

FOR THE **HOMEBREWER & BEER LOVER**

# zymurgy®

■ The Journal of the American Homebrewers Association ■

## *The dark side of* **lagers**



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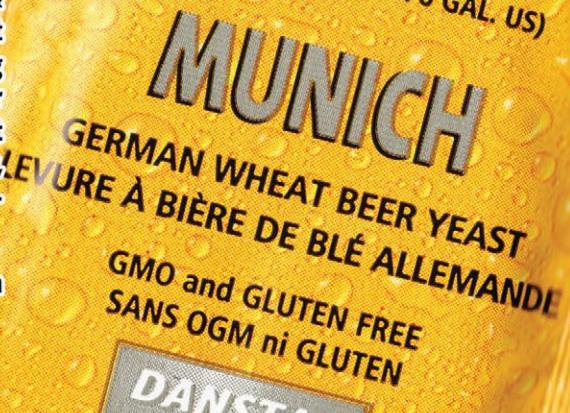
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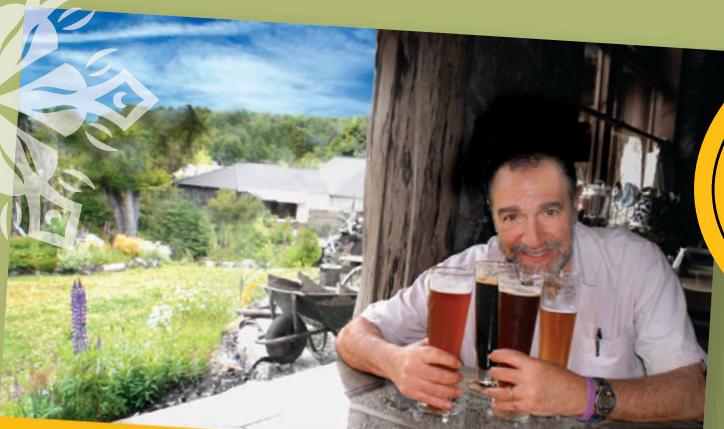
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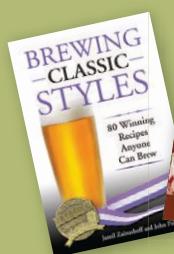
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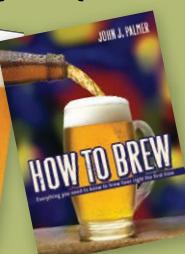
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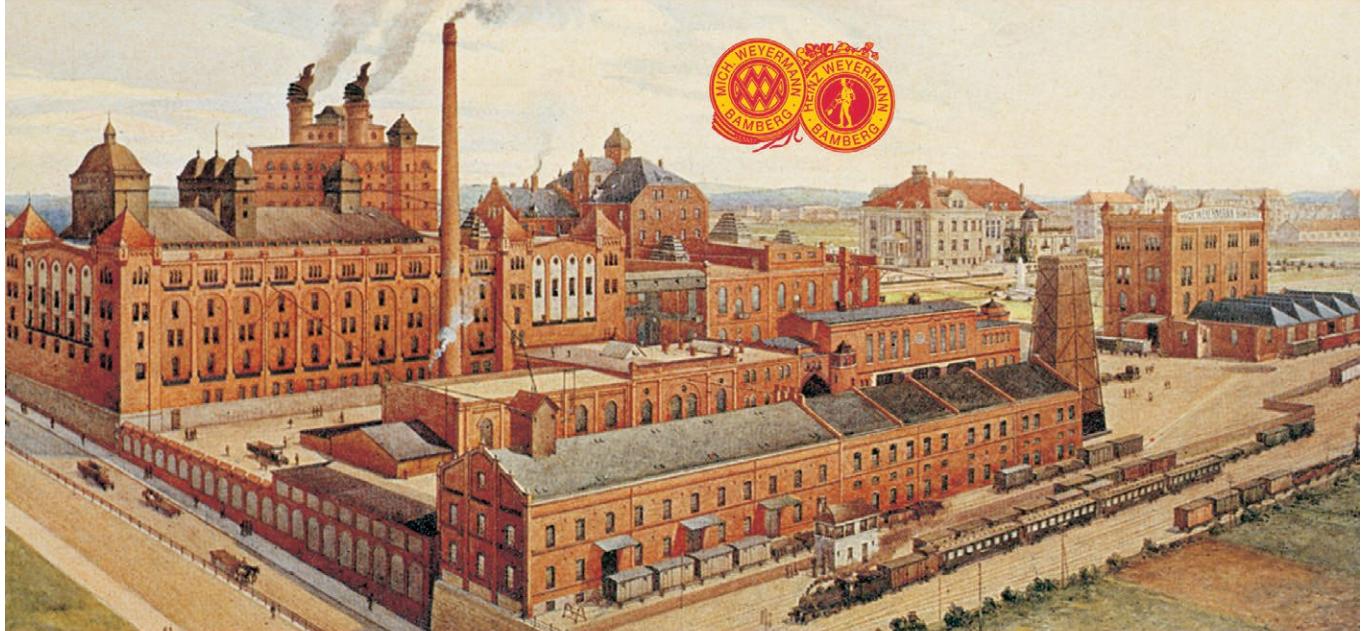
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# A Week About Beer

**Q**uestion: What do Philadelphia, San Diego, Denver, Oregon, Seattle, New York, Michigan and San Francisco have in common?

Answer: They're part of a growing number of cities and states that are designating a whole week, or in some cases a whole month, to celebrate craft beer.

Philadelphia will host the third annual Philly Beer Week next June 4-13 after the resounding success of its first two years. In 2009, Philly Beer Week attracted an estimated 35,000 attendees to 679 related events, including five beer festivals, a bike ride/brewery tour, pub crawls, meet-the-brewer nights and beer dinners. Philly Beer Week appears to be setting the bar high for a growing number of cities and states who are joining in on the fun.

"We think that Philly Beer Week will only get better and grow bigger from year to year," said Don Russell, aka Joe Sixpack, one of the founders of Philly Beer Week. "Now that we are moving the event to a warmer month [from March to June], we hope it will bring out even more attendees. We're planning to host outdoor events throughout the city and suburbs."

Philly Beer Week seems to have gotten the ball rolling, as several other celebrations debuted in 2009. The first annual SF Beer Week was held in San Francisco in February, Seattle Beer Week took place May 7-17, and San Diego is hosting its first Beer Week November 6-15. In addition, Denver, which annually has several peripheral events surrounding the Great American Beer Festival (GABF), pulled those together to establish the first official Denver Beer Fest September 18-27 (this year's GABF was September 24-26).

Not content to limit their celebrations to just one week, Oregon and Michigan have both devoted the month of July to craft beer. Oregon Beer Month includes the Oregon Brewers Festival as well as more than 120 other events devoted to beer.

Michigan Craft Beer Month, which is an official state event designated by a Michigan state House Resolution, includes the annual Michigan Summer Beer Festival among other events including meet-the-brewer nights, beer dinners and beer tasting classes.

Beer weeks are cropping up in New York (which had its second NY Craft Beer Week in 2009), Charlotte, Syracuse, Los Angeles, Baltimore, St. Louis, Indiana, Ohio and Boulder, and let's not forget about American Craft Beer Week (the "mother of all beer weeks,") a nationwide event set for May 17-23, 2010. In 2009, more than 200 craft breweries got in on the action with more than 500 special events, and the ACBW Facebook page had more than 11,000 fans as of September 2009.

On an unrelated note, this issue marks the debut of our new technical editor, Gordon Strong. Strong, a Grand Master V BJCP judge, just picked up his second straight Ninkasi Award at the 2009 National Homebrew Competition, and will be responsible for making sure the technical information in our articles and recipes for each issue is sound. Strong also contributes to our Commercial Calibration department. We're glad to have him on board!

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





# zymurgy®

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*By Drew Beechum*

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*By Tony Simmons*

Homebrewers making wine? You betcha! As a homebrewer, it's super easy and fun to get into home winemaking, especially with home wine kits.

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*By Thomas C. Hart*

Jacketed conical fermenters, or uni-tanks as they are commonly known, are standard fare in the brewing industry. But are they practical for homebrewers?



### ONLINE EXTRA

### Russian Imperial Stout

*by Mark Pasquinelli*

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

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## >> GET THERE!

### MAINE BREWERS FESTIVAL



The 16th annual Maine Brewers Festival is set for November 6-7 at the Portland Expo. This festival celebrates the quality and community of Maine's craft brewers and their tasty brews. Great food, door prizes, interesting vendors, and fantastic music round out the experience.

In addition to the Saturday festival, the Friday Night Dinner with the Brewers returns for its second year. In 2008, attendees enjoyed a five-course meal paired with beers from



Allagash, Shipyard, Gritty McDuff's and Atlantic Brewing, with a chance to meet the brewers and ask questions.

The Saturday festival includes two sessions, a Happy Hour session from 1:30-5 p.m. and the evening session from 6:30-10 p.m. Tickets to the Saturday sessions are \$32 and include 12 tickets good for 4-ounce pours and a souvenir glass.

For more information visit [www.mainebrew.com](http://www.mainebrew.com) or e-mail [info@mainebrew.com](mailto:info@mainebrew.com).

#### **November 1-7** **Syracuse Beer Week**

Syracuse, NY  
[www.greatbrewers.com/festival/syracuse-beer-week](http://www.greatbrewers.com/festival/syracuse-beer-week)

#### **November 6-15** **San Diego Beer Week**

San Diego, CA  
[www.sdbw.org](http://www.sdbw.org)

#### **November 7** **Festival of Wood and Barrel Aged Beer**

Chicago, IL  
<http://illinoisbeer.com/>

#### **November 7** **Beer, Bourbon & BBQ Festival**

Nashville, TN  
<http://beerandbourbon.com/nashville/show-info>

#### **November 7** **All Colorado Beer Festival**

Colorado Springs, CO  
[www.allcoloradobeerfestival.org/](http://www.allcoloradobeerfestival.org/)

#### **November 13** **Pittsburgh Brewfest**

Pittsburgh, PA  
[pittsburghbrewfest@gmail.com](mailto:pittsburghbrewfest@gmail.com)  
<http://pghrugby.com/brewfest.html>

#### **November 13** **Sunshine Challenge Beer Festival**

Orlando, FL  
[sunshine@cfhb.org](mailto:sunshine@cfhb.org)  
[www.cfhb.org/sunshine](http://www.cfhb.org/sunshine)

#### **November 21-22** **Great Brews of America Beerpfest**

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#### **December 2-6** **Holiday Ale Festival**

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## BREW NEWS:

### DOGFISH HEAD, SIERRA NEVADA COLLABORATE



This fall, craft breweries Sierra Nevada and Dogfish Head will release two collaborative beers. Limb & Life, a draft-only beer, debuted in October, while Life & Limb will debut in 24-ounce bottles and on limited draft in November.

The two beers are part of the growing trend of "collabeerations" among craft brewers (for more, see The List on the next page). The beers are "dedicated to the family of beer drinkers and enthusiasts worldwide who continue to support the little guys, iconoclasts, entrepreneurs and pioneers who risk life and limb to shape the vibrant craft brewing community."

Friends Sam Calagione of Dogfish Head and Ken Grossman of Sierra Nevada, who both started out as homebrewers (Grossman in

1969!) came up with the idea as their paths have crossed many times as brewers and board members of the Brewers Association.

"It is inspiring to see a person like Ken drive a beer-centric (as opposed to a biz-centric) brewery so far and so wide while sticking to his original ideals and integrating his family into the company," said Calagione.

Life & Limb is a 10-percent abv strong beer brewed with pure maple syrup from the Calagione family farm in Massachusetts and estate barley grown on the Grossman "farm" at the brewery in Chico, Calif. It is fermented with a blend of both breweries' house yeast strains and bottle conditioned for added complexity and shelf life. In addition, it is naturally carbonated with birch syrup from Alaska.

Limb & Life (the draft-only beer) is a small, low-gravity beer made from the second runnings of Life & Limb.

Life & Limb will be bottled at Sierra Nevada and released through its distribution network.

## >> THE LIST

### 6 CRAFT BEER COLLABORATIONS

"Collabeerations" are becoming more and more common among professional craft brewers, who showcase their spirit of camaraderie with collaborative brewing projects. Here is a sampling:

- 1) **Trip Series:** New Belgium and Elysian are planning to collaborate on at least four brews, the first of which was a Belgian IPA called Trippel IPA. Trip Two is currently in the works.
- 2) **Midnight Project:** Terrapin and Left Hand released their second collaboration in September, called Depth Charge, an imperial espresso milk stout.
- 3) **Collaboration Not Litigation:** This one has been on the market for a while, a delicious blend of Avery Salvation (strong golden ale) and Russian River Salvation (strong dark ale).
- 4) **Collaborative Evil:** In 2009, nine breweries (Lucky Bucket, Fifty-Fifty, Flossmoor Station, Valley, Sacramento, Fatheads, Oakshire, Silver Peak and Speakeasy) each brewed a strong dark Belgian-inspired ale and put their own twist on it. The beers were available for sampling at the Great American Beer Festival.
- 5) **Life & Limb:** A brand new collaboration between Dogfish Head and Sierra Nevada (see Brew News for more information).
- 6) **Wheelsucker Wheat:** After a mind-boggling bike tour of Colorado (six days and 426 miles from Boulder to Durango), brewers from Avery and Ska Brewing tapped this collaborative beer in late July.

### YOU'VE GOTTA DRINK THIS: Gouden Carolus Cuvee Van De Keizer

This Belgian strong ale (brewed by Brouwerij Het Anker in Mechelen, Belgium) is a must try, especially for Rochefort 8 and 10 fans. Its color is dark amber, and it pours with a sticky, long-lasting, off-white head.

The aroma is huge and dominated by rich dried fruit flavors from the malt and the yeast. It is definitely a "Belgian" nose, though not phenolic or banana-ish like some Belgian yeast strains. Probably the most effervescent aroma I've experienced in a non-hop accentuated beer.

The flavor coincides with the aroma and is malty sweet with dark fruit undertones. There is no perceptible hop flavor or aroma. Aggressive carbonation keeps the beer from becoming too sticky in the mouth. Its finish is long and warming with more fruit and malt. Overall this beer offers a wonderful balance of yeast, malt and alcohol, and is a must try for fans of Belgian dubbels and darker strong ales!

The beer is brewed once a year, on February 24 (Charles the Fifth's birthday).

Reviewed by Cody Christman (2009  
Beerdrinker of the Year),  
Golden, Colo.



### BREW NEWS: HOLLINGSWORTH LAUNCHES BREW TOUR

Kyle Hollingsworth, keyboardist for The String Cheese Incident, is finding more time for homebrewing and playing keys in his new solo project, now that The String Cheese Incident has taken a break from touring. Hollingsworth has also found the perfect way to blend his love of brewing with his love of music by launching a Brew Tour. Pairing up with the American Homebrewers Association (AHA) and Brewers Association members is allowing him to involve craft breweries, homebrewers, and his fans on Brew Tour.



In support of his new solo release, *Then There's Now*, Kyle is offering one lucky AHA member a chance to win two passes to a private tasting and meet & greet at select shows during the tour. With stops like Bent River Brewing Co. (Iowa) and Goose Island Beer (Chicago) behind him, he has much more craft beer to look forward to. Upcoming tour locations include Deschutes Brewery, Magic Hat Brewing Co., and New Belgium Brewing Co. When you attend one of Hollingsworth's events, be sure to stop by the AHA table and share a beer with your local AHA Evange-Ale-ist. Full details and contest info can be found at [www.kylehollingsworth.com](http://www.kylehollingsworth.com).

In Kyle's (and the AHA's) hometown of Boulder, Colo., he worked with Mountain Sun Brewery to create his very own beer, Hoppingsworth IPA, released in September.



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).

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by Our Readers

# What's Up with the Style Guidelines?

Dear *Zymurgy*,

In the September/October 2009 issue, the Commercial Calibration panel judged Avery Ellie's Brown Ale as a commercial example of American Brown Ale (BJCP Category 10C). The judges raved over it, giving it an overall score of 39.25, with Dave Houseman describing it as a "true American Brown Ale," and Gordon Strong suggesting [it] "belongs in the guidelines." High praise indeed, although Beth Zangari described it as "more like a bigger, sweater Northern English Brown," while Scott

Bickham suggested that it "comes across more like a London/Brown Porter."

Fair enough, but the 2008 BJCP Guidelines list Avery Ellie's Brown Ale as a commercial example of a Northern English Brown Ale (BJCP Category 11C)! So, what gives? Has Avery Ellie's Brown gone back to being an American Brown Ale (where it was in the 2004 BJCP Guidelines) or did the tasting panel mess up?

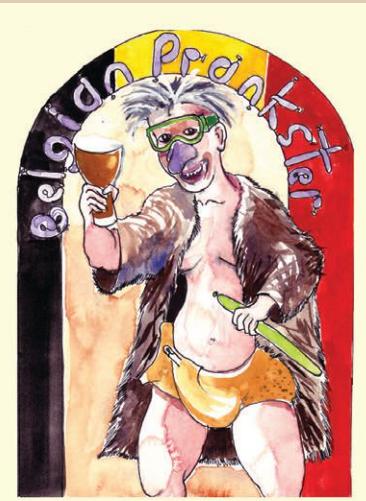
Thomas Barnes

example is a perfect match for the guidelines. Commercial examples can change over time, and may present differently depending on age.

So, I think the basic problem is that the commercial example was erroneously moved in the 2008 guidelines and will likely revert back to where it was in 2004 in a future release of the guidelines. This should not detract from the sensory assessment given by the judging panel, nor the general comments. You are seeing a common situation where a beer doesn't perfectly fit the style, where the style definitions have some overlap, and where the range of a style is somewhat broad. All of these combine to produce differing opinions on how the example lines up. But in any case, we all agreed it was a very nice beer well worth drinking.

## FROM OUR READERS

Homebrew label from Matt Mayes



*"The beer and label are based on a character named the 'Belgian Prankster' from a young adult fiction novel called The Order of Odd-Fish (we happen to know the author). This particular character has some traits that we thought might be interesting in a beer, so we attempted a 'character brew'. A friend named Gabe Patti painted the watercolor for the front. It's actually the best beer we ever made! Already making a second batch."*

Commercial Calibration judge Gordon Strong replies: I can see the source of confusion. The tasting panel is given a beer and told to judge it as a certain style; in this case, Avery Ellie's Brown Ale and American Brown Ale. So all our comments and scores are based on that premise—no problem so far. However, the 2008 BJCP Style Guidelines listed the beer as a Northern English Brown Ale, although it was listed as an American Brown Ale in the 2004 edition.

The BJCP Style Guidelines undergo periodic revisions and sometimes commercial examples move (or are removed) depending on how well they meet the style descriptions. As with judging, sometimes this assessment is somewhat subjective. In this case, the person reviewing the beer felt it matched better in the English category. Maybe the example was old and thus less hoppy, or maybe the reviewer believed American Brown Ales needed to have a stronger hop character.

The problem is further compounded by an evolving understanding of the style. American Brown Ale has quite a wide range, and can be very hoppy (as many homebrewed examples are) or rather malty (as most commercial examples are). Not everyone agrees on the style, and not everyone applies the guideline definitions strictly. Not every commercial

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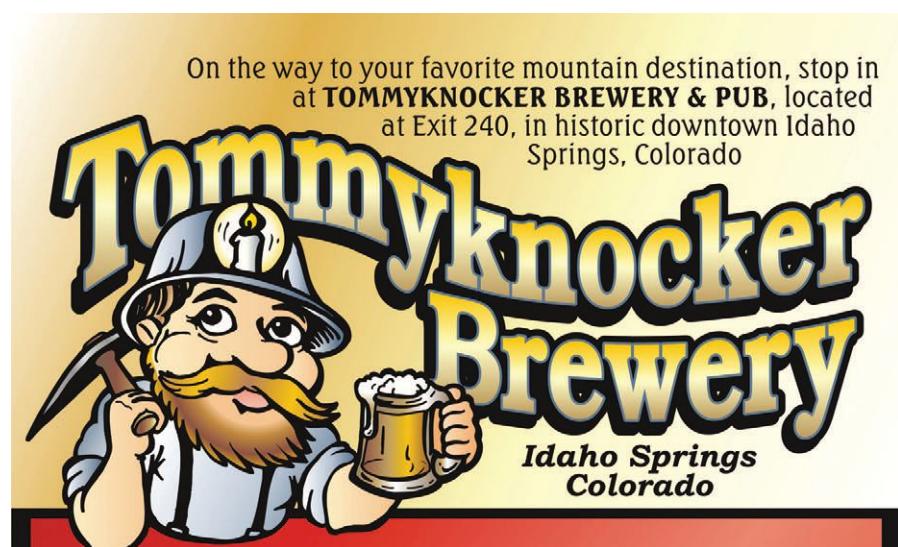
I spoke with the barman and most of his bottled beers were of the imperial type. We must stop this.

