosefalcons.com](http://maltosefalcons.com)) to build your own.

Fill the "draftback" with the hops of your

choice or with fruit or coffee or well, anything. The filling serves as a late filter while adding its own layer of haze and color. The last-minute hop burst makes up for a lack of dry hopping. Fruits can goose an otherwise plain American wheat beer.

To increase variety with minimal effort, put a check valve on the draftback's input and "T" the keg line to include a second output (a draft faucet or cobra line). For the cost of a few parts and no extra brew time, you've got the regular beer and the Randallized beer.

### Another Secret Stash of Recipes

Last issue, I presented a number of Saison recipes. Though it wasn't mentioned in the article text, here's a little secret—virtually every one of those beers was ready within 10 days. (OK, not the ones with Dupont strains in them.)

So, go forth and brew, but hurry up about it, will you?

**Drew Beechum is a member of the AHA Governing Committee and a regular contributor to Zymurgy.**



# All-American Brew-Off



**W**hen it came time for the River Valley Ale Raisers of Fort Smith, Ark., to begin organizing an amateur beer competition, they drew inspiration for the event from a well-known Southern institution held in Texas.

"Our competition stemmed from trips to the Bluebonnet Brew-off," said club president Lucas Stoltz. "Our previous president Steve Arnold had gotten us to start attending and entering that competition. We decided that it would be cool to host a competition locally."

The club decided it wanted a competition that showcased American styles only (the style must have the name "American" in it), and the All-American Brew-off was born. July 23 marked the second annual event for the Ale Raisers, a fairly young club that was established in 2008.

"We had a local brew shop open up that year and it didn't take long for us to figure out that a club was a good idea," Stoltz

## Two Blue Dogs Barleywine

LUCAS STOLTZ, RIVER VALLEY ALE RAISERS

BEST OF SHOW BEER, 2011 ALL-AMERICAN BREW-OFF

### INGREDIENTS

for 6 U.S. gallons (22.71 liters)

20.0 lb	(9.07 kg) pale U.S. two-row malt
3.3 lb	(1.5 kg) Northwestern Gold malt extract
1.0 lb	(0.45 kg) 20° L crystal malt
1.0 lb	(0.45 kg) 80° L crystal malt
4.9 oz	(113 g) pale chocolate malt
4.0 oz	(113 g) Special B malt
3.5 oz	(99 g) Magnum hops, 14% a.a. (60 min)
2.5 oz	(71 g) Amarillo Gold hops, 8.5% a.a. (steep)
1.5 oz	(42 g) Centennial hops, 10% a.a. (steep)
White Labs WLP001 California ale yeast (1L starter)	

**Original Gravity:** 1.100 (60% efficiency)

**Final Gravity:** 1.022

**IBUs:** 90

**Boil Time:** 90 minutes

**Primary Fermentation:** 2 weeks at 65° F (18° C)

**Secondary Fermentation:** 3 months at 45° F (7° C)

### DIRECTIONS

Mash grains at 150° F (66° C) for one hour.

**EXTRACT VERSION:** Substitute 12.33 lb (5.6 kg) pale liquid malt extract for the two-row malt. Steep the grains in 158 °F (70 °C) water for 30 minutes, strain, add the extracts, bring to a boil, and continue with the recipe as written.



said. "We did everything we needed to get a club going, voted in some officers to keep things straight, and have been meeting every month since."

This year's competition was organized by club member Jed Reinhard. Plans are to continue the event each year, ramping it up as time and resources allow. "This year we were able to hold it at [Fort Smith's] Riverfront Park and have a nice break in judging to go downtown and have some beers," Stoltz said. "Next year

we hope to have a pub crawl with some of the venues downtown. We also assisted with a local charity event this year called the 'Fest-of-Ale.' We hope to be involved with two fundraisers on the same weekend next year."

Stoltz is not only the club president, but an award-winning brewer, as he won the Best of Show at this year's event with his barleywine called Two Blue Dogs, named by his son. The beer was a collaborative effort with fellow brewer Patrick Pursel.



## FOUNDING PRESIDENT STEVE ARNOLD THOUGHT MORE CLUB ENTRIES IN COMPETITIONS WOULD BE A GREAT WAY TO GET THEIR NAME OUT AS A NEW CLUB AND GET SOME MORE FEEDBACK ON BEERS.

Formulation was based on one of Jamil Zainasheff's recipes, modified based on available ingredients. This was the first time it was entered for competition, but the brewers hope that as it ages, it will continue to be a competitive entry.

Stoltz said, "I brought Pat into brewing about two years ago and we now have a

nice rivalry for some of our competition beers."

Stoltz said he got into homebrewing after seeing Alton Brown's "Good Eats" show on how to brew. "It seemed to be a perfect mixture of science and cooking," he said. "So I picked up a kit and Charlie Papazian's book and dove in. I have been

brewing off and on since then, mostly to just make beer that I liked."

He has only been brewing competitively since the formation of the River Valley Ale Raisers. Founding president Arnold thought more club entries in competitions would be a great way to get their name out as a new club and get some more feedback on beers. It seems to have had the desired effect, and has allowed members like Stoltz to really hone their craft.

"Since the beginning, my equipment has evolved from a pot on the stove with some grain bags, to converted kegs, outdoor burners, a homemade slotted manifold mash tun, and a wort chiller," said Stoltz. "I really enjoy building brewing equipment almost as much as brewing itself."

Stoltz stressed the importance of education within a community of other brewers. "The only tip that I would suggest is to get involved in a local club. If there isn't one and you know some other brewers, get together. Being involved in a club has really given me a chance to learn from other brewers. One thing that I have always liked about this hobby is the wide variety of people that do it."

**Amahl Turczyn Scheppach is a former craft brewer and associate editor of Zymurgy, and now brews at home in Lafayette, Colo.**

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### AHA SPECIAL EVENTS

Visit the Events section of Homebrewers Association.org for more information.

**November 5**  
**AHA Learn To Homebrew Day**

**November 12**  
**AHA Rally at Wynkoop Brewing Co.**  
Denver, CO

**April 2012**  
**AHA National Homebrew Competition**  
**First Round Competitions**

**May 5, 2012**  
**AHA Big Brew—A Celebration of National Homebrew Day**

**June 21-23, 2012**  
**AHA National Homebrewers Conference**  
Seattle, WA  
[AHAconference.org](http://AHAconference.org)





## KUDOS—BEST OF SHOW

### AHA/BJCP Sanctioned Competition Program

#### April 2011

Humboldt Homebrew Festival, 23 entries—  
*Sean Wilson & Jamie Ashdon, Eureka, CA.*

#### May 2011

Brew Bubbas Session Beer Challenge, 151 entries—*Phil Sullivan, Warren, MI.*  
2011 THIRSTY Classic, 123 entries—  
*Dave Morse, Burlington, IA.*  
Sacramento County Fair 2011 Homebrew Competition, 72 entries—  
*Brady Silkman, Sacramento, CA.*  
California State Fair 2011 Homebrew Competition, 350 entries—  
*Paul Sangster, Carlsbad, CA.*  
Ranger Creek Sippy Cup Pro-Am Competition, 31 entries—*Britt Taylor-Burton, Austin, TX.*

#### June 2011

5th Annual ABC Brews Crews Homebrew Competition, 308 entries—  
*Bob & Kim Barrett, Ann Arbor, MI.*  
Los Angeles International Commercial Beer Competition, 401 entries—  
*Caldera Brewing Company.*  
OC Fair & Event Center Homemade Beer Competition, 479 entries—  
*Phil Lingenfelter, Lake Forest, CA.*  
Yellowstone Highland Games Scottish Ale Competition, 8 entries—  
*Ronald Kalvig, Billings, MT.*  
Home Winemakers Festival, 14 entries—  
*Dan Wieman & Joe Parker, Kelseyville, CA.*  
Battle of the Iron Homebrews, 13 entries—  
*Steve Girard, Phoenix, OR.*

