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The Journal of the American Homebrewers Association®

**ABBOTS, MONKS, AND BEGGARS:  
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# 10

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# 3,500 Years of Brewing History

Last November, I had the good fortune to be invited to tour Belgium with a group of U.S. beer journalists (and a few importers). We were invited on behalf of the Belgian Family Brewers, consisting of 21 Belgian breweries with more than 3,500 years of combined brewing experience. To be part of the Belgian Family Brewers, a brewery must have been brewing beer continuously in Belgium for at least 50 years.

Our four-day whirlwind tour was an immersion into the history of Belgian brewing, but also a glimpse at its future. Part of the reason for the tour (and for the formation of the Belgian Family Brewers) was to illustrate that Belgian breweries are not only traditional, but innovative.

It is also an effort to protect the heritage of authentic Belgian beers produced by traditional Belgian breweries. "Belgian-style beers are becoming more accepted as a category," remarked Xavier Vanneste, president of the Belgian Family Brewers. "Being copied can be considered the greatest form of flattery, but beer lovers around the world deserve to know the real and authentic story of the Belgian Family Brewers and their beers."

Beers produced by the 21 member breweries are marked with a BFB logo on their labels. Approximately 80 specialty beers from the breweries are allowed to carry the logo.

In the span of four full days, our group visited 10 of the breweries; heard presentations (and tasted beers) from all 21; and visited a hop farm.

The oldest brewery in the BFB, and our first stop, was Brewery Het Anker, found-

ed in 1471. The brewery is located at the site of a former hospital in Mechelen where nuns formerly brewed. It is currently owned by the fifth generation of the family that bought the brewery in 1872. The brewery, which brews the Gouden Carolus brand, underwent modernization in the 1990s with a publicly accessible brewery concept with guided tours, a brewery hotel (where we stayed the first night), and an onsite café.

The "newest" brewery in the BFB is St. Bernardus, founded in 1946 for the purpose of commercializing the beers of the Trappist monks of Westvleteren. Though that license ended in 1992, the brewery still brews the same recipes under the brand name of St. Bernardus. The brewery is currently at max capacity (does this sound familiar?) and was in the process of installing a Rolec brew system to bring capacity to between 100,000 and 120,000 hectoliters. St. Bernardus is situated in the middle of a hop region in Watou and the brewery uses its own hops. (We didn't visit St. Bernardus, but we did get to sample St. Bernardus beers with owner Hans Depypere at a dinner in Watou and later at a beer bar in Kortrijk.)

It's hard to narrow down such an expansive trip into a few highlights, so I've put together a photo essay (on page 68) to help illustrate. We met wonderful and gracious brewers and brewery owners, tasted amazing beers, and toured a beautiful country. Thank you to the Belgian Family Brewers and especially to our charming tour guide, Krishan Maudgal, for taking us on such a fantastic journey.

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

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Publisher ..... Brewers Association<sup>SM</sup>  
 Editor-in-Chief ..... Jill Redding  
 Associate Editor ..... Amahl Turczyn  
 Technical Editor ..... Gordon Strong  
 Art Director ..... Jason Smith  
 Graphic Designer ..... Ashley Peck  
 Graphics/Production Director ..... Stephanie Johnson Martin  
 Sales & Marketing Director ..... Barbara Fusco  
 barbara@brewersassociation.org

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

Business Development Manager  
 for Advertising & Sponsorship (West) ..... Kari Harrington  
 kari@brewersassociation.org  
 Advertising & Sponsorship Associate ..... Joe Damgaard  
 Marketing Coordinator ..... Jeb Foster  
 jeb@brewersassociation.org  
 Circulation Coordinator ..... Dan Goloback

## American Homebrewers Association

Director ..... Gary Glass  
 Assistant Director ..... Steve Parr  
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 Web Coordinator ..... Duncan Bryant  
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The purpose of the Brewers Association is to promote and protect small and independent American brewers, their craft beers, and the community of brewing enthusiasts. The Brewers Association is a not-for-profit trade Association under Section 501(c)(6) of the Internal Revenue Code.

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Find more homebrewing recipes on our website @ [Homebrewersassociation.org/homebrew-recipes](http://Homebrewersassociation.org/homebrew-recipes)



## >> GET THERE!

### THE FESTIVAL 2014

The third edition of The Festival, presented by Shelton Brothers and Sharefest in collaboration with Brouwerij West, will take place November 8-9 at CRAFTED at the Port of Los Angeles.

Some of the world's greatest artisanal beer, cider, and mead makers will meet festival attendees and share their stories and knowledge. Many will be creating special brews specifically for the event.

Admission to the festival includes a special-edition sample glass, plus the opportunity to meet more than 70 of the best beer, cider, and mead makers from Belgium, Canada, Italy, Germany, Scotland, Denmark, The Netherlands, Spain, the UK, New Zealand, Switzerland, France, and the United States, including local breweries. A portion of admission ticket sales will go directly to Sharefest. For more information, go to [www.sheltonbrothers.com/festival](http://www.sheltonbrothers.com/festival).

#### November 1

##### Maine Brewers Festival

Portland, ME

<http://mainebrewersfestival.com/>

#### November 1

##### Fall Craft Beer Festival

Pinellas Park, FL

[www.cajuncafeonthebayou.com](http://www.cajuncafeonthebayou.com)

#### November 7-16

##### Mushroom, Wine & Beer Festival

Mendocino County, CA

[www.visitmendocino.com](http://www.visitmendocino.com)

#### November 7-16

##### San Diego Beer Week

San Diego, CA

[www.sdbw.org](http://www.sdbw.org)

#### November 8

##### Brew Your Cask Off

Atlanta, GA

[www.brewyourcaskoff.com](http://www.brewyourcaskoff.com)

#### November 14-15

##### Treasure Coast Beer Fest

Port St. Lucie, FL

[www.treasurecoastbeefest.com](http://www.treasurecoastbeefest.com)

#### December 3-7

##### Holiday Ale Festival

Portland, OR

[www.holidayale.com](http://www.holidayale.com)

#### December 6

##### Valley Forge Beer Festival

Oaks, PA

<http://valleyforgebeerfest.com/>

For more craft brewing events, go to [CraftBeer.com](http://CraftBeer.com)

## >>GREAT PRODUCT FROM KEGWORKS: PUMPKIN TAP KIT

What better way to showcase your fall seasonal homebrew than to have it poured straight from a pumpkin? The Pumpkin Tap Kit from KegWorks turns any regular pumpkin into a beer dispenser with its easy-to-assemble shank and faucet combo.

The shank and faucet are both made of durable chrome-plated brass and the included instructions feature bright illustrations and easy-to-follow steps.

The Pumpkin Tap Kit (it can also be used in a watermelon!) is available from [KegWorks.com](http://KegWorks.com) for a suggested retail price of \$29.99.

## >> BREW NEWS:

### SAAZ RAISES \$5,000 FOR ST. BALDRICK'S

The Space Coast Associates for the Advancement of Zymurgy (SAAZ) held the 2nd annual Bottoms Up Beer Run on June 7 in Melbourne, Fla. The event is a fun 4K combining running (or walking) with homebrewed beer along the way.

Seventeen brewers from SAAZ provided 160 gallons of homebrew along the race course. Participants consumed four four-ounce beer shots during the race and a full beer at the finish. This year 427 registered and 394 finished the race. All finishers received a bottle opener medal and winners received commemorative pint glasses.

Thanks to the participants and generous sponsors, SAAZ donated \$5,000 to St. Baldrick's Brevard. Since the foundation's first grants as an independent charity in 2005, St. Baldrick's has funded more than \$101 million to support the most brilliant childhood cancer research experts in the world.

SAAZ was established in 1992 to promote the art of homebrewing and provide education to the local community. The club sponsors a national competition each fall, hosts several brewing demonstrations in the community, and holds monthly meetings with a goal of education. The 3rd annual Bottoms Up Beer Run is set for June 13, 2015.



## >> YOU'VE GOTTA DRINK THIS



### PRETTY THINGS BABAYAGA

This is the beer I was searching for all winter. The Babayaga does indeed taste like it was brewed up by a witch in the murky forest on a cold, dark night. Damp earth, herbs, and smoke flavors are subtle yet wonderful additions to the coffee, chocolate, and roast malt flavors you would expect to find in an imperial stout. But there's more: dark fruits, raisins, molasses, and hints of licorice, all on a luxuriously creamy body. Rye malt and hops add spice and keep it balanced. For all its sticky complexity, it never becomes overly sweet or heavy. It is ridiculous how much I enjoyed drinking this beer. The perfect complement to a Maine winter.

Reviewed by William Guddeck II,  
Brunswick, Maine



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

# >> CRAFT BREWER PROFILE: LARRY LEINHART

BY TOM HART

Larry Leinhart has spent 31 years in the brewing industry, starting out at Pabst Brewing Co. in 1983 and now serving as director of brewing operations at the German lager-focused Prost Brewing in Denver. I caught up with Leinhart to talk to him about beer, his career, and the passion he brings to the modern brewing revolution.

Leinhart comes from a beer-enthusiast family that includes Brewery Ommegang brewmaster Phil Leinhart, his younger brother. While other families talk sports, the Leinharts discuss beer. This familial fermentation fascination led Larry to a degree in science and further studies in brewing. His brewing career started in 1983 when he was hired as a lab technician at Pabst Brewing Co. in Newark, N.J. "At Pabst, I learned how to apply skills I had learned in my study of science to brewing," said Leinhart.

In 1985, Leinhart was hired by Anheuser-Busch, where he worked for 26 years as a member of the brewmaster staff, first at their Newark, N.J. facility and then at the then-new brewery in Fort Collins, Colo. Leinhart was selected as a member of the Fort Collins brewery start-up team, which involved interviewing new brewers and commissioning mega-sized equipment.

"Over the years I was a part of nearly every aspect of brewery operations—equipment maintenance, ordering, installation, product development, quality control, systems analysis, safety, employee training, marketing—and from that I have developed a strong appreciation for process and procedures," Leinhart said. "If you want to make consistently superior beer, you need to make sure everything works toward that. It takes planning, cooperation, and coordination."

Leinhart left A-B in 2011 to open Colorado Gold Hops, a commercial hop yard outside of Fort Collins, before starting work with Prost in February 2014.

"I feel really fortunate to be with Prost," he said. "Prost is a great company that has made a name for itself as a quality lager brewery. Their brewhouse is a classic, copper German two-vessel system built in 1963. It is beautiful and very hands-on, which means there is minimal automation. We have to pay attention to every detail. My job is to help make the beer even better and I can do that best by helping define procedures to guide process."

One trick Leinhart has found for simplifying processes is labeling. "One of the first things I did was buy one of those labeling



machines and start labeling everything: water lines in and out, pump switches, electrical conduit. People thought I was nuts, but that is a really simple way to keep things straight and clean up procedures. Now they tell me they don't know how they got along without all those labels."

Leinhart has settled in comfortably in his role at a 2,000-barrel-per-year craft brewery after getting his start with large brewing companies. "I have tasted literally thousands of different beers over the years and the beers being produced by craft brewers today are phenomenal," he emphasized. "That's not by chance. It is happening because brewers are passionate about making the best beer possible and backing that passion up with knowledge and practical skills."

**Tom Hart lives, brews, and writes in Corrales, N.M. where he has been busy in his brewery with his new label machine.**

# Prost Bock

RECIPE PROVIDED BY LARRY LEINHART, PROST BREWING CO.

Bock (German for goat) is likely a descendant of some of the oldest German lagers in the world. It evolved in the Franconia region of Germany, just north of modern day Bavaria. Bock has one of the largest ranges of the German beers, and can be light (like a helles bock or maibock) to very dark; it can be moderate to very strong in alcohol (like a doppelbock), and even up to 18 percent as in eisbock. The only thing it is generally *not* is hoppy. Bock is a malt-forward lager that must be brewed to at least 16° Plato starting gravity (specific gravity of 1.064).

There are many stories regarding bock, but one of my favorites is explained in the book *Bock* by Darryl Richman, which he borrowed from the book *One Hundred Years of Brewing*. It goes like this:

Duke Cristoph of Bavaria came into a disagreement with a knight from Brunswick that was to be settled by a drinking bout to which each would bring a keg of beer. The duke offered to host, and prepared his castle by adorning it with beautiful decorations. On the day of the bout, there were many people around to watch and as the two drinkers sat down to sort out their differences, the crowd quieted down. After drinking a large volume of beer, nearly 8 liters, the

drinker who could thread a needle while standing on one foot would win. Upon draining their gigantic vessels, a maiden was asked to go fetch a needle, and upon returning, left the gate open. While the duke and the knight were standing on one leg, and preparing to thread the needle, a goat ran through the gate. The duke was unfazed, but the knight, surprised, lost his balance and fell over. The knight, embarrassed, claimed that it was the bock that had caused him to fall over. The duke, speaking over a laughing crowd exclaimed, "The bock that knocked you down was the one that was brewed by me!"

Beware, this beer is advanced and requires specific equipment. As a low-hop, malt-forward beer, bock requires a series of mash steps. German mashing schedules regularly include decoction steps, and this recipe includes an option for a mash-off decoction. It also requires a longer boil to increase color and caramelize sugars, resulting in a richer, maltier profile without the risk of an overly sweet beer.

Cool fermentation temperatures are required, and extended lagering at 34° F (1° C) is crucial for flavor development and clarity. If cold fermentation and lagering temperatures are not possible, this beer should not be attempted.

## INGREDIENTS

for 5 U.S. gallons (19 L)

<b>8.6 lb</b>	(3.9 kg) Munich II malt
<b>3.6 lb</b>	(1.6 kg) Munich I malt
<b>1.15 oz</b>	(33 g) Carafa® II malt
<b>0.75 oz</b>	(21 g) Tradition hops, 6.7% a.a. (70 min)
<b>0.3 oz</b>	(8.5 g) Tradition hops, 6.7% a.a. (40 min)
<b>1.5 liter</b>	starter from a vial of White Labs WLP833 (German bock lager yeast)

**Starting Gravity:** 1.068 (17° Plato)

**Final Gravity:** 1.012 (3.5° Plato)

**IBUs:** 20

**ABV:** 7.7%

**SRM:** 20

**Efficiency:** 80%

## MASHING SCHEDULE

Combine malt with 4.5 gallons (17.03 L) of water at 148° F (65° C) for first rest at 122° F (50° C). Rest for 30 minutes. Raise the mash to 140° F (60° C). Rest for 30 minutes. Raise the mash to 158° F (70° C). Rest for 30 minutes. Raise mash to 170° F (76° C)\* and begin runoff.

## BOIL

Collect 7.25 gallons preboil. Boil for 120 minutes (post-boil volume will be about 5 gallons with a vigorous boil).\*\*

Ferment at 50° F (10° C) to terminal gravity (3.5 Plato, 1.012) and rack into a clean and sanitized carboy. Lager at 34° F (1° C) for 6-8 weeks. Prime with 3.3 oz of DME at 40° F (4° C) and bottle. Allow to sit at 65° F (18° C) for two weeks, chill and drink!

\*Optional: Instead of raising the mash to 170° F (76° C) with a burner, use a decoction mash. Boil 1.25 gallons of mash for 20 minutes and recombine with the rest of the mash. Use care so as not to get burned!

\*\*This boil-off rate will not represent every brew system; adjustments may be required.

(Dank der Leiter Brewer Matt Gubanich und dem Prost-Team Brewing)

## EXTRACT VERSION

Substitute 9.5 lb (4.31 kg) Munich malt extract syrup for Munich I and Munich II malts. Steep crushed Carafa II malt in 160° F (71° C) brewing water for 30 minutes, remove grains and dissolve extract completely before proceeding with boil. Note that the boil may be shortened to 70 minutes, but the resulting beer may not be as complex as the all-grain version, and may finish at a higher gravity, depending on the brand of Munich malt extract.



#### SPECIFICATIONS

Alpha acids: 14.0-15.0%

Beta acids: 7.0-8.0%

Cohumulone: 28-33%

Total Oil (mls./100 gr): 2.5-2.8%

Caryophyllene: 6-8%

Farnesene: 0.01%

Humulene: 10-15%

Myrcene: 55-60%

Storability: Good

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# >> HOMEBREW RECIPE

## BAVARIAN WEIZEN

RECIPE PROVIDED BY DONALD E. SIMPSON



First place, L.A. County Fair, 1996

(For more on this recipe, see the *Last Drop* on page 88.)

### INGREDIENTS

for 5 U.S. gallons (19 L)

<b>4.0 lb</b>	(1.81 kg) two-row pale malt
<b>4.0 lb</b>	(1.81 kg) German wheat malt
<b>1.0 lb</b>	(0.45 kg) dextrin malt
<b>0.5 lb</b>	(227 g) flaked barley
<b>2.0 oz</b>	(57 g, 6-7 AAU) Crystal, Hallertauer, Mt. Hood, or Liberty pellets (60 min)
<b>0.25 tsp</b>	Irish moss (30 min)
	Wyeast 3333 German Wheat yeast

**Original Gravity:** 1.050

### DIRECTIONS

Mash in grains at 121° (49° C) for a 30 minute protein rest. Raise temperature to 150° F (66° C) and hold for 30 minutes. Raise to 155-158° F (68-70° C)

and hold for 90 to 120 minutes, or until conversion is complete. Mash out at 168° F (76° C) for 5 minutes. Sparge to collect about 8 gallons (30.28 L) of wort. For this recipe, two 5-gallon kettles were used simultaneously, with hops and blended wort split evenly between the two. Total boil time was 90 minutes.

"August 9, 2014 update/notes: The mash pot is heavy stainless with a domed lid, 12 inches (30.5 cm) in diameter, 10.5 inches (26.7 cm) high. These days, I use 5 lb (2.27 kg) each of two-row and German wheat, and I use Tettnanger kettle hops at 60 minutes to get about 9.6 HBU, and one ounce the last 15 minutes for flavor. I fill my 6.5 gallon carboy to about 6.25 gallons and use a blow-off tube. Wyeast 3333 is highly flocculant, so the beer is quite clear with mild banana-clove taste. I bottle in 500ml bottles—the perfect size for the tall German wheat beer glasses!"

### PARTIAL MASH VERSION FOR 2014 UPDATE

Substitute 4 lb (1.81 kg) wheat malt extract syrup for wheat malt and 3.75 lb (1.7 kg) pale malt extract syrup for 3 lb of the pale malt. Omit dextrin malt. Mash the remaining 2 lb pale malt with the flaked barley at 155° F (68° C) for 45 minutes. Drain, rinse grains, dissolve extract completely, and proceed with the boil. Note that the version with malt extract may be a bit dark for the style.

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By Gary Glass



# Learn To Homebrew Day



The 15th annual American Homebrewers Association Learn to Homebrew Day, scheduled for November 1, is just around the corner! Thanks to all of you who have registered sites. For procrastinators, please sign up your site ASAP so we can include you in our stats for the event. If you do not wish to make your site's contact information public, there is an option on the sign-up form to limit the information displayed. See [HomebrewersAssociation.org](http://HomebrewersAssociation.org) for details on Learn to Homebrew Day, to register a site, or to find a registered site in your area.

Photos © Brewers Association

## AHA Assistant Director

I am pleased to announce the promotion of AHA business coordinator Steve Parr (above) to assistant director. In Steve's nearly four years with the AHA, he has more than proven his ability, professionalism, and leadership. Steve's promotion will help the AHA operate more efficiently and allow us to be even more productive in serving the AHA membership. Plus he's a really great guy—someone all of us on the AHA and Brewers Association staff are happy to work with.

## Club Insurance

On September 1, the AHA, in partnership with West's Insurance, formally launched a new homebrew club insurance program, offering AHA registered homebrew clubs an affordable insurance option that includes both general and liquor liability coverage for their members and officers. As of the September 1 enrollment deadline, 155 clubs representing 8,797 homebrewers had enrolled, according to West's.

Clubs that are interested in this opportunity, but that did not get signed up by the September 1 deadline, may still enroll. The insurance provider has agreed to allow continued enrollment for the club insurance beyond the initial deadline for the September 1, 2014-August 31, 2015 policy year. Clubs can continue to enroll at the standard annual rate through December 1.

The AHA spent many years investigating potential national insurance options

for homebrew clubs. In working with West's Insurance, particularly agent Luke Dobrich, who happens to be an AHA member, we found a partner that identified the coverage most needed by clubs and that could offer it at an extremely affordable price of just \$3.50 per club member. The AHA is not receiving any financial benefit from this program—we saw a need within the homebrewing community and wanted to make this coverage available and affordable. See HomebrewersAssociation.org for more information and a link to West's Insurance.

### Radegast Club of the Year Award

It's time to start preparing your club's submission for the 2015 Radegast Club of the Year Award. The inaugural award, named after a Slavic god credited with inventing beer, was announced at the 2014 National Homebrewers Conference in Grand Rapids, Mich. This award focuses on all the awesome things homebrew clubs do besides winning medals in competitions, like providing homebrew education for their members, promoting the hobby, and supporting local charities.