Trevor Cox  
(Homebrewer for 35 years)

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When I visit England and drink in any of the fine pubs there, I can find beers in the 5-percent-and-below range as well as the higher abv range. This makes it much easier to sample several great beers without passing out.

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## Cheers for Session Beers

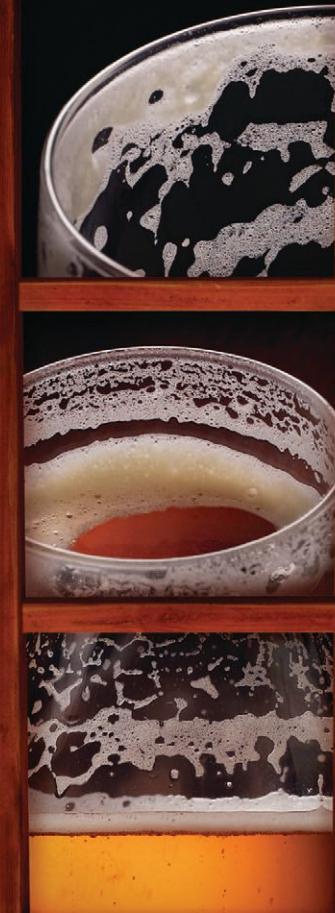
Dear Zymurgy,

Thank you for the September/October "A Toast to Session Beers." I often brag to my English relatives that the beer renaissance they have enjoyed for the last 10 years began here in the USA. Unfortunately, many of our beers have gone too far. There is nothing wrong with an occasional "double this" or "Imperial that" but recently I took my brother-in-law to a local pub and of the 13 beers on tap, not one was below 8 percent abv.

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CRAFTING A BETTER BEER.

by Professor Surfeit



# Kraeusening Isn't Just for Germans

Dear Professor,  
I have a couple questions for you. I was reading in *The Complete Joy of Homebrewing* about kraeusening my beer (where in the heck did that name come from anyways?). I'm also reading about kegging. I just got done brewing a batch of American Ale and I've decided to try kraeusening for this batch. So I've got the jug of unfermented wort sitting in the back of the fridge. I'm looking forward to trying the results.

My question is since there's still quite a bit of sediment forming in the bottom, I probably don't want to dump the sediment into the beer at bottling, do I?

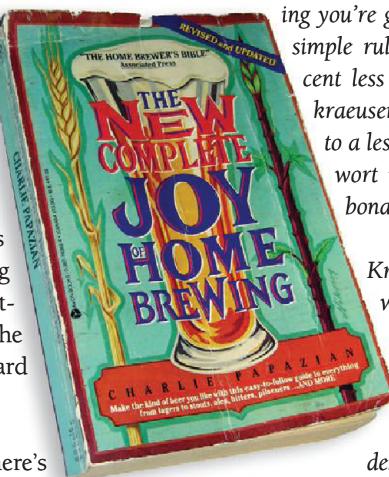
Next, I was reading about kegging in Appendix 2 and I noticed that there isn't as much priming sugar necessary for kegging, and I was wondering how that translated to the formula given for kraeusening. I noticed that most recipes in the book call for 1/2 or 3/4 cup of corn sugar for priming, but with kegging it says to only use 1/3 cup of sugar. Would I just reduce the amount of unfermented wort I'd be using for priming for bottling by a cup or two or is there a formula that differs from the one in the appendix that's specific to kraeusening for kegging?

Martin Rosendahl

Dear Marty,  
You've probably guessed what my answer would be about the sediment in the wort you have saved for kraeusening—don't worry about it. The sediment contains precipitated

proteins called trub. The amount you have will serve as a nutrient for the yeast.

It doesn't matter what form of sugar priming you're going to use for a keg. The simple rule is to use 33 to 50 percent less sugar for kegging. So for kraeusening this would translate to a lesser percentage of krausen wort volume for naturally carbonating your kegs.



Krausen is a German word for, well, krausen, the foamy fermentation bubbles that float on top of the initial fermentation. It's also a verb that describes the process of adding wort to promote natural carbonation in the "conditioning" stages.

Sprechen sie Deutsch, mein Herr,  
The Professor, Hb.D.

## 10-Gallon Gravity Guy

Dear Professor,  
I currently brew 5-gallon all-grain batches of beer two to four times per month. While this fulfills our desire to drink great beer, I've been interested in reducing the number of times I brew. Throughout reading *Zymurgy* and surfing the Web, I've learned that 10-gallon brewers are out there, successfully brewing twice the amount I do per brew. I'm interested in diving into this upgrade, but have a few questions.

What gear will I need to upgrade to 10-gallon batches? The obvious is a larger mash/lauter tun and brew kettle. How much should I expect to invest? Are 10-gallon batches cheaper to brew? How in the world do people pour 10 gallons of wort into their fermenters? Will I need a

brew sculpture for this endeavor? Thanks so much for your help.

Cheers,  
Geoff  
Oakhurst, Calif.

Dear Geoff,  
Brewing all-grain batches 10 gallons at a time obviously means doubling the volume of ingredients. The two most significant ingredient ramp-ups are grains and water. Grains take up space and water is heavy.

A 5-gallon bucket mashing system can mash up to about 12-14 pounds of grain at a time. That's good for most 5-gallon recipes up to about 1.075 initial gravity. For those 10-gallon batches you'll need a mashing vessel

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and lautering vessel (if you use a two-vessel process) that will hold 10-gallon volumes at a minimum.



For a 10-gallon batch you need to take into account that you'll be evaporating about 5 percent of the wort during boiling, sometimes more. You'll also need some clearance at the top for that foamy initial boil you take care not to boil over. So you're talking about a vessel about 15 gallons in volume.

Ten gallons weighs in at about 110 pounds (50 kg). That's heavy and hot. While some people like their partners hot and heavy, you need to take extreme care when around a boiling wort that's your significant other during the brewing process. You don't want to be lifting vessels alone and should try to set up the system so that no one needs to be lifting.

You're right. This means what you refer to as a "brewing sculpture." If it's a horizontal system then you'll need some pumps to transfer liquids. If it is multi-level you can let gravity do the work. I'm a gravity kind of guy myself. It's less stuff to clean and maintain, less expensive and simple to manipulate.

Five-gallon systems are hands on manageable for most people. Ramping up is a different set of engineering and management.

How much will it cost? I would hazard to guess it would be \$1 to \$1,000, depending on whether you're a scrounger, fabricator and barterer or can afford the stuff we all drool over advertised in the pages of *Zymurgy*.

Ramp it up and double your pleasure,  
 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.**



By Amahl Turczyn Scheppach

# Belgian Strong Ales

**T**rying to categorize Belgian ales is quite a feat, since variety and experimentation are intrinsic components of their design. While there are some inevitable gaps and overlap, however, it is possible to come up with general categorization. The following are five subcategories of Belgian Strong Ales for brewers intent on entering their Belgian creations for competition judgment. Note that there is prodigious use of qualifiers like "may contain" or "often have" in these descriptions to express that these are very open styles with lots of room for interpretation.

Belgian Blonde Ales are simply lighter versions of Tripel or Golden Strong ales. Commercial examples typically fall with-

in the 6-7.5 percent alcohol range. Fruity (usually citrus) and/or spicy Belgian yeast character along with lightly sweet Pilsner malt and a light sugar character can be found in the aromatics of these beers. Light to full gold in color at 4-7 SRM, the ales have medium-high to high carbonation and typically support a large white to off-white head of fine-beaded, lace-producing foam. Flavor can vary from light malt sweetness to spicy, citrus fruit flavors, to an earthy quality, or it may have all three. Hops may be faint, or hop flavor may be stronger, but generally bitterness levels are in the 15-30 IBU range. Alcohol may or may not be detectable through heat or warmth in the finish, but these beers are often dry in the finish after an initially sweet flavor, with finishing gravity ranging from 1.008 to 1.018, down from an original gravity of 1.062 to 1.075.

Belgian Dubbel beers should have a lot of the same rich dark melanoidin malt sweetness found in Munich Dunkel, but they can also have fruity esters and spicy phenols as well, depending upon the yeast strain used. Dried fruit, like raisins and prunes, in aroma and flavor are typical of the style, and may be accentuated with the use of Cara-Vienne, Cara-Munich and Special B malt. Fresh fruit character like plum, banana and apple are usually restrained, and should complement rather than dominate malt complexity in both aroma and flavor. Spicy phenolics like clove are much less common, but may be present in very slight amounts. Diacetyl should not be present. Caramel malt or roast grain flavors are also uncommon, and hops should be restrained if present at all, with IBUs in the 15-25 range. Alcohol warmth should be kept to a minimum, as these beers are typically within the 6-7.5 percent range. Color is dark to



medium amber, with reddish tints, and ranges from 10-17 SRM. Despite the malt emphasis, Dubbels can still manage to finish dry; like Belgian Blondes, finishing gravities range from 1.008 to 1.018, down from 1.062 to 1.075.

Belgian Tripel, occasionally spelled "Trippel," may have been so named because fermentables were added three times: in the primary, in secondary, and in the bottle. This is not always practiced, however. As a strong, light Belgian ale, Tripel should be deceptive, in that alcohol should not be readily detectable in the flavor. Good quality Pilsner malt should be used with a generous portion (up to 20 percent) of white sugar, soft water, and not much else—this yields a pale yellow to gold colored beer (4.5-7 SRM) of considerable strength (7.5-9.5 percent alcohol). Carbonation is generally high in these beers, and they are traditionally

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## Belgian Golden Strong Ale

### Ingredients

for 5.5 U.S. gallons (21 liters)

2 cans	(6.6 lb, 3.0 kg) Coopers Light Malt Extract
1.5 lb	(0.68 kg) Coopers Light Dry Malt Extract
3.0 lb	(1.36 kg) Cane Sugar (00 L)
1.25 oz	(35 g) Styrian Golding hops, 5.25% alpha acid (90 min)
0.75 oz	(21 g) Styrian Golding hops, 5.25% alpha acid (30 min)
2.0 oz	(57 g) Czech Saaz hops, 3.5% alpha acid (0 min)
3 packages	Wyeast 1388 Belgian Strong Ale yeast or White Labs WLP570 Belgian Golden Ale yeast
	Coopers Brewery Carbonation Drops for bottling

**Original Specific Gravity:** 1.079

**Final Specific Gravity:** 1.008

**IBU:** 29

**ABV:** 9.4%

### Directions

Heat 2.8 gallons (10.6 L) of cool water to 150° F (65° C). Stir in malt extract and sugar, and then bring to a boil. Add the first hops and boil the wort for 60 minutes. Add the second hops and continue to boil for 30 minutes. Add the third hops and turn off the heat. Chill the wort if possible, or pour into the fermenter with enough pre-boiled cold water to make 5.5 gallons (21 L). Aerate well and when the temperature drops to 64° F (17° C), pitch the yeast (use three packages of liquid yeast or a yeast starter). Begin the fermentation at 64° F (18° C) and allow it to warm up slowly to 80° F (27° C) over the duration of one week. When fermentation is complete, bottle the beer and prime for 4 volumes of CO<sub>2</sub> with Coopers Brewery carbonation drops. Allow bottles to carbonate at 70° F (21° C) for 2 to 4 weeks. Serve at 45-50° F (7-10° C).



bottle conditioned. A low finishing gravity (1.008 to 1.014) is critical to balance, as is a medium dose of kettle hops, usually noble hops or Styrian Goldings (20-40 IBUs). Carbonation usually lends a bit of perceived dryness or bitterness to the finish, as does alcohol, although solvent, heat or even obvious warming from the alcohol should be avoided. This can be tricky, as many Belgian yeast strains require higher fermentation temperatures

to attenuate fully and produce the desired esters and phenols.

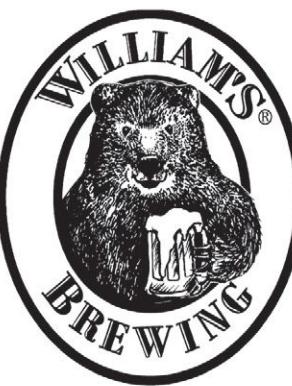
Belgian Golden Ales are similar to Tripels, but these beers are more associated with Duvel than the Trappist-inspired (Westmalle) Tripel, and they can be even lighter in color (3-6 SRM) and stronger in alcohol (7.5-10.5 percent ABV). There is also a softer character to Belgian Golden ales, with lighter fruit, like pear, apple and

citrus, and less spice than can be found in a Tripel. Carbonation is typically high to very high, with a light body and lots of well-disguised alcohol in the dry to very dry finish (1.005 to 1.016, down from an original gravity of 1.070 to 1.095). Hops are generally a bit more restrained than in a Tripel, at 22-35 IBUs, and are mainly added in the kettle. Again, high-quality Pilsner malt and up to 20 percent white sugar are used together with fairly soft water, and overt solvent alcohol or heat should be avoided.

Finally, Belgian Dark Strong Ale encompasses the strongest of the strong Belgian beers, and are typically brewed by either Trappist breweries (these tend to be drier beers), or Abbey breweries. These are the strong versions of the Dubbel style, with lots of complex dark malt sweetness, big esters and possibly phenols, and abundant (8-11 percent ABV) but smooth and mellow alcohol. Hops are generally restrained, at 20-35 IBUs depending upon the finishing gravity, with carbonation and alcohol playing a good role in tempering malt sweetness at the finish. Gravities typically start at 1.075 to 1.110 and attenuate to 1.010 to 1.024. Caramelized sugar or dark candi sugar may be used to add depth and color. Pilsner malt, perhaps with Munich malt should make up the base. Roast malt, alcohol heat, added spices or diacetyl should not be detectable. Crystal malts should not be used in large amounts, as they produce the wrong sort of sweetness for this style. The finished beer is a deep amber to brown color (12-22 SRM), with high carbonation and bottle conditioning. These are beers meant for aging several years on their lees, so it is wise to leave room for a slight increase in carbonation as residual sugars are slowly digested by yeast. It's also a good idea to add a dose of fresh yeast at bottling to ensure a complete bottle conditioning.

Note: Quadrupel and Christmas-style Belgian strong ales should be entered as Belgian Specialty Ales, not Belgian Dark Strong Ales.

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



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# BAVARIA'S “EXTREME” LAGERS

“Extreme” beers are so American! Pushing the limits of anything (be it material or intellectual) appears perfectly natural in a country that was founded mostly by square pegs in round holes—religious non-conformists, philosophical free thinkers, risk-taking entrepreneurs, daredevil adventurers, and, admittedly, a good number of outcasts, misfits and rascals. In America, therefore, the concept of “the frontier” has become the keystone of the nation’s collective identity. In the world of beer-making, American brewers have translated that frontier spirit into an entire new category of brews: “extreme” beer. But a closer look reveals that extreme brews may not be an American novelty at all. In fact, in Bavaria, they may have been around for centuries—only with a much more orderly touch!

It's true: Nothing seems to be off-limits to American brewers. New World beer-makers, unlike many of their more tradition-bound Old World counterparts, have been brewing up a storm of spectacular creations in recent decades, many at the very edge of our taste experience, and even our tolerance. Over here, you can find hefeweizens infused with strawberries, mandarin oranges or cranberries, lagers aged on cacao nibs, stouts spiked with espresso, super-high alcohol brews made with maple syrup, and bitter ales at the limit of alpha acid solubility ... the list is endless.

By contrast, in Purity-Law Bavaria—the bastion of traditional brewing—you'd be hard pressed to find such brew-experimental bravado. Yet, surprise of surprises, once you part the veil of seeming stodginess, you'll find a veritable treasure trove of ancient brews that, in all truth, can only be described as “extreme.” While the New World has taken an anything-goes shotgun approach to “extreme,” the Bavarians have focused their “extreme” predilections more on a single characteristic, one that seems less popular with Americans: extremely rich, smooth, aromatic maltiness. For example, while the American “Double Imperial” IPA is an aggressive, assertive hop bomb, the Bavarian Eisbock is a stealthy, deceptively mellow, velvety malt hammer. But both are, if you think about it, equally “extreme.”

The reasons for the Bavarians' preference for malty rather than hoppy extremes are largely cultural and historical: In Bavaria—the land with a 3,000-year old brewing culture; the place with the oldest continuously operating brewery in the world (Weihenstephan, since 1040 AD); the cradle of all lagers; and the home to perhaps half the world's major beer styles—beer has always been considered a food, part of the daily diet, and a source of nourishment rather than an indulgence. And the maltier the brew, the more food value it had. The Benedictine monks coined the phrase “liquid bread” for such substantial daily quaffing brews. And here is the story of their evolution.

BY HORST DORNBUSCH

## MÄRZEN: AN EARLY BAVARIAN "EXTREME"

Until the early 16th century, Bavarian brewers, much like their modern American colleagues, were allowed to put anything into their mash tuns that was fermentable—from barley, wheat, oats and rye to starchy tubers and legumes. Sometimes their beers tasted downright awful, especially in the summer—mostly, as we now know, from microbial infections. But in the depth of winter, when beer-spoiling bacteria were inactive, their beers generally tasted good. The medevils, of course, didn't have a clue about microbiology. Instead, they just tried to cover up bad flavors by adding all sorts of weird ingredients, including poisonous mushrooms, oxen bile, even chimney soot to their suds. Somebody just had to clean up the Bavarian brew!

The first step was a feudal edict pro-

claimed by Bavaria's Duke Wilhelm IV in 1516. It limited beer ingredients to only hops, barley and water (yeast was unknown at the time) and is now known as the Reinheitsgebot or Beer Purity Law. Its purpose, however, was not just to "purify" the brew, but to reserve wheat just for bread-making. This was intended to stave off starvation in years of crop failures. Only the duke's private brew houses were still allowed to make the precious weissbier.

Contrary to expectations, however, the Purity Law had no effect on the chanciness of Bavarian beer quality. No doubt, more "extreme" measures than the Purity Law were needed, and Wilhelm's successor, Duke Albrecht V was just the man for the job. In 1553, he simply outlawed summer brewing altogether between St. George's Day (April 23) and St. Michael's Day (September 29). Albrecht's decree

not only did the trick, it also had two completely unintended consequences. For one, it turned Bavaria virtually by accident—and unbeknown to Albrecht and his contemporaries—into a lager beer culture, because ale yeasts, like bacteria, go dormant at Bavaria's winter temperatures, while only lager yeasts remain active. For another, the decree forced brewers to work overtime in March ("März" in German) to make enough "Märzen" beer for the summer months. And these beers had to be fairly strong (at least 6-percent ABV) so they would keep well during the long storage ("lagering") in cool cellars.

Once the malt genie was out of the vat, however, it was only a matter of time before it would grow in size. Thus, the hefty, malty, 16th-century Märzen, brought about by happenstance, must be regarded as the true forerunner of today's super-malty Bavarian bocks. Known as "Starkbiere" (strong beers), there are now many different bock styles, varying in color from a very pale 2.5 SRM to a deep mahogany 24 SRM, and even darker; in gravity from 1.064 to 1.100 (16-25 °P); and in strength from 6 percent (rarely less) to about 8 percent (doppelbock), or even 13 percent (eisbock). Yet their bittering values can be as low as 18 IBU and rarely exceed 30 IBU.

## BOCK: THE CLASSIC BAVARIAN "EXTREME"

Though we now think of bock beers exclusively as Bavarian lagers, they started out as strong and hoppy ales in the 13th century in Einbeck, a northern German mercantile city and a member of the medieval Hanseatic League. Einbecker made these beers as a trading commodity for seafaring merchants, who took them as far as Flanders, England, the Baltics, and Russia. We now call this Einbecker beer Ur-Bock ("Ur" is a German prefix meaning original).