#### July 2011

2011 Wan Cup 2, 123 entries—  
*Ichiri Fujiura, Tokyo, JP.*  
San Diego County Fair-Home Brew, 818 entries—*Bob MacKay, Carlsbad, CA.*  
Brewster's Cup Series: Wood & Smoked Beers, 19 entries—*Jeffrey McElfresh, Dayton, OH.*  
Indiana State Fair Brewers' Cup Competition, 1,071 entries—*Chris Ingermann, Muncie, IN.*  
California Mid State Fair, 84 entries—  
*Russell Sterner, Morro Bay, CA.*  
4th Annual Ohio Brew Week Homebrew Competition, 308 entries—  
*Jeff Fortney, Dayton, OH.*  
West Coast Brewers Iron Brewer Competition 2011, 12 entries—*Michael Connor, Perth, Western Australia, AU.*  
ESB 2011 Homebrew Competition—Winter Warmers, 98 entries—*Sam Haldane, Sydney NSW, AU.*  
Ohio State Fair Homebrew Competition, 446 entries—*Kyle Bullock, Columbus, OH.*  
Amador Invitational (Commercial Microbrew Competition), 53 entries—  
*Sutter Buttes Brewery, Yuba City, CA.*  
Amador County Fair Homebrew Competition, 91 entries—*Rick Reineman, Stockton, CA.*

All American Brew Off, 53 entries—  
*Lucas Stoltz, Fort Smith, AR.*  
McHale's Monthly Mashout - July, 5 entries—  
*Rob Harris, Hixson, TN.*  
E.T. Barnette Homebrew Competition, 49 entries—*Steven Jayich, Anchorage, AK.*  
CAMRA Vancouver Too Hop to Handle, 14 entries—*Derrick Franche, Whistler Brewhouse, Whistler, BC, CAN.*  
Delaware State Fair Battle of the Brews, 201 entries—*Joseph Lemnah, Milton, DE.*  
Spirits of Baker County, 8 entries—  
*Randy Scorby, Baker City, OR.*  
Summer Beer Dabbler Showcase 2011, 68 entries—*Greg Seppelt, Saint Paul, MN.*  
2011 Buffalo County Fair Homebrew Competition, 85 entries—  
*Kim Herald, Kearney, NE.*  
Brisbane Amateur Beer Brewers (BABBs) Annual Club Competition 2011, 100 entries—  
*Tony Brown, Brisbane, QLD, AU.*  
Arapahoe County Fair Home Brew Contest, 33 entries—*Gene Wordekemper, Aurora, CO.*  
UP State Fair Homebrew Competition, 75 entries—*Rodney Kibzey, Lombard, IL.*  
Mead Free or Die, 57 entries—  
*Corey Clemmons, Santa Fe, NM.*  
2nd Schmidy's Annual Brewmaster's Homebrewer's Challenge, 43 entries—  
*Chris Anderson, Yucca Valley, CA.*  
24th Annual Southern California Regional Homebrew Championship, 285 entries—  
*Todd Peterson, San Dimas, CA.*  
First Coast Cup, 575 entries—  
*Richard Etshman, Tampa, FL.*  
MAGMA's Beer Competition Invitational, 100 entries—*Corey Baker, Medina, OH.*  
Gnarly Barley Home Brew Competition, 275 entries—*Jesse Ketterman, Fort Collins, CO.*  
Nevada County Fair, 100 entries—  
*John Glinka, Grass Valley, CA.*  
Ventura County Fair Amateur Beer Contest, 110 entries—*Augustus Chinery, Camarillo, CA.*  
Iowa State Fair, 252 entries—  
*Bradley Penar, West Des Moines, IA.*

#### August 2011

Tillamook County Fair Homebrew Competition, 8 entries—  
*Derek Mickelson, Bay City, OR.*  
Archuleta County Fair, 23 entries—  
*Jason Cox, Pagosa Springs, CO.*  
Skagit County Fair Hombrew Competition, 130 entries—*Adam Robbins, Seattle, WA.*  
16th Annual Montgomery County Agricultural Fair Homebrew Competition, 141 entries—  
*Ed Bielaus, Rockville, MD.*  
Beerstock 5060-3, 30 entries—  
*Steve Maiuri, Richland, WA.*  
United Way of Mason County, 19 entries—  
*Bob McHugh, Grand Rapids, MI.*

Lunar Rendezbrew XVIII, 515 entries—  
*Keith & Pam Bradley, Austin, TX.*  
Nebraska State Fair Beer and Wine Competitions, 24 entries—  
*Jay Price, Omaha, NE.*  
18th Annual Dominion Cup, 409 entries—*Tyler Kidd, Richmond, VA.*  
Deer River Bar-b-que and Brew Fest, 21 entries—*Mike Twite, Grand Rapids, MN.*  
Evergreen State Fair, 250 entries—*Phil Knudson & Blake Skouras, Marysville, WA.*  
Kentucky State Fair, 400 entries—  
*Alicia Ruplinger, Louisville, KY.*  
Timbers Army Homebrew Competition, 21 entries—*Eric Gantner, Portland, OR.*  
Western Idaho Fair, 69 entries—  
*John Herbenson, Nampa, ID.*  
Minnesota State Fair Homebrew Competition, 650 entries—*Steve Fletty, Saint Paul, MN.*  
Beer and Sweat 2011, 258 entries—  
*Chris Meta, Pittsburgh, PA.*  
Benton Franklin Fair Homebrew Competition, 27 entries—*James Golovich, Richland, WA.*  
McHale's Monthly Mashout - August, 8 entries—*Mark Forrester, Nashville, TN.*  
Best of the Bay 2011, 184 entries—  
*Dan Hansen, Everett, WA.*  
3rd Annual Beehive Brew-Off, 482 entries—  
*Mike Johnson, Salt Lake City, UT.*  
The Anchor Town Invitational, 54 entries—  
*Frank Bell & Steve Kunemund, Anchorage, AK.*  
Kitsap County Fair - Homebrew Competition, 35 entries—*Kenny Davis, Port Orchard, WA.*  
Colorado State Fair Homebrew Competition, 457 entries—*Jason Reinhardt, Lakewood, CO.*  
Mountain Maryland Brew Down, 30 entries—  
*Stephen Owens, Cumberland, MD.*  
Miniconcurso Clausura 2011, 11 entries—  
*Ariel Golia, Buenos Aires, AR.*  
Miniconcurso Clausura 2011, 30 entries—  
*Cesar Monzón, Buenos Aires, AR.*  
Miniconcurso Clausura 2011, 20 entries—  
*Javier Gaggino, Pilar, Buenos Aires, AR.*  
The Limbo Challenge, 176 entries—  
*Dwight Mulcahy, San Antonio, TX.*  
AHA Club-Only Competition, Mead, 57 entries—*Al Boyce, Minnesota Homebrewers Association, St. Louis Park, MN.*

#### September 2011

Berea Oktoberfest Microbrew Competition, 53 entries—*Jack Kephart, Brew Kettle, Strongsville, OH.*  
Bristol Homebrew Competition, 258 entries—  
*Thomas Dobson, UK.*





## AHA/BJCP SANCTIONED COMPETITION PROGRAM CALENDAR

For complete calendar, competition and judging information go to  
[www.HomebrewersAssociation.org/pages/competitions](http://www.HomebrewersAssociation.org/pages/competitions)



