

FOR THE HOMEBREWER & BEER LOVER

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zymurgy®

■ The Journal of the American Homebrewers Association ■

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Season



A Publication of
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DENSE BUBBLES

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Before we could open the Trumer Brauerei Berkeley, sister to our 400-year-old Brauerei in Salzburg, we had to master a few things. And dense bubbles were a biggie. Like champagne, the quality of a great pilsner can be seen in the density of its bubbles. Trumer Pils produces small, tight bubbles that don't just float to the top of the glass. They march. Delivering a slightly spicy aroma, with just a hint of citrus. Sure, the bubbles may be dense, but they know exactly what they're doing.



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More on Beer and Food

By now it's been hammered into your head that craft beer is a great accompaniment to many different types of food. And apparently, the possibilities are limitless. In January, I attended the Big Beers, Belgians and Barleywines festival in Vail, Colo., where, for one of the beer dinners, Doug Odell (Odell Brewing Co. in Fort Collins, Colo.) had to come up with a beer that would pair well with Rocky Mountain oysters, among other appetizers.

In case you've never heard of Rocky Mountain oysters and were wondering which alpine lake they might come from, they're actually deep fried bull testicles. For the record, the Odell Double Pilsner was a perfect accompaniment to this and other appetizers including a caviar station and a hot soup station (vanilla scented lobster bisque, Normandy brie soup with black truffles, and roasted red pepper bisque with roma tomato and aged balsamic). In addition, Tomme Arthur paired his Lost Abbey Lost and Found abbey ale with the caviar station, hot soup station and Carolina pulled pork sliders. Delicious!

I was impressed recently to see a slew of thoughtful answers and excellent beer pairing suggestions on TechTalk for a spectacular-sounding Mediterranean dinner that someone was planning. Many of the responses were similar—it seems homebrewers are learning many of the "tricks of the trade" when it comes to pairing beer and food, and are creating some of their own. As Randy Mosher wrote in *The New Brewer*, Zymurgy's sister publication for professional craft brewers, "We're lucky, really. In what other pursuit does the phrase 'Practice, practice' sound so delicious?"

The New Brewer features a back-page interview with various personalities in the craft brewing world, and I always ask

them for their favorite beer and food pairings. Here are some of the responses to tempt your palate:

Garrett Marrero, Maui Brewing: "A good fresh IPA and a bowl of spicy jambalaya. It's also hard to pass up a real beer float of CoCoNut Porter and macadamia nut ice cream."

Teri Fahrendorf, formerly of Steelhead: "Thai food with IPA or Pilsner."

Geoff Larson, Alaskan Brewing: "Smoked Porter, vanilla ice cream and fresh raspberries."

Kim Jordan, New Belgium: "Cheese and beer."

Vinnie Cilurzo, Russian River: "Pliny the Elder paired with duck confit and blue cheese flan."

Eric Warner, Flying Dog: "Beer and pizza."

We've had articles in *Zymurgy* on the subject, and beer and food pairing Web sites are cropping up including www.beerdinners.com, launched last year by Flying Dog Brewery. There is also a new one from the Brewers Association, www.craftbeerandfood.com, where BA member breweries will be encouraged to post their special releases and seasonal releases and will be required to post suggested food pairings for those beers.

In all, it's an exciting time to be a beer lover and a foodie. If you're heading to Cincinnati for the National Homebrewers Conference in June, I hope you'll check out the gourmet beer dinner on Tuesday, June 17.

Jill Redding is editor-in-chief of Zymurgy.

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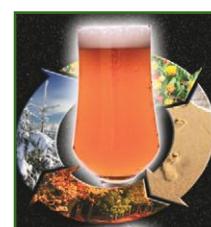
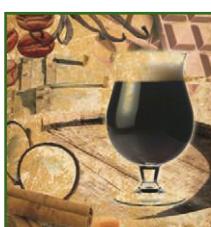
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>> GET THERE!

St. Louis Brewers Heritage Festival

The St. Louis Brewers Heritage Festival brings together brewers large and small for a three-day event.

On May 8, a VIP session includes "the ultimate beer dinner," a five-course gourmet meal paired with St. Louis beers. On May 9, a "Businessman's Special" will take place in the afternoon. General sessions are held on May 9 and 10. Each session is held outside in Forest Park, featuring more than 60 styles of beer to sample.