In 2014, the award was given to the Carolina BrewMasters of Charlotte, N.C. To see the BrewMasters' winning submission, learn more about the award, and to submit an entry, visit the Community section of HomebrewersAssociation.org. Entries must be submitted by March 31, 2015.

The 2015 winner will be announced June 13 during the grand banquet and awards ceremony at the National Homebrewers Conference in San Diego.

### Legislative Update

On August 21, California Gov. Jerry Brown signed AB 2609 into law. The passage of this bill means we can proceed as planned to host the 2015 AHA National Homebrewers Conference in San Diego June 11-13. It also means that the Southern California Homebrewers Festival can resume in spring 2015 after the 2014 event was canceled. Thank you to all of the California homebrewers who reached out to their legislators—those contacts made the difference in ensuring this bill's passage.

### Give the Gift of Membership



With the holidays quickly approaching, you will likely soon be contemplating gift ideas for family and friends. Might I suggest a lovely AHA membership gift card? The gift cards are easy to ship (they fit into an envelope or your wallet), are sure to please—how many gifts actually pay their recipient like AHA Member Deals do?—and include all of the benefits of membership. Plus, during the holiday season you can get a free copy of one of three great books to pass along as an added gift (or perhaps as a gift to yourself). Best of all, you will be supporting the AHA and our mission to promote homebrewing and protect homebrewers' rights.

Until next time, happy homebrewing!

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



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by Our Readers

# Judging is Personal

Dear *Zymurgy*,

Having entered numerous competitions and judged several, I'd like to point out something for newbies to competitions: judging is influenced by personal taste. It's the nature of the beast. While you shouldn't see a 15-point differential between judges, you can see as much as 10 points easily.



Case in point: the *Zymurgy* July/August 2014 Commercial Calibration, where the judging panel rated Sierra Nevada Nooner and Anchor IPA. These are all Grand Master II or higher judges and highly respected. But

if you look at the results, you will see their scores differed significantly. I noticed that for the Nooner IPA, Dave Houseman scored it a 32, while Gordon Strong scored it a 41 (nine-point differential). Then for the Anchor IPA, Dave scored it a 41, while Gordon was at 33 (eight-point differential). You cannot say one judge tends to score higher, since their rankings flip-flopped between the beers. And of course, these point differences are great enough to be sure a brew may not place in a competition.

While all judges would like to say personal taste is not an influence, in reality it is. There are certain notes in many beer styles that may not agree with our personal preference, that we might not be able to detect, or that we might be extremely sensitive to. It is unavoidable. This is not necessarily a bad thing. But it's likely only two judges rated your beer (which two judges is a crapshoot in the first round)—what happens if one of them does not like certain hop-derived notes, for example earthy or citrus? Of course if they both give the same feedback on a particular off-

flavor, that's a different story, as it means there is something wrong with the beer.

My point is, don't become discouraged if you place low in competitions. Take the feedback as constructive criticism and mess around with your recipes. I have a nice standard lager recipe that placed low in two competitions in a row with "grassy" being noted by several judges. I changed my malt bill a bit, and it just won gold. Also, try entering more than one competition with the same beer. You may be surprised by the difference in scores.

Cheers!

Kevin Hanley  
Arvada, Colo.



## Show Me the Honey

Dear *Zymurgy*,

In the July/August issue, Charlie Papazian's recipes (all-grain and malt extract) for Perfect IPA both call for one pound of wildflower honey. Neither recipe explains at what point to add this ingredient.

Please advise. Thanks.

Tom Brubaker

*Charlie Papazian replies: Error on my part. Honey should have been added at the beginning of the boil.*

## Frankenbrew is Not Scary

Dear *Zymurgy*,

I was dismayed when I read the Craft Brewer Profile (July/August 2014). In that piece, Jeff Erway stated "No longer can a homebrewer expect to build a Frankenbrew system and have a successful brewery." I can only reply, "Say it ain't so!"



Tim Roettiger's homemade boiler, "The Old Brick Pile."

I am a homebrewer who built his own commercial system—Frankenbrew, if you will. It is a wood-fired system that I created with the help of my wife, friends, and family members. As you can probably guess, I feel the premise of the quoted statement is patently false and I hope it doesn't discourage others who might want to create their own brewery.

Starting out, I lamented that I did not have enough capital to set up a modern system. However, I am now grateful for this. Why? Because it made me think. What did I *really* need to make beer? Something to boil in, something to mash in, something to ferment in. You get the picture. We have made brewing too complicated. Being self-financed forced me to get back to the basics, look toward medieval methods, use modern materials, and create a workable system.

The result? The Belgian Mare Brewery LLC is up and running and finding a market for our uniquely flavored beers brewed with traditional methods. One customer, a real ale aficionado, described

our Pale Ale as the best interpretation of an English pale ale he has ever had. We even had a genuine "I rode to school on a double-decker bus" Englishman give his stamp of approval to a test batch of dark mild. Yep, people like our beer.

So I think we put the lie to the notion that "Frankenbrew" breweries cannot be successful. Indeed, as too many craft beers become over-processed imitations of their former selves, victims of their brewers' success, it is the Frankenbrewers, toiling in the shadows, who are the true innovators.

Tim Roettiger  
Belgian Mare Brewery LLC  
Alstead, N.H.  
[www.belgianmare.blogspot.com](http://www.belgianmare.blogspot.com)

P.S. I have included a photograph of me next to our boiler, "The Old Brick Pile."

### **Spencer Ale**

Dear *Zymurgy*,  
Great article on Saint Joseph's Abbey (July/August 2014). I'm fortunate to live in Massachusetts and have tasted Spencer Ale in a bottle and on tap. It's fantastic!



Regarding the recipe: why is the temperature during the secondary fermentation phase dropped to 46-50° F when ale yeast is used?

Thanks for your insight. Keep up the good work!

Derek Burritt  
Eastham, Mass.

Article author Horst Dornbusch replies: *The temperature drop in the fermenter accelerates sedimentation of very "dusty" yeast and reduces the chance of autolysis.*

### **The Dark Side of Sugar**

Dear *Zymurgy*,  
I read the July/August issue and was very interested in the Stingo recipe (Style Spotlight). Could you possibly ask Amahl where I might find dark invert cane sugar or what I might use as a substitute? I really don't want to go to the trouble of making it myself. Thanks a bunch!



Jim Lukens  
Salmon, Idaho

Associate editor Amahl Turczyn replies: Hi Jim, glad you enjoyed the article. While I've never used them, I've heard good things about the dark syrups from [candisyrup.com](http://candisyrup.com). They make a D90 and a D180. I would probably lean toward the darker one. These are not cane and not invert per se, but they are designed to be highly fermentable and produce both color and dried fruit flavor in beer. They are a bit pricey, but

would certainly save you the time and hassle of making your own syrup. If you try the recipe with one of them, let me know how it turns out!

### **Missed Opportunity**

Dear *Zymurgy*,

Your magazine is one of the best sources for beer education out there. It is for that reason that your [lack of] response to a recent letter left me disappointed. In the July/August 2014 Dear *Zymurgy*, Mark Flores lamented the cost of one of the recipes in the issue (Pretty Nicie, Pretty Spicie), and I feel you missed an opportunity to educate. For example:

1. That recipe was only one of 13 in that issue. As with every hobby, some projects are going to be more affordable than others. A chair costs more in materials than a birdhouse, etc.

2. The total for the most expensive ingredients in that recipe, the peppercorns, was less than \$8 for the batch. The reason I'm splitting the peppercorn cost out is that he's still got enough for three more batches, and those peppercorns can also be used for delicious meals (steak au poivre, anyone?). It's not as though peppercorns go bad.

3. Not everything has to be bought online. Some of my favorite beers have been made with spices I found at my local spice shop. Not only is it likely cheaper (no shipping costs), you're supporting a local business, and the staff can help direct you on flavor notes you're not likely to find on an online product description page.

Keep up the good work educating us homebrewers, and advocating for craft beer and brewers everywhere.

Scott Petrovits  
Denver, Colo.

**Send your Dear Zymurgy letters to [zymurgy@brewersassociation.org](mailto:zymurgy@brewersassociation.org). Letters may be edited for length and/or clarity.**

**Hey homebrewers! If you have a homebrew label that you'd like to submit for the Dear Zymurgy section, send it to magazine art director Jason Smith at [jason@brewersassociation.org](mailto:jason@brewersassociation.org).**

by Professor Surfeit



# Getting to Higher Alcohol Mead



Dear Professor,  
I'm trying to ferment a 20-percent ABV mead. Right now it is at 1.012 and has stopped. I am using white honey with Lalvin 71B-1122 and Eau de Vie yeast. The Lalvin 71B-1122 was used to ferment to 15 percent, then the Eau de Vie was pitched to reach 20-percent alcohol. I used yeast energizer and nutrient along with aeration. Any ideas on how to get my mead to 1.000?

Thanks,  
Trevor  
Ten Par Inc.

Dear Trevor,  
Your quest for 20 percent is a noble one. For years, my meads had been maxing out at about 14.5 percent ABV with my specific

gravity regularly differentiating about 100 points. If I made 1.130 mead, then it would generally stop at 1.030; if 1.140, then 1.040. But over the last decade of making mead, I've been noticing a change.

Maybe the new higher-powered yeast is to blame or perhaps the bees' knees are super charged in the 21st century, but whenever I've added a bit of acidic fruit or fresh ginger, the yeast seem to get super excited about their environment and go the distance to between 17 and nearly 20 percent if there was enough sugar in the first place.

What's even more interesting: it seems that adding a cup of raspberries or a few ounces of freshly grated ginger revitalizes a stalled fermentation, helping it ferment down to 1.000 or below. I'm not saying my conclu-

sions are based on science, but empirically speaking I get consistent, extreme fermentations even when I don't really want them. I add acid fruit or ginger usually in the secondary after about one to three months of primary fermentation.

If ginger or raspberries are too aggressive in flavor, try some rhubarb, lime, or lemon juice. Of course you could always add the chemistry of citric acid or "acid blend" available from winemaking supply stores.

The only yeast nutrient I use is a gram or two of powdered yeast extract. I'd stay away from yeast energizer because it's very easy to add too much and the result is mead that tastes like a Vitamin B tablet. Not good.

Getting to 20 percent can take a year or more sometimes. It depends on so many variables.

Maxing it out,  
The Professor, Hb.D.

## Unmalted Wheat

Dear Professor,  
I would like to use unmalted wheat for brewing various beers. What's the best way to maximize the yield of fermentable sugar from unmalted wheat? Is a step mash adequate or do I need to conduct a cereal mash? Also, what is the percentage of fermentable sugar compared to unfermentable sugar? If using a Brett yeast, will it convert the unfermentable portion that lager and ale yeasts can't?

Dennis Soppich

Dear Dennis,  
Flaked and torrified wheat are cooked. Raw

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<b>Wheat, flaked</b>	13-15%	70%	8.1	33	No husk, therefore no contribution as husk astringency. Foam-promoting proteins available. Protein rest recommended. More soluble than raw.
<b>Wheat, torrified</b>	11%	76%	9	35	Heat-treated wheat allows for rapid hydration and starch and protein conversion. Mild toasted flavor.



## Make Your Own Torrified Wheat

You can make your own torrified wheat with a hot air popcorn popper. Use raw wheat berries about a half cup at a time in the popper until you start to hear a snapping noise... they pop and puff up just like corn, but make less noise. When the popping slows, dump them out onto a cool surface. Don't cook them too long, or you will get toasty/roasted flavors in your wheat. Just this brief heat cycle is enough to gelatinize starches in the wheat, and once torrified, you can use it in your favorite homebrew recipe.

—Amahl Turczyn

wheat is not and needs cooking. Crush raw wheat coarsely and cook in a cereal mash; add wheat and a cup or two of crushed malted barley to warm water and gradually bring to a boil. Use this cooked soup of wheat as an addition to your malts during the conversion process. See the sidebar to learn more about torrified wheat.

The chart above is from Charlie Papazian's book *The Homebrewers Companion*.

Regarding your question about Brett; it can do strange things and will often convert some of the normally unfermentable starch and sugars, but not all of them.

Hope this helps,  
The Professor, Hb.D

### Deficient Efficiency

Dear Professor,

I've been homebrewing for three years. Typically my all-grain efficiency is between 70 and 80 percent. I'm usually around 75 percent. The past four brews have been in the mid- to low 50-percent range. I can't figure it out. Normally, everyone says it's the crush of the grain that is the cause. Here are the changes I made and the checks I performed:

- Made several adjustments to my mill. I made it tighter, looser, default. I have The Barley Crusher.
- Re-calibrated all of my thermometers, hydrometer, and refractometer. No change.
- BeerSmith 2 is my software of choice. I reviewed my mash profile and my equipment profile. Nothing changed from the times where I was getting 75 percent efficiency.

Here is the only other thing I can think of. I buy my grains in bulk. They are stored in Rubbermaid bins in my garage. Yes, there are seasonal temperature fluctuations. But I've researched this possibility at length and I'm learning that most homebrewers aren't having this issue.

Help!

Jason Young  
Pottstown, Pa.

Dear Jason,

Well, you seem to be checking out many of the same things I would be checking. But I am noting that what you're checking are all the physical things you can see. There's something that is happening that you aren't seeing.

You and I are alike. I have been getting efficiencies between 70 and 80 percent pretty regularly. With some batches of malt I'll get up to 90-percent efficiency. I get disappointed when I don't get at least 70 percent and then usually recall that my crush may have been too coarse or the runoff too fast.

But your problem is dire indeed. Fifty percent is a bit concerning. I don't think I can easily give you a remedy from a distance and without paying a house call, but maybe, just maybe, your water chemistry could be fluctuating? Sounds remote, but too much or too little of something can affect efficiency.

One thing you could do to test your malt is to do a small mash with finely crushed grains with your typical water and also another test with distilled water with some added minerals like calcium sulfate. That would rule out any water problem.

Another possibility might be the malt; occasionally bulk grain is bagged with a higher-

than-normal proportion of chaff and/or other non-malt debris. I know homebrewers who have occasionally purchased a bag of this "bottom of the silo" malt, and it definitely affects yield. Most maltsters will mail you a replacement bag no questions asked if you let them know. It's rare, but it definitely happens.

You are saying that all things are equal that you can see. I suspect water, enzymes, ions, chemicals, and other things you can't see are being affected.

This is one time I feel like I can't be of much more help...without being there.

*Knocking on your door,  
The Professor, Hb.D.*

**Hey homebrewers! If you have a brewing-related question for Professor Surfeit, e-mail [professor@brewersassociation.org](mailto:professor@brewersassociation.org).**



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TECHNOLOGIES

By Amahl Turczyn

# Kotbüsser



**A**ncient regional German beer styles like Kotbüsser had a rough time surviving, at least officially, after 1871. This was the year Otto von Bismarck unified the country and required its new northern states to sign the so-called Beer Purity Law of 1516.

Kotbüsser got its name from Cottbus, the region where it originated, and like so many regional German specialty beers, it was made with locally available ingredients such as oats, wheat, honey, and molasses. After the purity law was enforced, however, it then became an “outlaw” beer, at least until European courts repealed the law in 1987. Germany then reinstated a less-strict version in 1993, but this modern Reinheitsgebot still

**HONEY MAKES UP A BIT LESS THAN 1 PERCENT OF THE GRAVITY; ADDED AT KNOCKOUT, IT'S JUST ENOUGH TO ADD FLORAL COMPLEXITY TO THE AROMATICS, AND DRY THE FINISH SOMEWHAT.**

bans the use of molasses and honey in beer. So even in this age of artistic craft brewing freedom, Kotbüsser is still considered somewhat of a maverick style.

Kotbüsser is a pale beer, often slightly hazy despite its lengthy conditioning, with a golden tinge from a minute addition of molasses. German noble hops are delicate, grassy, and floral in the aroma, melding seamlessly with a faint bouquet of honey. The style finishes clean and balanced, often with a hint of the same white wine character found in Kölsch beer. This is not by accident; the ale yeast strain used for this style is often the same used for

Düsseldorf altbier and the pale “hybrid” cold-conditioned beers of Cologne.

Kotbüsser is every bit as refreshing and delicate as the best examples of Kölsch, but tends to be less heavily hopped, and because of the oats and wheat, usually has a more substantial body and mouthfeel. Properly executed and conditioned, there are few beers more refreshing than Kotbüsser.

A Colorado craft brewery specializing in traditional German beer styles, Grimm Brothers Brewhouse in Loveland is one of only a handful of commercial breweries worldwide still making a Kotbüsser. Snow Drop is part of their regular lineup, and brewer/co-owner Don Chapman, a former homebrewer, was kind enough to share his 5-gallon pilot recipe, a beer that eventually became Snow Drop.

Chapman fine-tuned Snow Drop’s grain bill for optimum balance. Pilsner malt makes up the majority at 58 percent. This provides a clean, crisp backdrop against which the other, stronger-flavored ingredients can work, and also aids with lautering. With a good proportion of wheat and oats in the mix, this is an important consideration. “The Pilsner malt makes

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it so that we don't have to use any rice hulls," Chapman explained as he discussed the brewing of Snow Drop. "In fact we very rarely use rice hulls in any of our brews. I tend to ensure that at least 50 percent of the mash is barley and we don't have any issues." About 30 percent wheat malt adds body and foam retention, and a grainy, lightly sweet flavor. A relatively generous addition of about 7 percent unmalted, flaked oats provides a thick, clotted foam that lasts, as well as a silky, velvet body. Honey makes up a bit less than 1 percent of the gravity; added at knockout, it's just enough to

add floral complexity to the aromatics, and dry the finish somewhat. Snow Drop contains only a touch of molasses: less than .05 percent of the total fermentables. In this recipe, that's just over half an ounce. While it's a necessary ingredient in the style, Chapman mentioned that it's easy to overdo, and can easily overpower the other delicate flavors at work. "Since molasses can give a flavor of iron, I keep it very minimal in our recipe," he said.

Per tradition, only noble hops are used. Chapman goes with a very light first wort hop addition of Hallertauer. Then Magnum

is used for a modest bitterness, with heavier late additions of Hallertauer for flavor and aroma. Finally, a one-ounce dose of Saaz at knockout adds a grassy, aromatic note.

Chapman recommends soft water for the recipe, preferring not to make any adjustments for Grimm Brothers' Kottbüsser. A lot of that has to do with the quality of the Colorado brewery's source water. "Since our water here is so good, I feel that unless a beer absolutely needs specific salts for a style, I try not to screw with the water," he said. "I suppose if a brewer was in an area with much harder water, they would want to try and soften it a bit." This is particularly true if water with any iron content is to be used; molasses can compound the metallic flavor and throw off the balance.

Good attenuation is important for the relatively dry, crisp finish desired in this beer. Traditional versions recommend protein rests and decoction mashing. A beta-glucan rest would also be a sensible precaution for the flaked oats. However, with Snow Drop's carefully designed grain bill and today's highly modified Pilsner malt, Chapman has found that, at least on Grimm Brothers' brew system, these extra steps are unnecessary, and the beer does quite well with a single infusion mash. He recommends a relatively low-temperature rest at 152° F (76° C) for one hour, and then bringing up the temperature to 168° F (76° C) for lautering.

For yeast, Chapman uses White Labs Kölsch/German Ale strain WLP029, and ferments it at 70° F (21° C) for a "clean, crisp ale." Though not strictly necessary, one could certainly also cold-condition the beer post-fermentation—two to three weeks at 40° F (4° C) or lower would help to settle the often powdery WLP029 yeast, help to clarify the beer, and further encourage that classic smooth, dry, lager-like finish.

## Resources

1. Mosher, Randy. *Radical Brewing*. Brewers Publications, 2004.
2. Special thanks to Don Chapman at Grimm Brothers Brewhouse, Loveland, Colo.