### November 4

#### Music City Brew Off

Hendersonville, TN. Entry Deadline: 10/14/2011.  
[www.musiccitybrewers.com](http://www.musiccitybrewers.com)

### November 5

#### The BBG Skirmish in the Triad

Greensboro, NC. Entry Deadline: 10/23/2011.  
[www.battlegroundbrewers.com/skirmish2011.php](http://www.battlegroundbrewers.com/skirmish2011.php)

### November 5

#### Novemberfest 2011

Kent, WA. Entry Deadline: 11/2/2011. [www.wahomebrewers.org/novemberfest](http://www.wahomebrewers.org/novemberfest)

### November 5

#### The Dig Pub 4th Annual Monster Homebrew Competition

Cedar Park, TX. Entry Deadline: 10/28/2011.  
[www.thedigpub.com](http://www.thedigpub.com)

### November 5

#### 2011-2012 Rocky Mountain Homebrew Club Only Challenge

Denver, CO. Entry Deadline: 10/21/2011.  
[fotr.brewcompetition.com](http://fotr.brewcompetition.com)

### November 5

#### HOPS BOPS XXVII

Philadelphia, PA. Entry Deadline: 10/31/2011.  
[www.hopsclub.org](http://www.hopsclub.org)

### November 5

#### California State Homebrew Competition

San Francisco, CA. Entry Deadline: 10/15/2011.  
[www.nchinfo.org/state-comp](http://www.nchinfo.org/state-comp)

### November 5

#### Badger Brew-Off

Madison, WI. Entry Deadline: 10/28/2011.  
[www.mhtg.org/badgerbrewoff](http://www.mhtg.org/badgerbrewoff)

### November 6

#### MALT Turkey Shoot 2011

Baltimore, MD. Entry Deadline: 10/28/2011.  
[maltclub.org](http://maltclub.org)

### November 12

#### Land of the Muddy Waters

Rock Island, IL. Entry Deadline: 11/5/2011.  
[www.mugzhomebrew.org](http://www.mugzhomebrew.org)

### November 12

#### SCH\*ABC IV

Collegeville, PA. Entry Deadline: 11/3/2011.  
[www.schomebrewers.com](http://www.schomebrewers.com)

### November 12

#### Knickerbocker Battle of the Brews

Albany, NY. Entry Deadline: 11/4/2011.  
[www.thoroughbrews.org/kbotb/index.html](http://www.thoroughbrews.org/kbotb/index.html)

### November 12

#### Spirit of '76 Challenge

Fort Worth, TX. Entry Deadline: 10/21/2011.  
[spiritof76.hopocalypse.org](http://spiritof76.hopocalypse.org)

### November 12

#### London and South East Craft Brewing Competition

London, Wimbledon, UK. Entry Deadline: 11/11/2011.  
[londonandsoutheast.brewcompetition.com](http://londonandsoutheast.brewcompetition.com)

### November 12

#### Dark Side of the Beer

Tonawanda, NY. Entry Deadline: 11/5/2011.  
[www.niagarabrewers.org](http://www.niagarabrewers.org)

### November 12

#### Beer For Boobs

Zanesville, OH. Entry Deadline: 11/4/2011.  
[beerforboobs.brewcompetition.com/](http://beerforboobs.brewcompetition.com/)

### November 18

#### Sunshine Challenge

Maitland, FL. Entry Deadline: 10/26/2011.  
[cfhb.org](http://cfhb.org)

### November 19

#### FOAM Cup

Tulsa, OK. Entry Fee: \$7. Entry Deadline: 11/12/2011. [foamcup.us/](http://foamcup.us/)

### November 27

#### East Coast vs West Coast

Ocean City, MD. Entry Deadline: 11/20/2011.  
[home.comcast.net/~sunflowerbrewhouse/site/](http://home.comcast.net/~sunflowerbrewhouse/site/)

### December 3

#### AHA Club-Only Competition, Hail to Hefeweizen

Indianapolis, IN. Entry Deadline: 11/25/2011.  
[www.homebrewersassociation.org/pages/competitions/club-only-competitions](http://www.homebrewersassociation.org/pages/competitions/club-only-competitions)

### December 3

#### Walk the Line on Barleywine and Strong Ale Stumble

Dunedin, FL. Entry Deadline: 11/27/2011.  
[www.dunedinbrewersguild.com/WTL.htm](http://www.dunedinbrewersguild.com/WTL.htm)

### December 3

#### Walk the Line on Barleywine and Strong Ale Stumble Commercial Competition

Dunedin, FL. [www.DunedinBrewersGuild.com](http://www.DunedinBrewersGuild.com)

### December 10

#### 3rd Annual Fugetaboutit Homebrew Competition

Signal Mountain, TN. Entry Deadline: 11/19/2011.  
[www.barleymob.com/fugetaboutit/index.php](http://www.barleymob.com/fugetaboutit/index.php)

### December 10

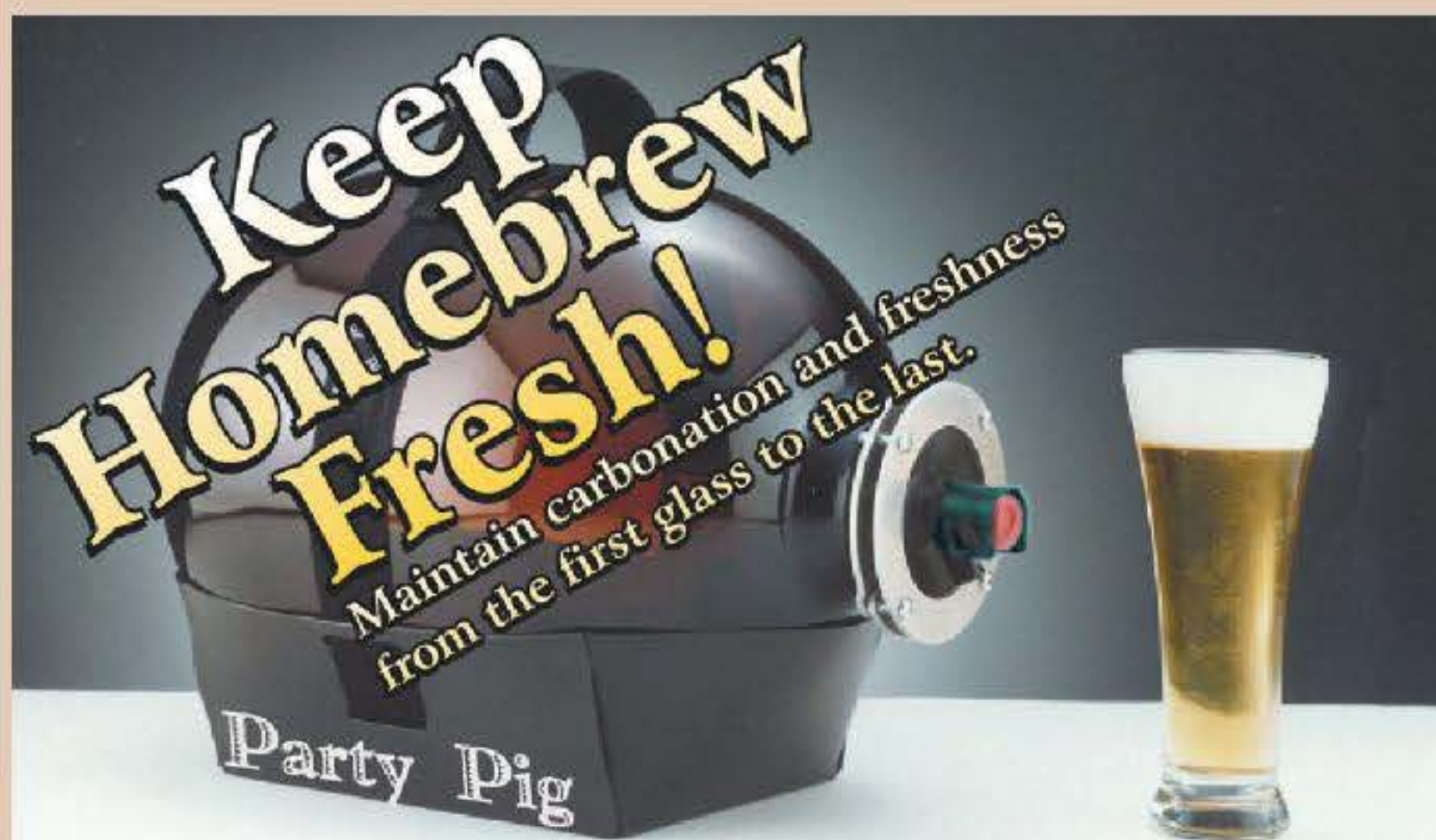
#### Manjimup Cherry Harmony HB Competition