Breweries include Anheuser-Busch, Augusta Brewing Co., Morgan Street Brewery, Schlafly, O'Fallon and Alandale.

A special festival brew, St. Louis Dark Lager, will be offered along with a special beer brewed especially for the event by a local homebrewer.

For more information go to www.stlbrewfest.com.



May 10

3rd Annual Oregon Micro Brew Fest

Oregon, WI. Phone: 608-835-3697, Web:

www.oregonwi.com/events/events.cfm

May 17

Great Orlando Beer Festival

Orlando, FL. E-mail: arobertson@greaterlandobeerfestival.com, Web: www.greaterlandobeerfestival.com

May 28-June 1

Mondial de la Biere

Montreal, Quebec, Canada. E-mail: mbiere@globetrotter.net Web: www.festivalmondial-biere.qc.ca

May 31

Maryland Brewers Springfest

Frederick, MD. Phone: 877-846-5397 Email: kscrivani@frederickkeys.com

Web: www.frederickkeys.com

May 31

Odell Small Batch Beer Festival

Fort Collins, CO. Web: www.odellbrewing.com

June 7

5th annual Blues 'N Brews Festival

Fayetteville, N.C. Web: www.cfrt.org/artman/publish/cat_index_1.shtml

BREW News: Homebrew Legalization

Believe it or not, there are five states in the U.S. where homebrewing is still not legal: Alabama, Kentucky, Mississippi, Oklahoma and Utah. In Utah, AHA director Gary Glass worked with University of Utah law student and homebrewer Douglas Wawrzynski, who encouraged Rep. Christine Johnson to sponsor a bill to legalize homebrewing in Utah. Glass testified on behalf of the bill before the Utah House Government Operations Committee. The Committee unanimously approved the bill and sent it on to the full House of Representatives, where it passed by an overwhelming 55-13 margin, thanks in large part to the scores of homebrewers who contacted their representatives urging them to support it. The bill then moved on to the Utah Senate, where the Senate Rules Committee chose not to schedule the bill for a vote, and so it died in Committee when the legislative session ended on March 5. While the bill's defeat was disappointing, the process demonstrated that a homebrew legalization bill could stand a real chance of being passed in Utah in the future.



As of this writing in early March, there is a bill in the Alabama Senate to legalize homebrewing. Glass has been working with AHA member John Little, who helped craft the language of the bill, to get the word out to Alabama's homebrewers, homebrew clubs, homebrew shops, beer enthusiasts and professional brewers to encourage support for the bill by Alabama state Senators and Representatives. Given that the Alabama House just recently approved a bill to increase the allowable alcohol content in beer from 6 percent to 13.9 percent abv, there is reasonable hope that the homebrew legalization bill has a chance at passage.



YOU'VE GOTTA DRINK THIS



Weihenstephaner Hefeweissbier

I hold this beer style close to my heart. At our wedding, my wife and I made our toast with a similar hefeweizen. Not champagne, or sparkling grape juice, but a wonderful cloudy German wheat beer. Yes, from the beginning she was very aware of what she was getting into. Carboys bubbling in the spare bedroom and tubing and racking canes hanging on the shower rod! Ha ha—true love indeed!

This is a wonderful German weissbier from what is claimed to be the world's oldest brewery. It pours a pale straw color (even by American standards). A nice rocky and brilliant white head rises. Lots of little busy bubbles dance up the sides of the glass. The aroma is sweet and spicy, with fennel and a faint bubblegum character. The first sip confirms its well-fermented and aged German roots. Crisp, firmly bitter (but the correct mild hops), and a very nice sweetness blended with a dry and slightly tart finish. This particular bottle has a very slight oxidation and phenolic character (due to its age and journey across "The Pond").

When in the mood for a thirst quencher or lawnmower beer, one can not go wrong with a German hefe and a slice of lemon. Great beer—two thumbs up!

Reviewed by Brian Cokonougher, Big Country Homebrewers Association, Abilene, Texas

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

BREW NEWS: American Craft Beer Week

Celebrate the flavor and diversity of American craft beer by participating in American Craft Beer Week May 12-18. American Craft Beer Week has been designated as a time for all legal-drinking-age Americans to explore and celebrate the flavorful beverages produced by our small, traditional and independent brewers.