**Amahl Turczyn** is associate editor of *Zymurgy*.



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## Snow Drop Kottbüsser

**RECIPE PROVIDED BY GRIMM BROTHERS BREWHOUSE, LOVELAND, COLO.**

### INGREDIENTS

for 5.5 U.S. gallons (20.82 L)

<b>6.0 lb</b>	(2.72 kg) German Pilsner malt
<b>3.0 lb</b>	(1.36 kg) wheat malt
<b>0.75 lb</b>	(340 g) flaked oats
<b>0.05 oz</b>	(1.4 g) Hallertauer pellets, 4.8% a.a. (FWH)
<b>0.24 oz</b>	(6.8 g) Magnum pellets, 14% a.a. (75 min)
<b>0.25 oz</b>	(7 g) Hallertauer pellets, 4.8% a.a. (30 min)
<b>WhirlFloc</b>	(10 min, optional)
<b>1.3 oz</b>	(27 g) honey (0 min)
<b>0.6 oz</b>	(17 g) molasses (0 min)
<b>0.5 oz</b>	(14 g) Hallertauer pellets, 4.8% a.a. (0 min)
<b>1.0 oz</b>	(28 g) Saaz pellets, 4% a.a. (0 min)

### White Labs

**WLP029** German Ale/Kölsch yeast

**Original Gravity:** 1.051 (12.75° P)

**Finishing Gravity:** 1.011 (2.75° P)

**IBUs:** 15

**SRM:** 3.5

**ABV:** 5.2%

**Boil Time:** 90 minutes

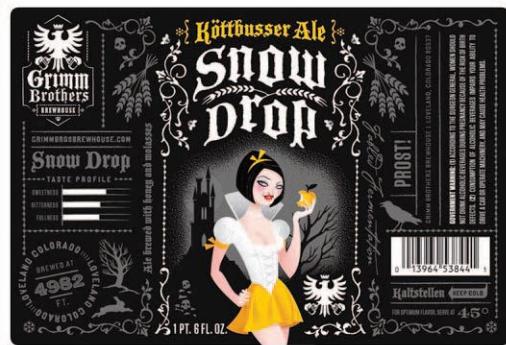
**Assumed Brewhouse Efficiency:** 75%

### DIRECTIONS

Mash in at 152° F (67° C) for 60 minutes. Mash out at 168° F (76° C) for 10 minutes. (Mash out will help to lower mash viscosity caused by oats and wheat prior to lautering.) Sparge at 168° F (76° C) until runoff wort gravity reaches 1.008 (2° P) or pH 5.8 (whichever comes first). Collect enough wort to end up with a volume of 5.5 gallons (20.8 L) at knockout, adding hops and other ingredients at stated intervals. Chill to 70° F (21° C), aerate and pitch. Ferment until terminal gravity is reached. Crash to 40° F (4° C) and cold condition for three weeks (optional) then package and carbonate (or bottle and prime).

### PARTIAL MASH RECIPE

Substitute 4 lb (1.81 kg) Pilsner malt extract syrup for the Pilsner malt and 2 lb (0.9 kg) wheat malt extract syrup for the wheat malt. Mash 1.5 lb (0.68 kg) pale 6-row malt with flaked oats at 155° F (68° C) for 45 minutes. Rinse grains, dissolve extract thoroughly and proceed with boil, adding honey and molasses at knockout along with aroma hops. Note that color may be slightly darker (5.1 SRM) with the partial extract recipe.



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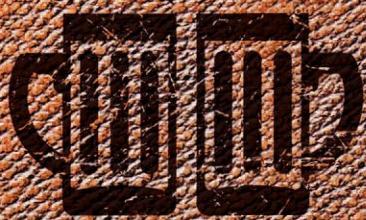
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# Parti- Gyle Debunking the Myths



# Think you know what parti-gyling is? You don't. Most likely everything you've ever read about it is bollocks.

This is sad, because parti-gyling, at its most sophisticated, is a beautifully elegant and economical method of brewing, offering the brewer both consistency and flexibility. Yet very few in the homebrewing world understand it or even seem to be aware of it.

Parti-gyling is usually described as using the first runnings for one beer and the second or subsequent runnings for another, and possibly adding some extra malt after the first wort has been run off. Such practice is primitive—a sledgehammer compared to the scalpel of later practices.

This method was used in the past. But the distant past: before 1800. Like so much in brewing, the technique was transformed by technological advances—in this case, the hydrometer.

## 18TH CENTURY

The earliest serious technical brewing texts, published in the 18th century, have plenty to say about parti-gyling. It was a standard technique of the day. In fact, brewing beers single-gyle was so unusual, it warranted a special description in early brewing manuals.

By Ron Pattinson

This is an early 18th-century description of brewing Brown Ale or Brown Starting Butt-Beer (what we would call porter—I wonder why they didn't stick with the old name?):

*"They take the Liquors from the brown Ale as for the Stout, but draw a greater Quantity from the Malt, than for Stout or Stitch, and after the stiff and second Mash they cap the Goods with fresh Malt to keep in the Spirit and boil it an Hour: after this, small Beer Is made of the same Goods."*

—*The London and Country Brewer* by William Ellis, 1737, page 25.

The worts from the first two mashes were used for Brown Ale or Butt-Beer. More malt was added to the tun and subsequent worts were used for Small Beer. It was a pretty standard way of brewing back then: take the good, early worts for a strong beer or ale and use the later ones for something watery. In private households that brewed, the family got the strong stuff made from the first worts; the servants got the rest.

One development in 18th century brewing was the advent of single-gyle brewing. In this method, all the worts were combined to produce a single beer. Entire, an early name for aged porter, took its name from this technique: entire-gyle. Using all of the worts for a full-strength beer greatly

increased the efficiency—and hence profitability—of large London porter breweries.

But that didn't mean parti-gyling disappeared. It just became more sophisticated.

*"Out of five Bushels of Malt, I generally make a Hogshead of Ale with the two first Coppers of Wort, and a Hogshead of small Beer with the other two . . . But for strong keeping Beer, the first Copper of Wort may be wholly put to that Use, and all the rest small Beer: Or when the first Copper of Wort is intirely made use of for strong Beer, the Goods may be help'd with more fresh Malt (according to the London Fashion) and Water lukewarm put over at first with the Bowl, but soon after sharp or boiling Water, which may make a Copper of good Ale, and small Beer after that."*

—*The London and Country Brewer* by William Ellis, 1737, page 29.

## 19TH CENTURY

When the hydrometer came into general use in the final decades of the 18th century, it offered brewers a whole new level of control. Not only were they able to brew beers to a consistent strength, but also to perfect malting and mashing techniques to brew as economically as possible. Much more sophisticated methods of parti-gyling were another advance. The key was to know the exact gravity of each wort.

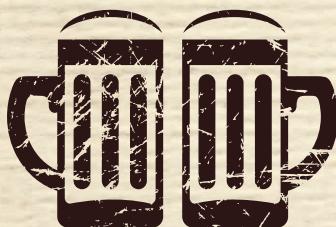
Looking at brewery price lists from the 1800s, you might be amazed at how many different beers a modest sized brewery could have in its range. One brewing just a couple thousand barrels a year might brew four milds, three pale ales, and four stouts. How was that possible? Parti-gyling.

Brewers, especially the smaller ones, didn't have discrete recipes for every beer. Looking at the example in Figure 1, while there are 13 different beers, only three recipes are needed: one for mild, stock, and table ale; one for pale ale; and one for stout. The worts from those basic recipes were blended in varying combinations to produce ales of different strength.

Nineteenth-century mashing techniques generally produced three or four different worts through combinations of mashing and sparging. Each of a different gravity, the worts could be blended to produce two, three, or even four beers of varying strengths. For example, X and XXX; or Porter, XX Stout, and X Stout.

Let's look at an example of how this worked in practice. This is a Whitbread brew from September 1, 1851<sup>1</sup>. There were two mashes and a sparge, producing

# Parti-Gyle Like It's 1920



This is a fairly simple parti-gyle from the 1920s. Two beers are made, a strong ale with a gravity of 1.054 and a mild ale at 1.034. There's nothing unusual about the brewing process: a single infusion mash followed by a sparge. It's at

the boil stage that things get slightly different. To do this properly, you really need separate vessels for mashing and boiling. After the first wort has been run off, it is hopped and boiled immediately, while the sparge is taking place.

Once the worts have been boiled and cooled, that's when the fun starts. You'll need to measure the volume and the gravity of both worts. First you need to figure out how much strong ale you'll want to end up with. You'll begin with 3 gallons (11.36 L) of mash wort at 1.085 and 4 gallons (15.14 L) of sparge wort at 1.020. First, calculate the blend for strong ale.

The proportion of mash wort = target gravity – the sparge wort gravity, or  $1.054 - 1.020$ , or 34

The proportion of sparge wort = the mash wort gravity – target gravity, or  $1.085 - 1.054$ , or 31

Thus, the strong ale will consist of 34/65 parts of mash wort and 31/65 parts of sparge wort.

For the strong ale (SA), rack off the calculated volumes of each wort into a sterile measuring vessel and transfer to the designated SA fermenter. For the mild ale (X Ale), transfer remaining wort into the X Ale fermenter and add water to hit the target OG of 1.033. If after combining the gravity is too low, you've been too greedy in the amount of strong ale you tried to squeeze out of the brew.

The hopping schedule is complicated by the fact that there are two boils. The weaker sparge wort has far fewer hops added to it but all of the sugar.

three worts that were hopped and boiled separately. Here are the post-boil stats:

	barrels wort	OG
1st wort	139	1106.8
2nd wort	247	1070.1
3rd wort	302	1042.3
<b>Total</b>	<b>688</b>	<b>1065.3</b>

Two beers were made. The first was a standard-strength porter, which got some of all three worts:

Porter	
barrels wort	OG
111	1106.8
227	1070.1
302	1042.3
<b>Total: 640</b>	<b>1063.4</b>

The next was a strong stout, SSS, which was made with some of the first and second wort:

SSS	
barrels wort	OG
28	1106.8
20	1070.1
<b>Total: 48</b>	<b>1091.7</b>

## FIGURE 1

Essex Standard, September 17, 1892

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No. 2 .. " (Bitter) .....	21/-	10.6 ...	5.3	*Porter.....	18/-	9/-	4.6
A K (Bitter) .....	18/-	9/-	4.6	X Stout .....	21/-	10.6	5.3
XXX Ale (Mild) .....	27/-	13.6 ...	6.9	XX Stout .....	24/-	12/-	6/-
XXX K (Mild) .....	24/-	12 ...	6 ...	XXX Stout .....	27/-	13.6 ...	6.9
XX (Mild) .....	18/-	9/-	4.6				

FIGURE 2

The gylng details from the original brewing record. At the top center next to "Sweet" are the priming sugar additions.

## HOPPING SCHEDULE

## Mash wort boil

Fuggles 90 min	0.75 oz
Fuggles 60 min	0.50 oz
Saaz 30 min	1.00 oz

## Sparge wort boil

Fuggles 90 min	0.25 oz
Fuggles 60 min	0.25 oz
Saaz 30 min	0.25 oz

The recipe (detailed on page 27) is for 3 U.S. gallons of SA and 4 U.S. gallons of X Ale. It assumes 72 percent mash efficiency.

## Overview

**1920 COURAGE SA AND X ALE**

Pale malt two row	8.75 lb (70.71%)
Crystal malt 40° L	2.25 lb (18.18%)
No.2 invert sugar*	1.25 lb (10.10%)
Sinamar®	0.13 lb (1.01%)
Fuggles 90 min	1.00 oz

Fuggles 60 min	0.75 oz
Saaz 30 min	1.25 oz
Mash at	147° F
Sparge at	162° F
Boil time	90 minutes
Yeast	WLP002 English Ale

5A

OG	1.054
FG	1.018
ABV	4.76
Apparent attenuation	66.67%
Pitching temp	59° F

X Ale

OG	1.033
FG	1.007
ABV	3.44
Apparent attenuation	78.79%
Pitching temp	61° F

Note that neither of the beers has a gravity the same as any of the worts.

Brewing such a small quantity of SSS—just 48 barrels—in Whitbread's brewery, which usually produced 700 barrels at a time, would have been financially unviable.

## 20TH CENTURY

In the 20th century, Scottish brewers took recipe sharing to its most extreme—some parti-gyled all of their beers from a single basic recipe. Maclay, for example, had a

standard recipe from which they made, in every conceivable combination, 60/-, 70/-, 80/- and strong ale.

The number of beers that could be produced from a single brew was staggering, especially when used in combination with priming casks at racking time with a high-gravity sugar solution. In the 1930s, Barclay Perkins had six different mild ales made from a single brew. The worts were blended to produce three strengths of mild that were primed with different sugars to make pale and dark versions of each.

These Barclay Perkins milds were from a brew day on October 11, 1937<sup>2</sup>.

Two mashes and two sparges produced four worts:

	barrels wort	OG
1st wort	384.5	1048.5
2nd wort	229	1039.0
3rd wort	371.75	1023.5
4th wort	33	1006.0
<b>Total</b>	<b>985.25</b>	<b>1037.1</b>

These were blended to three strengths:

Ale	
barrels wort	OG
19.5	1048.5
55.75	1039.0
75	1023.5
9.75	1006.0
<b>Total: 160</b>	<b>1030.9</b>

X Ale	
barrels wort	OG
220.5	1048.5
158.75	1039.0
268	1023.5
18.5	1006.0
<b>Total: 665.75</b>	<b>1034.9</b>

XX Ale	
barrels wort	OG
144.25	1048.5
14.5	1039.0
29	1023.5
5	1006.0
<b>Total: 192.75</b>	<b>1042.9</b>

While the proportions are very different, each beer contains some of all four worts. These three beers all came in two color variations. The beers as brewed were a dark amber color. Colored priming sugar was added at racking time to produce darker versions.

## 21ST CENTURY

Parti-gyling was almost universally

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# 1920 Courage SA and X Ale

## INGREDIENTS

for 3 U.S. gallons (11.36 L) Strong Ale (SA) and 4 U.S. gallons (15.14 L) Mild Ale (X) after blending

<b>8.75 lb</b>	(3.97 kg) pale two-row malt (70.71%)
<b>2.25 lb</b>	(1.02 kg) 40° L crystal malt (18.18%)

Mash grains at 154° F (68° C) for one hour.

## MASH WORT

**Target Volume:** 3 gallons

**Target Gravity:** 1.085

**Boil Time:** 90 minutes

Collect enough first runnings in kettle 1 to result in a 3 gallon (11.36 L) volume after 90 minutes of boil time. Add hops according to the following schedule:

<b>0.75 oz</b>	(21 g) Fuggle hops (90 min)
<b>0.5 oz</b>	(14 g) Fuggle hops (60 min)
<b>1.0 oz</b>	(28 g) brewers caramel or Weyermann® Sinamar® (60 min)
<b>1.0 oz</b>	(28 g) Saaz hops (30 min)

After the target volume has been run in, begin sparging at 162° F (72° C).

Sparge to collect enough secondary wort in kettle 2 to result in a 4 gallon (15.14 L) volume after 90 minutes of boil time. Add hops and sugars according to the following schedule:

## SPARGE WORT

**Target Volume:** 4 gallons

**Target Gravity:** 1.020

<b>0.25 oz</b>	(7 g) Fuggle hops (90 min)
<b>0.25 oz</b>	(7 g) Fuggle hops (60 min)
<b>1.25 lb</b>	(566 g) 30 - 35° L invert sugar* (60 min)
<b>1.0 oz</b>	(28 g) brewers caramel or Weyermann Sinamar (60 min)
<b>0.25 oz</b>	(7 g) Saaz hops (30 min)

Chill contents of both kettles to 61° F (16° C). Blend chilled wort to result in 3 gallons of 1.054 strong ale and 4 gallons of 1.033 X mild ale. Chill the strong ale to 59° F (15° C). Run blended worts into two separate fermenters and pitch each with WLP002 English Ale yeast or Wyeast 1968 London ESB ale yeast.

\*Lyle's Golden Syrup may be used instead of invert sugar, or see the sidebar on page 28 to make your own.

The quantities are so small that it isn't really relevant.

These three elements were blended, along with small quantities of water, to produce the three beers required:

## ESB Export

hl wort	OG
188	1075.9
74	1015.5
2.62	1040
<b>Total: 264.62</b>	<b>1058.7</b>

## London Pride

hl wort	OG
224	1075.9
280	1015.5
5.07	1040
19	1000
<b>Total: 528.07</b>	<b>1040.8</b>

## Chiswick

hl wort	OG
85	1075.9
173	1015.5
2.73	1040
7	1000
<b>Total: 267.73</b>	<b>1034.5</b>

Unsurprisingly, the strongest beer, ESB Export, contained the largest proportion of the first wort.

When Golden Pride, Fuller's barleywine, is parti-gyled from the same recipe, it gets almost 100 percent of the first wort. Fuller's needs to make sure that the first wort has a gravity a little above the 1.086 required by Golden Pride. If it were below that figure, they'd be buggered.

## CONCLUSION

I hope you now understand a little more of this wonderful yet woefully misunderstood technique that has formed the backbone of British brewing for centuries. The next time someone tries to tell you parti-gyling is using each running to make a different beer, you know what to say: "Not since 1780." Please make the effort. It'll save me so many arguments in the future.

London Pride, and Chiswick. This is a brew from May 15, 2012.

The mashing scheme was pretty simple, a single infusion followed by a sparge. It produced two worts:

	hl wort	OG
1st wort	497	1075.9
2nd wort	527	1015.5
Barm yeast	10.42	1040
<b>Total</b>	<b>1034.42</b>	<b>1044.8</b>

I'm not a hundred percent sure what the "barm yeast" row is, but I suspect that it's the wort extracted by pressing the hops after the wort has been run off.

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## Making Invert Sugar

As brewer's invert sugars aren't readily available, making them yourself is probably the best option. It doesn't take a huge amount of ingredients or equipment. You'll need:

- cane sugar (not table sugar)
- citric acid
- water
- candy thermometer
- saucepan

### DIRECTIONS

For each pound (455 g) of sugar used, bring 1 pint (473 ml) of water to a boil. Switch off the heat and add the sugar slowly, dissolving it. Add one-fourth teaspoon (1 g) of citric acid

per pound of sugar. Turn on the heat again (not too high) and set the alarm on the candy thermometer to 230° F (110° C). Stir frequently while it starts to simmer.

When the temperature hits 230° F (110° C), reset the alarm for 240° F (115.6° C). Heat slowly (the slower the better) until the temperature gets to 240° F (115.6° C). Lower the heat to keep at 240 to 250° F (115.6 to 121.1° C). For No. 1 invert sugar, maintain heat for 20 to 30 minutes (12-16 SRM). For No. 2, 90 to 120 minutes (30-35 SRM). For No. 3, 150 to 210 minutes (60-70 SRM). For No. 4, 240 to 300 minutes (275-325 SRM).

Brewing historian Ron Pattinson is the author of the blog "Shut Up About Barclay Perkins" and the website [www.europeanbeerguide.net](http://www.europeanbeerguide.net). His book, *The Home Brewer's Guide to Vintage Beer*, was published in 2014 by Quarry Books. He lives in Amsterdam.

### REFERENCES

1. Whitbread brewing record at the London Metropolitan Archives, document number LMA/4453/D/09/045.
2. Barclay Perkins brewing record at the London Metropolitan Archives, document number ACC/2305/01/622.

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# ICE CIDER MAKING ICE CIDER

BY NATHAN WILLIAMS



**Ice cider, like ordinary hard cider, is a fermented drink made from apples, but the juice from the apples is concentrated before fermentation by freezing—that's the ice part—and fermentation is halted prematurely, leaving significant residual sweetness. The resulting product is clear, usually still, with a nearly syrupy viscosity, and interplay among sweet, alcoholic, and tart flavors.**

The final flavor profile is more recognizably apple than that of most dry ciders. It's not something you drink a pint of—ice cider is more akin to an aperitif or dessert drink, similar to eiswein or botrytis (noble rot) wines such as Sauternes.

Note: Ice cider is not applejack, which is what you get if you freeze regular hard cider to concentrate the alcohol. Applejack tastes completely different and concentrating the alcohol can put you on the wrong side of the home distilling law.

Ice cider is a fairly recent innovation, generally credited to Quebec's Christian Barthomeuf and Pierre Lafond in the early 1990s. Barthomeuf owned a struggling vineyard and winery and had tried making ice wine without much success. Looking for something new, he realized that a similar process could be

applied to the locally-abundant apple crop. Lafond made a similar realization, and in addition to producing ice cider, he worked on the legal process of making it a recognized product in Canada. He gave it the name "ice cider," or in the original French, *cidre de glace*. By 1999, ice cider was available as a retail product, and since then more producers have appeared in Canada and the U.S. The two originators both still produce ice cider from their own cideries, Clos Saragnat and Cidrerie St-Nicolas.

In Quebec, to be considered authentic *cidre de glace*, the product must, among other things, be frozen naturally (outdoors), but it is not at all necessary to obey Quebec's rules to make good ice cider. Indeed, it is worth considering breaking other rules with the addition of different fruits, spices, sugars, or wood aging once the basic process is understood.



Collecting the runoff can take several hours.

## GETTING STARTED

Making ice cider starts with fresh (sweet) cider. It should be fermentable, meaning not treated with preservatives like potassium sorbate. Cider that has been pasteurized or UV-treated is acceptable.

Plan for a 25-percent yield—four gallons of sweet cider for every gallon of resulting ice cider. You might reach up to 33 percent if you get lucky. Dust off any smaller fermenting vessels you have in the 1- to 3-gallon range.

With hard cider, the selection of apples makes a big difference in the result, with varying amounts of sugars, acids, tannins, and other flavor compounds. If you have made hard cider, you know that the “eating” or dessert apples most commonly grown in the U.S. don’t make great cider by themselves. But with ice cider, the variety is less important. Ice cider doesn’t depend on tannins in the same way, and excellent ice cider can be made, as most Quebec cidermakers make it, entirely out of dessert apples. Some even make single-varietal ice ciders from Honeycrisp apples, a popular table variety.