Manjimup, Western Australia, AU. Entry Deadline: 11/27/2011. [www.homebru.com.au](http://www.homebru.com.au)

### December 10

#### Happy Holidays Homebrew Competition

St. Louis, MO. Entry Deadline: 12/2/2011.  
[www.stlbrews.org](http://www.stlbrews.org)



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*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 the rank of Grand Master in the Beer Judge Certification Program. Each issue, they 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](http://www.bjcp.org), pick up a bottle of each of the beverages and judge along with them in our Commercial Calibration.*



**T**wo Pilsners were judged by our panel for this issue.

First up was Beach Haus® Classic American Pilsner, a rare commercial example of the style, brewed by East Coast Beer Co. in Point Pleasant Beach, N.J. Classic American Pilsner (CAP) is a version of Pilsner brewed in the U.S. by immigrant German brewers. The style died out after Prohibition, but was resurrected mostly as a homebrewed style. (Download homebrewer Jeff Renner’s article, “The Revival of the Classic American Pilsner,” at [HomebrewersAssociation.org](http://HomebrewersAssociation.org) in the Zymurgy Free Downloads section.)

Beach Haus® Classic American Pilsner is the only style currently being brewed by East Coast, though the brewery plans to release its second beer, Beach Haus® Winter Rental, a schwarzbier, in October.

“From the start, we knew we wanted to do a Pilsner,” said East Coast co-founder John Merklin. “We researched the style quite a bit and really began to appreciate its history. After agreeing upon what experience we wanted folks to get from the beer, mainly a flavorful but clean and balanced beer, [lead brewer] Tom [Przyborowski] put an ingredient list together and we brewed our first batch. We immediately fell in love with the beer style and spent years refining our brewing technique and the ingredients. We did all of this out of my garage in a tricked-out, all-mash homebrew kit we had assembled.”

Next up was Polestar Pilsner, a German Pilsner from Left Hand Brewing Co.

in Longmont, Colo. Polestar is brewed with Weyermann Pilsner malt and pale two-row, and hopped with Magnum, Mt. Hood, and Sterling. It checks in at 5.5 percent ABV and 33 IBU.

Previously a Tabernash brand, the Pilsner transitioned to Left Hand Polestar Pilsner in 2005, according to brewery VP of operations Chris Lennert.

“We have made subtle changes to it over the years,” said Lennert. “We call it Polestar, another name for the North Star, which early explorers used to rely on for navigation. Our initial tagline on the beer was ‘guiding you to better beer.’ Our thoughts were to show people how Pilsners were supposed to be brewed, not like the Pilsners the major domestics were pumping out. If you ask any of our brewers, they’ll tell you it’s the hardest beer we make—there’s simply nowhere to hide.”

Polestar Pilsner won a bronze medal at the 2007 North American Beer Awards. 🏆

## ON THE WEB

Left Hand Brewing Co.  
[www.lefthandbrewing.com](http://www.lefthandbrewing.com)

East Coast Beer Co.  
[www.beachhausbeer.com](http://www.beachhausbeer.com)

BJCP Style Guidelines  
[www.bjcp.org](http://www.bjcp.org)

Commercial Calibration  
[www.HomebrewersAssociation.org/pages/zymurgy/commercial-calibration](http://www.HomebrewersAssociation.org/pages/zymurgy/commercial-calibration)

**OUR EXPERT PANEL** includes David Houseman, a Grand Master IV judge and competition director for the BJCP from Chester Springs, Pa.; Beth Zangari, a Grand 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 1995; and Gordon Strong, a Grand Master V judge, principal author of the 2004 BJCP Style Guidelines and president of the BJCP board who lives in Beavercreek, Ohio.





Beach Haus Classic American Pilsner—East Coast Beer Co., Point Pleasant Beach, N.J.  
BJCP Category: 2C Classic American Pilsner

## THE JUDGES' SCORES FOR BEACH HAUS® CLASSIC AMERICAN PILSNER



**Aroma:** Light, sweet grainy aroma with low-to-medium lemony hop presence. No DMS. No diacetyl. No fruity fermentation esters. Alcohol aroma evident. I'm missing characteristic six-row malt graininess and corn-like DMS. (8/12)

**Appearance:** Golden color. Brilliant clarity. Rocky, white long-lasting head. (3/3)

**Flavor:** Sweet malt with very low corn-like DMS that has hints of onion. Moderately high hop bitterness. Low-to-medium lemony hop flavor. No diacetyl. No-to-low fermentation esters. Hot alcohol, somewhat harsh, raw. Not the expected cracker, bread graininess usually perceived from six-row malt in the style. However, it is well balanced with a sweet, grainy, dry, hoppy finish. (16/20)

**Mouthfeel:** Medium-light body with a harsh hop and alcohol mouthfeel. Noticeable alcohol warming. Not as smooth and creamy as expected of the style. (3/5)

**Overall Impression:** This is a very drinkable, well-made beer that is a bit hot and harsh, without exhibiting the pre-Prohibition character of the classic example revived by (homebrewer) Jeff Renner. Its higher alcohol, balance, and malt/hop character seem much closer to a very good Dortmunder Export, but then it was the German immigrant brewers using American ingredients that produced this style in the U.S. This is a refreshing beer by itself for a hot summer evening, but also a great accompaniment to that picnic burger and potato salad. (7/10)

**Total Score:** (37/50)



**Aroma:** Initial pronounced grainy malt sweetness followed by floral herbal spice hop aroma. Very clean fermentation with no fruitiness or DMS. (10/12)

**Appearance:** Golden yellow with brilliant clarity. Creamy white foam persists to the end as well-formed head; laces on the glass. (3/3)

**Flavor:** Moderately sweet malt backbone supports an assertive herbal floral hop flavor; pronounced hop bitterness gives way to a sweet grainy flavor that reminds me of Hawaiian dinner rolls. Substantial sweetness balances the equally substantial hop bitterness that lingers pleasantly into the finish. Exceptionally clean fermentation character. (17/20)

**Mouthfeel:** Medium-full body with a moderate carbonation level. Creamy textured with a hint of alcohol warmth. No astringency. (3/5)

**Overall Impression:** Very well balanced. The substantial maize (corn) sweetness is distinctly different from that of 100-percent barley malt, and is complemented by the equally substantial herbal hop flavor and bitterness. Leaves an impression of a rounded fullness, and begs to be consumed by the liter. (8/10)