American Craft Beer Week is a long and established annual celebration of American craft brewers. In 2007, more than 150 brewery locations signed up to promote their special events. To find an event near you for 2008, go to www.americancraftbeerweek.org.



THE LIST

7

Beer Drinking Experiences



Matt Venzke, who was crowned the 2008 Beerdrinker of the Year at the Wynkoop Brewing Co. in Denver on February 23, provided an impressive resume. Here's a by-the-numbers list of the beer-drinking experiences of Venzke, an aircraft maintenance manager from Yorktown, Va.

1. Visited 454 breweries in 16 nations and 39 states
2. Sampled beers in 69 different beer styles
3. Recorded tasting notes for 3,250 different beers over the past six years
4. Tasted 625 new beers in 2007
5. Logged 3,000 miles in 2007 while traveling to breweries across North America
6. Tasted 17 non-alcohol beers in Kuwait while on military deployment
7. Collected 3,569 unique bottle caps, 3,389 coasters and 286 brewery glasses





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by Ray Daniels



Make Your Own Malt?

Study brewing long enough and you'll wind up visiting a maltster. After you've seen a few, the sights and smells take on a familiar pattern. The cool dampness of the steep room that reminds you of a chilly spring day. The germination beds with their impressive turners and a smell like cucumbers. The oppressive heat near the kiln, which—likely as not—you won't get to see inside.

At one time, malting was as much a part of brewing as mashing. Brewers made their own malts and the character of the malt largely determined the flavor of the finished beer. The next thought of any good homebrewer who hears this has to be "Hey, maybe I could make malt at home!" And that is possible.

When I attended the Siebel Institute's Diploma Course in Brewing in the mid-1990s, we studied malting for nearly a full week at the beginning of the course. By the end of it, I knew enough to be dangerous. Infused with enthusiasm, I acquired a bag of raw barley and set to work making some malt—just feet from where I made my own beer.

Steeping and germination aren't too tough—especially if you work from home and can tend to them regularly. The biggest challenge, I think, comes in kilning. Ideally you want to blow hot, dry air through the malt. I used a small home dehydrator like you would use for drying fruit to perform most of the drying operation. But this wasn't really quite dry enough, so as I recall, I ended with a brief period in the oven.

All in all, what I made wasn't bad—I even sent a sample off to a friendly maltster for analysis and got pretty good reviews for what I made. The only problem was that I was making about a pound at a time.



Briess drum roaster used for making specialty malts.

What I learned ultimately is that making malt, like making beer, isn't all that hard to do. Doing either of those things well is quite a bit harder. And if you want to make good malt (or good beer) consistently, then that takes considerable knowledge, suitable equipment and often years of experience. As a result, I never did make enough of my own malt to produce a whole batch of beer "from scratch."

But that didn't stop my homebrewer's dreams, of course. For a while there, I imagined creating a "scratch brewers" competition: beers made only from homegrown hops and homemade malts.

Some homebrewers found that idea appealing; others believed it indicated a serious illness in need of a 12-step program. Ultimately, the idea didn't get many takers among the job-holding, urban-dwelling homebrewers that I'm regularly in contact with.

Facing reality, we homebrewers will continue to buy malt—and malt extracts—as the most effective way to start making great beer. I was reminded of all this during a recent trip to the source of many of the malt ingredients American homebrewers use: Briess Malting Company.

I made a run up to their Chilton, Wis. facility in February with students and faculty of the World Brewing Academy Diploma course in Chicago. We got a nice tour of the usual malting processes: steeping, germination, kilning and packaging. But Briess is quite different from most of the other maltsters around Europe and the U.S. that I have visited because they make more than just kiln-finished malts. To produce specialty malts, they operate specialty malt roasters and make extracts that start in a brewhouse before progressing to vacuum evaporators for liquid extract and a spray-malt drier for the dry extracts. This is all very cool.

In ways both positive and negative, malt extract is a subject near and dear to many a homebrewer's heart, and the Briess folks really know their stuff in this area. I want to write more about extracts and their production, but I'll wait until my next column (or maybe the one after that) to tackle the topic. To round out this edition, let's talk a bit about specialty malts and the use of roasters.