Whatever variety you choose, the juice needs to be concentrated by freezing. The juice is frozen solid (cryo-concentration) and then slowly thawed, and the liquid that runs off is collected. The first portion to thaw contains a much higher concentration of sugars and other dissolved material from the juice. This runoff—with a total volume of a quarter to a third of the original volume of juice—is then fermented. Starting measurements of 30 to 40 degrees Brix (starting gravity of 1.120–1.160) are typical.

The simplest way to freeze the juice is to use a chest freezer. A temperature controller is a great investment for managing fermentation. A common 6.5-gallon bottling bucket fits the bill well and the bottom valve can be used for draining. The bucket can be safely filled with 5.5 gallons of liquid—maybe 6 if you like to live dangerously. Consider putting the bucket in the freezer before filling it with juice to avoid straining your back. However, you will still have to lift it out when it finishes freezing.

Individual one-gallon plastic jugs will also work, if you don’t have the freezer space. Simply remove two cups of liquid from each before freezing so the ice can expand.

## EXTRACTION

Once the juice is frozen all the way through and you’re ready to extract, you’ll need a collection vessel and a hose connected to the bucket’s drain valve. Remove the bucket from the freezer, open up the valve, and prepare to wait a while for runoff to start, possibly several hours. Check on it every half hour or hour. The ambient temperature will affect the speed; if you’re doing the runoff in a basement in the depths of winter, 12 to 16 hours is normal. One-gallon jugs can simply be inverted over containers and will thaw more quickly.

When it starts draining (more like dripping), test the sugar content. Gathering enough runoff to use as a sample for a hydrometer takes time. A better choice is a refractometer, which needs only a few drops to take a measurement. Since the usual range for a refractometer is 0 to 30

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A common 6.5-gallon bottling bucket works well for freezing the juice.

degrees Brix, and, especially at the beginning of the extraction process, the sugar range will be higher than that, you will need to get creative. To take the measurement, make a precise 50:50 dilution of the runoff with a small syringe—such as 2mL runoff and 2mL water—read the sugar level on the refractometer, and double that.

Keep collecting runoff until you have one-quarter of the original volume of juice, then stir and measure the overall sugar level. If it is above 30 Brix, you are in good shape—you could stop now, or you could continue to collect a little bit more. If it is substantially below that—say, below 28 Brix—stop collecting.

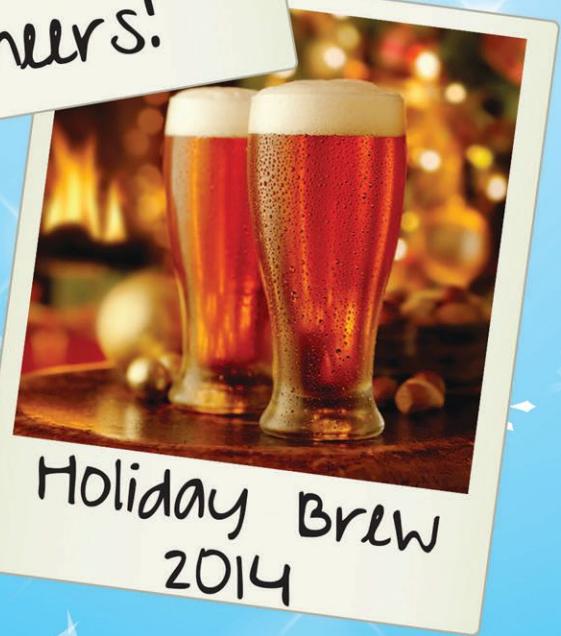
If the remaining liquid still seems to have a reasonable amount of sugar—over 10 Brix—you might want to collect a second volume of liquid (a second runnings of sort) then re-freeze and re-extract this, to get another dose of liquid at the desired concentration. Similarly, if your first extraction didn't hit your target, try a second round of freezing and extracting. Some commercial operators work this way, doing one round of cryo-concentration to 20 Brix, then another to 25, and then a final one to get past 30.

Freezing using the natural cold of the outdoors, if your climate allows, is another

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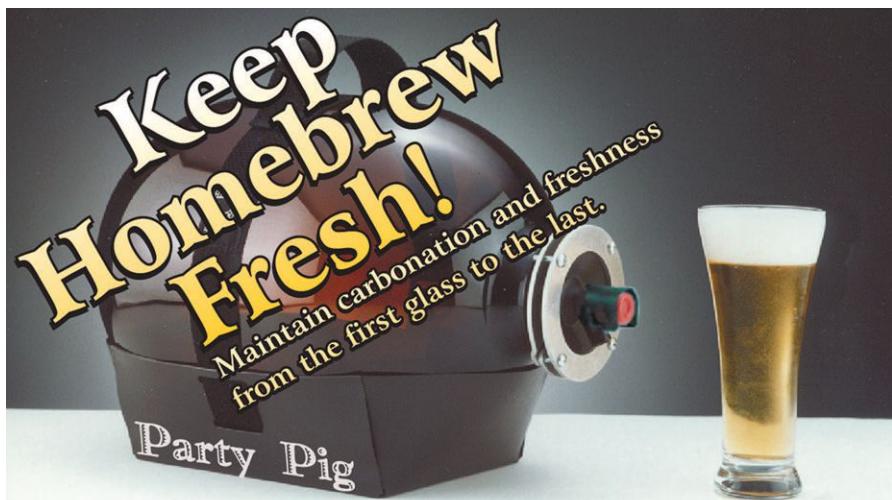
er option. Wait to press your apples, or keep the sweet juice chilled until it falls below freezing on a daily basis. Once the temperature is 30° F or below overnight, put the cider outside in plastic containers, as described previously. It may take a while to completely freeze, as the daily temperature changes partially thaw and refreeze the juice several times. This is good: the freezing and thawing cycles will cause the sugars and the water to separate and migrate further apart, so that when you do extract, you get better efficiency. Once it is frozen solid, thaw and drain as previously described.

#### FERMENTATION

Fermentation of the concentrated juice into ice cider is a familiar process for experienced cidermakers. It's important to ferment low (cool) and slow, but you do want to get the fermentation started, so the concentrated juice should be warmed to 60° F before pitching. Once it starts fermenting, consider moving it somewhere cooler.

Select yeast with relatively low attenuation. This is not the time to get out the champagne or turbo yeast. Wine yeasts are a good choice, especially those for sweeter wines like Riesling. Sweet mead yeasts and some English cider yeasts are also suitable. Lalvin 71B is a recommended dry yeast. The use of yeast nutrient is debatable—some prefer a vigorous initial fermentation, while others prefer a slow fermentation that is more easily halted.

Avoid fermenting ice cider to a completely dry finish, since residual sugar is key to the flavor balance and style. Target approximately 1.050 for the finishing gravity. Monitor the fermentation carefully to make sure it isn't fermenting too fast, and once it gets toward the target gravity, stop it completely. The sugar remaining in the cider can lead to guaranteed bottle bombs if any



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yeast is still active. If fermentation stalls out naturally before reaching your target—at 1.060 instead of 1.050, for example—call it done; don't try to reactivate the yeast.

The standard winemaking technique to stop fermentation is repeated racking. Rack the cider off the lees into a clean vessel, let it sit for a week or two to let anything settle out, and repeat. This method works fairly well, but it is significantly enhanced if you can cold-crash the cider first. If you have a chest freezer with a temperature controller, put the cider in at a temperature just above freezing and let it settle out before each racking.

If preferred, you can guarantee that the yeast is finished either by adding potassium sorbate or by sterile filtering. Both approaches can have flavor issues, which you may or may not be sensitive to. Sorbate is certainly cheaper and easier, but since you're doing something as crazy as making ice cider, "cheap and easy" might not be how you approach the task.

Conventional packaging is to use skinny, corked glass bottles of 375mL or occasionally smaller. Ice cider tends to be quite pretty, in the amber range depending on the apples involved, and there are no hops and no risks of skunking, so clear glass is preferred to showcase the appearance. It doesn't need to age in the bottle to be enjoyed, so you can immediately sit back and enjoy this relatively new star of the cider world.

**Nathan Williams has been homebrewing for 15 years, ever since his computer hobby turned professional and he needed a new hobby. He is an officer of the Boston Wort Processors and a regular at Franklin County Cider Days in Massachusetts.**



To see the Ice Cider and other presentations from the National Homebrewers Conference, go to the Resources section on the Let's Brew dropdown of HomebrewersAssociation.org



## INGREDIENTS

6 gallons (22.71L) sweet cider  
WLP720 Sweet Mead or Wyeast 4184 Sweet Mead yeast

## DIRECTIONS

Freeze and concentrate as per article, to 1.5 to 2 gallons (5.68 to 7.57 L) at SG 1.120 or higher. Allow concentrate to come up to room temperature, then pitch yeast. Let fermentation start at room temperature, then ferment cool. Check weekly, until gravity falls below 1.050.

Cold-crash and rack into a clean vessel; ensure that no further fermentation occurs over a period of several days. Optionally, sterile filter or add potassium sorbate to stabilize. Bottle and enjoy. Serve chilled.

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BY HORST DORNBUSCH

ABBOTS, MONKS, AND BEGGARS:

# RECONSTRUCTING THE WORLD'S EARLIEST ABBEY ALES



ABBEY ALES TODAY ARE ASSOCIATED PRIMARILY WITH THE BREWING CULTURE OF BELGIUM. THE TRUE ROOTS OF MONASTIC BREWING, HOWEVER, BELONG NOT JUST TO PRESENT-DAY BELGIUM, BUT TO ALL OF CONTINENTAL EUROPE. MONASTERY BEERS GO BACK ALL THE WAY TO THE VERY BEGINNING OF THE MONASTIC MOVEMENT IN THE HOLY ROMAN EMPIRE OF THE EARLY MIDDLE AGES.

The most influential originator of abbey beers, without a doubt, is the ascetic Italian scholastic, Saint Benedict of Nursia, who founded the Benedictine Order of monks in the first half of the sixth century AD. Benedict is crucial for our understanding of monastery brewing because in his instructions for the daily routine of the monks, known as the *Rule*, he stipulated that beer—brewed by the monks themselves, of course—should be an integral part of a monk's daily diet. Before Benedict, beer making had simply been a haphazard household chore; after Benedict, therefore, beer making became a systematic quest by professional brew monks all over Europe—and of nuns, too—for a consistent, top-quality malt-based alcoholic beverage.

Yet, in spite of the course-changing impact of these early monastic brews on the history of beer, there is only scant information on how they were made and how they might have tasted.

#### THE ABBEY OF SAINT GALL

After the collapse of the Roman Empire—the last Roman Emperor, Romulus Augustulus, was deposed by the Germanic chieftain Odoacer in 476 AD—centralized administration and taxation disappeared in Europe, as did the benefits that came with it, such as educational institutions, road and bridge maintenance, trade, public safety, and a uniform currency. With the Romans gone, a new social system, feudalism, took hold, in what was soon to be called the Holy Roman Empire. The papacy evolved into a powerful political

entity, with churches and monasteries emerging as the only viable network of public administration and learning. Not surprisingly, the secular powers—emperors, kings, dukes, and their vassals—regularly sought to curry favor with the religious institutions by granting concessions and privileges.

One such favor, in 854, was the loosening of some of Benedict's spartan dietary prescriptions by Emperor Lewis the German, one of Charlemagne's grandsons. Under the new rules, monks were entitled to seven meals a day, as much bread as they could eat, and incredibly, a daily ration of five to 10 quarts or liters (in today's measure) of beer! As a result, monastic life in most of Continental Europe became much more comfortable, sometimes luxurious, and



Saint Benedict of Nursia.

at times even raucous. The monks drank beer incessantly from morning until dusk; and their evenings were often devoted to happy conversation amongst themselves or with itinerant pilgrims over tankards of brew. Naturally, this required a steady flow of beer. The monks assigned to the brewhouse, therefore, were under constant pressure to keep up with their brethren's copious demands for libation, while also maintaining beer quality. For the first time in Europe, brewing evolved into a highly specialized professional craft; and different beers for different occasions and clienteles began to emerge.

For us, one of the most important sources about monastic life in general and brewing in particular in the High Middle Ages is a set of Latin chronicles from the Imperial Abbey of Saint Gall in northern Switzerland. This body of records, most of them written by Ekkehard IV (c. 980–1056), is entitled *Casus sancti Galli* (The Events of Saint Gall). It contains tantalizing, though unspecific, hints about the types of beers the brew monks made around the turn of the first millennium.

In those days, Saint Gall was the cultural center and most important place of learn-



ing and scholarship of the entire Holy Roman Empire. The abbey housed up to 150 resident monks, plus scores of lay workers and pupils. It also offered facilities for itinerant pilgrims and the abbot's noble guests. According to a controversial architectural plan of Saint Gall, drawn up on parchment around 830 AD and preserved to this day, the abbey complex consisted of some 40 buildings, including a church, dormitories, workshops, guest houses, stables, dining halls, and an infirmary.

Significantly, the plan also showed three breweries with adjacent bake houses, as well as a granary with a malting and milling area. Controversy arose over whether Saint Gall was ever erected according to this plan, because in 937 AD, the original abbey complex burned to the ground and was subsequently reconstructed. Most researchers now believe that the plan was just a model blueprint for an ideal monastery of that period. Some skeptics even doubt that Saint Gall ever had three breweries. However, from a more upbeat perspective, it is unlikely that a ninth-century architect would have included three breweries, had such breweries not been part of the standard physical configuration of a typical monastic community at the time.

#### FEUDAL BEER STRATIFICATION

From detailed inscriptions on the (real or ideal) Saint Gall plan, we can clearly identify all beer-related structures. The granary is labeled a “locus ad torrendas annonas/pilae/molae” (a place for roasting grain/[with] mortars/mills). Each of the three breweries seems to have been dedicated to the production of different beers called Celia, Cervisa, and Conventus.

The Celia brewhouse and an adjacent Cervisa fermentation cellar are identified on the plan as “domus conficienda celiae/hic refrigeratur cervisa” (a house for making Celia/herc Cervisa is being cooled). Celia is Latin for “strained” (probably “filtered” through a layer of straw), while Cervisa is a derivative of

# CELIA

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

<b>5.25 lb</b>	(2.38 kg) Weyermann® Floor-Malted Bohemian Pilsner Malt, 42%
<b>4.38 lb</b>	(1.99 kg) Weyermann® Floor-Malted Bohemian Wheat Malt, 35%
<b>1.25 lb</b>	(0.57 kg) Weyermann® Floor-Malted Bohemian Dark Malt, 10%
<b>1.25 lb</b>	(0.57 kg) Weyermann® Beech Smoked Barley Malt, 10%
<b>6.0 oz</b>	(170 g) Weyermann® Acidulated Malt, 3%
<b>0.5 oz</b>	(14 g) Strisselspalt hops, 4% a.a. (60 min)
<b>0.7 oz</b>	(20 g) gruit herbs: 25% each of lavender, juniper, and vermouth; 15% marjoram; 5% each of bay leaf and rosemary

## Belgian Abbey yeast

**Original Gravity:** 1.060 (15 °P)

**Final Gravity:** 1.021 (5.25 °P)

**IBU:** 9

**SRM:** 5.2

**ABV:** 5.2%

**Assumed Efficiency:** 65%

## BREWER'S NOTES

We know that the many brew monks of the High Middle Ages already used direct-fired metal mash cookers mounted over brick fireplaces. In these, they heated the entire mash slowly to the boil and then ladled the hot wort off the top into long, horizontal, open, wooden fermentation troughs carved from tree trunks. Some worts passed through a straw filter between the kettle and the fermenter. Fermentation was spontaneous, often aided by the addition of already fermenting beer as a "pitched" starter. The most authentic way to replicate this type of wort production in a modern brewhouse is by way of a triple decoction, which is what we did at the Weyermann 2.5-hl, three-vessel pilot brewery with its mash-kettle, lauter tun, and whirlpool. We mashed into the kettle and slurry-pumped it for decoctions. However, because we are dealing with indeterminate brewing instructions from the High Middle Ages, long before the invention of the thermometer and hydrometer, other methods, including multi-step or single-step infusions, are, of course, perfectly OK. Also, feel free to increase or decrease the total amount of grist and flavorings as you see fit. Individual results may vary depending on equipment and brewhouse procedures!

## DIRECTIONS

Finely grind the grist at a mill setting of 1.1 mm. Mash in with lukewarm liquor at a ratio of 3.5:1 (approximately 3.5 liter [0.925 gallon] per 1 kg [2.2 lb]; or 0.42 gallon [1.68 quart] per 1 lb of malt) for a 15-minute rest. Decoct about one-third of the main mash for about 5 minutes. Return the partial mash to the main mash. Rest the main mash for 15 minutes at roughly 122-131° F (50-55° C). Repeat the decoction and return. Rest the main mash for 15 minutes at approximately 140-149° F (60-65° C). Repeat the decoction and return. The main mash temperature should be at 158-167° F (70-75° C). Lauter. Reserve about a quarter each of the spent grist of both Celia and Cervisa for use in Conventus, if desired. Refrigerate (or freeze) this grain and use soon to prevent it from spoiling! Boil wort for 75 minutes. Add the Strisselspalt as a single charge 15 minutes into the boil. Suspend a gruit bouquet garni from a butcher string in the kettle for 10 minutes to sterilize, then remove gruit and save for later. (Note that weighing small amounts of gruit ingredients of about 0.7 oz. (20 g) of total gruit for a homebrew batch of 5 gallons (19 liters) requires a very finely calibrated scale!) Optional (anachronistic!) whirlpooling. Heat-exchange to temperature range of selected yeast strain—usually around 68° F (20° C)—preferably into an open fermenter. Suspend the gruit bouquet into the green beer. After two days of primary fermentation, discard the gruit and rack the beer for secondary fermentation. After about three weeks, mildly carbonate the beer to perhaps 0.75 volume (1.5 g/l) CO<sub>2</sub> and package.

## PARTIAL MASH VERSION

Omit dark malt and acidulated malt, substitute 4.5 lb (2.04 kg) pilsner malt extract syrup for the pilsner malt and 3 lb (1.36 kg) wheat malt extract syrup for the wheat malt. Mash smoked malt at 155° F (68° C) for 45 minutes; drain, rinse grains, dissolve extract completely, and proceed with boil.

## Celia gruit and hops.





Busy brew crew (from left): Weyermann brewmaster Dominik Maldoner, brewmaster Günther Thömmes, and the author. Celia mash-in complete.

the classic Latin *cerevisia* for beer. From the body of records, we know that Celia was a privileged brew made from the first runnings of a mash of malted barley and malted wheat. It was reserved for the abbot and guests of high rank. In a sense, Celia was a forerunner of what would become, several centuries later, the strong bock and doppelbock "liquid bread" of the brew monks of Bavaria.

The second brewery, conveniently located right next to the granary, is apparently

where Cervisa was brewed. We learn that "hic fratribus conficiatur cervisa/hic coletur celia" (here Cervisa is brewed for the brothers/her Celia [for the abbot] is being cleaned [= filtered]). Cervisa was apparently made mostly from the first runnings of a mash of malted barley and malted oats. This brewery was apparently the source of the volume brew that had to be cranked out *en masse* for the daily consumption by regular monks and visiting pilgrims. Because it was not "coletur" (filtered), this brew must have been hazy

## CERVISA

### INGREDIENTS

for 5 U.S. gallons (18.93 L)

<b>3.13 lb</b>	(1.42 kg) Weyermann® Floor-Malted Bohemian Pilsner Malt, 32%
<b>2.9 lb</b>	(1.33 kg) malted oats, 30%
<b>2.44 lb</b>	(1.11 kg) Weyermann® Floor-Malted Bohemian Dark Malt, 25%
<b>15.0 oz</b>	(425 g) Weyermann® Beech-Smoked Barley Malt, 10%
<b>4.5 oz</b>	(128 g) Weyermann® Acidulated Malt, 3%
<b>0.5 oz</b>	(14 g) Strisselspalt hops, 4% a.a. (60 min)
<b>0.7 oz</b>	(20 g) gruit herbs: 25% each of rock salt, marjoram, and rosemary; 15% sage; 10% bay leaf

### Belgian Abbey yeast

**Original Gravity:** 1.046 (11.6 °P)

**Final Gravity:** 1.018 (4.5 °P)

**IBU:** 9

**SRM:** 6

**ABV:** 3.8%

**Assumed Efficiency:** 65%

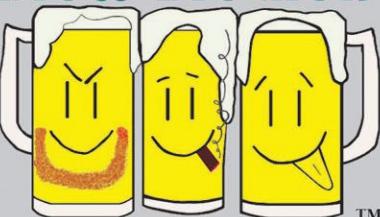
### DIRECTIONS

Follow recipe instructions as detailed for Celia on page 39.

### PARTIAL MASH VERSION

Omit dark malt and acidulated malt, reduce malted oats to 2 lb (0.9 kg), and substitute 3.75 lb (1.7 kg) pilsner malt extract syrup for the pilsner malt. Mash smoked malt, malted oats, and 1 lb (0.9 kg) pale six-row malt at 155° F (68° C) for 60 minutes; drain, rinse grains, dissolve extract completely, and proceed with boil.