**Total Score:** (41/50)



**Aroma:** A pleasant graininess with the creamed corn notes that exemplify this style. I also pick up some light mineral and metallic notes, along with light vegetal/cabbage notes from DMS. Light floral hops notes and esters, but the focus of the aroma is on the grains. (10/12)

**Appearance:** Golden color with a white head that lasts well. Excellent clarity. Solid looking example of the style. (3/3)

**Flavor:** The flavor mirrors the grain focus of the aroma. The malt/adjunct balance is good, and the hop character adds complexity, with earthy and floral notes that yield to an assertive hop bitterness. The fermentation profile is clean. The finish is both sweet and dry, with a final gravity that is probably slanted toward the high end of the style guidelines. The light graininess and mineral notes help ameliorate the sweetness. (17/20)

**Mouthfeel:** Good creaminess and malt depth that really nails the richness aspect of the style. A slight astringency lingers on the palate, leaving a slight mouth-puckering sensation. (4/5)

**Overall Impression:** Very nice beer, especially for the first bottled commercial example of the style I have tasted. I love the creamy mouthfeel—the flavors explode on the palate. The clean fermentation profile exemplifies the style, and the malt/adjunct balance is appropriate without emphasizing one over the other. The finish is a little edgy (harsh), but it was not a serious detraction to a well-crafted brew. (8/10)

**Total Score:** (42/50)



**Aroma:** Mild grainy malt nose, moderate sulfur. Medium-light earthy, spicy hops. Not totally clean; has some vegetal, DMS notes. The sulfur tones are a little off-putting, and seem a little dirty. The hop intensity is welcome. (8/12)

**Appearance:** Tall white head, moussy, persistent. Effervescent. Crystal clear. Medium-light gold color. Quite pretty. (3/3)

**Flavor:** Sweet-grainy Pils malt flavor, like Graham crackers. Medium to medium-high bitterness and spicy hop flavor. Dry finish with lingering hop aftertaste and bitterness. Clean lager character. The malt is moderate in intensity and has a full finish but no residual sweetness. A touch flinty/minerally. The sulfur notes accent the bitter bite in the finish. (17/20)

**Mouthfeel:** Medium-high carbonation. Medium to medium-light body. Relatively smooth and crisp. No noticeable alcohol warmth. Slightly creamy in the body with a very light hop astringency. (4/5)

**Overall Impression:** The balance of flavors is excellent: good bitterness and hop flavor intensity for a CAP. The body has some heft but the finish is crisp. The malt flavor is clean and tasty, but the aroma seems off. It seems a bit minerally and sulfury with the DMS jumping out too much. The sulfur could be from water or yeast, and gives a rough edge to the DMS. But the beer has the right bitterness for the style, which is what most examples miss. (8/10)

**Total Score:** (40/50)





## THE JUDGES' SCORES FOR LEFT HAND POLESTAR PILSNER



**Aroma:** Sweet, grainy Pils malt aroma with an initial hint of sulfur. There is a bit of alcohol and a low, lingering floral hop aroma. No diacetyl. No-to-low DMS. No fermentation esters. A clean, crisp, inviting lager aroma. (10/12)

**Appearance:** Light gold color. Brilliant clarity. Dense, rocky white head with sustained head retention. (3/3)

**Flavor:** Crisp, sweet, grainy, saline cracker-like malt with medium-high hop bitterness. Low floral hop flavor. A carbonate/sulfate water hardness to the hop profile. No-to-very low DMS. Low sulfur notes through to the finish and aftertaste. No diacetyl. Very clean lager fermentation with no fruity esters. Hops dominate and linger in the dry finish, with excellent support from the Pilsner malt. (17/20)

**Mouthfeel:** Medium body with a bit lighter mouthfeel due to the lively carbonation. A little warming alcohol. Some hop astringency and dryness. (4/5)

**Overall Impression:** An excellent and quaffable German Pilsner. Sulfate/carbonate water treatment accentuates the noble hops. Well executed brewing process provides the Pilsner malt backbone to support the dominant hop profile. Right on target for the style. This is like drinking Pilsner in a Gasthaus pub in Northern Germany, enjoyed with a wienerschnitzel and spaetzle lunch. (9/10)

**Total Score:** (43/50)



**Aroma:** Bready, sweet graham-like malt aroma up front with a clean yeast character, and spicy peppery herbal hops coming forward toward the back, reminiscent of old-fashioned horehound candies. (9/12)

**Appearance:** Very pale yellow, almost dark straw; brilliant clarity with a biscuity white persistent frothy head. (3/3)

**Flavor:** Bready graham-like malt, still like the horehound candies, is dominated by the assertive herbal hop bitterness and flavor. Balance is toward the pleasant hop character, with a lightly lingering bitterness into the finish. Clean fermentation, with a crisp, clean, and somewhat dry presentation. (16/20)

**Mouthfeel:** Medium light body with fairly high carbonation level. Creamy textured, not astringent. Prickly carbonation mixes with a hint of alcohol warmth that is both clean and lingering. (5/5)

**Overall Impression:** The initial malt aroma hinted at a fuller body and more malt flavor than was present. The graham-like malt and herbal hop quality that made the horehound candy is quite interesting as well, if a bit unexpected. A lovely example of a German-style Pils that would go well with a spicy sausage and red cabbage. (7/10)

**Total Score:** (40/50)



**Aroma:** Initial burst of DMS (scalions) when the beer is first poured, but this fades into light malt sweetness with a low level of pear-like esters. I pick up a little flowery hop character, and this elevates the fruitiness to a level that is a little higher than classic German Pilsners. A low alcohol level adds to the sweetness. (10/12)

**Appearance:** Crystal clear with a pale golden color. The white head has tight, uniform beads and great retention. (3/3)

**Flavor:** The beer starts cleanly, with soft bready and biscuit-like notes and sweetness from continental malt. The hop character develops slowly, with an herbal character that smoothly transitions to a medium-high bitterness that lingers after the beer is swallowed. A low level of DMS in the background adds complexity. Esters are present at a low level, but are more subdued than in the aroma and are at the level I expect in a clean lager style. (17/20)

**Mouthfeel:** Well-conditioned with a good creaminess that envelopes the palate. A low level of astringency lingers, as well as some mineral notes in the finish. Could be a little smoother, but is still excellent. (4/5)

**Overall Impression:** Great example of a German Pils. The aroma has a little more fruitiness than in most German lagers and the finish could be a little smoother, but everything else is right on the money. The balance and depth of flavor are both outstanding. Sipping this sample brings back memories of pleasant evenings in northern Germany. (9/10)

**Total Score:** (43/50)



**Aroma:** Medium-high hop aroma, spicy and floral. Clean grainy malt nose, with a light malty sweetness. Very light sulfur. Hops dominate malt. Generally clean lager character, with just a hint of pear-like esters. (10/12)

**Appearance:** Medium-sized pure white head, frothy, moderately persistent. Effervescent. Brilliant clarity. Medium yellow color. (3/3)

**Flavor:** Initial grainy malt with a strong spicy, floral hop flavor. High bitterness. Crisp, dry finish with a clean aftertaste. Moderately long finish with the grainy-sweet malt flavor and spicy, floral hop flavor lasting on the palate. Fresh and clean taste. Very clean lager character. Just a touch of sulfur. Very light esters accentuate the malty sweetness. (17/20)

**Mouthfeel:** Medium-to-medium-high carbonation. Medium-to-medium-light body, a touch full. Crisp. (4/5)

**Overall Impression:** Very clean lager. Pure hop and malt flavors. Great balance. Crisp, refreshing finish. Light mineral quality with a hint of esters. It has the freshness that imports often lack. The hops are forward but not out of balance, and they have an elegant, refined character. Superb drinkability. (9/10)

**Total Score:** (43/50)





# Barrel Run Porter



**H**ave you ever been frustrated at figuring out how to fix something or solve a problem, spending gobs of time and energy, only to find that in the end the solution was rather simple or required a different perspective? This has been the year of stuff needing repair at my home. It seemed unending. Approaching the challenge directly seemed to always lead me to expend needless energy; whereas if I just relaxed, had a homebrew, and thought of what the root of the problem might be and then kept an open mind on different approaches on how to fix it—well, then most of my breakdowns were easily fixed.