The kilning process that completes the production of most malts dries them and, depending on the heat applied, can increase their color a good bit. Most malts that retain diastatic enzyme activity come from the kiln: two-row, pilsner, pale ale and Munich malts would all be examples. Thus any maltster can make these common malts.

Once the Lovibond color rating of a malt goes above about 30, then production generally can't be done on the kiln. Instead a specialized piece of equipment known as a roaster is required. Roasters can apply much higher heat—up to 750° F versus a maximum of 240° F for the



Comparison of ground samples to assess the end point of the roasting process.

kiln. Roasters also rotate the malt during heating to ensure even heat distribution. Given the high heats being applied, this is essential to consistency in the finished product. Finally, where a kiln is generally devoted to removing moisture, the roaster can be used to "stew" malt, heating it while keeping it moist.

Much of what the roaster does is straightforward heating of previously dried malts or still-dry barley. Chocolate malt, black malt and roasted barley all come from a simple roasting of dry grains. Less intensely roasted malts like Briess' Victory® and Special Roast Malts also come from the roaster, but result from much lower temperature roasting.

The "stewing" approach produces caramel or crystal malts. While maintaining the moisture content of the roasting chamber, undried malt is heated up to the same saccharification temperatures you might use in mashing to allow rapid conversion of the malt starch into sugar. Once conversion occurs, the sugary malt is dried at various temperatures to produce the different colors of caramel malt that we brewers use.

Roasters perform these tricks in about four hours from start to finish. The interesting thing that I found was how operator-dependent the character of the finished product is. With all the analyses and instruments present at most maltsters, you'd think there might be a way to make these specialty products consistent through instrumentation. But it ain't so. Of course the operators know from experience about when they should expect the endpoint to be reached for each product. But the exact timing is based on visual inspection.

Here's how it works. While the roaster is operating, the operator takes a sample of the malt and grinds it to a powder in a small coffee grinder like you'd use at home. They then compare the color of that powder to a reference sample they have for the same product. Their workstation is equipped with a special light box to ensure optimal and consistent lighting for making the comparison.

For some products, the comparison sample consists of finished product from another batch. But once the malt is removed from the roaster into the adjacent cooling bin, color continues to develop. Thus, for more highly colored products, they actually have to remove the product from the roaster before it achieves the final color target. Here the reference sample is a "remove from roaster" color that differs from the finished product.

This little tidbit has some interesting applications for homebrewers. First, when you want to understand the real color of your malt, don't look at the un-ground malt. Surface color really isn't going to tell you much. Instead, throw a tablespoon in a coffee grinder or mortar and pestle and pulverize it to see what you are really getting. Second, if you are toasting your own malt, remember this trick and grind to inspect the change that has occurred as compared to the starting malt as well.

OK, that will about do it for specialty malts. Soon I'll circle back to the issue of malt extracts and tell you about the cool operation Briess has on that front.

Ray Daniels is a former editor-in-chief of *Zymurgy* and author of *Designing Great Beers*.

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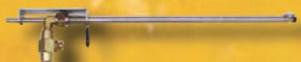
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by Professor Surfeit



Lambic Mambo

Dear Professor,

This is a question regarding an 18.9-liter batch of lambic that is currently in my secondary glass carboy as I write this. It's a batch of Stille Nacht (Silent Night) from the book titled *Beer Captured* by Mark and Tess Szamatulski.

The recipe calls for a Wyeast 4335 Lactobacillus delbrueckii in the secondary. Fermentation was normal and vigorous during the primary stage, and the gravity was where it was supposed to be when I racked to the secondary. The L. Bacillus was pitched but there were no signs of additional fermentation and no bubbles occurred. The wort has been in the secondary for more than two weeks now with no bubbles forming.

I am under the impression that once the L. Bacillus is pitched, additional fermentation should occur. Is this presumption correct? Is it possible the L. Bacillus was bad? Should I pitch more of the same strain? Any thoughts or suggestions would be greatly appreciated.

Thanks in advance,
Chris Steinman

Dear Chris,

Your questions cause a few belched responses. First of all, let's simply answer the question, should there be visible fermentation from lactobacillus ferment? No. Simple dimple answer. There may be a few signs if you look carefully, but a bacterial breakdown of compounds in your beer is not going to cause a krausen head of foam or even wispy laced bubbles. If you really want to know whether the lacto is alive and well, taste the beer. If it has gone sour then you have a winner or loser, depending on your perspective.