The Einbecker brew even made it overland to Munich, where the nobility liked it so much that, in 1590, Duke Wilhelm V ordered a replica of the northern beer to be made right in his own brew house. Subsequently, under Munich tutelage, that northern strong ale metamorphosed into a southern strong lager and acquired its modern name of bock. The Bavarian

## MALTONATOR DOPPELBOCK

### All-Grain Recipe

#### Ingredients

for 5 U.S. gallons (19 liters)

<b>9.5 lb</b>	(4.32 kg) Munich Type I @ approx. 6.2 °L (60%)
<b>5.5 lb</b>	(2.5 kg) Munich Type II @ approx. 10.2 °L (35%)
<b>0.75 lb</b>	(0.34 kg) Caramunich® Type I @ approx 35 °L (5%)
<b>1.5 oz</b>	(42 g) Hallertauer Mittelfrüh, Hersbrucker, or Tettnanger @ nominal 4.5% AA (bittering)
<b>0.75 oz</b>	(21 g) Hallertauer Mittelfrüh, Hersbrucker, or Tettnanger (flavor/aroma)
	Bavarian lager yeast (such as White Labs 833 German Bock, Wyeast 2124 Bohemian Lager, Wyeast 2308 Munich Lager, White Labs WLP838 Southern German Lager, or White Labs WLP920 Old Bavarian Lager)
<b>1 cup</b>	corn sugar or DME for priming (unless dispensed from kegs with a CO <sub>2</sub> system)

**Target Original Gravity:** 1.072

**Target Final Gravity:** 1.016

**SRM:** 22.3

**IBU:** 26

**ABV:** 7.3%

**Extract Efficiency:** 65%

#### Directions

Dough-in with 4 gallons of 100° F (38° C) water, allow to rest for 1 hour. Infuse with 1 gallon of near-boiling water every 15 minutes (6 additions total), stirring thoroughly after each addition. Mash out at 172° F (78° C). Slowly run-off, sparging as necessary, to collect 8 gallons of sweet wort. Boil hard for 2 hours, adding bittering hops 60 minutes before the end of the boil and flavor hops 20 minutes before the end of the boil. Let the wort rest 30 minutes, then rack and chill to 45-50° F (7-10° C). Oxygenate and pitch a large starter of yeast. Ferment for two weeks or until finished. Slowly chill to 28° F (-2° C), then rack again. Lager at 35° F (2° C) for 18 weeks.

#### Extract Version:

Substitute 10.72 lb (4.86 kg) of Weyermann Munich Amber Extract for the Munich malts. Steep the Caramunich.

dialect mangled the word Einbeck to “ayn pock,” and eventually to “ein bock” (a bock)—a word that actually means ram or billy goat in German. Nowadays, the bock’s ABV level is usually between 6 and 7 percent.

## DOPPELBOCK: A BREW FOR HOLY NOURISHMENT ... AND PROFIT

Doppelbock literally means “double bock.” It is more “extreme” than a regular bock, but not twice so, with alcohol levels usually ranging between 7 and 8 percent. Its roots go back to the Paulaner branch of the Benedictine order of monks, who were the resident friars of the Dukes of Bavaria and operated out of the Neudeck Monastery at the outskirts of Munich. Having witnessed strong beer-making in the noble brew houses, they tried their hands at the brew themselves, and soon this new and strong liquid bread became the obvious meal of choice for their frequent fasts, when no solid food was allowed to pass their lips, and when a liquids-only diet was supposed to purge their bodies and cleanse their souls. They reserved their strongest brews for their most taxing period of culinary abstinence, the 47 days of Lent between Ash Wednesday and Easter Sunday.

As word got out about the potency of the Paulaner brews, the common folk and even the noble duke himself made an annual Lenten pilgrimage to Neudeck, on St. Joseph’s Day (March 19), doing penance by clamoring for a drop of the holy suds. Finally, in 1780, the Paulaners introduced their Lenten beer commercially, by popular demand and for profit. They named it Salvator (“Savior”), and still today, during Lent, the first cask of Salvator Doppelbock is tapped in gala style, in the presence of dignitaries at the Paulaner Nockherberg beer hall, always on the second Thursday after Ash Wednesday. This annual ritual now marks the official highlight of “Starkbierzeit” (strong beer time), Bavaria’s “fifth season” of the year.

## EISBOCK: A LAZY LAD’S PUNISHMENT

Eisbock (ice bock) takes the Doppelbock concept one step further. It is a super-concentrated, malt- and caramel-accented beer that is now being brewed as either a

barley lager or a wheat ale. Stronger and usually darker than a doppelbock, it is relatively low in hop bitterness, especially considering its alcoholic strength of 8 percent or more and its substantial amount of residual sweetness from a high-gravity wort of approximately OG 1.100 (25 °P). The process for making an authentic eisbock relies on the fact that alcohol has a lower freezing point than water, so removing ice crystals concentrates the remaining alcohol. An eisbock is first brewed and fermented like a regular doppelbock, but then chilled to below the freezing point of water until ice crystals form in the conditioning tank. The beer is then racked, leaving the icy slush behind. The run-off is pure, condensed essence of bock ... to be savored in sips, never guzzled!

The origin of eisbock, according to legend, goes back to 1890, when, in the city

of Kulmbach, a brewery lad after a long day of toil in front of the mash tun was too tired to roll a couple of casks full of bock beer from the brewery yard into the cellar. That night, however, turned bitter cold, and the beer froze solid, bursting the casks’ staves. The following morning, the brew master—irate at the destruction before him—discovered that a small pool of murky, brownish liquid had formed at the very center of the frozen casks. So he forced the hapless apprentice to drink the awful-looking stuff as punishment ... unaware that it actually was the

## LUSTY MAY BOCK

### All-Grain Recipe

### Ingredients

for 5 U.S. gallons (18.93 liters)

<b>7.5 lb</b>	(3.4 kg) Pils malt @ approx. 1.7 °L (54.5%)
<b>4.0 lb</b>	(1.8 kg) Carafoam® @ approx. 2 °L (29.5%)
<b>2.2 lb</b>	(1 kg) Munich Type I @ approx. 6.2 °L (16%)
<b>1.11 oz</b>	(31 g) Tettnanger @ nominal 5% AA (bittering)
<b>0.75 oz</b>	(21 g) Hallertauer Mittelfrüh, Hersbrucker, or Tettnanger (flavor/aroma)
	Bavarian lager yeast (such as White Labs 833 German Bock, Wyeast 2124 Bohemian Lager, Wyeast 2308 Munich Lager, White Labs WLP838 Southern German Lager, or White Labs WLP920 Old Bavarian Lager)
<b>1 cup</b>	corn sugar or DME for priming (unless dispensed from kegs with a CO <sub>2</sub> system)

**Target Original Gravity:** 1.064

**Target Final Gravity:** 1.014

**SRM:** 5

**IBU:** 25

**ABV:** 6.6%

**Extract Efficiency:** 65%

### Directions

Dough-in with 4 gallons of 100° F (38° C) water, allow to rest for 1 hour. Infuse with 1 gallon of near-boiling water every 15 minutes (6 additions total), stirring thoroughly after each addition. Mash out at 172° F (78° C). Slowly run-off, sparging as necessary, to collect 7.5 gallons of sweet wort. Boil for 2 hours, adding bittering hops 60 minutes before the end of the boil and flavor hops 20 minutes before the end of the boil. Let the wort rest 30 minutes, then rack and chill to 45–50° F (7–10° C). Oxygenate and pitch a large starter of yeast. Ferment for two weeks or until finished. Slowly chill to 28° F (-2° C), then rack again. Lager at 35° F (2° C) for 16 weeks.

### Extract Version:

Substitute 9.45 lb (4.29 kg) Weyermann Bavarian Maibock Extract for all malts. Use 1.0 oz (28 g) Hersbrucker for the flavor/aroma hops.



most heartwarming, delicious and malty-sweet beer imaginable, and the lad's joy revealed the glorious truth. Punishment, indeed!

### MAIBOCK: A BOCK FOR THE LUSTY MONTH OF MAY

What beer could be more fitting than Maibock (May bock) for that transitional time of year when it's still too chilly to just laze about in the beer gardens, but already too bright to continue to hide indoors.

Maibock is often bittered with floral, spicy Tettnanger and has a color of about 5 SRM, even though a few breweries insist on keeping their Maibocks almost as dark as their fall or winter bocks. Maibock is a beer hall brew, still comforting, but already foretelling of tastes to come. Also known as Frühlingsbock (springtime bock), it is a happy marriage, in both grain bill and flavor, between bock beer proper and a Helles, thus combining uniquely the strength of a powerful winter brew with the bright appearance and refreshing crispness of a summer session beer.

Brew-technically, however, Maibock is

still a true bock with a substantial body and malty sweetness. Even in the darkest Maibock versions, there must be no roasted or chocolate malt character. The base for an all-grain Maibock, therefore, is generally about 50 percent Pils malt. For more mouthfeel, you can add some pale caramel as well as Vienna or Munich malt. For a slightly darker Maibock in the 9-SRM color range, compose a grain bill of about 80 percent Vienna malt and about 10 percent each of Carafoam® and Carared®.

### BREWING TIPS FOR BELLY-WARMING ALL-GRAIN BOCKS

In principle, the brewing process for all bocks is the same. In the days of poorly modified grains, all bock beers were, of course, decocted—a process that is no longer necessary with modern malts. However, because high-gravity bocks need huge grain bills, allowing the grain bed to hydrate for about an hour or more, after a very thick dough-in at a temperature of around 100° F (38° C), will greatly enhance both extract efficiency and lautering speed as well as the finished brew's malt flavor.

A simple way of raising the mash temperature gradually to the mash-out temperature of 172° F (78° C)—with sufficient time for all beta-glucan, protein and sugar rests—is to infuse with near-boiling water every 15 minutes. Divide the infusion liquor into six equal batches, and add

one batch every 15 minutes, stirring thoroughly. If your mash system allows you to continually add hot water while stirring, you can do this instead. If this process is too difficult, a traditional infusion mash can be performed.

Boil the wort for about two hours to promote the Maillard reaction, during which sugars and amino acids combine to form melanoidins. Because bocks are overwhelmingly malty, hop additions are surprisingly small for an "extreme" beer, and they are strictly noble (Hallertauer, Hersbrucker, Spalter, or Tettnanger). Add bittering hops one hour and flavor/aroma hops 20 minutes before shut-down. After shut-down, let the wort rest for about 30 minutes for improved trub sedimentation. Then rack the wort off the trub. Heat-exchange it to the optimum yeast fermentation temperature of 45–50° F (7–10° C).

In the cellar, any Bavarian lager yeast will do, but it must be healthy and vibrant so that it starts promptly in its high-gravity environment and does not get stuck as the alcohol level nears terminal values. To ensure a healthy burst of yeast activity, aerate twice as long as you normally would and perhaps aerate again the following day. This is important, because inadequate oxygenation can cause the yeast to produce unacceptably high levels of hangover-producing, sour green apple-tasting acetaldehyde as well as solvent-tasting esters. Allow about two weeks for primary fermentation.

Once the brew is virtually still, let it rest for a few days for yeast sedimentation. Then rack it and give it an optional two-day diacetyl rest at room temperature, after which you should reduce the temperature by 2–3° F (1–1.5° C) a day to approximately 28° F (-2° C), or as close to that point as possible. Rack the brew again. Condition and lager it at about 35° F (2° C) for at least eight weeks (12 to 18 weeks would be preferable). An old German rule calls for lagering one week for every degree Plato of original extract.

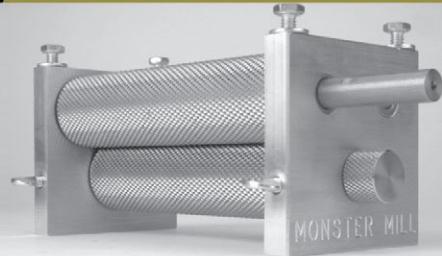
### BREWING TIPS FOR BELLY-WARMING EXTRACT BOCKS

Because extract brewers start out with a finished wort product, the relationship



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between flavor, gravity and color is often a compromise. Perhaps the most suitable LME choices for authentic bockbier flavor are the unhopped Bavarian Maibock Extract and the unhopped Munich Amber Extract from Weyermann®, both available in 4-kg plastic jerry cans. The Maibock Extract is made from Vienna, Carafoam® and Carared®, and the Amber Extract entirely from Munich malt. According to the manufacturer, in their undiluted state, both LMEs have a gravity rating of OG 1.350 to 1.400 (87.5 to 100 °P) and a sugar content of between 72 and 79 percent. If used to make an OG 1.052 (13 °P) brew, the Maibock LME results in a wort color of 20 to 25 EBC (approx. 8 to 9.8 SRM), and the Amber, of 22 to 28 EBC (approx. 8.7 to 11 SRM).

When these color specs are translated for a typical Maibock gravity of OG 1.064 (16 °P), for instance, the Weyermann® Maibock Extract results in a fairly dark color value of approximately 11 SRM; while the Weyermann® Amber Extract, used at a typical Doppelbock gravity of OG 1.072 (18 °P), translates into a fairly light color value of 13.5 SRM. To lighten the Maibock color, a homebrewer could substitute about half of the Maibock Extract with Weyermann® Bavarian Pilsner LME to reach a color value of approximately 4.5 to 6 SRM. Likewise, you can substitute about one-third of the Amber Extract with Weyermann® Bavarian Dunkel LME to reach a color value of approximately 18 to 24 SRM.

For brewing, simply mix your desired combination of LME with your hot brewing liquor, bring to a boil, add the bittering hops, and, from then on, follow the all-grain instructions. For a Maibock of OG of 1.064, you need a total of approximately 9.45 lb (4.29 kg) LME; for a Doppelbock of OG 1.072, you need about 10.72 lb (4.86 kg) of LME.

**Horst Dornbusch is a frequent contributor to brew publications in North America and Europe and is the founder of Cerevisia Communications, a Massachusetts-based consulting company in the international brew industry.**

## AT A GLANCE

Bock beer season, the time for extreme, malt-accented beers, starts in Bavaria around the middle of November and ends in May. As a general rule, bock beers start out deep amber at about 6 percent abv in the fall, then get progressively stronger and darker as the weather gets colder, only to become paler ("heller") when the last of the bock styles, Maibock, appears in May. Though there are no rigid specifications that separate one bock clearly from another, the following are useful, albeit rough, guidelines for brewing bock-style lagers.

### Standard Bockbier

**OG:** 1.064–1.072 (16–18° P); rarely lower, often higher  
**FG:** 1.012–1.016 (3–4° P); sometimes higher  
**SRM:** 2.5–24; varies greatly with grain bill composition  
**IBU:** 20–25; sometimes as low as 15 or as high as 30  
**ABV:** 6–7%; never lower, often higher

### Maibock

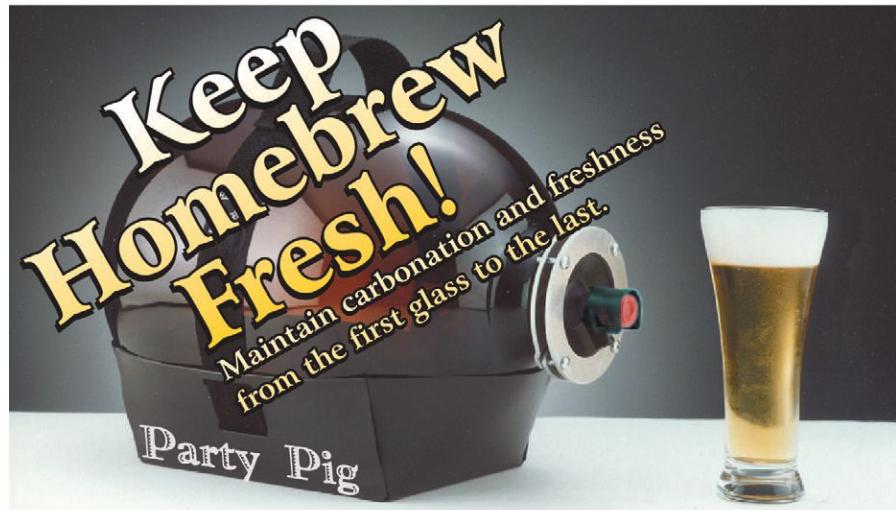
**OG:** approx. 1.064–1.070 (16–17.5° P)  
**FG:** approx 1.014 (3.5° P)  
**SRM:** approx. 4.5–6 (sometimes as dark as 9)  
**IBU:** 20–35 (sometimes from spicy Tettnanger for bitterness)  
**ABV:** 6–7% (sometimes higher)

### Doppelbock

**OG:** typically 1.072 (18° P); rarely less, often more  
**FG:** usually 1.016 (4° P)  
**SRM:** usually 18–24  
**IBU:** usually 28–32  
**ABV:** usually 7–8%; sometimes higher

### Eisbock

**OG:** approx. 1.100 (25° P); after freezing  
**FG:** usually 1.016 (4° P); Doppelbock before freezing  
**SRM:** approx. 30; sometimes darker; a dark Doppelbock before freezing  
**IBU:** 18–22, sometimes lower; a mild Doppelbock before freezing  
**ABV:** 8–9%; sometimes as high as 13%; after freezing



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*It was a dark and  
with all the clarity of*



# A Darkness More than Lager

By Drew Beechum

*stormy night,  
freshly poured Imperial Stout.*

But as I sat and pondered the world before me and the passing of yet another summer, I wondered: is this it? Are these big, fruited bombs all that's left to life? What will I do now as the mercury dips down past those valued fermentation temps?

The answer lies in the oft ignored, slightly impractical world of lagers, of course! Let's stroll through our newly arrived cold sable nights with beers to match.

# *John's "World Famous" Dark Lager*

1986 Old School Version

## Ingredients

for 5.0 U.S. gallons (19 liters)

<b>2 cans</b>	unhopped Dark Malt Liquid Extract
<b>12.0 oz</b>	(340 g) Crystal Malt
<b>1.5 oz</b>	(42 g) Cluster pellets (60 min)
<b>0.5 oz</b>	(14 g) Hallertau pellets (10 min)
<b>2 packages</b>	Red Star Lager Yeast

**Directions:** Place crystal malt in a grain bag and place in your brew pot along with 2.5 gallons of water. Slowly bring the water to a boil and turn off the heat. Remove the grain bag from the pot and squeeze the liquid from the bag into the pot. Add the malt extract syrup to the pot, stirring well to avoid sticking and scorching. The syrup is easier to pour when it has been preheated by warming the open can in a saucepan of water. Save some of the wort in a saucepan to make your yeast starter (see directions below). Add all of the Cluster hops and bring to a gentle rolling boil. Boil for 1 hour covered. Add all of the Hallertau hops in the last 10 minutes. Cool with a counterflow wort chiller and pitch yeast starter. When gas starts to bubble through the airlock, cool the wort to an ideal temperature of 55° F (13° C).

**Note:** These are the original instructions included with the 1986 recipe. Zymurgy technical editor Gordon Strong suggests steeping the grains at 150-170° F [66-77° C] (not boiling them) and boiling with the pot uncovered, not covered.

**Yeast Starter:** After adding the malt to the kettle, save some wort in a pan. Raise the temperature to 85° F (29° C) and add the yeast packets. Cover the pan loosely. In a half hour the starter should be actively bubbling and ready for pitching.

## DREW'S LAGER RULES

For years, I've proclaimed loudly from atop my yeast box, "As goes your yeast, so goes your beer!" With lagers, this literally stands as a doubly truthful testament. Slower metabolic processes prevent quick yeast reproduction from taking up your slack. Practical experience bears out that lagers turn out best when hit with more than twice the yeast required for ales. Optimum pitching rates are 6-10 million cells/ml for ales and more than 10-15 million for lagers. You can grow your starter at room temperature, but give it a day below 60° F before pitching.

If you make a large starter (3 to 4 liters for normal gravities, and 7+ liters for "mega" gravities), you can stop the bad techniques. No more pitching your lagers above 60° F (15° C) to encourage growth before chilling the beer down! Now you can go cold, pitching closer to fermentation temperature and avoiding excess ester formation. Build in an extra day or two to your starter regimen for chilling and settling the yeast. Decant the mass of spent wort before pitching unless you want estery oxidized starter blending with your precious newborn.

Don't be horrified if it takes two days for kräusen to form at 50° F (10° C), and two-plus week primaries are OK. After that period, I usually check the gravity and test for diacetyl. If it's present, I'll raise the beer to 65° F (18° C) for two days before racking and crashing back to temp. Slowly (1° F/day) drop the beer to 35° F (1.6° C) and hold it there for 30-40 days before packaging. The bigger beers require more time, but you already knew that.

Maintaining consistent fermentation temperatures is more important than hitting your temps spot on. If you're fermenting outdoors and depending upon the chilly air, find a way to insulate the beer from wild fluctuations.

## AMERICAN DARK LAGER

All too often we beer geeks love to bust the chops of the industry's largest players. Still, we all recognize the amazing technical skills needed to consistently brew their products. Even if we don't like the taste, we get it.