The same thoughts can be applied to certain aspects of homebrewing. How about barrel-aging a beer? Have you ever had the thought that it could be great to age that recent beer in a used spirits barrel?

And then immediately thought, “How am I going to fill a 40-, 30-, 15-gallon barrel?” Coordinating a group brew is not an option if you don’t want to spend a lot of time organizing that process. Where are you going to find the room for a barrel that size?

Like many problems I’ve solved, I approached attaining a barrel-aged character with a rather unique solution, at least in my world. I landed a very large “empty” barrel that had been used to age bourbon. No way was I going to try to fill that sucker with homebrew. But I had quickly discovered when moving the barrel that there were notable sloshing noises coming from within. The barrel was not empty. Magic? No, the previously “empty” barrel had leached out residual liquid and alcohol that had been taken up

in the wood. I proceeded to drill a small hole in the barrel and drained the barrel “runnings.” It was dark, cloudy, astringent, with significant alcohol, and quite nasty tasting.

I bottled the runnings and let it sit for many months. The silty, dark, charcoal residue settled out, and upon sampling I had a quite smooth, very strongly flavored liquid. Alcohol content was unknown, but I observed legs on the sides of the glass, an indication of “proof” strength alcohol.

What I did as a homebrewer is completely illegal for a professional, commercial brewery to do. *So, if you’re a pro, don’t even think of doing the following.*

I brewed a moderate strength porter. At kegging/bottling time, I added a quart of the “barrel runnings” to 5 gallons of brew. That’s a 20:1 ratio. A 10:1 ratio may have had proper balance as well, but I didn’t have room enough in the keg to add that ratio. Too strong a ratio could debilitate yeast activity needed for natural refermentation and carbonation.

For determining the proper ratio, I conducted small-scale taste tests. Five ounces of porter and ¼ ounce (1½ teaspoons) of barrel runnings seemed like the perfect combination. What was very interesting was that both the “barrel runnings” and the porter had very similar flavor profiles of roast and cocoa notes. A match meant to be.

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

**Charlie Papazian is the founder of the American Homebrewers Association and the author of *The Complete Joy of Homebrewing*.**

Photo by Charlie Papazian



## Barrel Run Oatmeal Porter

### ALL GRAIN RECIPE

#### INGREDIENTS

for 5.5 U.S. gallons (21 liters)

<b>5.0 lb</b>	(2.3 kg) English pale malt; Maris Otter
<b>2.9 lb</b>	(908 g) Munich malt (10-15 L)
<b>1.5 lb</b>	(680 g) English brown malt
<b>1.0 lb</b>	(454 g) English crystal malt (10-15 L)
<b>1.0 lb</b>	(454 g) quick oats
<b>8.0 oz</b>	(225 g) Gambrinus honey malt
<b>8.0 oz</b>	(225 g) Weyermann Cara®
<b>8.0 oz</b>	(225 g) English chocolate malt
<b>1.0 T</b>	gypsum (calcium sulfate)
<b>1.25 oz</b>	(35 g) Vanguard hops 5.4% a.a. (6.75 HBU/189 MBU) 60 min
<b>1.0 oz</b>	(28 g) Liberty hops 4.5% a.a. (4.5 HBU/126 MBU) 10 min
<b>0.75 oz</b>	(21 g) Liberty hops, very end-of-boil
<b>0.5 oz</b>	(14 g) Crystal hop <i>pellets</i> 5.5% alpha, dry hop
<b>1.0 qt</b>	(0.95 l) clarified and sedimented barrel runnings from bourbon barrel
<b>0.25 tsp</b>	(1 g) powdered Irish moss
Your favorite ale yeast (I use White Labs Cry Havoc)	
<b>0.75 cup</b>	(175 ml) corn sugar (priming bottles) or 0.33 cup (80 ml) corn sugar for kegging

**Target Original Gravity:** 1.060 (14.7 B)

**Target Extraction Efficiency:** 78%

**Approximate Final Gravity:** 1.014 (3.5 B)

**IBUs:** about 31

**Approximate Color:** 41 SRM (82 EBC)

**Alcohol:** Porter before addition of runnings 6% by volume

#### DIRECTIONS

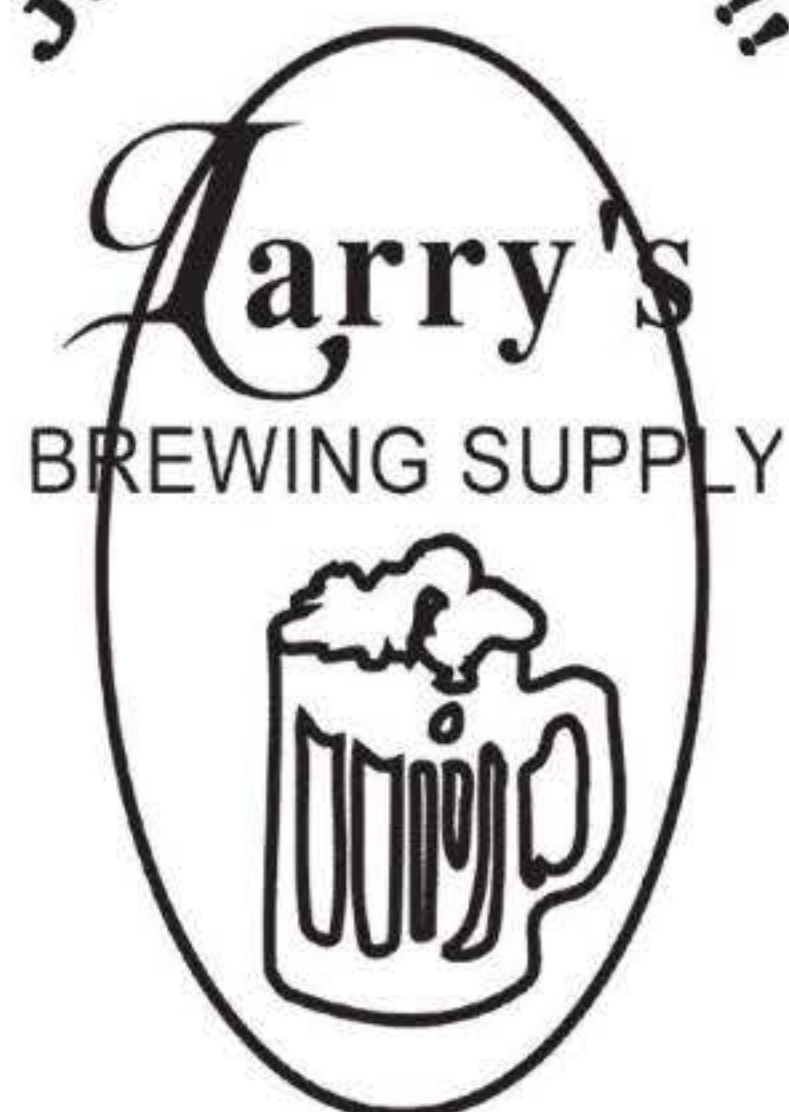
A step infusion mash is employed to mash the grains. Add 11 quarts (10.5 liters) of 140° F (60° C) water to the crushed grain and gypsum, stir, stabilize and hold the temperature at 132° F (53° C) for 30 minutes. Meanwhile add quick oats plus 1 cup of pale malt to 7 quarts (6.7 liters) of cold water and bring to boil. At the end of the 30-minute 132° F malt mash, add the oat mixture to the malt mash and add heat if needed to bring temperature up to 155° F (68° C) and hold for about 30 minutes. Raise temperature to 167° F (75° C), laut and sparge with 3.5 gallons (13.5 liters) of 170° F (77° C) water. Collect about 5.5 gallons (21 liters) of runoff. Add 60-minute hops and bring to a full and vigorous boil.