But what really perplexes me is the notion



an improperly capped or mishandled sample may have been encountered. A very real possibility. It happens to the best of us.

I don't have a copy of the book at my fingertips, but I'm figuring there's a description of the beer (with lacto) and that must have appealed to your senses and imagination. You might be on your way to a great new brew called Nicht Stille Nacht.

Silent Night Naught,
The Professor, Hb.D.

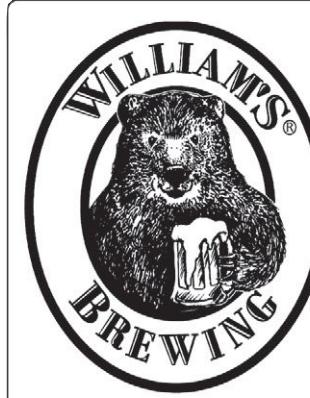
Gnarly Revised

Hello Professor,

Here are two pictures of my fermenter. It's been a year since pitching my bugs, and man, I think that scum is really starting to take off now! I was actually thinking



that a recipe for De Dolle Brouwers' Stille Nacht would call for a lactobacillus fermentation. The times I have enjoyed this brew revealed no hint of acidity from lactobacillus. This is a strong Belgian-style ale with lots of malt and body and quite well made. Methinks



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about bottling soon, but I am a bit unsure of the best test to know if I am ready for bottling this batch. What is the best way to sample from a carboy without disturbing the process too much?

Sipping on Pumpernickel Rye Stout while waiting patiently,
Larry, aka Metal Larzz

Hey ho Metal,
Taking a look at your photos I see wisps and a surface that is partially covered with developing brett "scum." I'm thinking you are either there or on your way at this point. Actually and probably more like "on your way." Healthy brett scum covers the surface completely with a velvet-like white blanket of scum. Perhaps your fermenter is not above 60° F, which from my experience is important to develop the micro-organic activity.

One sure way to know whether you are ready to bottle is to take a sample with a pipette or any other form of long tube-like straw. Yes, you'll break the surface, but scum heals. Does it have that estery and funk characteristic of a developing lambic beer or like those you have tasted?

If indeed you are ready to bottle, add some fresh ale yeast and a bit of priming sugar. The brett/lambic characters will continue to develop in the bottle, provided they are not stored at temperatures below about 55°, though 60-65° F would be better—once again from my homebrewing experience.

Making a Belgian-style lambic is not without controversy. Can you really call it lambic? Not really, since, unlike the Belgians who introduce their wort to the ambient air of the Brussels area, you've introduced cultures of yeast that try to replicate the style. So hitting it squarely on the nail is not what you are going to end up with, but with a good screw-

driver you can really pull things together and perhaps make a brett-induced beer that rivals the best of the authenticated stuff.

Good luck. I feel like this batch is a nephew of mine. I hope you'll share a bottle once it becomes of age.

Brettly yours,
The Professor, Hb.D.

Two Stepping the Mash

Dear Professor,

I am just about finished reading my Christmas present, *Microbrewed Adventures*. The reminiscences were very enlightening and written in such a pleasant manner that I felt relaxed even without a homebrew.

I noticed, however, that in this book published so recently you espouse step mashing in so many recipes. I thought that technique was old news in light of the highly modified malts presently available.

I await with appreciation your comments,
Hank Bienert

Yo Hank,
You must have me confused with that scalawag Charlie Papazian, but for now I'll be glad to take all that credit you're heaping.

I think, well actually I know that Charlie and I agree that step mashing at the lower first temperature rest (at about 132° F [56° C]) helps develop proteins that enhance head retention and improve foam quality. I think what's confusing you is the temperature rest that is more typically discussed in brewing texts, which espouse a protein rest in the 114° F (45.5° C) range. This lower range develops yeast nutrient proteins, which as you indicate are not as necessary with highly modified malts. From practical experience the extra soaking tends to increase yield a bit once you boost the mash to saccharification temps—compared to a single infusion mash. That last statement comes from empirical hands-on experience and don't think for a minute that I embarked on a sophisticated laboratory experiment.