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## CONVENTUS

### INGREDIENTS

for 5 U.S. gallons (18.93 L)

Enough spent mash from Celia and Cervisa to produce a 1.036 SG potential yield for 5 gallons, or substitute 3.1 lb (1.4 kg) pilsner malt extract syrup for spent mash, 55%

<b>1.19 lb</b>	(540 g) malted oats, 21%
<b>1.06 lb</b>	(481 g) Weyermann® Floor-Malted Bohemian Pilsner Malt, 18%
<b>4.0 oz</b>	(113 g) Weyermann® Floor-Malted Bohemian Dark Malt, 4.5%
<b>1.5 oz</b>	(42 g) Weyermann® Acidulated Malt, 1.5%
<b>0.5 oz</b>	(14 g) Strisselspalt hops, 4% a.a. (60 min)
<b>0.7 oz</b>	(20 g) gruit herbs: 25% each of rock salt, anise, and caraway; 15% dry, cracked ginger; 10% rosemary

### Belgian Abbey yeast

**Original Gravity:** 1.035 (8.75 °P)

**Final Gravity:** 1.012 (3 °P)

**IBU:** 9

**SRM:** 2

**ABV:** 3%

**Assumed Efficiency:** 65%

### DIRECTIONS

Finely grind the dry grist at a mill setting of 1.1 mm. Mix the milled dry grist, gruit, and moist spent grist from the Celia and Cervisa batches. Mash in with lukewarm liquor at a ratio of 3.5:1 (approx. 30 lbs. of malt per 1 gallon of liquor or 3.5 kg per 1 liter) for a 15-minute rest.

Then proceed as for Celia and Cervisa, but skip the steps for suspending the gruit bag in the kettle and the primary fermenter.

when served. On special occasions, the monks fortified Cervisa with honey, in which case they called it Cervisa Mellita. “Mel” is Latin for honey.

Roughly halfway between the Celia and Cervisa breweries is a structure described as “peregrinorum.../cellarium/bracitorium/ad refrigerandum cervisam/” (the

pilgrims’.../storage room/brewery/[and a place] for cooling Cervisa). This was likely also the place where Conventus was brewed, next to Cervisa. Conventus was made from a mix of the second runnings of Celia and Cervisa, with the former being brewed in the first and fermented in the second brewery. The “small” Conventus was reserved



Gruit herbs made up of 25% each of lavender, juniper, and vermouth; 15% marjoram; 5% each of bay leaf and rosemary.

Photos courtesy of Horst Dornbusch

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for beggars and the abbey's lay workers, who were mostly indentured serfs. Sometimes, Conventus was also blended with wort from a freshly mashed bed of malted oats.

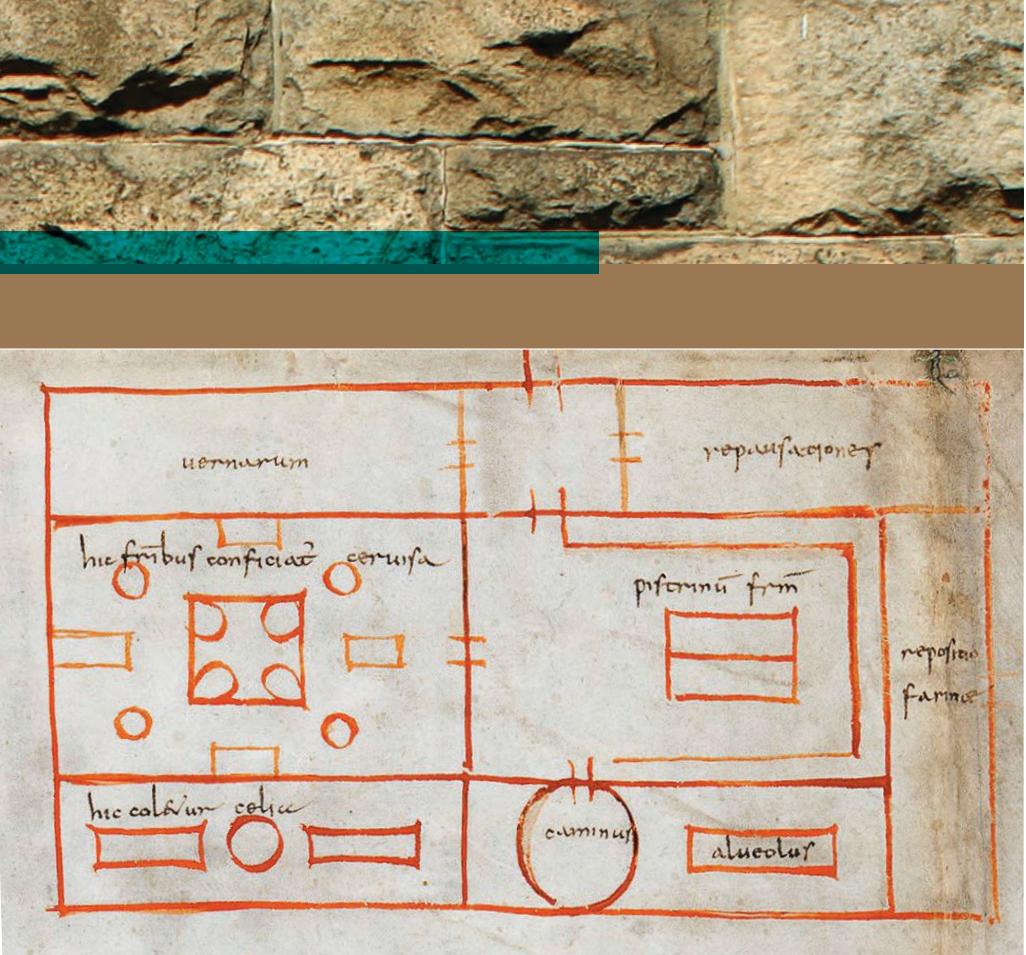
We know from several subsequent sources that the three brews—Celia, Cervisa, and Conventus—were made, in one variation or another, in virtually every monastery in Europe, until well into the late Middle Ages and the Renaissance. Thus, we are probably justified in calling these early beers, perhaps anachronistically, true “beer styles.”

#### AN HEIRLOOM BREW EXPERIMENT

In order to replicate—or at least approximate—these medieval brews in a modern brewery, I obtained permission from the Weyermann® Malting Company in Bamberg to conduct an experiment on its pilot brewery inside the malting plant. This “reenactment” took place at the end of February 2014. The brew crew included Dominik Maldoner, the Weyermann brewmaster, and Günther Thömmes, a former brewmaster of the Bitburger brewery who has done research in medieval brewing and has written historical mystery novels set in breweries. Weyermann graciously supplied all the raw materials for this historic brew event.

There is no doubt that the monks of Saint Gall were already well acquainted with the art of malting and milling. Composing grain beds for the three brews, therefore, was not a problem. The required malted barley, wheat, and oats were easy to come by. However, with no clear guidelines for their relative proportions in our mashes, we had to rely on our best guesses. Thus, we took the three-tier class system of the Saint Gall monastic society into account.

We used a portion of wheat malt only for the abbot's Celia, because wheat was deemed a precious grain in the Middle



Cut-out of a Cervisa brewery on an early 8th-century architectural plan of the Abbey of Saint Gall.

Ages. For the regular monks' Cervisa, we used no wheat, but plenty of barley and a good portion of oats. For the beggars' Conventus, we used plenty of oats and a remash of the spent Celia and Cervisa grists, both of which would otherwise have been used as horse feed. Given the malting technology at the time, we used mostly floor-malted barley for all three beers. Because medieval malts were dried in direct-fired kilns, we also added some smoked malt to the grist. Finally, because most medieval beers were probably mildly infected with *Lactobacillus*, we added some acidulated malt. Given the vagueness of the source material, the grist profiles presented in the recipes are not dogma, even though they seem to make intuitive sense for a modern recreation of these beers.

### FLAVORINGS

The next issue to solve was the choice of beer flavorings. We knew from historical sources that the zenith of the High Middle Ages, shortly after the 10th century, was also the period of transition from gruit beers—that is, beers flavored entirely

with herbs—to beers flavored entirely with hops (*Humulus lupulus*). Evidence suggests that the initial use of hops was just one of many herbs in a gruit mixture. It is likely, therefore, that the Saint Gall brews of our reconstruction period were flavored with both gruit herbs and hops. This seems supported by the first known mention of gruit in a document by the German emperor Otto II. It dates from 974 AD and grants the privilege to produce gruit to a church in Liège, in present-day Belgium. The first known use of hops in beer is documented in 822 AD, in the annals of the Benedictine Abbey of Corbie, in the province of Picardy in northwestern France. Over time, the hop portion in gruit apparently increased steadily, especially in monastery beers, until, by the 13th century, hops had replaced herbs entirely in almost any beer on the European Continent (though not yet in England).

The composition of gruit varied greatly by region and might have included, in fresh or kiln-dried form: anise, bay leaf,

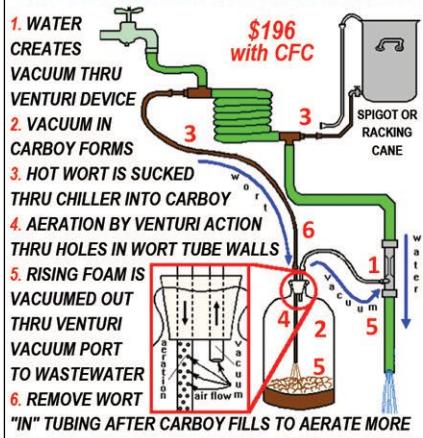
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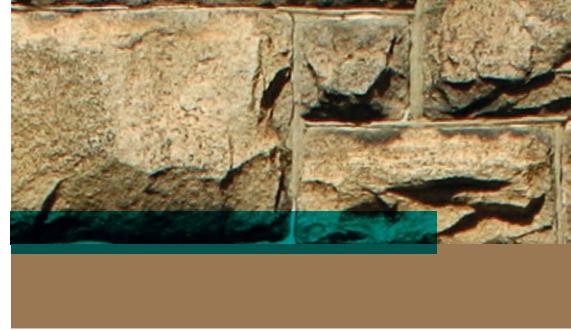
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blackthorn, caraway, sweet gale, ginger, ivy, juniper, lavender, marjoram, meadowsweet, mugwort, rosemary, sage, yarrow, and wormwood (vermouth). For our selection, we once again let ourselves be guided by the feudal social system. The abbot's Celia received more precious gruit than the other beers.

As for hops, all beers got the same amount, calculated for 9 IBU. This value is just above the taste threshold of alpha-acids for most people and should provide for a proper balance between gruit and hop flavors. Our variety of choice was Strisselspalt, which has a long historical lineage and is cultivated in Alsace. We boiled the Strisselspalt as a single hop addition for an hour in the kettle. In the old days, of course, all beers were spontaneously fermented, a luxury not available to us in the super-clean Weyermann pilot brewery. Thus, in keeping with the monastic theme, we used Belgian Abbey Ale yeast. In addition, the original Saint Gall brews must have had virtually no effervescence, but to please modern palates, we conditioned the finished beers, anachronistically, with about 0.75 volume (1.5 g/L) of CO<sub>2</sub>. Finally, we diverted about 10 percent of the Cervisa wort into a separate, small fermenter, where we added honey for a Cervisa Mellita. Translated to a standard 5-gallon (19 L) homebrew batch, our quantities amount to roughly a half-gallon (2 L) of Celia wort with 3.5 ounces (100 g) of honey.

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**Noble Rot**  
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A saison science project. Complexity and fermentable sugars for this funky ale come from grapes that have been infected by the botrytis cinerea mold, commonly known as noble rot.

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### TASTING NOTES

About five weeks after the brew day, the fully matured beers underwent a sensory evaluation by a panel of Doemens-certified beer sommeliers. The Celia was clear and the bouquet revealed distinct notes of lavender and elderflower. The taste was grainy and slightly salty, with aspects of forest fruits and gooseberries.



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The Cervisa, by contrast, had a bouquet of fresh corn, cereal, and hay. Its taste was of plum, hay, and rosemary. The finish was slightly leathery-tart. The Cervisa Mellita was noticeably alcoholic, dry, and slightly sour, with wood, resin, and honey in the nose; and a slightly harsh bitterness in the finish. The beggars' Conventus, as a "small" charity beer, had pleasant notes of fresh spring hay, rosemary, and dandelion flowers. Its taste was reminiscent of forest fruits and gooseberry; and its finish was slightly salty.

Overall, the panel pronounced all of these beers from the High Middle Ages, especially the abbot's Celia, as surprisingly pleasant and drinkable.

**Horst Dornbusch is a consultant in the international brewing industry, an international beer judge, and the author of several books on beer. A portion of this article will also appear in the author's forthcoming book *Beer Styles from Around the World*, to be published in the spring of 2015.**



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# DECOCCTION:

## Worth the Effort?

By Timothy Phelps  
& Joseph Fuller



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**Editor's Note:** This is the fourth published experiment from the AHA's Research & Education Fund. For more on the REF and to see other completed projects, go to the Community section of HomebrewersAssociation.org

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The questions occasionally pop up on online forums and in brewing publications.



"Have you ever done a decoction?"



"Do I need to do a decoction to brew a traditional lager?"



"Do you get anything viable for the added time a decoction requires?"

When a member of the Krausen Commandos was planning to brew a Munich dunkel and brought up the topic of decoction at a club meeting, we realized that none of us had ever performed one. No one in our club had ever done a side-by-side comparison to provide concrete proof that doing a decoction does or does not in fact make a difference.

Soon after, our club learned about the AHA Research and Education Fund, so we decided to try to answer that question. The only way we felt we could evaluate it properly was to brew four batches: a single-infusion mash and a single-, double- and triple-decoction, all on the same day, on the same equipment. The brews would be performed with the same lots of grain, hops, water, and yeast, and then would ferment in the same place, under the same conditions, in order to eliminate any variables that could occur in separate brew day circumstances.

### WHAT IS A DECOCTION?

For a great explanation of decoction, we turned to *How to Brew*<sup>1</sup> by John Palmer. According to Palmer:

Decoction mashing was developed to get the best extraction from the old-time Northern European barley strains that depended on overwintering to germinate and were more difficult to malt and modify. Decoction mashing provided for better breakdown and solubilization of the starches and better extraction from those less-modified malts. Beer connoisseurs claim better malt flavor and aroma from decoction mashing. These days, less-modified malts are hard to find, but decoction mashing is still useful for extracting that extra bit of malt character for bock and Oktoberfest-style lagers. In addition, the decoction mash provides for increased hot break and clarity in the wort. The pH from decoction mashes has been shown to be 0.1 to 1.15 pH lower than the same wort from an infusion mash.

Decoction mashing is a good way to conduct multi-step mashes without adding additional water or applying heat to the mash tun. It involves removing a portion of the mash to another pot, heating it to the conversion rest on the stove, then boiling it, and returning it to the mash to raise the rest of the mash to the next temperature rest. The portion removed should be pretty stiff—no free water should be showing above the top of the grain. The decoction should be held to conversion rest temperatures (150 to 155° F or 65 to 68° C) for 10 to 15 minutes before being boiled. Stir constantly!





The Krausen Commandos.

## PLANNING

In early May 2013, we started to discuss the experiment and how to do a side-by-side comparison, which would allow us to educate fellow members on the actual differences found. We decided to use the aforementioned Munich dunkel recipe from our club member.

## EQUIPMENT

- 2 Blichmann TopTiers
- 15.5 gal stainless eHLT  
(*to heat all water*)
- 15.5 gal stainless propane-fired kettle
- 20 gal Coleman cooler mash tun
- 24 quart turkey pot and fryer  
(*for decoctions*)
- Calibrated electronic thermocouple readers
- Barley Crusher MaltMill
- Blichmann in-line thermometer
- Chillzilla counterflow wort chiller
- Refractometer
- Hydrometer
- 3 propane tanks
- 4 6.5-gallon carboys
- Aeration stone

## INGREDIENTS

**Batch size:** 6 gallons

**Boil time:** 90 minutes

- 6.0 lb** (2.72 kg) Pilsner malt
- 3.5 lb** (1.59 kg) 10° L Munich malt
- 1.25 lb** (0.57 kg) 60° L crystal malt
- 0.75 lb** (340 g) torrified wheat
- 0.25 lb** (113 g) 40° L crystal malt
- 0.25 lb** (113 g) chocolate malt
- 1.5 oz** (42 g) Tettnang, 3.08% a.a.  
(60 min)
- 1.0 oz** (28 g) Tettnang, 3.08% a.a.  
(30 min)
- 2 smack packs** Wyeast 2308  
Munich Lager yeast

### Big Y Spring Water

(We opted to pitch two smack packs per batch versus making starters to keep the differences in starters out of the equation.)



## BREW DAY

On November 16, 2013, a half-dozen club members convened at 8 a.m., eager to dive into the brew day. To begin, we weighed out the grain for all four batches and then ran it through the grain mill to achieve the same crush for each beer.

We decided to begin by brewing the single infusion batch since all of us are familiar with that procedure. We also had further discussion regarding the actual mash times. To allow for maximum time consistency for each batch, we agreed that the mash rest time for each would be 60 minutes for the entire wort and grist together (including the decoction times).

Although the brew day went fairly smoothly, one challenge that arose was the decoction schedule. The recipe and mash schedule called for distinct amounts of the mash to be removed for the decoction. These amounts were calculated to raise the mash to the next temperature step. What we discovered dur-

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The four batches took 12.5 hours to brew.

ing the first decoction is that BeerSmith assumed that the mash temperature could be maintained through an external heating source so that heat was not lost along the way. We used a cooler for our mash tun, and therefore were unable to do so. However, we were able to accurately monitor the mash temperature through the use of calibrated electronic thermocouple readers that measure temperature down to a tenth of a degree. With this accuracy, we could observe the trend of the mash cool-down along the way and were able to revise the grist volume removed to hit our target rest temperatures.

At the pinnacle of the brew day, we had three batches going at the same time. We had strike water heating for the single decoction, the double decoction was going through its final mash rest, and the triple decoction was finishing the boil and recirculating. We were able to hit our original gravities for two of the decoction batches plus the single infusion. The double decoction came out two points higher than the rest.

After 12-and-a-half hours, we had completed all four batches and cleaned up. It was a long day!



"The Krausen Commandos planned and executed the experiment quite well, from planning prior to the brew day until well after when judging took place. It was great to be able to judge this because, in my experience as a BJCP judge, it is beneficial to test the palate and become knowledgeable about various brewing techniques. It was fun to try to figure out which sample was which each time we were brought a new beer."

— BJCP judge Ryan Galligan

## FERMENTATION

We chose to ferment all the beers in 6.5-gallon carboys. The four beers were kept at 62° F (17° C) for the first 12 hours to begin fermentation. They all started at varying times during the night, but by morning all had a two- to three-inch-thick krausen on the top. At this time, the carboys were all moved to a lager fridge large enough to accommodate all of them, with the temperature set to 51° F (11° C).

The beers fermented for two weeks, during which time they were closely monitored to determine when they were ready for the diacetyl rest. At that point, the temperature was raised to 65° F (18° C) for four days, after which the temperature was dropped back down to 51° F (11° C). Following this, we pulled samples from



## Timeline

### Day 1:

Brewed. Started fermenting at 62° F (17° C) for 12 hours.

### Day 2:

Carboys moved to lager  
fridge set to 51° F (11° C).

### Day 15:

Diacetyl rest at 65° F (18° C)  
for four days.

### Day 19:

End diacetyl rest. Temperature  
lowered to 51° F (11° C).

### Day 24:

Beers kegged for lagering.  
Temperature lowered to  
36° F (2° C) for four weeks.

### Day 52:

Kegs moved to kegerator for  
continued lagering/carbonating  
for two weeks.

### Day 70:

Judging/public presentation.

each to measure gravities and to check for diacetyl. We were happy to find no perceptible diacetyl present.

## KEGGING AND LAGERING

Since we determined we were at our target gravities with the exception of the double decoction (which finished higher due to the higher OG), we kegged the batches for lagering. The lager fridge was set to 36° F (2° C) and the four batches were lagered for four weeks. The kegs were then moved to a kegera-



The beers were judged blind and in random order.

tor set to 42° F (6° C) to finish their last two weeks of lagering and also to force carbonate them at the same time and at the same pressure. We also sampled the beers at kegging and were pleased with the results.

## THE NUMBERS

We meticulously kept track of all gravities, temperatures, etc. The target original gravity was 1.051 while the target final gravity was 1.013.

**Single Infusion:** 1.051 OG / 1.011 FG

**Single Decoction:** 1.051 OG / 1.013 FG

**Double Decoction:** 1.053 OG / 1.016 FG

**Triple Decoction:** 1.051 OG / 1.012 FG

**BJCP Guidelines:** OG: 1.048 – 1.056 /  
FG: 1.010 – 1.016

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## CLUB BLIND TASTE TEST

At week five of lagering, our club had its monthly meeting, so we decided to do a blind taste test. We had 19 club members present and three guests.