# *John's "World Famous" Dark Lager*

2009 New School Version

## Ingredients

for 5.0 U.S. gallons (19 liters)

<b>5.75 lb</b>	(2.6 kg) Pilsner Malt
<b>1.0 lb</b>	(454 g) Munich 10L
<b>1.0 lb</b>	(454 g) Crystal 60L
<b>0.6 lb</b>	(272 g) Crystal 15L or Cara-pils
<b>0.50 lb</b>	(226 g) Weyermann Carafa® Special II
<b>1.25 oz</b>	(35 g) Perle pellets 7.5% a.a. (60 min)
<b>0.5 oz</b>	(14 g) Sterling pellets 7.5% a.a. (0 min)
	Wyeast 2633 Oktoberfest Blend

**Original Target Gravity:** 1.048 (12 P)

**SRM:** 23

**IBU:** 47

**Directions:** Mash at 152° F (67° C) for 45 minutes. Boil for 60 minutes. Ferment at 55° F (12.8° C).

**Extract Version:** Substitute 4.5 lb Pilsner LME and 0.5 lb Munich LME for the malts.

Fortunately, not all macro beer is pale. Before craft beer's wide spread, I often found myself stuck in beer hell, faced with 10 taps of yella and a lone beacon—Michelob Amber Bock. Sure, a real bock beer would click its heels and haughtily walk away from this mere pretender, but ignoring the name, it is one of the few remnants of a once more common style. (See Shiner Bock and Dixie Blackened Voodoo for other choices.)

So imagine my disappointment when I discovered Amber Bock's big secret: caramel extract. I've tasted a sample of the goo. As thick and slow as molasses in January, the syrup is sweet, powerfully dark and almost as thick as LME. Fortunately, there is more to this style than just extract syrups.

I love trolling through archives full of dusty paper and moldering bits waiting to be recovered. If it hadn't been for computers, I'd probably be locked away in a library, desperately craving a beer. Digging through my club's (the Maltose Falcons) archives, I came across a Best of Show-winning Dark Lager recipe from a pre-Rogue John Maier.

Laughing, John agreed to share this fossilized recipe. Apparently at the time, he was competing with two different dark lager recipes. Back in the day, the typical competition had style categories for "Light Lager," "Light Ale," "Dark Lager," "Dark Ale," "Stout," "Porter," and "Other." I can guarantee that this won't taste a thing like Amber Bock.

Now, he's not the kind of guy to leave us hanging around with an ancient artifact proving evolution in human pursuits. After all, John and Rogue promote homebrewing at every opportunity. So to help out, he jotted down a New School Award Winning Dark Lager recipe for us. I can only imagine what the John of yesteryear would think seeing the ingredients available to the modern Maier. What a difference 23 years makes!

## HEART OF DARKNESS

### SCHWARZBIER

Köstritzer Schwarzbier, the odd black beer remnant of the old East Germany,

## *Heart of Darkness Schwarzbier*

### Ingredients for 5.5 U.S. gallons (20.8 liters)

<b>6.5 lb</b>	(2.9 kg) Weyermann Pilsner Malt
<b>3.0 lb</b>	(1.3 kg) Weyermann Munich Malt
<b>0.75 lb</b>	(340 g) Weyermann Carafa® Special III
<b>0.50 lb</b>	(226 g) Weyermann Crystal 60L
<b>0.30 oz</b>	(8.5 g) Magnum pellets 14.0% (60 min)
<b>0.50 oz</b>	(14 g) Tettnanger pellets 5.2% (20 min)
	Wyeast 2124 Bohemian Lager/WLP838 South German Lager (or WLP885 Zurich Lager to prep for Falconsclaws)

**Target Original Gravity:** 1.051

**SRM:** 31

**IBU:** 22

**Directions:** Mash at 125° F (52° C) for 20 minutes. Mash at 154° F (68° C) for 60 minutes. Boil for 90 minutes.

**Extract Version:** Substitute 5.0 lb Pilsner LME and 2 lb Munich LME for the malts.

was my first truly beloved German lager. I can appreciate the artistry expressed in a great and fresh Pilsner, but the murky Köstritzer won my heart. My second attempt at lagerish beers was a schwarzbier. (The first was a California Common and the less said about that the better, for my pride.)

Schwarzbier has a long history centered on the town of Kulmbach, where medieval monks supposedly brewed the original schwarzbier (as ale). With the advent

of lager brewing, this kissing cousin to dunkels and stouts underwent a transformation. Born from the black-hearted ales, schwarzbier eventually settled into the shape of a black lager with soft roasted notes and a malt body resting between Pilsner's crispness and bock's über-maltiness.

Many homebrew recipes depend on English-style chocolate and black patent malts for the deep blackness. The resulting beer strays from the desired profile

## *My Smoked Dark Heart*

### Ingredients for 5.5 U.S. gallons (21 liters)

<b>4.0 lb</b>	(1.8 kg) Weyermann Pilsner Malt
<b>4.0 lb</b>	(1.8 kg) Weyermann Rauch Malt (Beechwood Smoked)
<b>3.0 lb</b>	(1.3 kg) Weyermann Munich Malt
<b>0.75 lb</b>	(340 g) Weyermann Carafa Special III
<b>0.50 lb</b>	(226 g) Weyermann Crystal 60L
<b>0.30 oz</b>	(8.5 g) Magnum (Pellets) 14.0% (60 min)
	Wyeast 2124 Bohemian Lager / WLP838 South German Lager

**Target Original Gravity:** 1.058

**SRM:** 31

**IBU:** 18

**Directions:** Mash at 125° F (52° C) for 20 minutes. Mash at 154° F (68° C) for 60 minutes. Boil for 90 minutes.

**Extract Version:** Substitute 3 lb Pilsner LME, 3 lb Weyermann Bamberg Rauch LME and 2 lb Munich LME for the malts.

due to an overabundance of roast. The right balance lies in the region's own brewing supplies. Weyermann produces a line of Carafa® chocolate malts. There are three grades—I-III—with III registering in the 500+L range. The secret beauty queens of the line are the "Carafa Special" malts, where the husk is stripped away and with it the more aggressive flavors and roast acidity. The Specials taste like dark toffee blended with your favorite mild coffee. I prefer using just Carafa malt, but some brewers continue to blend regular roast.

Stuck with just regular roasted malts? "Capping" the mash can round off the harsher edges since the dark malt spends less time swimming in the hot mash. Separate the dark malts from your main mash and wait until the sparge to add them. Alternatively, since you mostly want the color, avoid mashing altogether and cold soak your roasted malts (~1 lb crushed to 1 quart water). Overnight and a straining later, it yields a black ink that can turn a light lager into a black hole. Weyermann produces a Carafa-based Reinheitsgebot-legal colorant called

Sinamar®. Shocking rumors say that several brewers (including Köstritzer) skip the mash and color solely with Sinamar. (Rumors being rumors, take this with a big grain of salt, please!)

#### ADDING SOME SMOKE

During the summer, a man's fancy turns to wheats, blondes and "lawnmowers," but my neighborhood brewery, Craftsman Brewing, turns that on its head. Each summer, they release their Smoked Black Lager—black, sessionable and pleasantly smoky. Running with it, a few changes to Heart of Darkness gives us a whole new beer, called My Smoked Dark Heart.

#### BALTIC PORTER

Now we're leaving the "sessionable" waters of this article in favor of the true cold weather beers. From this point on, we're talking some serious amounts of lager yeast—be prepared to either bust your record for largest starter or brew one of the preceding recipes first for the yeast cake.

Baltic Porter is a legendary beer of trade competition. Supposedly inspired by the arrival of London Porter and Russian Imperial Stout, this local bastard child continues to wane in the face of cheap Pilsner and vodka. Think of this beer as a super schwarzbier. Proving the exception to the rule that every big beer needs time, a friend's Baltic Porter won a BOS when the beer was only six weeks old.

The recipe for Any Port in a Storm won't be ready nearly as fast, but we load up on the Munich and a few other malts to build a dense layered approach. I also prefer these beers to have a bit of heft, but not as hearty as an Imperial Stout. If you really want to push the beer to its maximum, you'll want to do a double decoction.

#### JUXTAPOSITION IMPERIAL BLACK PILSNER

OK, I'll admit this collaboration from Stone, Cambridge and Scotland's BrewDog feels like a great coup for me. The mighty Stone Brewing is in my neck of the woods (Southern California speaking). Cambridge Brewing Company was my first regular brewpub, just a short walk

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##### Specialty Flakes:

##### Traditional Flakes:

##### Dark Flakes:

##### Light Flakes:

##### Flaked Wheat:

##### Flaked Oats:

##### Flaked Barley:

##### Flaked Rye:

##### Flaked Caramel:

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## *Stone /Cambridge/BrewDog* *Juxtaposition Imperial Black Pilsner Clone*

### Ingredients

for 5.5 gallons (20.8 liters)

<b>17.50 lb</b>	(7.9 kg) Weyermann Pilsner Malt
<b>2.50 lb</b>	(1.1 kg) Vienna Malt
<b>1.00 lb</b>	(454 g) Carafa® Special III Malt
<b>0.70 oz</b>	(20 g) Sorachi Ace pellets 13.7% (mash hopping)
<b>0.70 oz</b>	(20 g) Sorachi Ace pellets 13.7% (first wort hopping)
<b>0.33 oz</b>	(9.3 g) Sorachi Ace pellets 13.7% (90 min)
<b>0.33 oz</b>	(9.3 g) New Zealand Motueka pellets 7.4% (90 min)
<b>0.33 oz</b>	(9.3 g) Sorachi Ace pellets 13.7% (80 min)
<b>0.33 oz</b>	(9.3 g) New Zealand Motueka pellets 7.4% (80 min)
<b>0.33 oz</b>	(9.3 g) Sorachi Ace pellets 13.7% (70 min)
<b>0.33 oz</b>	(9.3 g) New Zealand Motueka pellets 7.4% (70 min)
<b>0.33 oz</b>	(9.3 g) Sorachi Ace pellets 13.7% (60 min)
<b>0.33 oz</b>	(9.3 g) New Zealand Motueka pellets 7.4% (60 min)
<b>0.33 oz</b>	(9.3 g) Sorachi Ace pellets 13.7% (50 min)
<b>0.33 oz</b>	(9.3 g) New Zealand Motueka pellets 7.4% (50 min)
<b>0.33 oz</b>	(9.3 g) Sorachi Ace pellets 13.7% (40 min)
<b>0.33 oz</b>	(9.3 g) New Zealand Motueka pellets 7.4% (40 min)
<b>0.33 oz</b>	(9.3 g) Sorachi Ace pellets 13.7% (30 min)
<b>0.33 oz</b>	(9.3 g) New Zealand Motueka pellets 7.4% (30 min)
<b>0.33 oz</b>	(9.3 g) Sorachi Ace pellets 13.7% (20 min)
<b>0.33 oz</b>	(9.3 g) New Zealand Motueka pellets 7.4% (20 min)
<b>0.33 oz</b>	(9.3 g) Sorachi Ace pellets 13.7% (10 min)
<b>0.33 oz</b>	(9.3 g) New Zealand Motueka pellets 7.4% (10 min)
<b>0.50 oz</b>	(14 g) Sorachi Ace pellets 13.7% (0 min)
<b>0.50 oz</b>	(14 g) New Zealand Motueka pellets 7.4% (0 min)
<b>2.00 oz</b>	(57 g) Sorachi Ace pellets 13.7% (dry hop)
<b>3.50 oz</b>	(99 g) Hallertauer Saphir pellets 4.5% (dry hop)
	Wyeast 2124 Bohemian Lager/WLP838 South German Lager

**Target Original Gravity:** 1.100

**SRM:** 30

**IBU:** 233 (theoretical, not actual)

**Directions:** Mash at 148° F (64° C) for 60 minutes. Mash out at 165° F (74° C) for 30 minutes. Boil for 90 minutes.

**Extract Version:** Substitute 12.5 lb Pilsner LME and 2 lb Munich LME for the Vienna malt.

from my office to relieve the stress of being an overworked, overstudied, underpaid undergraduate. And if you haven't heard of BrewDog, then you've been missing out on the antics of these punk rock Scottish brewers who make a ton of American IPAs and stouts, tweaking the noses of the anti-binge-drinking crusaders by releasing beers like Tokyo\*, a jasmine- and cranberry-infused 18.2-percent mega Imperial Stout. (How's that for rock 'n' roll?)

Stone keeps experimenting and has released a series of collaboration ales, each

with a trio of brewers. Past collaborators include Alesmith, Jolly Pumpkin, Maui Brewing, Mikkeller, and Nøgne-Ø. Even homebrewer Ken Schmidt got in on the act. Each of the beers incorporates unique themes brought to the party by the individual brewers.

According to Stone brewmaster Mitch Steele, the team decided to do something they'd never done before. Martin at BrewDog proposed a Black Pilsner and everyone else voted to make it a strong beer (no surprise there). Topping it off,

## *Any Port in a Storm* *Baltic Porter*

### Ingredients

for 5.5 U.S. gallons (20.8 liters)

<b>12.00 lb</b>	(5.4 kg) Pilsner Malt
<b>3.00 lb</b>	(1.3 kg) Munich Malt
<b>1.00 lb</b>	(454 g) CaraAmber® (30L)
<b>1.00 lb</b>	(454 g) CaraMunich® (60L)
<b>1.00 lb</b>	(454 g) Carafa® III Special
<b>0.50 lb</b>	(226 g) Chocolate Malt
<b>0.75 oz</b>	(340 g) Magnum pellets 14.0% (60 min)
<b>0.50 oz</b>	(226 g) Hallertauer Tradition 6.0% (20 min)
	WLP833 German Bock or WLP830 German Lager

**Target Original Gravity:** 1.093

**SRM:** 49

**IBU:** 42.5

**Boil time:** 90 minutes

**Directions:** Mash at 152° F (67° C) for 60 minutes.

**Extract Version:** Substitute 3 lb Pilsner LME and 2 lb Munich LME for the malts.

they used a set of hops they've never used before—the lemon-infused Sorachi Ace from Japan and New Zealand's Motueka "noble" hop. And use them they did! Hop additions abound in this beer—13 in total. Oh, and it's the first time they ever tried mash or first wort hopping!

But my favorite part of the whole project has been the beer community's reaction. Stone aggressively blogs and hints at each of its special projects. When they announced a "Pilsner" project, virtually everyone treated it like a return to their old April Fool's jokes. But now that the beer has hit the streets, it's no joke. Chewy and crisp at the same time, the beer screams with the hops, but it's not like the hoppy beers you're used to since it lacks the distinctive American orange/grapefruit/pine bite.

### FALCONSCLAWS

Saving the biggest for last, I present the massive and terrifying Falconsclaws.

Inspired by the world's strongest lager, the 14-percent Samichlaus Doppelbock, this beer first saw light when Switzerland's Hurlimann Brewery discontinued its tradition of brewing and releasing this beer on Swiss Christmas (December 6). A few Maltose Falcons, bereft at the beer's demise, designed a challenge to their homebrewing skills and began to produce this annual monster.

Make no bones about this beer: you need a yeast cake to make it sing. Our first batches used fairly large starters and

while they worked, each stalled after a few weeks of fermentation. A dose of sherry yeast finished those batches out.

Eventually, I began to brew a few weeks ahead—an Xmas schwarzbiere—to grow a large slug of White Labs' seasonal Zurich Lager. This really turned the corner on the beer. Instead of dropping from 1.140 to 1.050, the giant dose brought the lofty gravity down to an astonishing 1.016! This brew is an exercise in patience. Follow the Swiss (and now Austrian) tradition and wait a year before drinking.

## Falconsclaws

### Ingredients

for 5.0 U.S. gallons (19 liters)

<b>28.75 lb</b>	(13.0 kg) Weyermann Pilsner Malt
<b>1.50 lb</b>	(680 g) German Crystal 65L
<b>1.50 lb</b>	(680 g) Munich Malt
<b>1.00 lb</b>	(454 g) Vienna Malt
<b>0.50 lb</b>	(226 g) Melanoidin Malt
<b>1.00 lb</b>	(454 g) Dark Candi Sugar
<b>1.75 oz</b>	(49 g) Styrian Golding pellets 4.0% (60 min)
<b>1.50 oz</b>	(42 g) Hallertauer Mittelfrüh pellets 3.8% (15 min)
<b>0.50 oz</b>	(42 g) Hallertauer Hersbrucker (whole) 2.3% (2 min)
	WLP885 Zurich Lager Yeast (cake from a previous batch)

**Target Original Gravity:** 1.143

**SRM:** 23 SRM,

**IBU:** 32

**Boil time:** 90 minutes

**Directions:** Mash in at 124° F (51° C) for 30 minutes with 36 quarts of strike water. Saccharification rest at 154° F (68° C) for 60 minutes. Collect 7 gallons of wort for boiling (first runnings).

**Extract Version:** Substitute 17 lb Pilsner LME and 2 lb Munich extract for the malts. Eliminate the melanoidin malt.

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\*Some heavy and/or bulky items are excluded, such as glass bottles, sacks of grain, bulk DME, and oak barrels.

Brew a PATERSBIER,  
THE NUMBER 8,  
LEFSE BLOND,  
DUBBEL or TRIPEL kit  
before it is too late.

Since this is a first runnings beer, think about brewing a small beer. With the remaining mash sugars, you can easily hit 1.055. To keep the second beer interesting, cap the mash with steepable grains like chocolates and crystals. We managed to make several dunkels and Belgian dark ales from the leftovers.

**Drew Beechum sits on the AHA Governing Committee and brews constantly with his fellow Maltose Falcons. He regularly writes about and promotes brewing and beer literacy in Zymurgy.**

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rhubarb

**H**omebrewers making wine? You betcha! As a homebrewer, it's super easy and fun to get into home winemaking, especially with home wine kits. Think about it...no heating, no cooling, and no carbonation required! You can make some truly exceptional, and perhaps even award-winning, wine for as little

as \$4 a bottle and in as little as four to six weeks. And, homemade wine also makes a terrific gift, especially for the holidays. Best of all, you don't need much gear beyond your existing homebrew equipment. You can still homebrew regularly, but also change it up once in a while and pop a wine into your brewing schedule.

### TAKING THE PLUNGE

Before becoming a professional brewer, I was an avid homebrewer for many years. As I experimented with beer recipes and beer styles, I was always curious about home winemaking but unsure about how to get started. I ultimately got into winemaking back in 1999 when I opened a small, local homebrew shop here in my hometown of Pagosa Springs, Colo. I began stocking wine kits just to round out the basic beer supply inventory. This gave me the perfect excuse to try out wine making. It was fun and easy. And, I was very lucky—my very first wine took Best of Show at the Colorado State Fair, and all I did was follow the kit's very simple directions!

Over the last 10 years, I have experimented with making wine from all kinds of sources, including fresh fruit, pressed juice, honey, and even flower petals. But, for consistency and ease of preparation, I prefer wine kits for making grape wine. The wine kit manufacturers have added a plethora of new wine styles and made vinification (the conversion into wine by the process of fermentation) even easier. Out of the wine kits I've made, several have garnered gold medals and two even won international Best of Shows.

With wine kits, most of your existing homebrew equipment can be used. You will need to buy a few reasonably priced items, including some new transfer hoses (primarily because they are soft plastic and porous enough to pick up wine flavors that you don't want in your beers later), a basic corker, and some good quality corks.

# Why Not Wine?

BY TONY SIMMONS

You can certainly buy more and fancier winemaking paraphernalia, but simple works pretty darn well.

### KIT WINEMAKING

Today's wine kits are easy to make and are specifically geared toward people with busy lives. Compared to brewing up a batch of beer, where a brewer usually sets aside a weekend afternoon, most wine kits take only 20 to 25 minutes to put together and are simple enough to even be made after coming home from work.

Much of the process of winemaking is similar to homebrewing. One notable difference is the simple procedure of vinification with wine kits, which goes like this:

- Read all directions before starting.
- Clean and sanitize your primary fermenter (at least 6+ gallon or 30 liters in size).
- Put a liter or quart of warm water into your fermenter and mix the pre-measured bentonite powder vigorously (this muddy mixture will help pull unwanted and harsh flavors out of your wine).
- Carefully add juice and mix well.
- Top up with cool water to the recommended volume, mix again, and measure your starting gravity.
- Add any oak if required and stir.
- Sprinkle yeast on top, and voilà! You've started your first home wine!

Most wine kits are geared for 6-gallon or 23-liter batches, which end up making about 30 bottles (750 ml) of wine. So you'll need a primary fermentation vessel that has enough headspace for a modest krausen head. I often use a sanitized bucket (the unscratched one that came with my initial homebrew equipment kit) for primary since it provides a large target area for pouring the juice, which can be quite useful as most red fruit juice intensely stains any clothing it touches. You may want to consider a larger, roomier bucket to start. To reduce the potential

for oxidation, I do prefer using glass for secondary fermentation as well as long-term aging (if required).