The total boil time will be 60 minutes. When 10 minutes remain, add the 10-minute hops and Irish moss. When 0 minutes remain, add the end-of-boil hops. After a total wort boil of 60 minutes, turn off the heat and place the pot (with cover on) in a running cold-water bath for 30 minutes. Continue to chill in the immersion or use other methods to chill your wort. Strain and sparge the wort into a sanitized fermenter. Bring the total volume to 5.5 gallons (21 liters) with additional cold water if necessary. Aerate the wort very well.

Pitch the yeast when temperature of wort is about 70° F (21° C). Ferment at about 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. If you have the capability "cellar" the beer at about 55° F (12.5° C) for about one week.

When fermentation is complete, rack/siphon beer off sediment, add 1 quart barrel runnings, prime with sugar and bottle or keg when complete.

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# Barrel Run Porter

## MALT EXTRACT RECIPE

### INGREDIENTS

for 5.5 U.S. gallons (21 liters)

<b>7.0 lb</b>	(3.2 kg) amber malt extract syrup or 5.6 lb (2.5 kg) amber dried malt extract
<b>1.5 lb</b>	(680 g) English brown malt
<b>1.0 lb</b>	(454 g) English crystal malt (10-15 L)
<b>8.0 oz</b>	(225 g) Weyermann Carafa®
<b>8.0 oz</b>	(225 g) English chocolate malt
<b>1.0 T</b>	gypsum (calcium sulfate)
<b>1.75 oz</b>	(49 g) Vanguard hops 5.4% a.a. (9.5 HBU/265 MBU) 60 min
<b>1.0 oz</b>	(28 g) Liberty hops 4.5% a.a. (4.5 HBU/126 MBU) 10 min
<b>0.75 oz</b>	(21 g) Liberty hops, very end-of-boil

<b>0.5 oz</b>	(14 g) Crystal hop <i>pellets</i> 5.5% a.a., dry hop
<b>1 qt</b>	(0.95 l) clarified and sedimented barrel runnings from bourbon barrel
<b>0.25 tsp</b>	(1 g) powdered Irish moss
	Your favorite ale yeast (I use White Labs Cry Havoc)
<b>0.75 cup</b>	(175 ml measure) corn sugar (priming bottles) or 0.33 cup (80 ml) corn sugar for kegging

**Target Original Gravity:** 1.060 (14.7 B)

**Target Extraction Efficiency:** 78%

**Approximate Final Gravity:** 1.014 (3.5 B)

**IBUs:** about 31

**Approximate Color:** 41 SRM (82 EBC)

**Alcohol:** Porter before addition of runnings 6% 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 l) hot water) and discard the crushed grains, reserving the approximately 2.5 gallons (9.5 l) of liquid to which you will now add malt extract, gypsum and 60 minute hops. Bring to a boil.

The total boil time will be 60 minutes. When 10 minutes remain add the 10-minute hops and Irish moss. When 0 minutes remain add the end-of-boil hops. After 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 15-30 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 5.5 gallon (21 liters) batch size. Aerate the wort very well.

Pitch the yeast when temperature of wort is about 70° F (21° C). Ferment at about 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. If you have the capability "cellar" the beer at about 55° F (12.5° C) for about one week.

When fermentation is complete, rack/siphon beer off sediment, add 1 quart barrel runnings, prime with sugar and bottle or keg when complete

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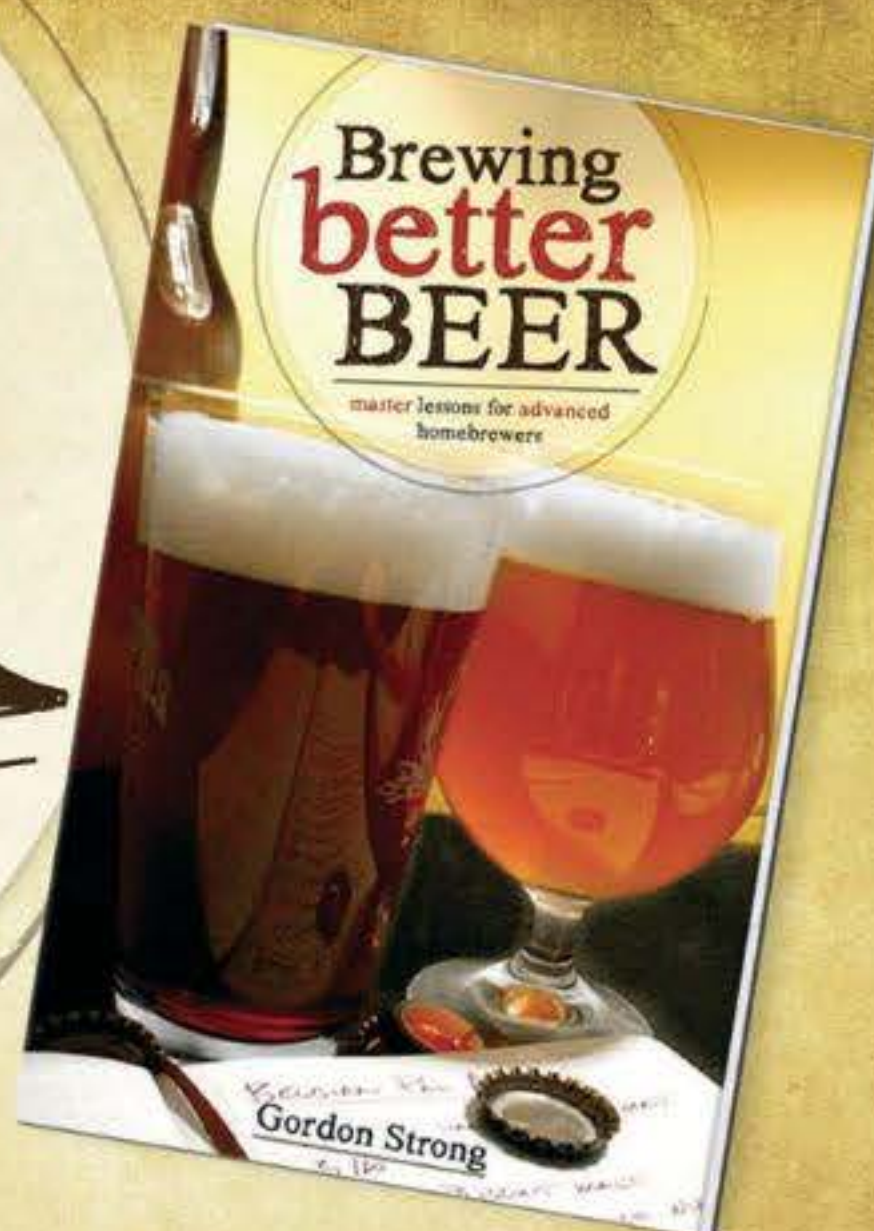




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# FOAM, Choc Brew Up a Wild One

**Y**es, we'll do it! That was our unanimous response when the Choc Beer Company asked our homebrew club, the Fellowship of Oklahoma Ale Makers (FOAM), to collaborate on the 2011 Wild Brew beer.