We sampled the four beers side by side, along with a commercially brewed dunkel (Hofbräu Dunkel). At the time of the club tasting, the beers weren't quite carbonated enough, so they all tasted very similar. The consensus was to carbonate them more before our public sampling and official judging.

Those of us who had sampled the batches during the lagering process had noticed a significant flavor difference among the decoctions, with the triple decoction having the most complex flavor. Unfortunately, we did not get the same carryover of flavor during our club sampling.

### THE JUDGING

After more than eight months of planning, we reached the grand finale: the judging. On January 25, several club members and six judges descended upon Brew and

Wine Hobby in East Hartford, Conn. with our bar setup and kegs in tow, eager to get opinions on the beers.

Our judging panel included four BJCP judges, a professional brewer, and a BJCP judge in training. As in any typical judging situation, we provided them with a



Article authors Joe Fuller (left) and Timothy Phelps.

Photos courtesy of Krausen Commandos;  
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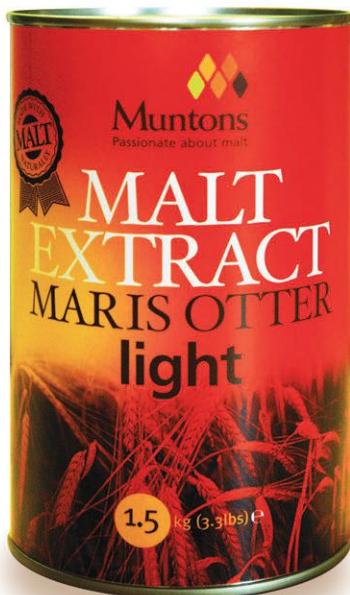
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"The six judges were amazingly thorough in evaluating the beers... In the end, the single decoction was judged as being closest to the style guidelines for a Munich dunkel."

calibration beer, Hofbräu Dunkel, the same one our club used for comparison. The judges were provided with minimal detail about the beers they were tasting, similar to a competition. The beers were judged blind and in random order. The judges used official BJCP tasting sheets and followed the guidelines for 4B Munich Dunkel.

The six judges were amazingly thorough in evaluating the beers and we now have 24 scoresheets outlining where we can ultimately make improvements on the beers. In the end, the single decoction was judged as being closest to the style guidelines for a Munich dunkel.

### The Scores (Averages)

Single Decoction: 33.3

Single Infusion: 32.5

Double Decoction: 30.5

Triple Decoction: 30.3

## Judges' Overall Impressions

### Single Infusion

- Complex, needs body. Esters and toasty malts. Too much bitterness.
- Needs more complexity. Medium body. Easy drinking.
- Nice complexities, not as complex as nose tells it. Lingering bitterness. Easy drinking.
- Astringent. Needs refinement.
- Esters out of style. Phenols are unpleasant. Hazy.
- Malt complexity. A bit bitter. Burn scorched notes?

**Summary:** Some judges noted a good malt complexity, while others noted that it needed more. Some astringency issues were also mentioned by a few judges. More than one noted it was "easy drinking" but perhaps a bit too bitter.

### Single Decoction

- Balanced. Richness, but could stand more. Brown sugar. Alcohol warmth.
- Dark fruit esters too much. Flavor great. Complex malts. More balanced.
- Oxidized and muted.
- Balanced. Lower bitterness, complex.
- Rich, complex mouthfeel. Balanced. Nice! Alcohol warmth. Well done.

**Summary:** Most judges remarked that this beer was well-balanced, with several noting alcoholic warmth. "Complex" was another descriptor used frequently in their summaries.

### Double Decoction

- Yeast masks the malt. Esters high. Body, drinkable. Add Munich.
- Toasty. Moderate body. Easy drinking, lacking richness of style.
- Well crafted. Thin. Esters high.
- Good. Fermentation related issues? Gentle. Restrained.
- Within style. Not full of malt flavor. Dry, subtle.
- Lacking depth. Toasty. Needs more richness. Watch temps, esters.

**Summary:** Most judges noted this entry to be a bit estery, and perhaps thin and need-

ing more body. Several noted the beer to be restrained in flavor as well.

### Triple Decoction

- Not as balanced as it could be. Esters, phenols. Drinkable. Needs body.
- Low aroma. Low flavor caramels. Bitterness too high?
- Bitterness and esters too high. Body thin. Alcohol warmth.
- Aroma nice but flavor lacking. Astringent.
- Within style. Well-balanced. Scorched? Clean.

**Summary:** Judges noted a touch of astringency and bitterness levels a bit too high, and needing a bit more body. One judge noted a scorched grain note, which was puzzling since the decoction was closely monitored.

## PUBLIC SAMPLING

While the judges were evaluating the beers, club members poured samples for customers at Brew and Wine Hobby. We had about 30 patrons try all four beers in random order and the consensus was that the double decoction was the favorite, taste-wise.

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## SUMMARY

In the end, we have varying data of which beer scored the highest by the judges compared to what tasted the best to members of the public. No clear winner emerged from the samples.

Based on the less than one-point difference between the two highest-scoring beers, the single infusion and single decoction, our conclusion is that it's not worth the extra effort to do a decoction since there were no noticeable differences among all of the beers.

Of course, there is always room for further study and refinement of the experiment. As previously mentioned, we decided to conduct our decoction mashes for the same duration of time in order to minimize the variability of mash rest time and in doing so may have ultimately affected the final outcome. A change in mash times may prove to bring about different results. Also, if we had sought out less-modified malt for the decoctions, the results may have been different as well. Many other variables such as mash temperatures could be altered in such an experiment to find the sweet spot for how a decoction may be beneficial.

Nonetheless, we feel that we learned from the experiment and that any brewer could benefit from trying a decoction at least once. This experience was a great team builder for all involved in the process.

We would like to thank the AHA, Brew and Wine Hobby, and our six judges for helping to make this experiment possible.

**The Krausen Commandos started in 2010 with a few talented brewers who thought it would be great to start a club, not imagining that after nearly four years, it would have 38 members spread out all over Connecticut. The Commandos pride themselves on being a learning organization and have won more than 50 medals and ribbons in competition.**

## REFERENCE

- Palmer, John. *How to Brew*. Boulder, CO: Brewers Publications, 2006.

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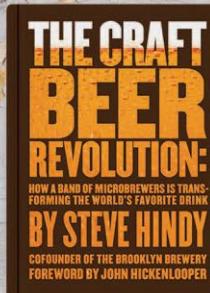
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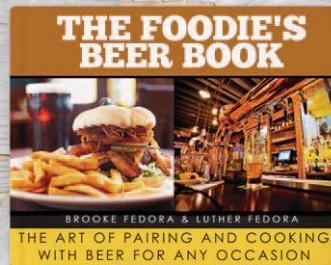
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Over a span of just a few decades, the American craft brewing industry has exploded from a handful of homebrewers and beer enthusiasts to a true entrepreneurial force. Steve Hindy, co-founder of the Brooklyn Brewery, provides an insider's account of the personalities, battles, and alliances that shaped the early days of craft beer. Hindy chronicles the pioneers of the craft brewing movement such as Fritz Maytag, all the way to the "third generation" of today's craft brewers who continue to innovate and push the movement forward.

Palgrave Macmillan

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### THE FOODIE'S BEER BOOK

BY BROOKE AND LUTHER FEDORA

Gastropub owners and Culinary Institute of America graduates Brooke and Luther Fedora explore the many ways beer can enrich a dish or an entire meal in this 320-page cookbook. The book is sectioned off by seasons and includes sample menus for events such as weddings, lobster bakes, Oktoberfest parties, and Thanksgiving. Tips such as beer flavor profiles and how to cook with beer are included, along with a homebrew recipe.

Skyhorse Publishing

\$24.95

### SUSTAINABLE HOMEBREWING: AN ALL-ORGANIC APPROACH TO CRAFTING GREAT BEER

BY AMELIA SLAYTON LOFTUS

Co-founder of Seven Bridges Cooperative homebrew supply store, author Amelia Slayton Loftus describes how to make homebrewing part of an eco-friendly lifestyle, from sanitizing equipment to reducing waste in homebrewing to growing your own organic ingredients. More than 35 organic homebrew recipes are included, plus food recipes for using spent grains.

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BY MICHAEL TONSMEIRE

One of the most exciting and dynamic segments of today's brewing scene is American-brewed sour beers, with craft brewers and homebrewers alike adapting traditional European techniques to create some of the world's most distinctive and experimental styles. This book details the wide array of processes and ingredients in American sour beer production, with actionable advice every step of the way. Inspiration and practical applications for brewers of all levels are provided by some of the country's best known sour beer brewers, including Russian River, Jolly Pumpkin and The Lost Abbey.

Brewers Publications

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### GOODNIGHT BREW

BY ANN E. BRIATED (KARLA OCEANAK)

A beery takeoff of the iconic children's book Goodnight Moon, Goodnight Brew is a full-color "pitcher book" for grown-ups. In the tale, the brewery employees—including three little otters (in charge of the water), a wort hog, and a hops wildebeest—introduce readers to brewing equipment, ingredients, and styles of beer. Goodnight Brew is described as "the perfect anytime story for beer lovers everywhere."

Bailiwick Press

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- 2014 -

## HOLIDAY GIFT GUIDE



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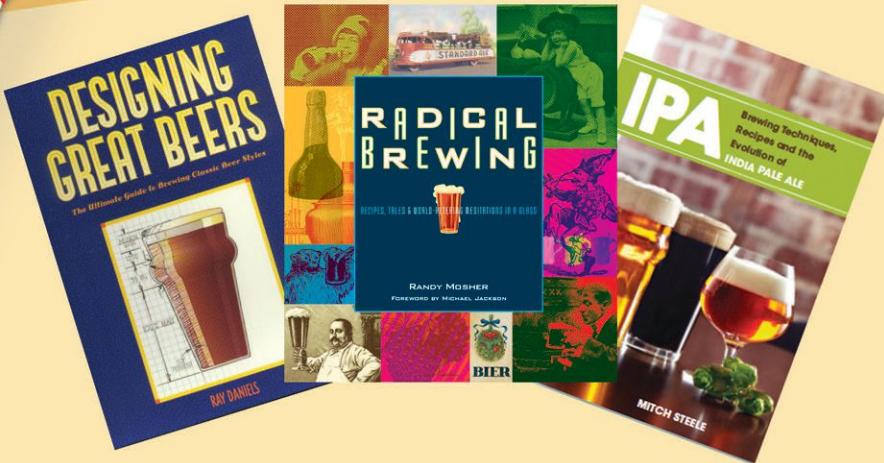
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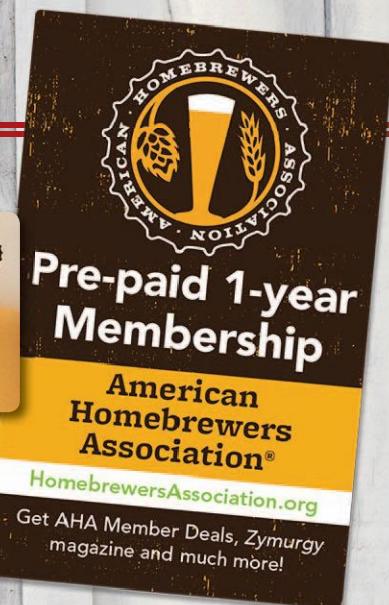


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[ssbrewtech.com](http://ssbrewtech.com)

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[lollyphile.com](http://lollyphile.com)

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# BELGIUM BEER TOUR

By Jill Redding

In November 2013, I traveled with a group of 15 U.S. beer journalists and beer importers to Belgium at the invitation of the Belgian Family Brewers, a group of 21 breweries with 3,500 years of brewing experience among them (see the Editor's Desk for more information). Our whirlwind, four-day tour had us visiting 10 of the breweries as well as a hop farm, and sampling beers and hearing presentations from all 21 member breweries. The highlights are too numerous to mention and represent on these pages, but I've pulled together a sampling of photos from our amazing trip. I hope you enjoy them!



1 I took this photo from my morning run along a canal in Brugge near the Hotel Martin's Relais.

**Day One:**

- 2 The courtyard at the hotel at Het Anker brewery, Mechelen.
- 3 Only beers brewed by the 21 members of the Belgian Family Brewers can carry the BFB logo.
- 4 Ivo Bosteels, the sixth generation of the Brouwerij Bosteels family, pours a sample of Deus at a luncheon at the Bosteels family manor house. His son, Antoine, is the current head of the brewery.
- 5 Rodenbach Caractère Rouge.
- 6 The PALM Brewery (brewer of the Rodenbach brand) has a stable of Belgian draught horses at its Diepensteyn Castle.
- 7 From left, Alain De Laet (Brewery Huyghe), Jay Strubbe (Duvel-Moortgat), Marco Passarella (Brewery St. Bernardus), and David Bossuyt (Bockor Brewery) enjoy a beer and cheese pairing at Duvel. (Photo by Krishan Maudgal)



7



6



10



8



9



11

#### Day Two:

- 8 The bottling line at Brewery Huyghe in Melle.
- 9 Traditional waterzooi paired with Silly Abbaye de Forest at t'Klokhuys ("the Clock House") brasserie in Ghent.
- 10 Happy hour with the Duchesse at the Dulle Griet tavern in Ghent.
- 11 Brewer Yves Benoit pulls samples of Petrus Aged Pale from a foeder at Bavik Brewery.



15



12

**Day Three:**

- 12 A visit to Hoppecruyt Farm in Poperinge. The farm grows several hop varieties, including Cascade, and also sells fresh hop shoots, a delicacy in Belgian cuisine.
- 13 Sampling experimental single hop beers at Hoppecruyt Farm.
- 14 Benedikte Desmyter-Coutigny of Hoppecruyt Farm serves Passchendaele ("passion ale"), a beer brewed by Brouwerij Van Honsebrouck to commemorate the 100th anniversary of World War I.  
*(Photo by Krishan Maudgal)*
- 15 Hans Depypere, owner of St. Bernardus brewery, shares a laugh with DRAFT magazine's Erika Rietz.  
*(Photo by Krishan Maudgal)*

Photos by Jill Redding © Brewers Association

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#### Day Four:

- 16 The coolship at Bockor Brewery in Bellegem.
- 17 Foeder of Jacobins Kriek at Bockor Brewery.
- 18 Saison Dupont, fresh from the source.
- 19 Brewmaster Olivier Dedecker gives a tour at Brasserie Dupont. The brewery has preserved some historical techniques such as boiling the wort using a direct gas burner beneath the copper kettles, using square fermentation vessels instead of cylindro-conical ones, and doing the second fermentation in bottles horizontally in crates (an old technique from gueuze production.)
- 20 A delicious lunch of beef carbonade and frites at Brasserie Dubuisson.
- 21 Our tour group outside of the Dubuisson brewery. (Photo by Krishan Maudgal)
- 22 Mother-daughter Anne De Ryck (one of the first female brewmasters in Belgium) and Miek Van Melkebeke of Brouwerij de Ryck speak to the group outside of Moeder Lambic in Brussels.
- 23 Xavier Vanneste (light blue shirt) of De Halve Maan brewery is president of the Belgian Family Brewers (Zymurgy editor Jill Redding is seated to his left). The final event of the trip was a dinner with all of the brewery owners at the Maison des Brasseurs at the Grand Place in Brussels. (Photo by Krishan Maudgal)



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by Amahl Turczyn

# 2014 Humpback Homebrew Competition



First runner-up Scott Hixson (left) and second runner-up Toby Guidry.

This year's Humpback Homebrew Competition was held July 19 in Ocean Springs, Miss. and hosted by the Gulf Coast Brewers League. The homebrew club, which formed in August 2012, currently has about 25 active members.

"Working in close partnership with Crooked Letter Brewing Company, we held our first competition last year after the state of Mississippi passed the homebrew law," explained competition organizer Mark Cowley. "We limited the entrants the first year to brewers from Mississippi only, so we could celebrate the passage of the new law. Last year's competition brought in 58 beers in five BJCP categories from 35 brewers."

In 2014, the competition was open to homebrewers nationwide, and was

expanded to 10 BJCP categories. The competition drew 178 entries from 78 brewers from as far away as San Francisco.

The competition was held for the second year in a row at the Mary C. O'Keefe Cultural Center in downtown Ocean Springs, Miss. The awards ceremony was held at Crooked Letter Brewing Company.

Best of Show for the 2014 competition went to George "Bobby" Mowell of Silver Spring, Md. with a Kölsch. Mowell is a member of the DC Homebrewers.

Runner-up was Scott Hixson of the Gulf Coast Brewers League with a weizenbock, the same beer that netted him a gold medal at the 2014 National Homebrew Competition.

Photo courtesy of Nate Thurman

## "Kölsch II"

### RECIPE BY

**GEORGE "BOBBY" MOWELL**

BEST OF SHOW, 2014 HUMPBACK HOMEBREW COMPETITION

### INGREDIENTS

for 5.5 U.S. gallons (20.82 L)

<b>9.0 lb</b>	(4.08 kg) Best Malz Pilsner malt
<b>0.5 lb</b>	(227 g) red wheat malt
<b>0.5 lb</b>	(227 g) light Munich malt
<b>4.8 oz</b>	(136 g) acidulated malt
<b>0.55 oz</b>	(16 g) Hallertauer hops, 4.1% a.a. (60 min)
<b>0.65 oz</b>	(18 g) Saaz hops, 3.5% a.a. (60 min)
<b>0.35 oz</b>	(10 g) Hallertauer hops, 4.1% a.a. (30 min)
<b>0.35 oz</b>	(10 g) Saaz hops, 3.5% a.a. (30 min)

**East Coast Yeast ECY 21** Kölschbier yeast

**Original Gravity:** 1.052

**Final Gravity:** 1.010

**ABV:** 5.5%

**SRM:** 3.9

**IBU:** 20

### DIRECTIONS

Use distilled water treated with 0.5 tsp calcium chloride. Mash at 149° F (65° C) for one hour. Ferment at 60° F (16° C). Mowell adds, "Primary for two weeks, lager for 3-4 until clear, but the longer it lagers the better it gets. This was my first time using the ECY; I've used White Labs before and it turned out very well, but the ECY has a distinct flavor and flocculates quickly."

### EXTRACT VERSION

Substitute 8 lb (3.63 kg) pilsner malt extract syrup for Pilsner, Munich, wheat, and acid malts. Dissolve extract completely and proceed with recipe. Note that extract version will be slightly darker (4.2 SRM) than all-grain version.



Best of Show judging

The advertisement features the Ss Brewing Technologies logo with "304 Stainlessium" above it. It includes a section titled "FTSS CONTROL YOUR TEMPS!" with text about temperature-controlled fermentation. A graph shows "Prototype Testing Results with Ice Water from Cooler" comparing ambient temperature (black line) and beer temperature (blue line) over 10 hours. Below the graph, various pieces of brewing equipment are displayed, including a large white coiled tube, a smaller tube, a black control unit, a metal lid, a coiled stainless steel immersion chiller, and a black keg.

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## BEST OF SHOW FOR THE 2014 COMPETITION WENT TO GEORGE "BOBBY" MOWELL OF SILVER SPRING, MD. WITH A KÖLSCH. MOWELL IS A MEMBER OF THE DC HOMEBREWERS.

Crooked Letter Brewing Company will brew Mowell's Best of Show beer on its 15-barrel brew system, and sell it in kegs and bottles throughout its market.

Mowell is a lawyer by trade who has been brewing for about five years. He started with an extract kit his wife got him for his birthday. After a short hiatus, Mowell got back to brewing, making the move from extract to all-grain.

"A move to a small apartment sidelined me, but two-and-a-half years ago I started up again with all-grain brewing, and quickly made the jump into kegging," explained Mowell. "I just started entering competitions in May of this year, and am absolutely thrilled and incredibly honored that my beer was selected as Best of Show!"

Just in case you are unable to try Mowell's Kölsch on tap at Crooked Letter, he has generously provided a homebrew-sized recipe of the winning brew (see page 75).

The Gulf Coast Brewers League plans to expand the Humpback Homebrew Competition even further going forward. "Next year's competition is already in the planning stages," Cowley said. "We anticipate opening the competition to all BJCP categories, and hope to bring in more than 250 entries." Judging will take place the weekend of July 18, 2015.

**Amahl Turczyn is associate editor of Zymurgy.**

## KUDOS—BEST OF SHOW

### AHA/BJCP Sanctioned Competition Program

#### June 2014

Hilo Brewfest Homebrew Competition, 49 entries—Bill Brooks, Kailua, HI.  
Pear Juice Concentrate Challenge, 18 entries—Chuck Boyce, Cincinnati, OH.  
The Ruck's Extreme Homebrewing Competition Summer Sixpack 2014, 48 entries—Jennifer Cutler, Stephen Graham, Bryan Stradley, Latham, NY.  
Canberra Brewers – Competition #2 - 2014, 52 entries—Dicko, Canberra.  
Celtic & A Lot More Homebrewers Competition, 138 entries—David Christensen, Casper, WY.  
RBT Belgian and German Beers Competition, 59 entries—Russell Rehbein, Townsville, Australia.  
Mid-State Fair Homebrew Competition, 91 entries—Roger Schmitz, Paso Robles, CA.  
NHC Summer Session, 60 entries—Éanna Burke, Galway, Ireland.  
Napa Town and Country Fair, 28 entries—Ryan Spencer.