### STABILIZING AND CLARIFYING

Just like homebrewing, you'll proceed through primary and then secondary fermentation, making sure that your gravity is correct throughout the process. Assuming everything is on target, you will need to employ stabilizing and clarifying steps that are crucial, but not generally practiced in homebrewing. This will usually include

adding some sulfite, sorbate and a clarifier (either isinglass or chitosan).

While some home vintners may not want to add sulfites to their wine, I'd recommend following the directions on this one. Sulfites help as an antioxidant and bacterial retardant. Plus, the amount of sulfites added to home winemaking is dramatically less than you will find in most commercial wines. Feedback we have gotten from customers and friends is that wine made from wine kits with sulfite tastes great and they didn't end up with the ruddy cheeks or stuffy head they've traditionally gotten from commercial wines. However, if you are sensitive to sulfites, consult your doctor before this step.

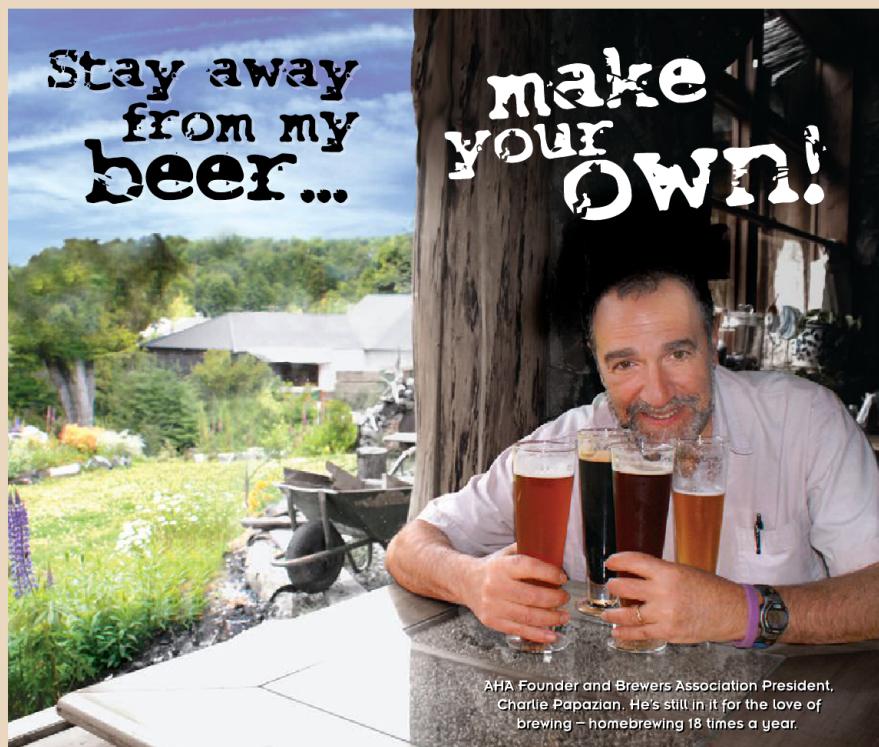
### TASTING AND BLENDING

Before bottling, it's important to taste your new wine. Most of the time it comes out just great, especially if you followed the directions. However, if you don't like the way your wine finishes, I strongly recommend holding off on bottling until you can adjust the results.

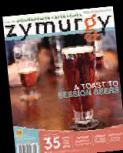
The most common complaint I hear is that a wine finished on the dry side. If this is the case, you can blend with another wine (a topic we will cover in a moment) or add some inexpensive wine conditioner (a blend of sugar and potassium sorbate), which will arrest any further fermentation. Draw off some of your new wine and do a little measured dosing with the wine conditioner to see if you like the flavor.

If your wine doesn't require that extra sweetness, but is still missing something, blending is another idea to consider. You can blend pre-fermentation with different juices or post-fermentation with different finished wines. Blending is a true art and has been practiced by vintners for thousands of years. And, it's a lot of fun.

One of our local home winemakers, Dana Clark, has a real knack for this technique and has produced some outstanding blended wines, including a Pear/Chardonnay. "I like to try out different combinations," explains Clark. "Often, I'll make several different ratios in separate wineglasses and line them up for side-by-side comparison. The key is to keep



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adding slowly and tasting your blended creation. Then, I'll take the ratio I like the best and apply it to the full batch. If it's still not perfect, give it some time to age in the carboy, then sample it again. Sometimes that aging will really help a wine come into its own."

## BOTTLING AND CELLARING

When your wine tastes right to you, it's time to bottle. Simple handheld double-lever corks work fine, or you can upgrade to a floor corker for better leverage. I suggest investing in some good quality corks or synthetic corks. You can certainly do the bottling all by yourself, but it can be a bit of a chore. Why not make a party out of it? With a bunch of thirsty friends, you may not get the full 30 bottles' quota by the end, but that "angel's share" given to your helpers usually comes back to you later.

When it comes to cellaring and aging, a lot depends on the style of wine you made as well as your palate. Many of the simple wine kits are designed to be drunk young and taste great that way. Others (usually the big reds) can dramatically benefit from extended aging. Consult your wine kit manufacturer for suggestions.

In my cellar, I like to pull a bottle out every few weeks (or months) and give it a try. When it tastes good, it's ready to drink or send out as gifts. When you've got a good wine coming out of your cellar, you'd be amazed at how fast those 30 bottles disappear! As such, I like to stash a few bottles away for special occasions.

In the end, home winemaking is a fun diversion for homebrewers. Since you probably already have most of the gear, I suggest stopping by your local homebrew shop this week to see what they have to offer in the way of wine kits. The sooner you start, the sooner you'll be able to enjoy some great affordable home wine.

**Tony Simmons is president and head brewer of Pagosa Brewing Co. in Colorado and is a Siebel Institute and World Brewing Academy graduate. However, many of his wine awards were won before attending brewing school.**



## CHARDONNAY/PEAR WINE

### Recipe by Dana Clark

Start both batches around the same time.

#### 1. Your Favorite Chardonnay Wine Kit (6 gallons)

Follow all directions for primary and secondary fermentation. Once gravity is 1.000 or less, rack to 6-gallon carboy and add 1/2 tsp. potassium metabisulfite. Then add medium oak cubes (I like the ones from LD Carlson) and leave a minimum of 8 weeks. At that time, if you want a more buttery taste, add 1 T. Madagascar vanilla, or more for taste.

#### 2. Pear Wine (3 gallons)

1 can	(96 oz) Vintner's Harvest Pear fruit wine base
3.5 cans	water
12 cups	sugar (or sugar syrup)
6.5 tsp.	acid blend
0.25 tsp.	grape tannin
1.75 tsp.	yeast nutrient
1.75 tsp.	pectin enzyme
3/8 tsp.	potassium metabisulfite
	Lalvin EC-1118 yeast

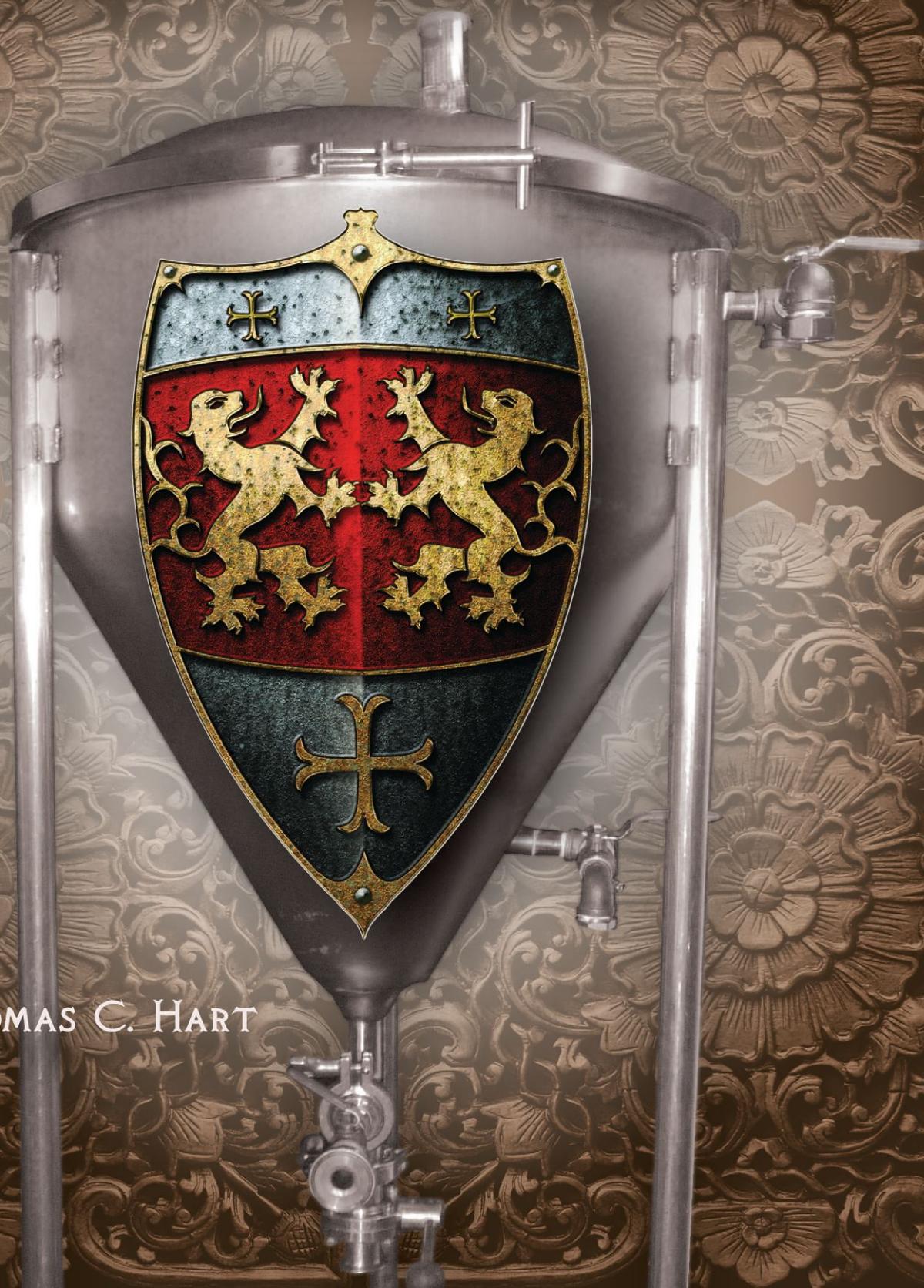
Combine all ingredients except yeast and check for acid and specific gravity. Acid balance should be .60 - .65%. SG should be 1.085-1.090. Adjust and let stand overnight. Add yeast the next day. Gently stir once a day for 4-5 days, then let sit for 7 days. Rack to 3 gallon carboy once SG reads 1.040 or below.

Rack again after 3-4 weeks when SG reads 1.010 to 1.000. Add 3/8 tsp. potassium metabisulfite at this time, or 3 crushed Campden tablets. Let sit until Chardonnay is ready.

To blend both wines with a 2:1 ratio, rack 2 gallons of Chardonnay into 3-gallon Carboy A (with 4 gallons remaining in 6-gallon carboy B.) Rack two gallons of Pear wine into the 6-gallon carboy B with the 4 gallons of Chardonnay and put on airlock. Rack last gallon of Pear wine into the 3-gallon carboy A with the 2 gallons of Chardonnay. Let both carboys (A&B) sit for one month.

Taste after one month. Add vanilla or oak cubes as desired. Bottle. Wine can be consumed now or in one month, but will be better after 6-12 months aging in bottle.

# SEEKING THE GRAIL: JACKETED CONICAL FERMENTERS



By THOMAS C. HART

MANY HOMEBREWRIES BEG THE QUESTION AS TO WHEN ENOUGH IS ENOUGH. DO WE REALLY NEED IN-LINE AERATION STONES, TWO-ZONE PLATE HEAT EXCHANGERS AND STEAM KETTLES TO TURN OUT A DRINKABLE SIX-PACK OF SUDS? WE ALL KNOW THE ANSWER, AND YET FOR MANY OF US THERE IS AN INESCAPABLE ALLURE TO GADGETRY. FOR SOME OF US, THE QUEST FOR THAT NEXT GREAT THING IS DRIVEN BY A CRUSADER-LIKE PASSION.

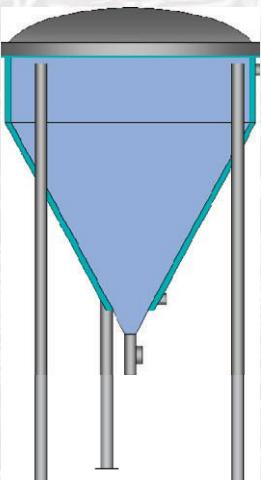
Much of the quest for gadgets is driven by a desire for control. Timers, thermometers, hydrometers and scales have all become standard gadgetry for producing consistent beer. There are, of course, practical control limitations and reasonable individuals who will say absolute control is an illusion. Yet the siren's song of precise control is hard to ignore.

Conical fermenters have become popular in recent years in part because of their beneficial design and the control it provides. A primary benefit of this design is the ease of separating yeast from the beer. In the case of traditional carboys and buckets, you need to transfer your beer into a secondary container, which means cleaning and sanitizing each piece of equipment that comes into contact with the beer. With a conical, you can simply draw off any break, trub or yeast you wish to eliminate through a dump valve. Likewise, samples for evaluation are easily taken through a racking valve. Further, some conicals are designed to hold pressure, which helps prevent airborne contamination and allows for sanitary transfers using CO<sub>2</sub> pressure.

An additional benefit of many conicals is their stainless steel construction. Stainless steel resists scratching and staining. It is inert and will not carry flavor into a beer. It is impermeable to light, odor and oxygen and will not break when exposed to heat, cold or an unintended trip to the floor.

Conicals come in a variety of sizes, which allows for single vessel fermentation. This size benefit can also be a disadvantage when it comes to cooling. While smaller vessels fit in refrigerators, larger ones require other solutions.





Jacketed conical fermenters, or uni-tanks as they are commonly known, are standard fare in the brewing industry. Their stand-alone design allows for individual control and conservation of valuable floor space. The temperature control set-ups are generally straightforward and sometimes amazingly simple. Thermo-couplers in each fermenter signal digital temperature controllers to turn circulation pumps on and off to circulate glycol through fermenters' jackets to control the product's temperature. This glycol can be either chilled or heated depending on seasonal needs. The better commercial conicals have zoned jackets, including jacketed cones. Less expensive models may have only a single, small jacketed area. But in every case the goal is control, simple and effective.

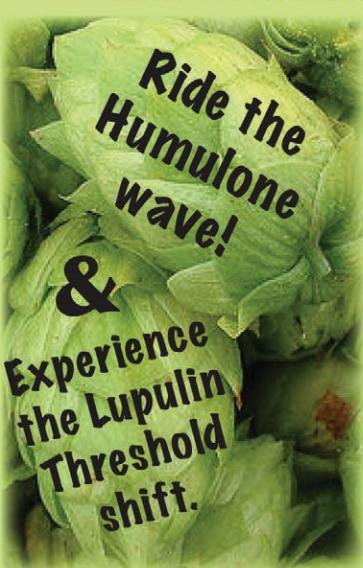
The quest for my grail of gadgetry began with winning an online contest. The prize was a gift certificate from Toledo Metal Spinning, the manufacturer of the conical hoppers we crave. My prize was sufficient to purchase two large hoppers. Yet as I explored the choices an idea was born: "What if two could become one to create a single, perfect, jacketed fermenter?" I recognize the idea of a jacketed conical fermenter for homebrewing is ridiculously over the top. It is neither necessary nor practical. But honestly, since when has practicality really been part of the equation? "The Practical Brewer" indeed!

Toledo Metal Spinning manufactures 16 different hoppers, ranging in volume from .1 to 51.1 gallons. PDF files are available for each hopper, providing specific dimensions. Only a handful of the company's hoppers are useful as fermenters, but two of their models are perfectly suited for my design. The dimensions of the 21-gallon model, TMS201014, allow it to nest inside the 24.1 gallon model, TMS221014, with less than a 3/4" gap between their walls. This gap is perfect for circulating glycol around the fermenter to regulate its temperature. Unfortunately, the standard outer diameters (OD) of the vessels' upper rims are not compatible for nesting. Fortunately, the company offers a variety of custom modifications. Specifically, they are able to trim the inner hopper so its rim OD matches that of the outer hopper.



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My design is relatively simple. A 1/2" stainless coupling is fitted and welded into holes cut in the sidewall near the top and bottom of the larger hopper. These will serve as the jacket's inlet and outlet ports through which glycol will be circulated.

Next, the bottom few inches of the outer hopper is removed to allow the tip of the inner hopper to protrude. This allows for a relatively simple union to be made at the bottom of the jacket. The matched upper rims are then welded together, creating a complete seal around the upper lip. This weld must be ground smooth to allow a proper seal on the finished fermenter.

Finally, a donut-shaped plate, a metal ring of sorts, is cut to fill the space between the bottom of the exterior jacket and the outer wall of the interior jacket where it protrudes. This ring is welded in place, creating a seal at the bottom of the jacket.

There are numerous designs for legs and stands. My fermenter is supported by three stainless pipe legs that have been welded to the outer wall. Consideration should be given to the height of these legs, as well as their stability. A friend, welder and fellow homebrewer, Bret Haskins, constructed a bracketing system to mate the round pipes with the cylindrical body of the fermenter, providing exceptional strength and stability for the legs.

Another major consideration is the lid and seal of the fermenter. This is an area where your ingenuity can shine as you determine the system best suited to your needs and budget. Toledo Metal Spinning sells both flat and domed covers. Other companies, such as Blichmann Engineering and More Beer, successfully utilize gaskets and clamps on their systems. My fermenter uses a Blichmann gasketed top with a wraparound barrel clamp. This system will hold pressure and is airtight.

A drawback of my jacketed design is that it does not allow for the use of the type of separate, rotating, racking arm preferred by many conical owners. To compensate for this, a sanitary T is attached to the



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bottom of the cone. A racking tube is inserted through the horizontal arm of this T, while the vertical arm serves as the dump port. The elbowed racking tube has a T tip to help prevent clogging during fermentation. Its length is such that it rises a few inches into the cone, allowing the beer to be racked off the settled yeast

and trub. Whatever racking system you choose, it should be removable for easy and thorough cleaning.

The temperature of my fermenter is regulated by glycol pumped through a small chest freezer. A submersible pump, controlled by a Ranco digital temperature

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controller (DTC, model ETC-111000-000), recirculates the glycol through the fermenter's jacket. The controller can be set for either cooling or heating. In warm weather, the freezer chills the glycol to about 40 degrees. In colder weather, the freezer is turned off and an immersion heater is utilized to warm the glycol for recirculation. A thermo-coupling located in the fermenter signals the DTC to turn the pump on and off as needed to maintain the desired fermentation temperature.

An added benefit of this glycol setup is the ability to utilize the chilled glycol in the second stage of my two-stage plate heat exchanger. This allows me to quickly chill my wort to nearly any temperature I desire.

I am sure I will find other ways to tinker with my conical soon enough, but for now it is complete. Down the road I will insulate the exterior and play around with some clean-in-place ideas, but for now I plan to simply enjoy the fruits of my labor as I dream of my next gadget conquest. What does anyone know about flash boilers, anyway?

**Thomas Hart started brewing in 1982 in order to save money. Graduating to all-grain brewing by his third batch, he quickly discovered a passion for brewing gadgets. Tom is a BJCP-certified judge, co-founder and former head brewer of the Rio Grande Brewing Company, father of two aspiring soda makers, and the grateful husband of a very supportive wife.**

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# COMMERCIAL CALIBRATION



In honor of our Dark Lagers theme for this issue, we bring you one new beer and one award-winning favorite.

First up is a new offering from Full Sail Brewing in Hood River, Ore. Full Sail celebrated its 10th anniversary as an employee-owned brewery in July 2009 and released Session Black Premium Dark Lager to celebrate. Our judges were among the first to try the new brew.

"Session Black is short, dark and totally drinkable," said Full Sail executive brewmaster Jamie Emmerson. "The initial tastes are a subtle pairing of caramel and chocolate malt flavors with precise hopping to provide an elegant citrus background to the delicate finish of dark cocoa."

Session Black, which is packaged in 11-ounce "Stubby" bottles, checks in at

**OUR EXPERT PANEL** includes David Houseman, a Grand Master III 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.

**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.**

5.4 abv and 22 IBUs. (As a side note, be sure to check under your bottle cap to see if you've gotten rock, paper or scissors!)

Next up was Capital Dark from Capital Brewery in Middleton, Wis.

Capital Dark, which used to be known as Munich Dark, is in the style of a Munich Dunkel. Brewed to 5.4 percent abv, it has won several medals, including gold at the 2005 Great American Beer Festival.