Wild Brew is a great beer festival held in Tulsa every summer to benefit the Sutton Avian Research Center in Bartlesville, Okla. Choc has participated for many years, but for the first time in 2010 they brewed a Wild Brew beer in collaboration with Tulsa's Marshall Brewing Company. They served it at the 2010 festival and sold it in local stores, with all profits going to Sutton. When Marshall was unable to participate for 2011, Choc called upon FOAM to collaborate with recipe modification and brewing.

Choc brewmaster Michael Lalli, who got his start as a homebrewer, decided to stick with the Belgian IPA style from the 2010 Wild Brew, and asked us to consider possible hop combinations and yeast strains that would complement the base grains, bump up the IBUs, and make the 2011 recipe our own. FOAM went to work via our website forum and, after a bit of debate, we settled on a recipe. The 5-gallon version is shown with this article.

Next we headed south to Choc in tiny Krebs, Okla. to brew the beer. Dozens of homebrewers converged on the small brewery to brew the second of two 465-gallon batches of Wild Brew. You can see a video of our brew day at [www.youtube.com/watch?v=RCQGE24iXWM](http://www.youtube.com/watch?v=RCQGE24iXWM). The folks at Choc were great and we had a fantastic time. Special thanks go to my club mate Jeff Swearengen for spearheading recipe development and pulling the entire project together.

The beer hit store shelves in Oklahoma and Arkansas on June 6, and FOAM and Choc served the beer at the Wild Brew festival on July 30.

**Jeff Pursley is president of FOAM. He has been homebrewing for 16 years in his garage on Leonard Mountain near Bixby, Okla.**

## Wild Brew 2011 Belgian IPA

### INGREDIENTS

for 5 U.S. gallons (19 liters)

7.50 lb	(3.4 kg) Weyermann Pilsner malt
4.75 lb	(2.2 kg) Crisp pale ale malt
0.5 lb	(227 g) Castle aromatic malt
1.0 lb	(454 g) cane/invert sugar
0.4 oz	(11 g) Columbus pellet hops, 14.9% a.a. (first wort hop)
0.7 oz	(20 g) Centennial pellet hops, 8.9% a.a. (45 min)
1.55 oz	(44 g) Cascade pellet hops, 5.4% a.a. (15 min)
1.35 oz	(38 g) Saaz pellet hops, 3.8% a.a. (0 min)
2.0 oz	(56 g) Cascade pellet hops, 5.4% a.a. (dry hop)
1.0 oz	(28 g) Saaz pellet hops, 3.8% a.a. (dry hop)
0.2 oz	(8 g) gypsum (boil/kettle)
0.25 tsp.	Five-Star Super Moss (boil at 10 min)
Wyeast 3522 Belgian Ardennes yeast (2L starter)	

Original Gravity: 1.075  
SRM: 5.8 to 6.0  
IBU: 44  
Efficiency: 70%  
90 minute boil

### DIRECTIONS

Mash grains at 145° F (63° C) for 45 minutes. Raise mash temperature to 155° F (68° C) for 15 minutes. Mash out at 165° F (74° C) and sparge at 175° F (79° C). Boil for 90 minutes, adding hops, gypsum, and moss as indicated in the recipe. Add the sugar during the last 5 minutes of the boil. Ferment at 70° F (21° C). Dry hop, package, and carbonate.

**Extract version:** Substitute 8.9 lb (4 kg) pale liquid malt extract for the three malts, add malt extract to water, bring to a boil, and proceed with recipe as written.



Photo courtesy of FOAM



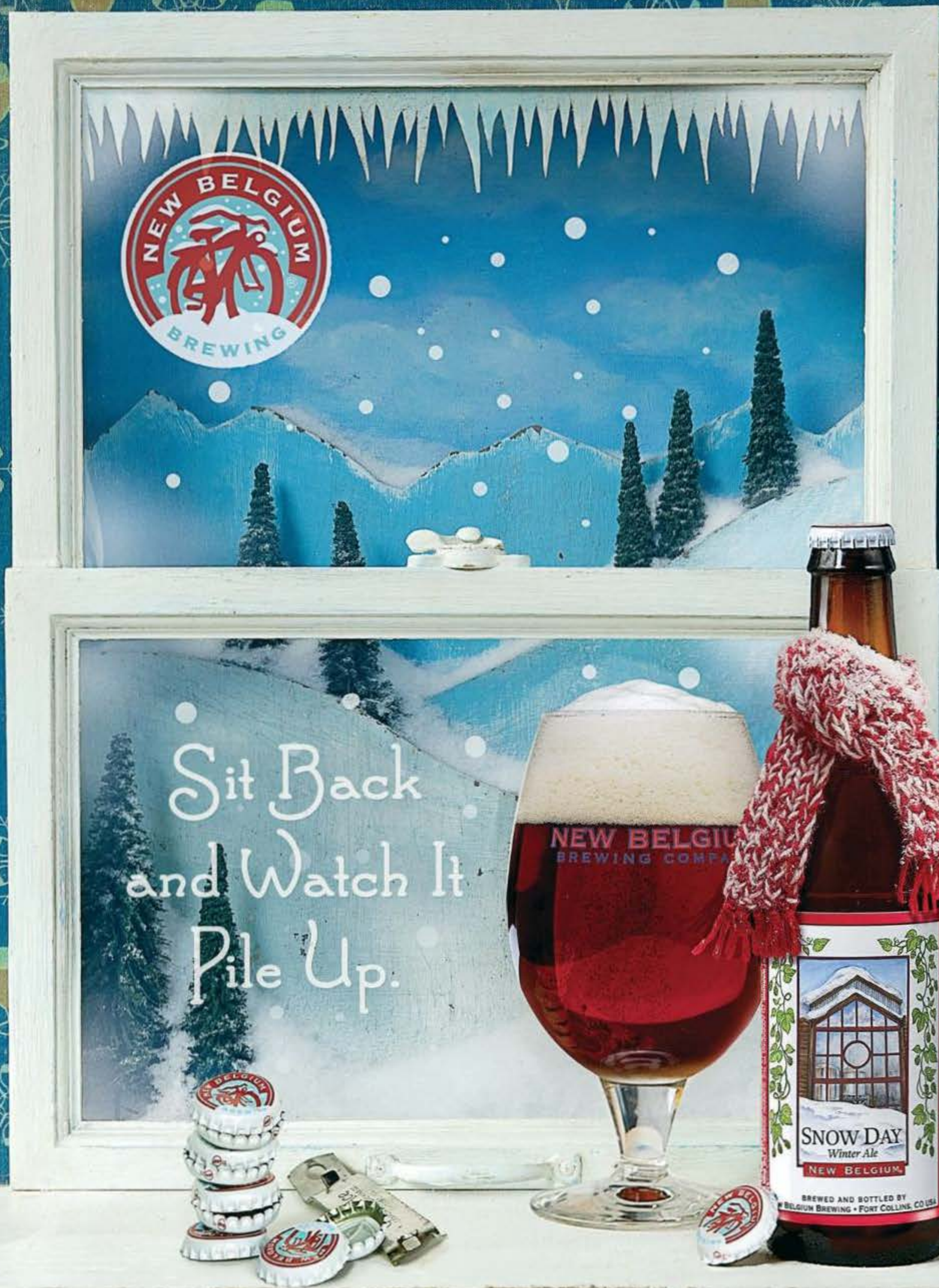
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