#### July 2014

Because Beer Homebrew Competition, 310 entries—Kent Courtice, Vancouver, BC, Canada.  
2014 Winter SABC Amateur Brewing Challenge, 23 entries—M. Kennedy, Adelaide, South Australia.  
Westgate Brewers Stout Extravaganza, 87 entries—Fergus McGregor.  
BABBs Annual Club Championship, 81 entries—Kris Domagala, Brisbane, Queensland, Australia.  
The Erie County Fair Home Brew Competition, 57 entries—John DePaolo, Williamsville, NY.  
New York State Fair Homebrew Competition, 279 entries—Sean Coughlin, Rochester, NY.  
3rd Annual MVHBC Homebrew Competition, 163 entries—Michael Marino, Burlington, MA.  
Ohio Brew Week Homebrew Competition, 312 entries—Jane Zalewski, Proctorville, OH.  
Amador County Fair Homebrew Competition, 88 entries—William Prichard, Plymouth, CA.  
M.A.L.T. 2014, 319 entries—Duncan Rodger, Toronto, Canada.  
Indiana Brewers' Cup, 1,191 entries—Evan Brill/HB, Louisville, KY.  
Clark County Fair, 6 entries—Paris Woodson, Springfield, OH.  
2014 WanCup2, 184 entries—Chris Hainge, Kyoto, Japan.  
The Great Arkansas Beer Festival and HomeBrew Competition, 43 entries—Willie Reyenga, Little Rock, AR.  
E.T. Barnett Homebrew Competition, 60 entries—Steven Jayich, Anchorage, AK.  
Dunn County Fair, 19 entries—John Susa, Eleva, WI.  
Battle of the Homebrews, 53 entries—Matt Gracey, Denver, CO.  
El Paso County Fair Homebrew Competition, 34 entries—Mike Bordick, Colorado Springs, CO.  
2nd Annual Humpback Homebrew Competition, 132 entries—Bobby Mowell, Silver Springs, MD.  
IAMNSOB Homebrew Competition, 20 entries—Steve Johnson, Osage, IA.  
Triggerfish ProAm Competition, 18 entries—Dylan Phelan, Three Anchor Brewery, Cape Town, South Africa.  
BBQ & Brew, 19 entries—Greg Reuter, Cedar Rapids, IA.

Cowlitz County Fair, 43 entries—Steve Dahl, Vancouver, WA.  
Deer River Bar-B-Que & Brewfest, 53 entries—Levi Loesch, Minneapolis, MN.  
Monochrome, 16 entries—Jakub Scheibe, Dublin, Ireland.  
Lucid BFD, 81 entries—Wayne Ducette, Big Lake, MN.  
ASH HBOY American Ales, 55 entries—Jeremy Voeltz, Pinetop-Lakeside, AZ.  
MASH Out - Ales of Summer, 43 entries—Rich Surace, Mason, OH.  
All American Brew Off, 101 entries—Adam Barnes, Fort Smith, AR.

MASH Homebrew Competition, 139 entries—John Mulligan, Swanton, OH.  
German Fest Stein Challenge, 227 entries—Josh Strupp, Milwaukee, WI.  
2014 Canfield Fair Homebrew Competition, 86 entries—Tom Metzler, New Middletown, OH.  
New Jersey State Fair Homebrew Competition - 18th Annual, 261 entries—Doug Vohden, Summit, NJ.  
Antelope Valley Fair Home Brew Competition, 82 entries—Ethen Adams, Santa Monica, CA.  
3rd Annual Crystal Coast Brew Off, 136 entries—Kevin Moore, Raleigh, NC.

**Continued >>**

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## KUDOS—BEST OF SHOW

### AHA/BJCP Sanctioned Competition Program

Iowa State Fair, 277 entries—Stephen Rinderknecht, Adel, IA.

Ventura County Fair Amateur HomeBrew Competition, 108 entries—Dana Cordes, Simi Valley, CA.

#### August 2014

Hail the Ale, 76 entries—Paden Town, Manhattan, KS.

Best of the Bay Homebrew Competition, 176 entries—Chris McClanahan, Bellingham, WA.

2014 Los Angeles County Fair Homebrew Comp, 302 entries—Eric Addison, Fullerton, CA.

Alabama Brew Off, 242 entries—Tom Vaegetti, Birmingham, AL.

Lunar Rendezbrew XXI, 328 entries—Mark Schoppe, Austin, TX.

Western Idaho Fair Homebrew Competition, 126 entries—Scott Allen, Boise, ID.

Kentucky State Fair Homebrew Competition, 465 entries—Rick Stidham, Louisville, KY.

Josephine County Homebrewers, 34 entries—Jeff Clarke, Steve Ferrell, Rich Bush, Grants Pass, OR.

Summer Smash II, 35 entries—Christiana Bockisch, Tempe, AZ.

Bay de Noc Brew-Off, 33 entries—Tom Uelmen, Gladstone, MI.

I Can't Believe It's Not Lager, 18 entries—John O'Connell.

Colorado State Fair Homebrew/Craft Beer Competition, 631 entries—Shawn Crawford, Greeley, CO.

Evergreen State Fair 2014, 159 entries—Dennis Nagy, Monroe, WA.

Austin ZEALOTS Homebrew Inquisition, 222 entries—Dan and Joelle Dewberry, Austin, TX.

Minnesota State Fair Homebrew Competition, 693 entries—John Longballa, Roseville MN.

Benton Franklin Fair Homebrew Competition, 33 entries—Jocelyn Bequette, Benton City, WA.

Beer & Sweat, 281 entries—Jennifer Hermann, Cleveland, OH.

For What It's Worth, 188 entries—Mark Crone, Danvers, IL.

Nebraska State Fair Beer and Wine Competition, 127 entries—Gabe Stadler, Genoa, NE.

MoM Hot Summer Brew Off, 81 entries—Nathan Briscoe, Holden, MO.

Lee's Summit Downtown Days 2014 Brewoff, 7 entries—Bryant Gish, Lee's Summit, MO.

Summer Suds in Savannah, 138 entries—Mike Tripka, Bluffton, SC.

Garden County Irish Red Ale Competition, 40 entries—John Craddock, Dublin, Ireland.

2nd Annual Macon Beer Festival Homebrew Competition, 74 entries—Blair Housely, Cumming, GA.

Castle Hill & Hills District and NSW State Homebrewing Competition, 363 entries—Danny Hannan, Baulkham Hills, NSW, Australia.

6th Annual Beehive Brew-Off, 621 entries—Andrew Willardson, Salt Lake City, UT.

WCB Belgium, 18 entries—Andy Thomas, Shelly, Australia.

SFHG Bring Your Brews, 28 entries—Kevin Inglin, San Francisco, CA.

Intervarsity Beer Brewing Competition 2014, 43 entries—Cape Peninsula University of Technology, Cape Town, South Africa.

Homebrew Competition at the Coconino County Fair, 23 entries—Stephen Lenhart, Flagstaff, AZ.

Good Time Brewers Classic, 39 entries—Bryan Franklin, Baton Rouge, LA.

III Concurso Estadual de Cervejas Caseiras da ACervA Catarinense, 67 entries—Gabriel Kollross, Florianopolis, SC, Brazil.

#### September 2014

National Organic Brewing Challenge, 136 entries—Tom Karow.

The 2014 Great Frederick Fair, 83 entries—Tim Rice, New Market, MD.

Barley and Hops Hoopla, 37 entries—Keith Heckman & Jeff Bunton, Columbia, MO.

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## AHA/BJCP SANCTIONED COMPETITION PROGRAM CALENDAR

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

**November 1**  
**California State Homebrew Competition**  
San Francisco, CA.  
Entry Deadline: 10/11/2014.

**November 1**  
**All Colorado Beer Festival**  
Colorado Springs, CO.  
Entry Deadline: 10/24/2014.  
[www.allcoloradobeerfestival.com](http://www.allcoloradobeerfestival.com)

**November 1**  
**7th Annual Monster Homebrew Competition**  
Cedar Park, TX.  
Entry Deadline: 10/24/2014.  
<http://thedigpub.com/monster-homebrew-competition/>

**November 4**  
**Southern Season Annual Homebrew Competition**  
Chapel Hill, NC.  
Entry Deadline: 11/1/2014.  
[www.southernseason.com](http://www.southernseason.com)

**November 7**  
**Santa Fe Open Brewing Competition**  
Santa Fe, NM.  
Entry Deadline: 10/25/2014.  
<http://santafeopen.org/>

**November 8**  
**Knickerbocker Battle of the Brews**  
Albany, NY.  
<http://thoroughbrews.org/>

**November 8**  
**Badger Brewoff**  
Madison, WI.  
Entry Deadline: 10/31/2014.  
<http://mhtg.brewcompetition.com/>

**November 8**  
**SCH\*ABC 7**  
Collegeville, PA.  
Entry Deadline: 10/25/2014.  
[www.schomebrewers.com](http://www.schomebrewers.com)

**November 8**  
**Hall of Foamers Home Brew Competition**  
Topeka, KS.  
Entry Deadline: 11/1/2014.  
[www.topekabrewers.com](http://www.topekabrewers.com)

**November 8**  
**FOAM Cup**  
Tulsa, OK.  
Entry Deadline: 10/25/2014.  
<https://foamcup.us/>

**November 8**  
**Beer for Boobs IV**  
Zanesville, OH.  
Entry Deadline: 10/26/2014.  
[www.sodz.org/beer-for-boobs-competition](http://www.sodz.org/beer-for-boobs-competition)

**November 8**  
**Bubbly Creek Barrel Brawl**  
Chicago, IL.  
Entry Deadline: 11/4/2014.

**November 8**  
**Joint Novembeefest & Puget Sound Pro-Am**  
Kent, WA.  
Entry Deadline: 11/1/2014.  
[www.wahomebrewers.org/novembeefest](http://www.wahomebrewers.org/novembeefest)

**November 8**  
**Land of the Muddy Waters**  
Rock Island, IL.  
Entry Deadline: 10/30/2014.  
[www.mugzhomebrew.org](http://www.mugzhomebrew.org)

**November 8**  
**National Homebrew Champs 2014 (North)**  
Johannesburg, South Africa.  
Entry Deadline: 10/1/2014.

**November 8**  
**Skirmish in the Triad**  
Greensboro, NC.  
Entry Deadline: 10/26/2014.  
[www.battlegroundbrewersguild.com](http://www.battlegroundbrewersguild.com)

**November 8**  
**Sioux Falls Craft Beer Expo Homebrew Competition**  
Sioux Falls, SD.  
Entry Deadline: 11/2/2014.  
<http://siouxfallscraftbeerexpo.com/competition>

**November 9**  
**Wort in Show**  
Victoria, BC, Canada.  
Entry Deadline: 10/31/2014.  
<http://wortinshow.happyhomebrewer.com/>

**November 15**  
**WCB is M E A D?**  
Perth, Western Australia.  
Entry Deadline: 11/15/2014.

**November 15**  
**MALT Turkey Shoot – 10th Annual**  
Baltimore, MD.  
Entry Deadline: 11/9/2014.  
[www.maltclub.org/MALT/Turkey\\_Shoot.html](http://www.maltclub.org/MALT/Turkey_Shoot.html)

**November 15**  
**Motown Mash**  
Morristown, NJ.  
Entry Deadline: 11/1/2014.  
[www.mashnewjersey.com/motownmash2014.php](http://www.mashnewjersey.com/motownmash2014.php)

**November 16**  
**Sunshine Challenge**  
Orlando, FL.  
Entry Deadline: 10/15/2014.  
[www.cfhb.org](http://www.cfhb.org)

**November 20**  
**IX Concurso Nacional Das Acervas**  
Salvador, Brazil.  
Entry Deadline: 11/14/2014.  
[www.acervabaiana.com.br](http://www.acervabaiana.com.br)

**November 22**  
**IÂ° Copa Cervezas de Chile**  
Santiago, Chile.  
Entry Deadline: 11/8/2014.  
[www.minicerveceria.cl](http://www.minicerveceria.cl)

**November 23**  
**2014 Butler Homebrew BASH**  
Butler, PA.  
Entry Deadline: 11/15/2014.  
<http://bash.smythenet.com/>

**November 28**  
**Backroom Brewery Home Brewer Competition**  
Middletown, VA.  
Entry Deadline: 11/21/2014.  
[www.backroombreweryva.com](http://www.backroombreweryva.com)

**December 6**  
**Palmetto State Brewers Open 16**  
Columbia, SC.  
Entry Deadline: 11/21/2014.  
[www.sagecat.com/psbo16.htm](http://www.sagecat.com/psbo16.htm)

**December 6**  
**2014 Nielsen Massey Homebrew Competition**  
Chicago, IL.  
Entry Deadline: 11/23/2014.  
<http://nielsenmasseychallenge.com/>

**December 6**  
**Monk Melee IV**  
Hulmeville, PA.  
Entry Deadline: 11/30/2014.  
[www.monkmelee.com](http://www.monkmelee.com)

**December 6**  
**Happy Holidays Homebrew Competition (HHHC)**  
St. Louis, MO.  
Entry Deadline: 11/21/2014.  
[www.stlbrews.org/competition/hhhc/index.asp](http://www.stlbrews.org/competition/hhhc/index.asp)

**December 6**  
**CiderDays Amateur Cider Competition**  
Deerfield, MA.  
Entry Deadline: 11/22/2014.

**December 6**  
**Fugetaboutit**  
Chattanooga, TN.  
Entry Deadline: 11/7/2014.  
[www.barleymob.com](http://www.barleymob.com)

**Continued >>**

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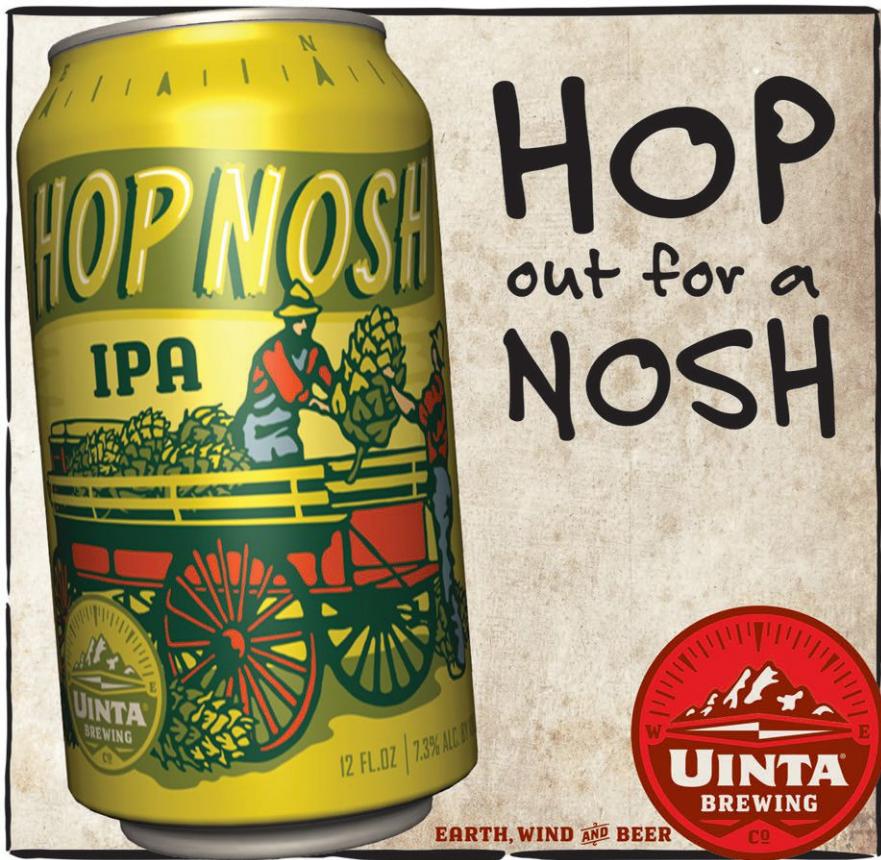
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## AHA/BJCP SANCTIONED COMPETITION PROGRAM CALENDAR

### December 13

#### *ABQ Beer Holiday Fiesta*

Albuquerque, NM.

Entry Deadline: 11/28/2014.

<http://abqbeer.com/holiday-fiesta-brew-competition/>

### December 13

#### *8th Annual Virginia Beer Blitz*

Hampton, VA.

Entry Deadline: 11/29/2014.

[www.colonialalesmiths.org/BeerBlitz/](http://www.colonialalesmiths.org/BeerBlitz/)

### December 13

#### *Pints and Knights*

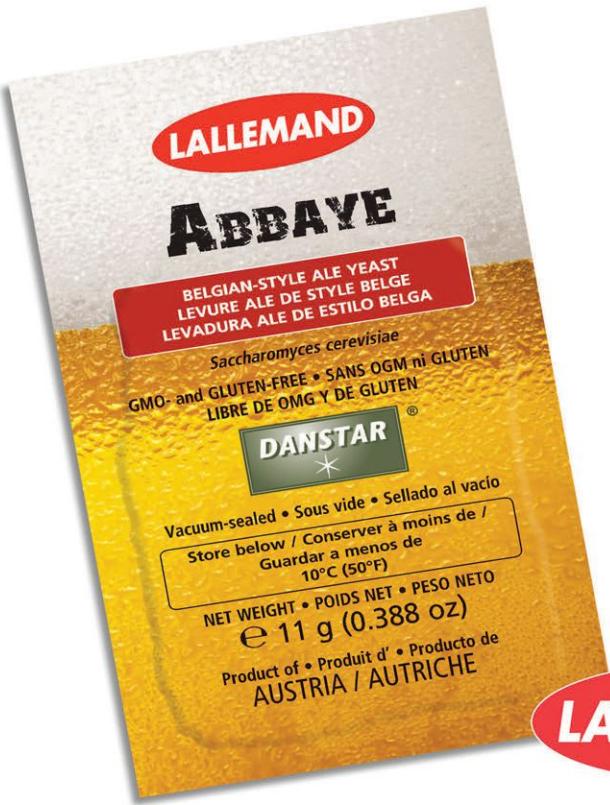
#### *Homebrew Competition*

Santa Fe Springs, CA.

Entry Deadline: 12/5/2014. <http://competition.enriquepiceno.com/>



For an up-to-date calendar  
of AHA and BJCP events  
go to the Events section of  
[HomebrewersAssociation.org](http://HomebrewersAssociation.org)



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# COMMERCIAL CALIBRATION

**One way beer judges check their palates is by using commercial "calibration beers"—classic versions of the style they represent. Zymurgy has assembled a panel of four judges who have attained 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.**



with five different grains, including chocolate wheat. The addition of cacao nibs creates a “devilishly delicious chocolate finish with a velvety mouthfeel.” It checks in at 5.9 percent ABV.

Shake Chocolate Porter was judged as a Spice, Herb & Vegetable beer (cacao nibs) using robust porter as the base style.

Next up was The Temptress, a year-round imperial milk stout from Lakewood Brewing Co. in Garland, Texas. Referred to as “seduction in a glass,” The Temptress is brewed with chocolate and caramel malts. It pours with a thick, milk chocolate head and has a silky mouthfeel. Tasting notes include sweet caramel and a touch of vanilla. The Temptress checks in at 9.1 percent ABV.

We sent some early holiday cheer in the form of “decadent” beers to our judges for this issue.

First up was a relatively new beer from Colorado’s oldest microbrewery. Shake Chocolate Porter recently joined the year-round lineup for Boulder Beer Company, which started in a goat shed northeast of Boulder, Colo. in 1979.

“Shake’s our first year-round release in over four years and I am stoked we have married two of my favorite flavors—chocolate and coffee—in my favorite beverage, beer!” commented Boulder Beer president Jeff Brown. The beer won a gold medal at the 2014 World Beer Cup.

A twist on the traditional robust American porter, Shake Chocolate Porter is brewed

The Temptress was named Best Beer by the *Dallas Observer*’s 2013 Best of Dallas. Lakewood Brewing Co. suggests pairing The Temptress with robust blue cheese or dark chocolate.

**OUR EXPERT PANEL** includes David Houseman, a Grand Master V level judge and competition director for the BJCP from Chester Springs, Pa.; Beth Zangari, a Grand Master II level judge from Placerville, Calif. and founding member of Hangtown Association of Zymurgy Enthusiasts (H.A.Z.E.); Scott Bickham, a Grand Master III 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 IX judge, principal author of the BJCP Style Guidelines and president of the BJCP board who lives in Beavercreek, Ohio.