Judge Beth Zangari called Munich Dark

"an excellent American example of a German classic."

Be sure to check out the Capital Web site for several recipes using Capital Dark, including Smoked Sausage/Cheddar Beer Soup.

## ON THE WEB

**Full Sail Brewing Co.**  
[www.fullsailbrewing.com](http://www.fullsailbrewing.com)

**Capital Brewery**  
[www.capital-brewery.com](http://www.capital-brewery.com)

**BJCP Style Guidelines**  
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# THE SCORES



Session Black—Full Sail Brewing Co., Hood River, Ore.

BJCP Category: 4A Dark American Lager



DAVE HOUSEMAN

## THE JUDGES' SCORES FOR SESSION BLACK



BETH ZANGARI



SCOTT BICKHAM



GORDON STRONG

**Aroma:** Medium roasted malt aroma, more pronounced as the beer warms a little. Very light floral hop aroma. No DMS. No diacetyl. No fruitiness. Alcohol not apparent. Very inviting, crisp lager aroma, but with a roasted malt aroma that's almost stout- or porter-like. (9/12)

**Appearance:** Very dark amber color, but not opaque. Bright clarity. Thin, tan head dissipates rapidly leaving a ring of bubbles on the sides of the glass. (3/3)

**Flavor:** Roast malts balanced with moderate hop bitterness. There's a hint of sweetness trailing to a dry finish. Well balanced with surprising hop bitterness and very low floral hop flavor. A bit of corn-like flavor, perhaps from the use of corn in the grist and not DMS. No diacetyl. No fruity esters. Alcohol not evident. Clean, crisp lager fermentation. (16/20)

**Mouthfeel:** Medium-light body. Smooth. Low astringency from roasted malts. No warming from alcohol. Dryness from both fermentation and roasted malts. High carbonation leaves a tingling mouthfeel. (5/5)

**Overall Impression:** Refreshing bitterness and dry finish make for a very drinkable beer. A lot of flavor for a Dark American Lager. Roasted malt aroma and flavor a bit over the top for this style but it works for this beer making it both interesting and refreshing. When judging to style, even a great drinking beer may not be quite to style; this is somewhat porter- or stout-like. Still, it would be good to have with a steak smothered in mushrooms, the roast malts complementing the charbroiled steak but the dry finish and hop bitterness making it less filling with the meal. Definitely one I'd keep in my fridge. (8/10)

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

**Aroma:** Low caramel and bready malt with a hint of spicy, herbal hop aroma. No diacetyl or fruitiness, though a ghost of DMS emerges as the beer sits a bit. (10/12)

**Appearance:** Dark reddish brown turns ruby red when held to the light; brilliant clarity. Light tan foam rises to persistent, creamy head. A few larger bubbles form as the beer sits. (3/3)

**Flavor:** Low caramel malt up front gives way to light graininess, then moderately sweet malt flavor with no burnt or roastiness. Hint of hop bitterness provides balance for a clean finish. Bready, slightly grainy character toward the end accentuates the crisp hop character. As the beer sits in the glass, a very light roast acidity emerges, which also amplifies the bitterness. No hop flavor. Very clean. (16/20)

**Mouthfeel:** Medium light body, with moderate carbonation and low alcohol warmth late in the finish. Smooth, almost silky texture, except for a slight roasty tang, though not astringent. (4/5)

**Overall Impression:** Body is on the full side for what I expected, more like a Continental version (Heineken or Baltika #4) than Shiner Bock or Blackened Voodoo. Very clean and fresh, though with graininess that suggests six-row barley malt. A perfect beer for the transition from hot summer nights to balmy autumn evenings, when a Pils isn't enough, but a porter is too much. This Full Sail definitely lives up to its name as a Session beer. Wouldn't mind keeping this one regularly stocked in the fridge! (7/10)

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

**Aroma:** Light chocolate malt is at the forefront with a restrained roastiness. A hint of caramel and maybe toffee in the background. The fermentation character is clean, with just some minimal light esters. A touch of metallic character emerges as it warms, but this is more of a mineral complexity than oxidation. (11/12)

**Appearance:** Deep brown color with some orange/copper highlights. The head retention is adequate, and the clarity is excellent as it should be in a lager. (3/3)

**Flavor:** It has a lot of complexity, beginning with a generous malt character with toasted and caramel malts. The backbone is sustained though perhaps a little too substantial for this style. The roasted malts lend a bittersweet chocolate character and a touch of dryness to the finish. The hop bitterness is low, leaving the balance toward the malt. There are no significant fermentation flavors. (16/20)

**Mouthfeel:** It has some body and depth in line with the malt flavors noted above, almost on par with an oatmeal stout. A very slight astringency lingers after the beer is swallowed, and the carbonation adds a light tingling sensation on the tongue. (4/5)

**Overall Impression:** This is a very nice session beer. The roast character and overall malt strength are both a bit higher than expected, but it does not come across as a "big" beer compared to the style. Rather, it is a clean, malt-focused beer with flavor. (8/10)

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

**Aroma:** Medium to medium-low malt aroma, lightly roasty, moderately caramelly, some deeper Munich-like character. Clean lager character; barest hints of esters and hops. The malt character is a little rich for the style, but it's very pleasant. (11/12)

**Appearance:** Deep copper-brown color. Clear, but you have to hold it up to a light to tell. Low beige head, settled quickly. (3/3)

**Flavor:** Medium to medium-low malt, lightly roasty and somewhat caramelly. Light cocoa and burnt sugar flavors. Medium to medium-low bitterness, light to medium-light hop flavor. Balance is slightly malty; bitterness is a little higher than most. Dry finish, crisp, with a light palate. Clean lager character. Fresh, clean flavor. (16/20)

**Mouthfeel:** Medium-light body. High carbonation. Crisp, with a slight carbonic bite. Smooth. (5/5)

**Overall Impression:** Excellent drinking beer! A little roasty and bitter—at the upper end of the style, but very tasty. Light and crisp, capturing the essence of the style. Similar to some of the premium European dark lagers listed as commercial examples. This belongs in the guidelines. Their session lager is a great beer too; stubbies rock. (8/10)

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



## THE JUDGES' SCORES FOR CAPITAL DARK



**Aroma:** Light caramel malt aroma. Low level of Munich malt. Maltiness not bready or as intense as the best examples. No hop aroma. No DMS. No diacetyl. Alcohol not evident. No fruity esters. (8/12)

**Appearance:** Dark amber color. Bright clarity. Thin, tan head dissipated rapidly, although when forced, the head held up a bit longer. (3/3)

**Flavor:** Sweet, caramel, with a hint of chocolate malt but not the rich, bready melanoidins expected from the use of Munich malt and decoction mashing. Hop bitterness balances the underlying beer but sweetness overrides the balance to leave a medium-sweet finish. Lingering bitterness in aftertaste. No hop flavor. No DMS. No diacetyl. No fruitiness. Distracting caramel notes from oxidation or older beer; perhaps this bottle didn't hold up to the shipping during the summer months. (14/20)

**Mouthfeel:** Medium body with smooth, nearly creamy/slick mouthfeel. No warming alcohol. No astringency. (4/5)

**Overall Impression:** This Dunkel has the right components but the pieces don't come together to give a rewarding whole. Sweetness is a bit cloying, as if from crystal malt rather than Munich malt, so the rich bready malt profile is absent. Muted flavors and aromas and caramel-like notes are an indication that age or handling may be a factor since the beer seems like it has suffered. (6/10)

**Total Score:** (35/50)



**Aroma:** Rich, toasty, sweet chocolate malted aroma with caramel in the background, reminiscent of an ice cream parlor. No hop aromas; no off aromas, including DMS, diacetyl or fruity esters. (10/12)

**Appearance:** Brown with gold highlights; creamy light tan head forms well, but falls to a thin layer on beer surface; brilliant clarity. (3/3)

**Flavor:** Sweet and toasty malt flavor, though not at the same level of intensity as the aroma seemed to promise. Very low white pepper spicy hop flavor, with just enough bitterness to provide a cleanly balanced middle. No burnt or roasted notes, no diacetyl or off-flavors. Balance is toward toasty malt sweetness, but with a moderately dry, clean, lingering finish. Chocolate malted flavors come more forward as the beer sits a bit. (17/20)

**Mouthfeel:** Medium full body with firm carbonation. Some alcohol warming that lingers in the finish. A hint of astringency contributes to the dry finish. (5/5)

**Overall Impression:** Richness of the aroma was almost bock-like. Flavor was somewhat lighter than the aroma promised. The chocolate malted flavors are well balanced with a moderately low hop bitterness. Quite quaffable by the liter; this beer begs for a plate of rotisserie chicken and warm red potato salad with bacon and dill. An excellent American example of a German classic. (8/10)

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



**Aroma:** Munich malt comes through first with distinctive toasted bread-crumb and other melanoidin notes. I also pick up a little caramel sweetness and dark fruits that lend a bit more raisin character than is typical in this style. The esters are low and appropriate for the style. A little roasted malt climbs through the head as it dissipates. (9/12)

**Appearance:** Dark brown with ruby highlights and a light beige head that stands up very well. Clarity and conditioning are excellent. (3/3)

**Flavor:** The melanoidins are up front, as they were in the aroma. The roasted malts are a little sharp, and there are some paper notes in the background that may indicate some accelerated destabilization of the malt flavors (the sample was shipped during warm weather). The yeast esters are subdued, as appropriate for the style, but there are some overripe dark fruit components that I associate with oxidation of melanoidins. The hop bitterness is at a sufficient level to balance the malt sweetness. (15/20)

**Mouthfeel:** The carbonation level is appropriate, giving some lift to the palate without making it gassy. There is a little astringency and some burnt notes that linger after the beer is swallowed. The finish could be a little smoother. (4/5)

**Overall Impression:** This seems to be on the mark stylistically, but the sample I judged had an oxidative character that is likely responsible for the transformation of some of the melanoidin components into others which are responsible for the burnt notes in the finish and the overripe fruit character. There are still enough positive traits to make this beer a very good example of the style and a pleasurable drinking experience. (6/10)

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



**Aroma:** Light malt, rich Munich-like qualities, melanoidins, hints of milk chocolate, nutty, toffee notes. Light noble hops. Hint of esters. Clean lager character. Malt is light in character but has the right intensity. Light oxidation, but that makes it seem like some imports. (10/12)

**Appearance:** Dark copper color. Clear. Tall beige head, great retention. (3/3)

**Flavor:** Rich Munich malt quality, hint of roast (too much). Bitterness is medium (too high). Balance is just about even—needs to be maltier. Medium-light hop flavor, a touch metallic though. Clean lager otherwise. Slightly oxidized. Roast and bitterness linger a bit too much in finish. Medium-dry finish after full, rich palate. (15/20)

**Mouthfeel:** Medium body. Medium-high carbonation—too much, interferes with taste. Smooth. (4/5)

**Overall Impression:** Bitterness is a little high. Has a touch of oxidation and a slight metallic flavor. Richness of malt is nice. Very clean lager. Could be a little fresher. Back off on roast and bitterness a bit to allow the Munich malt flavor to come through. Obviously a well-crafted lager with authentic ingredient tastes, just a little unbalanced for style and a touch stale. (7/10)

**Total Score:** (39/50)

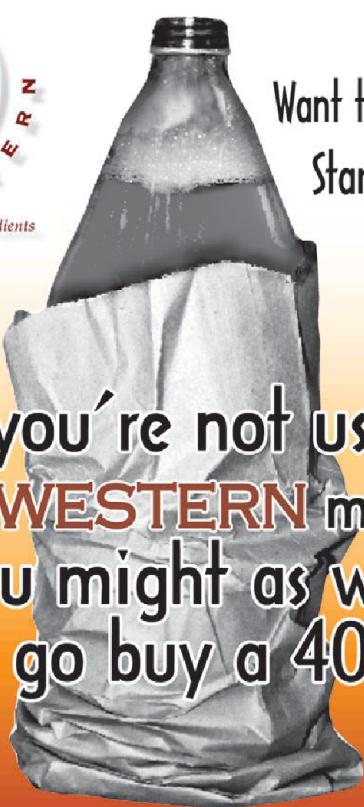


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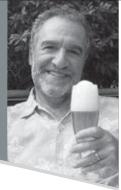
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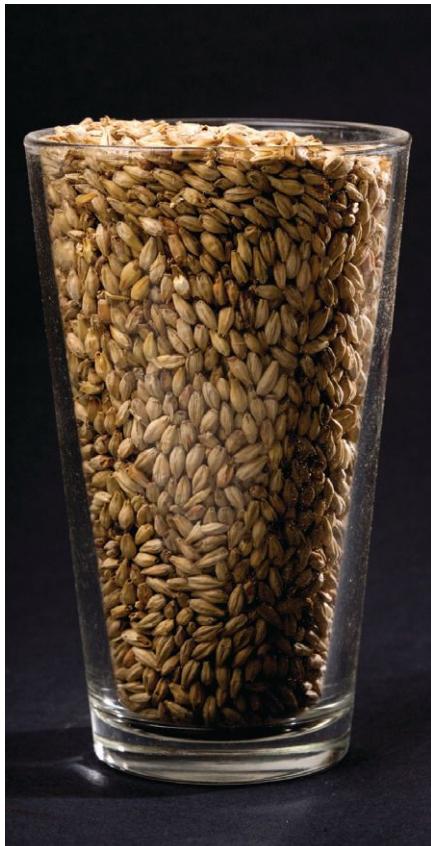
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by Charlie Papazian



# Gluten-Reduced Beer?



"I've long held that ordinary beer, as ordinarily made, qualifies as gluten free. I am a celiac but do drink ordinary beers including micro-brewed all-malt beers in moderation without any gastric trouble. I avoid wheat beers like the plague!"

—Professor Michael Lewis, U.C. Davis, California Extension Program, in a letter discussing my project and his research.

"... prolyl endoprotease (AN-PEP) completely degrades gluten into harmless fragments within 2 hours."

—C. Mitea et al, Leiden University Medical Center in Belgium, 2008; Gut, 57: 25-32

**I**ntolerance to gluten protein is the most common genetic disorder in humans, affecting 1 to 2 percent of the American population. These estimates are even higher worldwide and many suspect American estimates are low. The disorder is called celiac (or coeliac) disease.

It's a disorder that, when certain types of gluten protein are ingested, creates an autoimmune response in the body. That

## FDA PROPOSES TO DEFINE THE TERM "GLUTEN-FREE"

From the U.S. Food and Drug Administration's Web site:

*FDA proposes to define the term "gluten-free" to mean that a food bearing this claim in its labeling does not contain any one of the following:*

- An ingredient that is a prohibited grain
- An ingredient that is derived from a prohibited grain and that has not been processed to remove gluten
- An ingredient that is derived from a prohibited grain and that has been processed to remove gluten, if the use of that ingredient results in the presence of 20 parts per million (ppm) or more gluten in the food or
- 20 ppm or more gluten

response compromises the tiny absorbing and digestive villae (hair-like protrusions) within the small intestines, resulting in serious digestion problems leading to several forms of ill health.

Currently those with celiac disease are advised to stop eating and drinking any food that has been made with or has content that includes the gluten protein. Therein lies the problem for beer drinkers diagnosed with celiac disease. Beer is made with barley, which along with wheat, rye, oats and other similar cereals, contains the offending protein called prolamin/polypeptide/gluten.

One of the most common inquiries I receive from homebrewers is "Can homebrewers make gluten-free beer?" The answer may be yes. Furthermore, beer suitable for celiacs may be made with traditional ingredients such as barley malt.

There are many challenges in deciphering advice about whether beer is or can be

**"Without any special treatment most ordinary\* beers show up as negative or vanishingly low in tests for gluten as those tests are currently designed—that is looking for wheat proteins. I do not know of any test that is specific for barley proteins (or correctly celiac fragments thereof) nor, for that matter, any definitive studies that show barley or malt proteins yield a fragment that triggers an immune response. Barley (and as a result malt) is, I think, unfairly lumped in with wheat."** PROFESSOR MICHAEL LEWIS

\* I would presume Professor Lewis implies that "ordinary" beer does not contain any wheat.

# Slithy Tove Pale Ale

All Grain Recipe

## Ingredients

for 5.5 gallons (21 liters)

8.0 lb	(3.6 kg) Two-row Maris Otter malt
1.0 lb	(454 g) Gambrinus honey malt
1.0 lb	(454 g) American wheat malt (for more assurance substitute barley malt for wheat malt)
8.0 oz	(225 g) English crystal malt (15 L)
4.0 oz	(113 g) Belgian Special-B malt
1.5 oz	(42 g) Sterling hops 6% alpha (9 HBU/168 MBU) 60 min
1.0 oz	(28 g) Citra hops 13% alpha (13 HBU/364 MBU) 10 min
1.0 oz	(28 g) Citra hops (1 min)
0.5 oz	(14 g) Citra hop pellets 5.5% alpha. – dry hop
3.0 ml	(3 g) Brewers Clarex™
0.25 tsp	(1 g) powdered Irish moss
	Cry Havoc White Labs yeast or American or English ale yeast of your choice
0.75 cup	(175 ml measure) corn sugar (priming bottles) or 0.33 cup (80 ml) corn sugar for kegging

**Target Original Gravity:** 1.050 (12.5 B)

**Target Extraction Efficiency:** 75%

**Approximate Final Gravity:** 1.012 (3.5 B)

**IBU:** about 58

**Approximate Color:** 12 SRM (24 EBC)

**Alcohol:** 5% by volume

## Directions

A step infusion mash is employed to mash the grains. Add 11 quarts (10.5 l) of 140° F (60° C) water to the crushed grain, stir, stabilize and hold the temperature at 132° F (53° C) for 30 minutes. Add 5.5 quarts (5.2 l) of boiling water and add heat to bring temperature up to 155° F (68° C) and hold for about 30 minutes. Raise temperature to 167° F (75° C), lauter and sparge with 3.5 gallons (13.5 l) of 170° F (77° C) water. Collect about 6 gallons (22 l) 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 the Irish moss. When 1 minute remains add the 1-minute 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.

Add 3 ml of Brewers Clarex™ and 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.

Prime with sugar and bottle or keg when complete.

gluten-free. There is no internationally accepted standard regarding the testing and certification of gluten-free foods and beverages, beer or otherwise. For example, European standards and measuring techniques are different than American standards. Most current standards test specifically for wheat-derived and specific gluten protein.

In the United States, the Food and Drug Administration (FDA) currently defines gluten-containing food and beverages as

either made with or containing the offending prolamin/polypeptide/gluten protein. Here is where one really needs to consider whether this official assessment is realistic guidance for beer drinkers.

The FDA rule implies that even if a beer has zero prolamin/polypeptide/gluten content, it is officially *not* gluten-free because it is made with gluten-containing ingredients. There are arguments emerging that lead one to consider that offending proteins can be removed from beer.

Furthermore, most standardized tests for gluten are based on measuring gluten fractions of wheat as a “marker” or indicator of gluten levels. These tests either minimize or skew accounting for or do not take into account the nuances of other cereal-derived prolamin/polypeptide/gluten. There is even some inconsistency in medical opinion and research that renders inconclusive the notion that all cereal-derived prolamin/polypeptide/gluten is harmful to celiacs.

Professor Michael Lewis convincingly argues in his paper “Celiac Disease, Beer and Brewing” [www.beetown.org/pdf/celiac\_disease.pdf] that the natural malting, mashing, boiling, fermenting, aging and filtering process can remove enough prolamin/polypeptide/gluten and may render it safe for many inflicted with celiac disease.

Most brewers are aware of a phenomenon called chill haze. Beer containing certain types of protein remains clear at room temperatures, because these proteins remain dissolved. At cold temperatures this protein precipitates, appearing as a haze in the beer. It eventually settles out as sediment if kept at cold temperatures long enough. This chill haze-precipitated protein is barley malt (in the case of all barley malt beer) prolamin/polypeptide/gluten. Precipitated chill haze protein can be cold filtered out of beer. It's also significantly reduced or eliminated by adsorptive methods common in the beverage industry.

If you don't trust that the natural processing of malted barley into beer reduces offending proteins enough, there is another option that now promises to eliminate all offending prolamin/polypeptide/glutens from beverages. Brewers Clarex™ is an enzyme developed by DSM Food Specialties specifically eliminating all traces of prolamin/polypeptide/gluten in beer, wine, alcohol and fruit juices when used appropriately.

Headquartered in The Netherlands, DSM Food Specialties (www.dsm.com) has been a participant in beer industry events and trade shows for many years. They are a global supplier of advanced ingredients

for the food and beverage industries, primarily manufactured with the aid of fermentation and enzyme technology.