Keep on the Lupulin journey,
The Professor, Hb.D.

The BU's Upper Limit

Dear Professor,

I'm wondering if you know of any research that has been done to determine the limits of IBU dissolution in wort. I seem to recall hearing that numbers over 100 are generally unreachable, though I'm not sure where I heard or read this. Can you shed any light on this issue?

Joe Dougherty
Philadelphia, Pa.

Dear Joe,

I had a tough time tracking down a definitive answer. In short you might say "it all depends." Practically speaking it's like adding sugar or salt to water. There's only so much of these crystals that will completely dissolve in water. But how much will depend on temperature, probably pH and what else is in the water. That's a Simple Simon answer. While some brewers will brag about the 140 Bittering Units in their holy warrior IPA, I kind of doubt that there is a reality to those kind of numbers. Sure you can calculate out to these kinds of numbers, but calculating formulas don't work once you approach saturating factors.

I inquired of our good friends at Siebel Institute and they really didn't have any definitive answer either. But they did send me an article that starts out:

Isomerization kinetics of hop bitter acids during wort boiling

M. G. MALOWICKI and T. H. Shellhammer. Dept. of Food Science & Technology, Oregon State Univ., 100 Wiegand Hall, Corvallis, OR 97331-6602

While overall hop utilization has been well defined functionally, there is a pronounced lack of published research pertaining to the actual kinetics of both the extraction of alpha acids from hops and their subsequent isomerization.

The rate of isomerization of alpha acids to iso-alpha acids (the bittering compounds in beer) was characterized over a representative pH and temperature range to model reaction kinetics during the boiling portion of the brewing process...(for more see http://ift.confex.com/ift/2004/tech-program/paper_25787.htm)

Essentially this paper seems to be indicating that most research on this subject is in the range of bitterness units more normal to the more ubiquitous international light lagers. One can also feel that it is essentially being suggested that there are several factors that govern BU solubility in beer. The extremes to which homebrewers and craft brewers are taking alpha acids is pioneering stuff—but unfortunately there isn't any sophisticated research being funded on this kind of brewing, because it takes mucho dinero i.e. bucks, money, moolah to have the scientific community do these kinds of studies. And the bucks usually come from brewers who have lots of money, and those that have a lot of money don't have a need for researching this kind of extreme brewing. So there you have it.

Meanwhile Siebel Institute unofficially indicates that to their memory, the highest BU level tested so far is at about 100. Additionally they say that to their way of thinking even by adding isomerized extract, you would still have a BU limit that can be carried in a beer.

*Isomerize me Scotty,
The Professor, Hb.D.*

A Gray Day

Dear Professor,

I'm fairly new to all-grain brewing, having spent the last nine years or so doing extracts. I did my first batch of all-grain about two months ago (an English bitter, using White Labs British Ale yeast), and after bottling, it's been in my basement until this past weekend.

Upon pouring (after it was chilled in the fridge), I noticed the beer is a bit hazy, which I presume is protein haze? I've never actually experienced this with any of the extracts I've made.

However, there is one other unusual thing I've noticed, and that is the color. Believe it or not, while the beer appears a darker golden color from a distance, upon close inspection, the beer looks like it has almost a slight "gray" tint to it, noticeable especially when you pour it. It's very strange, unlike anything I've ever seen with any beer I've made in the past. There are no "off odors," and it tastes wonderful. I don't know if this is also a result of pro-

tein haze, or perhaps something else?

I had another theory. I used One Step cleanser to prepare the bottling equipment, and as you may know, One Step is kind of hard to dissolve, at least when using cold water. Well, I noticed when I bottled this beer, I had soaked the bottling tank with One Step, and since it is no-rinse, just emptied it out and filled it with the beer. However, while it was filling, I saw that there were a few undissolved granules of One Step up the side of the bottling bucket. And that is only what I

saw....who knows how many were actually in there that I did not see. I wonder if perhaps that is my problem? Or maybe something else? I did use Super Moss to help clarify...would that have had anything to do with it? Any help or advice would be appreciated.

Thanks!

Ron Ferraro

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I'll try to give you indefinite answers. If it's chill haze at cold temperatures, it will go away and the beer will clear at warmer temperatures. So you can answer this question quite easily. Now about that "grayness" you speak of, my comment is "What the —?"