**Boulder Beer Co.**  
[www.boulderbeer.com](http://www.boulderbeer.com)

**Lakewood Brewing Co.**  
[www.lakewoodbrewing.com](http://www.lakewoodbrewing.com)

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

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

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[ShmaltzBrewing.com](http://ShmaltzBrewing.com)

# THE SCORES



Shake Chocolate Porter—Boulder Beer Co., Boulder, Colo.  
BJCP Category: 21A Spice, Herb or Vegetable Beer

## THE JUDGES' SCORES FOR SHAKE CHOCOLATE PORTER



DAVE HOUSEMAN



BETH ZANGARI



SCOTT BICKHAM



GORDON STRONG

**Aroma:** Roasted malts dominate aroma with supporting chocolate notes followed by a bit of caramel. It's like a rich Yoo-hoo chocolate drink. No hop aroma. No DMS. No diacetyl. Fruity fermentation esters are moderate. No overt alcohol aroma. A chalky, mineral note persists in the finish. (9/12)

**Appearance:** Very dark, black, nearly opaque, with garnet highlights. Very clear to bright clarity. Rocky, tan, long-lasting head. (3/3)

**Flavor:** Assertive initial chocolate flavor with roasted malts, caramel, and a nutty, almost hazelnut finish. Massive chocolate character is real cocoa, not just roasted malts. Balancing medium-high hop bitterness. No hop flavor. No DMS. No diacetyl. Medium fermentation esters. Low alcohol flavor. Chalkiness and bitterness linger in a semi-dry finish. (16/20)

**Mouthfeel:** Medium-full body with a smooth mouthfeel followed by low alcohol warming. Mouthfeel drops off mid-palate. Well attenuated. A bit of lingering bitterness and astringency in finish. (4/5)

**Overall Impression:** A very drinkable porter akin to a chocolate milkshake. This is certainly a chocolate lover's beer. A good example of a robust porter, but I find the raw cocoa a bit too assertive for the rest of the beer, resulting in a lingering nuttiness and imbalance. This would be a great beer to cook with, to make ice cream or cheesecake. Of course you could also drink it with dessert or enjoy it as dessert itself. (7/10)

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

**Aroma:** Semi-sweet chocolaty goodness dominates. No hop aroma. A low prune stone fruit ester plays behind a hint of caramel. Reminds me of a freshly opened bag of chocolate baking morsels. (9/12)

**Appearance:** Deep burnished brown-black with brilliant clarity. Bright garnet highlights sparkle at the bottom of the glass. Topped by a well-formed, persistent, creamy light tan head. (3/3)

**Flavor:** First impression is of mocha, followed by hints of vanilla, then high floral, rosy alcohol notes. No hop flavor is detected, though a firm hop bitterness accumulates and blends with powdered baking chocolate and roasted barley notes. While bitterness lingers in the finish, it provides balance to a liqueur-like chocolate and alcohol presentation. (15/20)

**Mouthfeel:** Moderately full-bodied with silky texture and creamy carbonation. Carbonation adds to the sensation of full-bodiedness. A low alcohol note combines with a light roast astringency for a lingering warm finish. (5/5)

**Overall Impression:** As the sample diminished, it took on a slightly lighter texture. Initial aroma reminded me of coffee and unsweetened cocoa powder. The light roast coffee and chocolaty goodness begs for a piece of zucchini (or pumpkin) bread as an accompaniment. (7/10)

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

**Aroma:** Rich milk chocolate aroma, with moderate coffee and mocha notes. A light roasty character lends a slight smokiness. No hop aroma. A little alcohol along with plums, figs, and other dark fruit esters. Very inviting. (10/12)

**Appearance:** Dark brown color with very good clarity. The head is light beige in color and concentrated in a tightly beaded ring that forms a halo around the outside. Oils from the chocolate may have impacted the head retention. (2/3)

**Flavor:** A rich maltiness is consistent with the aroma, but here it has more of a bittersweet chocolate character. Low to moderate coffee notes with a low roasty sharpness carry through to the finish. No discernible hop flavor, but the bitterness is moderately high, which helps dry out the finish. Slight metallic notes on the sides of the tongue after swallowing seem more mineral-like than oxidized. Low levels of dark fruit esters, including plums and black currants. (16/20)

**Mouthfeel:** Moderate carbonation combines with dextrins to lend a pleasant creaminess. Low alcoholic warmth is appropriate to the style, and while there is a slight astringency, it is not burnt or excessive for the base style. (4/5)

**Overall Impression:** A nice beer that layers cacao nib flavors on top of a well-crafted base beer. The focus is on the roasted malt flavors, enhanced by chocolate notes and balanced by enough hop bitterness to prevent the beer from being too sweet. The coffee notes probably put it a little closer to an American stout than robust porter, but this did not significantly affect my score. Nicely done! (8/10)

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

**Aroma:** Moderately high chocolate aroma, like milk chocolate; has some sweetness mixed in with the chocolate. No noticeable hops. Slightest hint of alcohol. Seems fairly clean; not getting fruit. Mostly chocolate in the aroma; it reminds me of a cooled cup of hot chocolate. (8/12)

**Appearance:** Moderate-sized beige head with tight bubbles and average retention. Opaque in the glass, but clear when held to a light. Dark brown color with beautiful reddish mahogany highlights. (3/3)

**Flavor:** Moderately strong chocolate flavor initially with moderate sweetness, finishing with moderate bitterness. The bitterness gives it a bittersweet aftertaste, although the initial flavor is of milk chocolate. Clean fermentation character. Moderate earthy-woody-citrusy hop flavor. Light roast flavors dominated by chocolate and overwhelmed ultimately by sweetness in the palate. Nutty-roasty flavors in the aftertaste are interesting. (14/20)

**Mouthfeel:** Medium-high carbonation. Medium-full body, moderately creamy, silky texture. Slightly astringent. Lightly warming alcohol, not bad. Fairly smooth. The bubbles lighten the impression of body. (4/5)

**Overall Impression:** The milk chocolate quality makes me think of lactose. Has a rich, silky mouthfeel. The bitterness takes over late; otherwise this would be way too sweet. The porter qualities are subdued except for chocolate and some bitterness. Definitely a winter beer with all that sweetness but there are some strong chocolate flavors to balance. (7/10)

**Total Score:** (36/50)



## THE JUDGES' SCORES FOR THE TEMPTRESS



**Aroma:** Soft roasted malt and barley profile with supporting alcohol. Finishes with light coffee, chocolate, caramel, and vanilla notes. No hop aroma. Fruity fermentation esters. No DMS. No diacetyl. Overall, a complex but subtle aroma. (10/12)

**Appearance:** Black with ruby highlights. Opaque. Dense, rocky, tan, long-lasting head. (3/3)

**Flavor:** Sweet chocolate maltiness up front with lingering notes of vanilla and caramel. Substantial hop bitterness but the beer finishes quite sweet. Fruity prune-like esters from malts and fermentation. Noticeable alcohol flavor. Lingering sweetness approaching cloying. No hop flavor. No DMS. No diacetyl. (15/20)

**Mouthfeel:** Full-bodied. Creamy. Smooth. Noticeable alcohol warming and presence in mouthfeel. (5/5)

**Overall Impression:** Very complex beer; milk stout's answer to Russian imperial stout. Nice combination of malts, esters, and alcohol, certainly delivering on the expectations for an imperial milk stout. For drinkability I would have liked a bit more attenuation so that it doesn't finish quite as sweet, even for a big milk stout; this would provide more balance. Still a good beer to have with a chocolate dessert, gorgonzola cheese, or sipped to warm on a cold night. (7/10)

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

**Aroma:** Sweet dark roasted coffee and dark chocolate with hints of caramel are reminiscent of a candy bar. No hop aroma detected. Caramel notes become stronger as the sample warms. Fermentation character is clean. (8/12)

**Appearance:** Rocky, biscuity dark tan head forms atop the opaque black-brown liquid and persists. When held to a lamp, deep red highlights appear near the bottom of the glass. (3/3)

**Flavor:** Semisweet chocolate with dried currants dominate the first impression. Chocolate character is roasty, like dark unsweetened baking chocolate, at first a bit savory, but then pronounced sweetness and vanilla take over. No hop flavor, though a moderate bitterness is present, balanced with the roast and chocolate. (15/20)

**Mouthfeel:** Full body and low carbonation give silky texture, accentuated with a low astringency and cozy alcohol warmth. Blankets the tongue without being cloying. (4/5)

**Overall Impression:** Like a security blanket or comfy old quilt, this is a warmer. The bifurcation of savory, roast, dark unsweetened cocoa to full vanilla sweetness takes the palate on a journey. I suggest pairing with goat cheese cheddar. Or better yet, blue cheese cheesecake on a chocolate cookie crust, topped with any local berries—blueberries, raspberries, blackberries, currants, elderberries, or any combination. (8/10)

**Total Score:** (38/50)

**Aroma:** Rich sweet malty aroma with moderately strong chocolate and coffee notes. I don't pick up any lactose, but it could be buried underneath the other aromatics. Alcohol is fairly assertive—ethanol in first impression, but developing a little solvent character as the beer breathes. Moderate dark fruit esters (plum and raisin), along with notes of black licorice and molasses. No hop aroma. (8/12)

**Appearance:** Very deep brown, almost black. Excellent clarity, but the head retention is poor even when the high alcohol content is taken into account. A ring of light brown bubbles along the edge of the glass, with a few islands floating in the middle. (2/3)

**Flavor:** Assertively malt-forward, with chocolate, treacle, and toffee notes pervading from start to finish. It is not quite as rich as I expected from the aroma. Complex, with moderately high hop bitterness enhanced by roasted malts. The dark fruit esters add intrigue, while coffee notes carry through to a fairly long, although somewhat sweet, finish. (13/20)

**Mouthfeel:** A little thick due to relatively light carbonation, but not excessively cloying. Lactose leaves residual stickiness on the lips. Alcohol warmth is evident but seems to be primarily ethanol. A light astringency in the finish. (4/5)

**Overall Impression:** Complex and flavorful beer with some rough edges. Initial solvent volatiles gradually disappeared, along with the head. A little more carbonation and conditioning would improve the liveliness. The alcohol level is high enough for an imperial designation without being too potent. (8/10)

**Total Score:** (38/50)

**Aroma:** Surprisingly neutral. Light roast, soft malt. Medium-low spicy alcohol. Light impression of sweetness. Generally clean, but alcohol is high in the balance. The roast qualities do grow a bit as it warms but still remain on the low side. Expecting more impact from a beer of this strength. (8/12)

**Appearance:** Tall, medium brown colored head with frothy bubbles and fair retention. Brownish-black color. Opaque. (3/3)

**Flavor:** Moderate roast flavor but smooth, not harsh or burnt. Bready malt base. Medium-high bitterness. Moderate alcohol flavor accentuates perceived bitterness. Full, somewhat hot finish with light roast and alcohol in the aftertaste. Not really tasting vanilla. Finish is rather harsh. Medium-low earthy hop flavor. Slight impression of sweetness mid-palate but the bitterness quickly overtakes it. The roast doesn't really remind me of chocolate or coffee, just roasted grain. (13/20)

**Mouthfeel:** Very full body. Warming-hot alcohol is prominent. Medium carbonation. Kind of heavy-rich-full impression. Somewhat smooth and creamy but the alcohol burn intrudes and negatively impacts the smoothness. (3/5)

**Overall Impression:** Could use more aging. The alcohol is kind of hot. The flavors seem neutral in general. I don't really get the intensity and complexity of roast flavors that I expected in a beer this size. The alcohol flavor and heat dominate, and the vanilla wasn't noted. Would like to try this again in six months to see if it comes more into balance. (6/10)

**Total Score:** (33/50)



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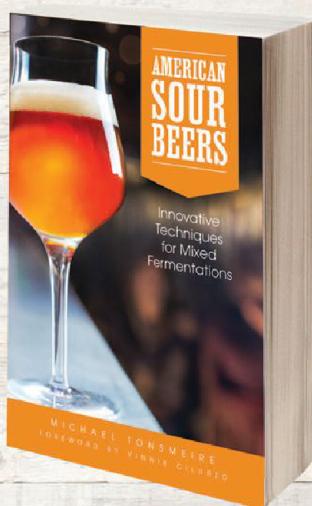
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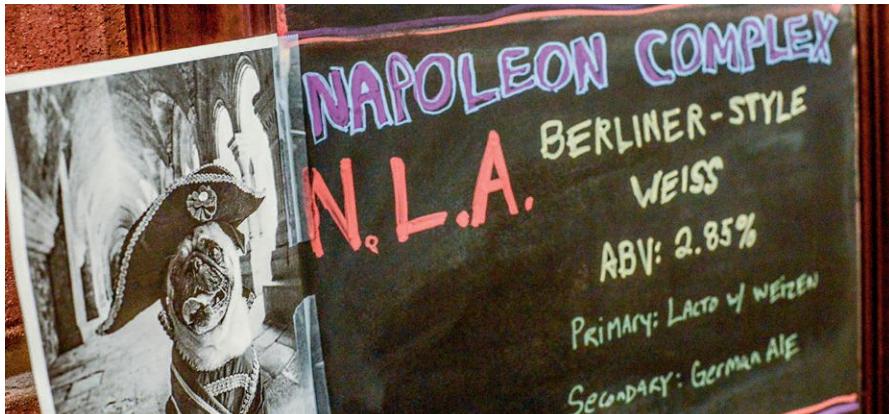
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by Charlie Papazian



# No Hops, No Kidding



**H**ow many times have I been offered a sour beer? Way too many than I usually care for. Don't get me wrong. I enjoy sour beers that are balanced in a way that doesn't leave my mouth in a pucker, my eyes squinting from shock, and my stomach haunting me the next morning. I suppose you might say I'm a bit fussy, but there's no denying anyone their preference.

So when Andy Sparhawk, Craft Beer Program coordinator for the Brewers Association (BA) and lead recipe formulator for a recent BA staff brew day, taunted me at our staff bar, "Charlie, you should try our N.L.A. Berliner Weiss-style sour beer. I'm sure you won't like it. It doesn't have any hops. It's a wheat beer and it's sour," my contrarian side was tweaked. "Give me some," I defiantly replied, hoping I wasn't going to get whacked with a smack-down sour punch in the puss.

My apprehension was totally defused. I found myself whirling around to check out the tap board for the details. This was my kind of sour beer.

Too busy enjoying and then refilling my glass, I didn't take all the information in at first. Then I realized what

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## Napoleon Complex (Berliner-style Weiss)

**RECIPE BY ANDY SPARHAWK AND BREW TEAM N.L.A. (NO LUKES ALLOWED)**

### INGREDIENTS

for 5 U.S. gallons (19 L)

<b>2.5 lb</b>	(1.13 kg) German Pilsner malt (50%)
<b>2.5 lb</b>	(1.13 kg) wheat malt (50%)
<b>(no hops are used in recipe)</b>	
<b>White Labs</b>	
<b>WLP630</b>	Berliner Weisse Blend (traditional blend of German Weizen yeast and lactobacillus)
<b>Wyeast 1007</b>	German Ale
<b>1 cup</b>	(240 ml) corn sugar (priming bottles) or 0.75 cup (175 ml) corn sugar for kegging

**Target Original Gravity:** 1.029 (7.5 B)

**Approximate Final Gravity:** 1.007 (2 B)

**Target Extraction Efficiency:** 80%

**IBU:** 0

**Approximate Color:** 3 SRM (6 EBC)

**Alcohol:** 2.9% by volume

### DIRECTIONS

A one-step infusion mash is employed to mash the grains. Add 2.5 quarts (2.4 L) of 167° F (75° C) water to the crushed grain, stir, stabilize and hold the temperature at 150° F (65.5° C) for 45 minutes. Raise temperature to 167° F (75° C), lauter and sparge with 3 gallons (11.4 L) of 170° F (77° C) water. Collect 5 gallons (19 L) of runoff. Bring to a full and vigorous boil for 10 minutes.

Cool wort and pitch WLP630 between 70-75° F (21-24° C) and ferment for 14 days. At 7 to 10 days, add Wyeast 1007. Wait until fermentation is complete (3 to 5 weeks total fermentation) and then bottle or keg. Carbonate to 3.0 volumes of CO<sub>2</sub> by force carbonating a keg or prime with corn sugar and bottle or keg. This beer should be more carbonated than usual and will require chilling to cold temperatures in order to control foaming.

### EXTRACT VERSION

Substitute a wheat malt extract that is 50% wheat and 50% barley malt. Use 4 lb (1.8 kg) wheat malt extract syrup or 3.4 lb (1.5 kg) dried malt extract. Dilute the malt extract to reach 5 gallons volume. Bring to boil and proceed as in above recipe.

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Andy had said. "No hops." Really? I was thinking, "Well, this wouldn't really be German because it has no hops. As a matter of fact, it wouldn't be beer in the USA either, because it doesn't have any hops."

But what the hell. This was a super refreshing, clean, crisp, well-balanced sour beer with a huge bready aroma, light on the palate, with plenty of sparkling carbonation. This was worth brewing. This was worth sharing.

I asked Andy how his team brewed this, and here is his response:

*"For office brew teams, brew days are dependent upon each team members' schedule. Is an event registration going on? Is there a press release being published that day? How many of us are in on 'x' Friday? Once there is agreement of when, we set our sights on what. For this brew, the team wanted to create a beer that fit the season. Estimating that the beer would ultimately be enjoyed no earlier than June, a Berliner-style Weiss was agreed upon."*

*"The recipe and brew schedule are both simple. The hardest part might be fighting the urge to add hops. The usual concerns of brew day equipment issues our team seems to run into were mitigated by the recipe's simplicity. They also offered those who could not make the brew day the option to play a role by preparing traditional syrups to accompany the final product."*

*"Our team couldn't have been more pleased with the results, and the timing of this bone-dry, tart, thirst-quenching Weiss was perfect for the mid-90 temperatures of July. We're glad you liked it, Charlie!"*

Just before I departed, I asked for another 4 ounces of N.L.A. and then squirted in about a half-ounce of Firestone Walker Pivo Pils from the adjacent tap. All of a sudden I had a new beer in my glass: a still beautifully balanced Berliner-style Weiss, but now with a vibrantly fresh yet subtle hop aroma. Will I dry-hop my own version of Napoleon Complex with some German Saphir hops? Time will tell.

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

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# Is Homebrewing Cost-Effective?

In 1994, I needed just the slightest nudge into homebrewing from my sister Teresa, who gave me a copy of *The New Complete Joy of Home Brewing* for Christmas. I already had much of the gear: two 6.5-gallon carboys scrounged from work, champagne bottles from my wedding, a big canning pot, and a vintage gas stove. The "why" was that I yearned for the English bitter I had enjoyed while visiting my sister Patsy in England. Back then, you could not buy great beer, but now you can. So is it worth the time and expense of homebrewing? I say yes.

Some homebrewers let their love of brewing escalate into "hobby" status, where new methods, exotic ingredients, and equipment become more important than expense. A recent *Zymurgy* article described going back to simpler times—batches of "only" five gallons. Any hobby can get expensive and expansive.

Should we factor the value of time into the cost of making beer? I say no. The value of one's time is primarily used to justify not doing something, such as continuing to push that mower around the yard instead of hiring a gardener or buying a riding mower. But many of us continue to homebrew because we love the beer we create, enjoy sharing it with friends and family, and love experimenting with new styles now that our palates have "matured."

I made a reluctant and thrifty entry into all-grain, chronicled in the March/April 2003 *Zymurgy*. I was happy with the beer I was making, but Teresa's friend from Bavaria said that my Weizen tasted great but was too dark in color. I decided that I'd need to do all-grain to fix the color, and got sparging equipment for

Christmas. I added a second 5-gallon pot, and was on my way. The resulting Weizen, when entered in a local competition, took first place! [Editor's Note: see Beeroscope on page 9 for the recipe.]

I spend about \$30 for ingredients to make a 6-gallon all-grain batch. To buy that amount of beer would cost about \$100, for a savings of about \$70 per batch. I buy my grains by the sack and grind them at home, saving more money. If you buy grains by the batch, the costs are about the same as for extract, which, for a 5-gallon batch, is about \$36. To buy eight six-packs would be about \$64, for a savings of \$28 per batch. With the cost of durable start-up equipment at about \$160, the break-even payback is six batches. If you buy bottles, then add a batch per two cases of bottles to the break-even—still an excellent business case.

For many homebrewers, basic all-grain equipment includes an 8.5-gallon pot, an outdoor propane burner and tank, wort chiller, and sparging gear, which runs about \$500. If you already have an outdoor propane cooker for turkey frying, you can eliminate about \$140. Even with the all-grain equipment purchases, the break-even is only about 18 batches.

And, once you have reached break-even, you can take your brewing to the next level—kegging, lagering, exotic beers, ciders, meads, etc. The good news is that those fancier, sometimes exotic beverages are even more expensive to buy, further improving the payback!

**Don Simpson lives in Pasadena, Calif. with his lovely although non beer-drinking wife, Carol.**

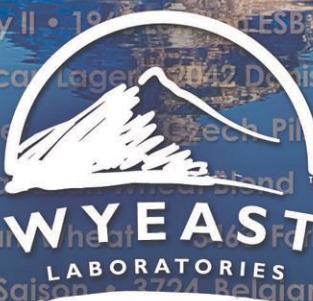


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