Brewers Clarex™ is currently marketed as a haze eliminating/reducing enzyme, specifically “improving the colloidal stability of beer.” Because of the complexity and inconsistency of international standards and “gluten-free regulations,” they have not marketed this enzyme as a tool suitable for eliminating gluten in beer. They do not promote that Brewers Clarex™ can help make beer that is suitable for celiacs.

## Research

Research relevant to Brewers Clarex™ and its significance in addressing the health issues of those who suffer from celiac disease is ongoing. Some research indicates that a general gluten analysis is not detailed enough to determine the true benefits of Brewers Clarex™ to persons who have celiac disease. The symptoms experienced by celiac patients are generated in particular by certain allergenic epitopes in gluten that recognize T-cells and cause an immune response in the small intestine. The research DSM has conducted has shown these specific epitopes are completely degraded by Brewers Clarex™.

Please see two technical articles (<http://gut.bmjjournals.org/cgi/content/abstract/57/1/25> and [www.ncbi.nlm.nih.gov/pubmed/16690904?dopt=Citation](http://www.ncbi.nlm.nih.gov/pubmed/16690904?dopt=Citation)) for a much more detailed explanation. These were published as a result of research conducted by the University of Leiden in The Netherlands. The enzyme referred to in these articles (AN-PEP or Aspergillus niger prolyl endoprotease) is Brewers Clarex™.

## Concerns

Some brewers may have a concern about Brewers Clarex™ because it is an “enzyme preparation for food use containing proline-specific endo-protease derived from a selected self-cloned strain of *Aspergillus niger*.” For those who are opposed (for whatever reasons) to cloned or genetically modified organisms, this may be of concern. Professional brewers usually shy away from using genetically modified organisms (GMO) in part because of the associated bad press they often receive.

# Slithy Tove Pale Ale

## Mash/Extract Recipe

### Ingredients

for 5 gallons (19 liters)

<b>5.75 lb</b>	(2.6 kg) very light malt extract syrup or 4.6 lb (2.1 kg) very light DRIED malt extract
<b>1.0 lb</b>	(454 g) Gambrinus honey malt
<b>1.0 lb</b>	(454 g) American wheat malt
<b>8.0 oz</b>	(225 g) English crystal malt (15 L)
<b>4.0 oz</b>	(113 g) Belgian Special-B malt
<b>1.5 oz</b>	(56 g) Sterling hops 6% alpha (9 HBU/168 MBU) 60 min
<b>1.0 oz</b>	(28 g) Citra hops 13% alpha (13 HBU/364 MBU) 10 min
<b>1.0 oz</b>	(28 g) Citra hops (1 min)
<b>0.5 oz</b>	(14 g) Citra hop pellets 5.5% alpha (dry hop)
<b>3.0 ml</b>	(3 g) Brewers Clarex™
<b>0.25 tsp</b>	(1 g) powdered Irish moss Cry Havoc White Labs yeast or American or English ale yeast of your choice
<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:** 1.050 (12.5 B)

**Target Extraction Efficiency:** 75%

**Approximate Final Gravity:** 1.012 (3.5 B)

**IBU:** about 58

**Approximate Color:** 12 SRM (24 EBC)

**Alcohol:** 5% by volume

### Directions

Heat 3 quarts (3 l) water to 172° F (77.5° C) and add crushed grains to the water. Stir well to distribute heat. Temperature should stabilize at about 155° F (68° C). Wrap a towel around the pot and set aside for about 45 minutes. Have a homebrew.

After 45 minutes add heat to the mini-mash and raise the temperature to 167° F (75° C). Pass the liquid and grains into a strainer and rinse with 170° F (77° C) water. Discard the grains.

Add to the sweet extract you have just produced more water, bringing the volume up to about 2.5 gallons (9.5 l). Add malt extract and 60 minute hops and bring to a boil.

The total boil time will be 60 minutes. When 10 minutes remain add the 10-minute hops and the Irish moss. When 1 minute remains add the 1-minute 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 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 l) of cold water has been added. If necessary add cold water to achieve a 5.5 gallon (21 l) batch size. Aerate the wort very well.

Add 3 ml of Brewers Clarex™ and 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.

Prime with sugar and bottle or keg when complete.

The recommended dosage of Brewers Clarex™ for use in beer is 1-3 grams per hectoliter (1-3 g per 0.85 barrels or 0.16-0.48 g per 5 U.S. gallons). Since Brewers Clarex™ comes in liquid solution, grams approximately convert to milliliters.

For more information on the availability of Brewers Clarex™ in the U.S., contact White Labs at [info@whitelabs.com](mailto:info@whitelabs.com).

After attending a European brewers’ conference earlier this year, I was offered a small sample of Brewers Clarex™ to experiment with. Slithy Tove is a 5-gallon batch of homebrewed all malt (using 10 percent wheat malt) hoppy pale ale. It is an exact duplicate of an earlier batch of pale ale called Blizzards and Blossoms Pale Ale. I added 3 ml of Brewers Clarex™ to Slithy Tove at yeast pitching.

Slithy Tove Pale Ale is visually no different than Blizzards and Blossoms. Flavor, mouthfeel and aromatic character also remained consistent between the two batches of beer. Foam character and head retention is superb. There is a slight haze present in the beer when refrigerated to 33° F (1° C) possibly due to dry hopping. Citra hops is a new variety and should be more accessible to homebrewers beginning with the harvest of the 2009 crop. It has high alpha in the range of 13 percent and more significantly has very fruity notes of apricot and passion fruit when used as aroma hops.

### Testing for the Presence of Gluten Protein

I qualitatively tested Slithy Tove Pale Ale using an EZ Gluten Test Kit. This quick and easy home test is available from Elisa Technologies ([www.elisa-tek.com](http://www.elisa-tek.com)). I was disheartened when my test indicated a “positive” presence of gluten. The test is a very sensitive test and guarantees a lower limit of detection of 10 ppm for barley, rye and wheat glutens. I later learned that because this test is designed to see barley and rye glutens, the wheat fraction indicators are sometimes much more sensitive.

At this point I wanted to know more accurately what the glutens levels were. I pursued quantitative testing. After talking with the Elisa Technologies’ very helpful staff, I was advised which assay I should choose to measure the gluten in beer. There are four assay options available, but only one is suitable for measuring gluten in beer. Apparently the Gluten AOAC Assay, Prolamins Assay and Prolamins Competitive Assay are not dependable tests for measuring gluten in food and beverage products containing alcohol. I sent my beer in to have it analyzed using their Gluten High Sensitivity Assay. This assay guarantees a lower limit of detection of 5 ppm.

### Success

“Parts per million” is a way to quantify very low concentrations of substances. For example, 1 ppm is equivalent to 1 milligram of a substance per liter of liquid (abbreviated as mg/L) or 1 milligram of a substance per kilogram of solid substance (abbreviated as mg/

### RESOURCES

“Celiac Disease, Beer and Brewing”: [www.beertown.org/pdf/celiac\\_disease.pdf](http://www.beertown.org/pdf/celiac_disease.pdf)

Brewers Clarex™: [www.brewersclarex.com](http://www.brewersclarex.com)

Testing for gluten: [www.elisa-tek.com](http://www.elisa-tek.com)

Celiac Disease: <http://celiacdisease.about.com/>

Food and Drug Administration: [www.fda.gov/Food/LabelingNutrition/FoodAllergensLabeling/GuidanceComplianceRegulatoryInformation/ucm111487.htm](http://www.fda.gov/Food/LabelingNutrition/FoodAllergensLabeling/GuidanceComplianceRegulatoryInformation/ucm111487.htm)

kg). (For a more detailed explanation, see <http://celiacdisease.about.com/od/celiacdiseaseglossary/g/PPM.htm>).

The official results came back indicating that the gluten content in my batch of Slithy Tove Pale Ale was “less than 5 ppm.” In other words less than 5 milligrams per liter of beer. Success—that’s very low.

The analysis report stated: “The assay utilizes ELISA techniques and is designed for the measurement of cereal gluten at low levels, nominally within the range of 5-100 ppm, in e.g. raw materials and finished food products; it detects the omega gliadin fraction of wheat as a marker of total gluten. These samples were tested using a ‘high sensitivity’ modification of the gluten assay procedure which enables detection limits of levels less than 5 ppm gluten in most sample matrices. The detection limit for your samples was 5 ppm.”

The laboratory director noted that my sample was tested about 10 times because it was so close to the 5 ppm threshold. The tests indicated my sample could have been about 4.6 ppm, but there was no way of knowing this degree of accuracy using this particular test. If I had used 100-percent barley malt in the recipe and had eliminated the wheat, my results would most likely indicate a much lower level of gluten.

Is Slithy Tove Pale Ale gluten free and safe for those with celiac disease? By this time you can imagine my answer. My experimental batch of homebrew measured less than 5 ppm, but I can’t say that it is safe for all or even some celiacs because there are no dependable, consistent and public standards offered by the U.S. government

and the medical community. For liability reasons I am not giving any advice here. If you have celiac disease and wish to explore this option, you are free to do so. Please be aware that with any process, techniques and quality controls must be adhered to. I will also note that any deviation from the use of traditional ingredients and process could compromise the effectiveness of Brewers Clarex™.

Professional brewers offering “gluten reduced” beers for sale would be well advised to test each batch before release. At \$120 an assay test, this is impractical for most homebrewers. The EZ Gluten Test costs about \$15 per test, and can be done easily at home. Using an all barley malt recipe may likely indicate a negative presence of gluten. If you are dealing with or know someone who has celiac disease and they are thirsting for a beer, it may be worthwhile to explore the Brewers Clarex™ option. I would strongly advise medical consultation before deciding to enjoy good beer again. A measure of 5 ppm is very low. I have heard that most celiacs can tolerate up to 15 mg of gluten a day, but these kinds of generalizing statements can be dangerous. It depends on the severity of the problem. Each celiac’s condition can be different.

For some celiacs, “gluten reduced” beer in moderation may soon be a safe option. I think the future looks promising. The conversation has begun. As they said in Wonderland, “Twas brillig and the slithy toves did gyre and gimble in the wabe...”

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

**Charlie Papazian is founder of the American Homebrewers Association.** 

By Amahl Turczyn Scheppach

# 19th Annual TRASH Competition



Over 20 years ago, several homebrewers from the Pittsburgh area found each other at Chiodo's, the only local bar serving a good selection of imported beers. They decided to meet on a semi-regular basis and called themselves the Turtle Creek Homebrew Club. The group numbered around a dozen and several of those original members are still active in the club.

In 1987, as more members joined from outside the Turtle Creek area, the name was changed to the Western Pennsylvania Homebrewers Organization, and registered as a club with the AHA. Then, as membership surged again and meetings became more regular, it was decided that another name change was in order.

Some of the suggested names produced acronyms that were less than desirable for a serious group of homebrewers. One popular suggestion was Pittsburgh International Suds Suckers. This was a fairly accurate description of the club, but the acronym wasn't something you'd want your kid to wear on a T-shirt. Then a female member, Cathy Benson,

## "Modest Mild" Mild Ale

Recipe by Jake Ocque, Amherst, N.Y., Niagara Association of Homebrewers

### Ingredients for 5 U.S. gallons (18.93 L)

<b>5.5 lb</b>	(2.49 kg) Maris Otter pale malt
<b>0.25 lb</b>	(113 g) brown malt
<b>1.0 lb</b>	(0.45 kg) CaraMunich malt
<b>0.4 lb</b>	(181 g) 200 L chocolate malt
<b>0.4 lb</b>	(181 g) 120 L crystal malt
<b>0.2 lb</b>	(91 g) Special B malt
<b>0.1 lb</b>	(45 g) Carafa II malt
<b>0.5 oz</b>	(14 g) Styrian Aurora pellet hops, 7.6% alpha acid, (60 min)
	Wyeast No. 1028 London ale yeast
<b>3.5 oz</b>	(99 g) corn sugar to carbonate

**Original Specific Gravity:** 1.034

**Final Specific Gravity:** 1.012

**Boiling Time:** 90 minutes

**Primary Fermentation:** 5 days at 68° F  
(20° C)

### Directions

Mash grains at 156° F (69° C) for one hour. Substitute Northern Brewer for Styrian Aurora, if not available. Note: this recipe appears to use 60 percent efficiency; reduce base malts if your system has higher efficiency. 5 lbs of base malt is appropriate for 70 percent efficiency.

### Extract version:

Substitute 4 lb LME or 3 lb DME for the base malts (Maris Otter and brown malt). Use UK brands, if possible. Use light/pale versions. Steep specialty grains in 170° F (76° C) for 20 minutes.



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Photo courtesy of Peter Kozlowski

www.homebrewersassociation.org

November/December 2009

ZYMURGY

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## KUDOS—BEST OF SHOW

### AHA/BJCP Sanctioned Competition Program

#### May 2009

Goblets of Gold Mead Competition, 29 entries—*Harley Stephenson, Homer, Alaska*  
2009 California State Fair Commercial Craft Brewing Competition, 356 entries—*Bob Kluver, Main Street Brewery, Corona, CA*  
2009 California State Fair Home Brewing Competition, 198 entries—*Aaron Seizer, Northridge, CA*

#### June 2009

Cryer Malt Perth Royal Beer Show, 86 entries—*Gryphon Brewing Services, Perth, WA, Australia*  
2nd Annual Liquid Poetry Slam, 305 entries—*Jeff Niggemeyer, Longmont, CO*  
New York State Fair Homebrew Competition, 165 entries—*Douglas Wing, Painted Post, NY*  
San Diego County Fair Homebrew Competition, 641 entries—*Matt Richard, San Diego, CA*

#### July 2009

2009 WanCup2, 113 entries—*Ryoichi Takabayashi, Kawasaki, Kanagawa*  
Indiana State Fair Brewers' Cup, 732 entries—*Larry Barnhart, Kokomo, IN*  
E.T. Barnette Homebrew Competition, 54 entries—*Edward Bielaus, Rockville, MD*  
Pisgah Organic Pro-Am, 81 entries—*Adam Reinke, Arden, NC*  
Ohio Brew Week Homebrew Competition, 175 entries—*Art Richardson, New York, NY*  
All Idaho HausBrau Battle, 66 entries—*Jeremy Gramkow, Horseshoe Bend, ID*  
California Midstate Fair, 58 entries—*Mark Capozzoli*  
Amador Invitational (Commercial Microbrew Competition), 39 entries—*Lodi Beer Company, Lodi, CA*

Amador County Fair Homebrew Competition, 102 entries—*William Kenney, Rescue, CA*  
Mufasa No-Hop Challenge, 6 entries—*Darryl Dieckman, Cincinnati, OH*  
TRASH XIX, 190 entries—*Jake Ocque, Pittsburgh, PA*  
Ohio State Fair Homebrew Competition, 335 entries—*Michael Byrne & Dave Forman, Columbus, OH*  
2nd Annual All-American Competition, 22 entries—*Brandon Kolbe, Appleton, WI*  
Spirits of Baker County, 27 entries—*Dick Blankenship, Salem, OR*  
First Coast Cup, 373 entries—*Marc Powell, Woodstock, GA*  
Brisbane Amateur Beer Brewers Club Annual Comp, 121 entries—*Chris Moss, Brisbane, Qld, Australia*  
22nd Annual Southern California Regional Homebrew Championship, 292 entries—*Andrew Waisanen, Irvine, CA*

**August 2009**

Larimer County Fair Gnarly Barley Homebrew Competition, 140 entries—*Aaron Heaton, Fort Collins, CO*  
The Beehive Brew-Off, 304 entries—*Troy Faircloth, Tooele, UT*  
Iowa State Fair, 208 entries—*Rick Srigley, Boone, IA*  
Nevada County Fair Homebrew Competition - Novice, 48 entries—*Kenneth Wyman, Grass Valley, CA*  
14th Annual Montgomery County Agricultural Fair Homebrew Competition, 138 entries—*Ed Bielaus, Bethesda, MD*  
Lunar Rendezbrew XVI, 412 entries—*Darrell Maudlin, Houston, TX*

Mountain Brewer Open 12th, 195 entries—*Steve & Cody Wiseman, Cross Lanes, WV*

The Anchor Town Invitational, 52 entries—*Todd Rock, Anchorage, AK*

Los Angeles County Fair Homebrew Beer, 166 entries—*William Frost, Etiwanda, CA*

Intervarsity Beer Brewing Competition 2009, 24 entries—*University of Stellenbosch, Stellenbosch, South Africa*

Blues 'N' Brews Homebrew Competition, 156 entries—*Keith Anthul, Worcester, MA*

Washington Mead & Cider Cup, 34 entries—*Jeff Carlson, Grand Rapids, MI*

California Brewers Festival Commercial Competition, 141 entries—*Sudwerk Helles, Jay Prah, Privatbrauerei Sudwerk Hubsch, Davis, CA*

Oregon State Fair Homebrew Beer Competition, 206 entries—*Randy Scorby, Baker City, OR*

Kentucky State Fair Homebrew, 214 entries—*Rick Stidham, Louisville, KY*

Benton Franklin Fair, 22 entries—*Jocelyn Bequette, Benton City, WA*

Nebraska State Fair Homebrew Competition, 196 entries—*Kevin Kroll, Lincoln, NE*

AHA Club-Only Competition, Amber Hybrid Beer, 48 entries—*Ron Lull, Broomfield, CO*

Colorado State Fair Homebrew Competition, 331 entries—*Cary Floyd, Arvada, CO*

Malt Madness, 450 entries—*Bob Piano, Allentown, PA*

Brew Masters Competition, 36 entries—*James Vokoun, Plover, WI*

Lakewood Rotary Homebrew Festival, 52 entries—*Colin Lenfesty, Seattle, WA*

made the ultimate suggestion. A majority vote confirmed it and the Three Rivers Alliance of Serious Homebrewers, aka TRASH, was born!

TRASH held its 19th Annual Homebrew, Cider and Mead competition at the River Towne Pour House in Monroeville, Pa. on July 18. Organizer Peter Kozlowski provided some insight into this year's competition.

**Zymurgy:** How long have you been affiliated with the competition?

Peter Kozlowski: This was my first year organizing it. For the past two years, I would contact beer companies and solicit swag from them to distribute to the entrants and winners. This year I stepped up and took over the competition in order to ensure that it would happen. We are

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## AHA/BJCP SANCTIONED COMPETITION PROGRAM CALENDAR

Want to discuss judging, beer styles, competitions and exams? Join the BJCP Members Forum at [www.bjcp.org/phpBB2/index.php](http://www.bjcp.org/phpBB2/index.php). To register a new competition, please go to [www.bjcp.org/apps/comp\\_reg/comp\\_reg.html](http://www.bjcp.org/apps/comp_reg/comp_reg.html). Check the AHA or BJCP Web sites to see the latest calendar of events. Competition organizers: please remember to submit your results promptly using our electronic system. Competitions not filing organizer reports will not be allowed to register in the future.

Interested in becoming a beer judge? See [www.beertown.org/homebrewing/scp/judge.html](http://www.beertown.org/homebrewing/scp/judge.html) for information.