If you had too much cleanser you would probably have tasted and smelled the stuff in the beer. But you seem to be happy with those qualities. Hey, I have an idea. Take a few granules of this "One Step" you speak of and add it to your most unfavorite light colored beer. If the beer turns gray and hazy then, bingo, your wild guess is right on. If the beer doesn't change, then I would presume that cleanser assault is not the problem. Either way throw out that most unfavorite light colored beer and save your thirst for the great homebrew you've just made.

Theoretically, some malt extracts are mashed and processed well enough whereby you will get minimal chill haze. When mashing you may not have the techniques completely down to eliminate all the proteins. I know I

get chill haze erratically in my all-grain brews. Seems that the lightest ones have the most chill haze, while those that have some darker specialty malts are clearer.

Keep on brewin' Ron,
The Professor, Hb.D.

Converting Pearled Barley in Venezuela

Dear Professor,

In general there is no whole but only pearled barley available to common mortals in my country. Whole wheat though is attainable. I understand that the amylase contained in malt is the substance that converts into sugar the starch contained in cereals; and that malt (and therefore amylase) can be attained from almost any cereal.

I plan to make malt with whole wheat; grind pearled barley and treat it with the malted wheat, so as to convert into sugar the starch from the ground pearled barley.

Would you care to comment on the above

plan? Thanking you in advance for your kind attention, I look forward to your news!

Sincerely,
Jorge A. Pardo
Caracas, Venezuela

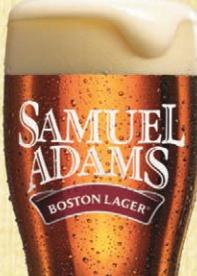
Dear Señor Pardo,
Greetings to all the ale-ya's Venezu-ale-ya!
Boy that is very corny of me, but we're not talking corn, we're talking wheat and barley.
In theory this should work, but you must boil the barley before mashing with the malted wheat. The wheat should be of a quality that will produce wheat malt by having enough diastase enzymes.

Buenas suertes,
El Profesor, Hb.D.

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



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by Our Readers

It's Time for Balance

Dear *Zymurgy*,

I spoke recently with a founder of one of the oldest U.S. microbreweries. We both lamented the trend of recent years to so many over-the-top "extreme" beers: massively hopped and/or absurd alcohol levels.

Perhaps the silver lining in the dark cloud of hops/malt shortages (*Beeroscope*, January/February 2008 *Zymurgy*) could be a return to balanced beers. When hops are too expensive (or even unavailable) to hit three-digit IBUs in every batch, maybe brewers will take a second look at their recipes. How about if one goal of a beer became to invite a second glass rather than to slam the drinker against the wall on the first sip?

Let 2008 be the year of the balanced "session" beer.

Dick Dunn
Longmont, Colo.

Keeping Things in Perspective

Dear *Zymurgy*,

I just read Charlie Papazian's "Why Homebrew?" piece (March/April 2008) and want to thank you for continuing to feature him and his perspectives on homebrewing in your magazine.

I grew up as many homebrewers do from extracts, to all-grain, to ever more complex mashes and refined recipes. With a degree in chemical engineering and microbiology, I am drawn to many of the intricacies of brewing science. I have written my own spreadsheets to manage the thermodynamics of hitting specific mash temperatures and the chemistry of accomplishing specific brewing water ion levels.

But Charlie's frequent references to the intrinsic joys of brewing, the smells, the warmth, the camaraderie, the sharing are great reminders to me and maybe others to not let too much intellectual curiosity

about the complexities behind brewing get in the way of just enjoying it for what it is.

**LABELS FROM BRUCE SANCHEZ
EDMOND, OK**



Big Brew 2007 turned into a family affair for the Chesapeake Real Ale Brewers Society (CRABS). Photo submitted by Joel Gallihue.

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I hope I'm still homebrewing after 38 years as Charlie is. I think that if I keep brewing that long it will be for the simple, intrinsic enjoyment of being at the mash tun and boiling kettle making beer rather than for the pursuit of ever-refined procedures and recipes.

Bruce Onsager
Naperville, Ill.