### **November 7**

#### **Novembeerfest**

Kent, WA. Contact: Tim Hayner, 206-730-4532, [tim@bigalbrewing.com](mailto:tim@bigalbrewing.com) [www.impalingers.org](http://www.impalingers.org)

### **November 7**

#### **Lancaster County Brewers Showdown II**

Lancaster, PA. Contact: Mike Knaub, 717-266-0833, [rock@cyberia.com](mailto:rock@cyberia.com) [www.lancasterbrewers.com](http://www.lancasterbrewers.com)

### **November 7**

#### **The Dig Pub 2nd Annual Monster Homebrew Competition**

Cedar Park, TX. Contact: Todd Wink, 512-996-9900, [Todd@thedigpub.com](mailto:Todd@thedigpub.com) [www.thedigpub.com](http://www.thedigpub.com)

### **November 7**

#### **31st Annual California State Homebrew Competition**

San Francisco, CA. Contact: Steve Casselman, 408-220-4348, [beercandyman@yahoo.com](mailto:beercandyman@yahoo.com) [www.nchinfo.org/StateComp/StateComp.html](http://www.nchinfo.org/StateComp/StateComp.html)

### **November 14**

#### **Land of the Muddy Waters**

Rock Island, IL. Contact: Richard Toohill, 563-391-8828, [nrtoohill@mchsi.com](mailto:nrtoohill@mchsi.com) [www.mugzhomebrew.org](http://www.mugzhomebrew.org)

### **November 14**

#### **2nd Annual Stoney Creek Homebrewers' Amateur Brewing Championship**

Lafayette Hill, PA. Contact: Stan Belkowski, 610-630-9570, [sbelkowski@comcast.net](mailto:sbelkowski@comcast.net) [www.SCHomebrewers.com](http://www.SCHomebrewers.com)

### **November 14**

#### **Wizard of SAAZ III**

Akron, OH. Contact: Michael Krajewski, 216-316-1302, [woscoordinator@gmail.com](mailto:woscoordinator@gmail.com) [www.hbd.org/saaz/wos.html](http://www.hbd.org/saaz/wos.html)

### **November 14**

#### **Sunshine Challenge**

Orlando, FL. Contact: Ed Measom, 407-673-1099, [sunshine@cfhb.org](mailto:sunshine@cfhb.org) [www.cfhb.org](http://www.cfhb.org)

### **November 14**

#### **Bay Street Bash**

Savannah, GA. Contact: Steve Matthews, 912-897-3448, [srmatt@comcast.net](mailto:srmatt@comcast.net) [www.savannahbrewers.com](http://www.savannahbrewers.com)

### **November 14**

#### **Knickerbocker Battle of the Brews**

Albany, NY. Contact: Keith Looney, 518-462-9293, [looney@moonbrew.com](mailto:looney@moonbrew.com) [www.thoroughbrews.com](http://www.thoroughbrews.com)

### **November 15**

#### **MALT Turkey Shoot 2009**

Baltimore, MD. Contact: Timothy Sauerwein, 202-256-6592, [didgeribrew@gmail.com](mailto:didgeribrew@gmail.com) [www.maltclub.org](http://www.maltclub.org)

### **December 5**

#### **New England Fall Regional Homemade Beer Competition**

Deerfield, MA. Contact: Ronald Clapp, 413-247-0050, [lokispice@hotmail.com](mailto:lokispice@hotmail.com) [www.valleyfermenters.com](http://www.valleyfermenters.com)

### **December 5**

#### **Walk The Line On Barleywine 2009**

Dunedin, FL. Contact: Nelson Crowle, 727-534-6944, [Nelson@DunedinBrewersGuild.com](mailto:Nelson@DunedinBrewersGuild.com), [www.DunedinBrewersGuild.com](http://www.DunedinBrewersGuild.com)

### **December 5**

#### **AHA Club-Only Competition, Belgian Strong Ales**

Clearwater, FL. Contact: Nelson Crowle, 727-534-6944, [Nelson@DunedinBrewersGuild.com](mailto:Nelson@DunedinBrewersGuild.com), [www.homebrewersassociation.org](http://www.homebrewersassociation.org)

### **December 5**

#### **TVHA Homebrew Competition**

Temeecula, CA. Contact: Eric Holden, 858-386-6059, [ericholden00@hotmail.com](mailto:ericholden00@hotmail.com) [www.tecemulahomebrewers.com/](http://www.tecemulahomebrewers.com/)

### **December 12**

#### **Fugetaboutit Homebrew Competition**

Signal Mountain, TN. Contact: Tony Giannasi, 423-762-8741, [tony@barleymob.com](mailto:tony@barleymob.com) [www.barleymob.com](http://www.barleymob.com)

### **December 12**

#### **Happy Holiday Homebrew Competition**

St. Louis, MO. Contact: August Altenbaumer, 314-335-7063, [aflalten@gmail.com](mailto:aflalten@gmail.com) [www.stlbrews.org/competition/index.asp](http://www.stlbrews.org/competition/index.asp)

hoping to attract a brewing superstar, e.g. Charlie Papazian, Garrett Oliver, Jim Koch, etc. to our event to be an honorary judge for the 20th annual TRASH homebrew competition.

**Zymurgy:** What's the Rivertowne Award, and how was it started?

**PK:** The Rivertowne Pour House Award winner has their beer brewed at the commercial brewery that serves as a venue for the competition. The idea for the award came about during the planning phase of this event. I asked Andrew Maxwell, the brewer and proprietor, how he felt

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#### AHA SPECIAL EVENTS

See [www.AHArally.org](http://www.AHArally.org) for the current AHA Rally Calendar

##### November 7

##### **Teach a Friend to Homebrew Day**

Worldwide Event. Contact: Janis Gross, [Janis@BrewersAssociation.org](mailto:Janis@BrewersAssociation.org), [www.homebrewersassociation.org](http://www.homebrewersassociation.org)

##### November 12

##### **Matt Brewing Co./AHA Rally**

Utica, N.Y. Contact: Kathryn Porter, [Kathryn@BrewersAssociation.org](mailto:Kathryn@BrewersAssociation.org), [www.AHArally.org](http://www.AHArally.org)

about the idea of having the best of show beer being brewed at his brewpub. He was all for the idea, but could not commit to brewing the best of show beer if that beer turned out to be something like sour Belgian ale. Therefore we created the Rivertowne Award, which would entitle the best commercially accessible beer to be brewed at their facility. This year we lucked out with the Best of Show award winner also winning the Rivertowne Award.

**Zymurgy:** What prizes were available to entrants this year, and who were the main sponsors donating to the event?

**PK:** From a Party Pig to yeast gift certificates, we had a great response from the homebrewing community this year. We'd like to thank Dogfish Head, Rogue, 5 Star Chemicals, Alaskan Brewing Company, Harpoon Brewing, Troegs Brewing, All About Beer magazine, Rock Bottom Brewing of Pittsburgh, Northern Brewer, Midwest Brewing Supply, Hops Direct, White Labs, Party Pig, and the Rivertowne Pour House in Monroeville, Pa.

**Zymurgy:** Best of Show winner Jake Ocque shared his winning recipe for Modest Mild with Zymurgy, and here it is for your brewing pleasure. If it looks familiar, it's probably because the same beer won a gold medal at the 2009 National Homebrew Competition in the English Brown Ale category. Good homebrew gets around!

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

#### STATEMENT OF OWNERSHIP, MANAGEMENT, AND CIRCULATION (REQUIRED BY TITLE U.S.C. 4369)

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By Kai Troester



# Fast Ferment Test

**A** common problem in brewing is the uncertainty about the final gravity that can be expected for a batch of beer. This makes it difficult to know how far along fermentation is and when it is truly complete. This is especially true for lagers, where the fermentation slows down significantly toward the end and it becomes difficult to distinguish between a finished and a slow fermentation.

When the attenuation of the beer is higher than expected, it is difficult to determine if it is the result of mashing or poor fermentation performance. There is a simple test to measure the fermentability of the wort before the beer has finished primary fermentation, called the Fast Ferment Test (FFT). The FFT is a very useful tool that can be used by the brewer to gain more insight into the brewing process.

Both ale (*Saccharomyces cerevisiae*) and lager (*S. pastorianus*) yeast can ferment all primary wort sugars (fructose, glucose, sucrose, maltose and maltotriose). In addition, lager yeast can also completely ferment melibiose and raffinose. The latter can only be partially fermented by ale yeasts. While this difference can be used to distinguish between ale and lager yeasts, neither of these two sugars occurs in brewer's wort in significant amounts to make a difference in the attenuation of the beer.

The level of attenuation that is reached when all fermentable sugars have been consumed by the yeast is called fermentability, or limit of attenuation. It is determined by brewhouse processes, in particular mashing and the addition of kettle adjuncts, and is independent of the fermentation process<sup>1</sup>. Fermentation parameters such as yeast strain, yeast health, pitching rate, temperature, and

time will determine how close the final beer attenuation will get to this limit set in the brewhouse—in other words, the amount of residual fermentable sugars left in the finished beer.

The FFT is designed to create fermentation conditions that allow the yeast to consume all fermentable sugars in a sample of wort within a few days. This exposes the limit of attenuation of the produced wort before the primary fermentation of the main batch of beer has been completed. It is accomplished through the combination of high pitching rate, high fermentation temperatures and agitation.

To perform a fast ferment test, a sample of wort slightly larger than what is needed to perform a hydrometer or refractometer reading is used (about 120-180 ml or 4-6 ounces are enough for a hydrometer reading). This sample is then pitched with some of the yeast that is used for the

## READER ADVISORY: Warning!

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primary fermentation. Due to the small size of the sample, even a small amount of yeast is overpitching and sufficient.

A good practice is to re-suspend the yeast sediment with some wort and pitch most of the yeast slurry into the beer. A small

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amount is left behind and more wort is added until the sample is of sufficient size for a fast ferment test. It is important that as much sample volume as possible comes from the wort to be tested as the fermentability of other wort (e.g. the wort used to propagate the yeast) can skew the results. The sample is then placed in a warm place (20-25° C or 70-80° F) and left to ferment. Occasional agitation through shaking or constant rousing through the use of a stir plate helps to speed up the fermentation process.

One to two days after fermentation has stopped completely, the yeast has settled and no more CO<sub>2</sub> is produced, the gravity of the sample is tested. This is the lowest gravity that the final beer can have, unless some other organism that is able to metabolize more than the primary wort sugars is present in the beer. The resulting attenuation is the limit of attenuation or fermentability of the wort and gives feedback that can be used to assess the consistency of the mashing process.

The beer fermentation may not necessarily reach that attenuation potential. The difference between the actual beer attenuation and the limit of attenuation depends on fermentation parameters. Yeast strain and its flocculation characteristics, yeast health (initial O<sub>2</sub> levels in particular) and fermentation temperature play a big role. The amount of residual fermentable sugars (i.e. the difference between the attenu-

ation potential determined through the fast ferment test and the beer attenuation) is important for the character and balance of the beer. If it is too low, the beer may appear too dry and if it is too high, the beer may be too sweet.

For example, German Pilsner beers generally have a limit of attenuation to actual attenuation difference of 0 to 4 percent, Export style beers 0 to 2 percent, Munich Helles 2 to 4 percent, and Dunkel and Bockbiers may show a difference of up to 6 percent or more<sup>1</sup>. Experience from previous batches will be the best guide for the level of residual fermentable sugars that works best for a given style of beer.

To further illustrate this, a Munich Helles with an original gravity of 1.048 SG (12 Plato) was brewed and the Fast Ferment Test showed a final gravity of 1.009 SG (2.3 Plato). This indicates a wort fermentability of 81 percent. Based on previous experiences, an attenuation difference of 2 percent is desired. This is given once the beer has an attenuation of 79 percent, or a final gravity of 1.010 SG (2.5 Plato). To increase the precision of the extract measurements necessary for this level of control, the use of a narrow range hydrometer (e.g. 1.000-1.020 SG or 0 to 5 Plato) is recommended.

Some textbooks<sup>2,3</sup> show a more involved procedure for performing a fast ferment test. This involves a larger volume of wort

and more precisely controlled pitching rates and fermentation conditions. It also requires multiple readings to be taken to determine the point at which the gravity does not show any further change. Based on my experience, such level of precision is not necessary at the homebrewing scale. The aforementioned simple method of performing a Fast Ferment Test has proven to be very reliable, especially if the amount of yeast used for it far exceeds the pitching rate used for the primary fermentation.

The knowledge of the wort fermentability is not only useful for troubleshooting attenuation problems by separating the effects of mashing and fermentation, it also allows for many more advanced brewing practices. For example, the cold conditioning process for lagers (and ales) can be started as soon as the predicted attenuation has been reached and young beer components like diacetyl and acet-aldehyde have been reduced sufficiently. The amount of residual fermentable sugars can also be taken into account for calculating the amount of priming sugar that is needed which allows for bottling before the final gravity has been reached, a practice that is especially useful for Bavarian Weissbier, which benefits from a larger amount of yeast in the bottle and being consumed fresh.

**Kai Troester has been homebrewing for four years, focusing on German styles and brewing techniques. The science behind brewing fascinates him and for the last two years, he has been working on [braukaiser.com](http://braukaiser.com), a Web site dedicated to homebrewing science and German brewing techniques. He lives in Pepperell, Mass.**

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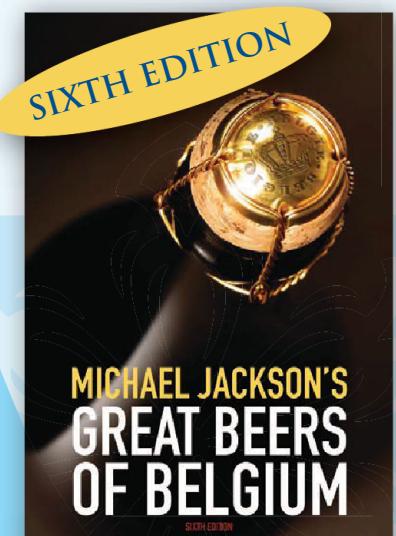
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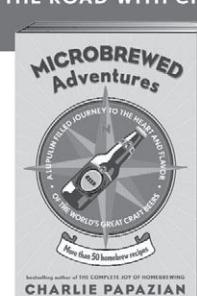
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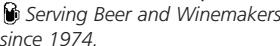
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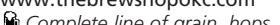
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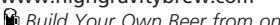
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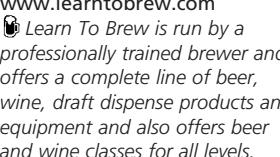
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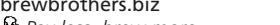
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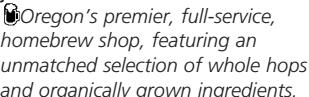
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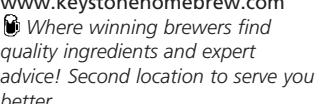
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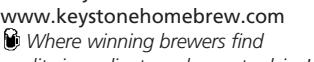
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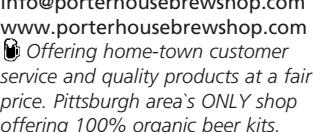
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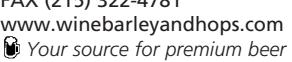
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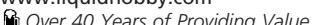
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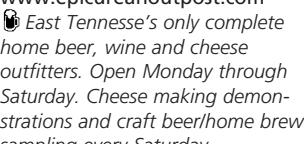
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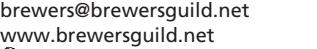
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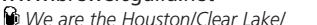
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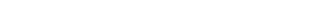
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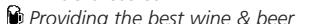
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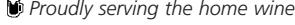
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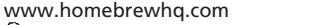
  
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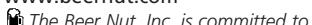
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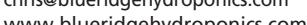
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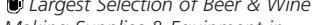
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# Becoming a Zymurgist

I started homebrewing because when people at beer fests and book events asked if I brewed, I grew tired of answering “no.” For three years, I soaked up beer culture through breweries’ histories and brewers’ stories. I lit out on a journey to write a book about the American craft beer scene. My “research” led me on a 10,000-mile odyssey to meet (and drink) with the owners and employees of 14 breweries—1 percent of the domestic market at the time—to catch a glimpse of the brewing arts.

I say arts because as someone who can neither paint nor draw nor sing nor even score very high on “Rock Band,” I’ve always applied my one artistic merit, writing, to those who create.

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**IF NOTHING ELSE, I NOW BETTER UNDERSTAND THE DIFFICULTY AND POTENTIAL MISHAPS SO AS TO GAIN EVEN MORE RESPECT FOR BREWERS, BOTH THE PRO AND HOME VARIETY.**

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Furthermore, I can cook but I can’t bake. When it comes to that exact science, particularly when a recipe calls for bakers yeast, I wind up with a clump of dense dough that doesn’t rise.

With several great books already out there on the science and mechanics of brewing, I was solely interested in the human aspect. Besides, I suck at science. When you make a mistake in storytelling, it’s easy to edit. That’s what the delete button is for. When you err in science, say, zymurgy, the drain is your delete button.



After the book was published, what I encountered at author events throughout the country—this time rolling 13,000 miles—was a tremendous, emphatic homebrewing community. The one question I got more than “Did you make it to (insert favorite brewery)?” or “Why didn’t you visit (insert same favorite brewery)?” was “Do you homebrew?” I explained that my mission was to meet the men and women who brew professionally so that all of us who don’t brew at home are able to stay plied with great beer.

I could not ignore, however, that I’m blessed with having a homebrew supply shop a few blocks away. And a large closet. And a tolerant—even supportive—girlfriend.

So I made the leap from ale enthusiast to homebrewer. If nothing else, I now better understand the difficulty and potential mishaps so as to gain even more respect for brewers, both the pro and home variety. Now when people ask me the “do you” question, I answer yes, as I have

just bottled my first batch, a sessionable Extra Special Bitter. Batch No. 2 is perhaps overly ambitious for a newbie. I’m attempting a Latte Stout, tossing lactose and coffee beans in the mash, and I’ve been advised to percolate some coffee in case it’s needed during secondary fermentation.

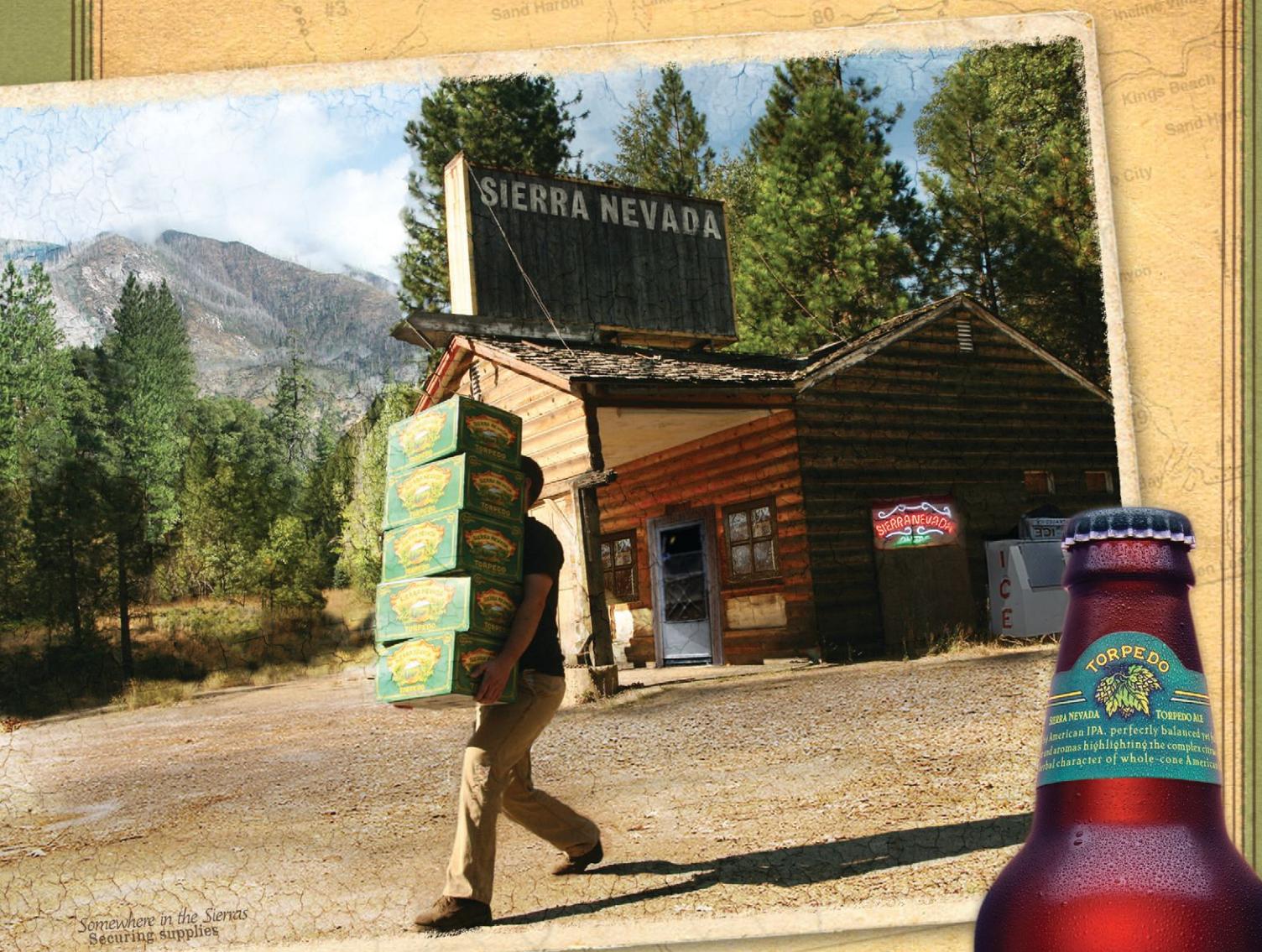
My girlfriend loves stouts and lattes. And I may just draw her into the act this way.

This is all “research” for my next book project, which is not only about beer, but hits closer to home.

Transitioning from beer fan and writer to zymurgist (which I refer to myself as with great humility for fear of denigrating all those who do it so well), I’m embracing what we all know about brewing, that it’s both an art *and* a science.

**Brian Yaeger is the author of *Red, White, and Brew: An American Beer Odyssey* (St. Martin’s Press). He blogs at <http://beer-odyssey.blogspot.com/>**

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