Homebrew Labels

Dear *Zymurgy*,
You asked for it! Here are a few of my homebrew labels. (see page 15)

I do look forward to receiving my issues of *Zymurgy* every other month. You all do a great job producing it.

Thanks!
Bruce Sanchez
Edmond, Okla.

Don's Homebrewery

Dear *Zymurgy*,
I received the March/April 2008 *Zymurgy* and noticed Jeff Harwood's homebrewers setup. Would you be interested in displaying mine? I think it would awesome to see it in a magazine I've subscribed to for years!
Don Darst
Salem, OR



Don's Homebrewery

Send your letters to Dear Zymurgy, PO Box 1679, Boulder, CO 80306 or e-mail jill@brewersassociation.org. Hey homebrewers! If you have a homebrew label that you would like to see in our magazine, send it to Kelli Gomez, Magazine Art Director, at the above address or e-mail it to kelli@brewersassociation.org.



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by Jamil Zainasheff and John Palmer

Converting a Recipe to a Partial Boil

You may have noticed that most extract homebrew recipes that are based on an all-grain recipe have more bittering hops than the all-grain recipe. This is because the rate of isomerization of the bittering alpha acids from hops decreases as the density of wort increases. Extract recipes that call for a partial wort boil (boil of less than the full volume to be fermented), are more concentrated than the full wort boils usually used in all-grain recipes, and thus require more bittering hops to be boiled to achieve the same level of bitterness in the finished beer.

In their book *Brewing Classic Styles* (Brewers Publications 2007), Jamil Zainasheff and John Palmer describe a method of adding only half of the fermentables in a partial boil extract recipe at the start of the boil, with the remaining fermentables going in at the very end of the boil. By using only half of the fermentables in half of the total volume of wort during the boil, you can use the same amount of bittering hops as called for in a full wort boil recipe. The following is an excerpt from *Brewing Classic Styles* describing how to do this:

The basic method can be summarized like this: Boil all of your hops in half of your total malt extract, in half the recipe volume, add the remaining extract at the end of the boil to pasteurize it, and then dilute to the final recipe volume in the fermenter. Piece of cake, right? The goal is to design a partial-boil wort that has the same gravity, specialty malt flavors, and therefore the same flavor development from the boil as the full-sized wort. Sometimes it will be impractical to get the gravity and wort composition exactly the same, but close is good enough.

Create the Wort

The first step to designing your boil is to

determine the contribution of any steeping grains in the recipe and subtract that from the target boil gravity. The difference will determine the amount of extract you need to add to the steeping wort to create the target gravity of the partial boil. Ideally, the percentages of the malts in the partial wort should be the same as they are in the full-sized. However, it's usually not practical to split the specialty grain contributions in half; it is easier to steep or mash them all at once, and add your extract to that wort to create the boil. Likewise, even though it may be ideal to split or divide the specialty malt extracts,



Munich Helles

This recipe is based on “München Großes Bier” from Brewing Classic Styles by Jamil Zainasheff and John Palmer.

Ingredients

for 5.5 U.S. gallons (21 liters)

2 cans	Coopers Light Malt Extract (7.5 lb, or 3.4 kg)
0.5 lb	(227 g) Coopers Light Dry Malt Extract
0.25 lb	(113 g) Melanoidin Malt (280 L)
1.5 oz	(43 g) Hallertau (or similar) hops, 4.0% alpha acid (60 min)
4 packages	Wyeast 2308 Munich Lager Yeast, or 4 vials White Labs WLP838 Southern German Lager Yeast, or 20 g Fermentis Saflager S-23 Coopers Brewery Carbonation Drops for bottling

Directions

Steep grains in 2 gallons (7.6 L) of cool water, heat to 170° F (77° C) strain and sparge with 2/3 gallons (2.5 L) hot water. Stir in half of the malt extract, and bring to a boil. Add bittering hops and boil for 60 minutes. Remove from burner and add remaining extract. Cool the wort, then pour into fermenter with enough cold water to make 5.5 gallons (21 L). Aerate and pitch yeast when temperature drops to 50° F (10° C). Ferment at 50° F (10° C) for one week or until fermentation is complete. Age in secondary fermenter for four weeks at 38° F (3° C). Prime with Coopers Brewery carbonation drops at bottling (at room temperature).

Original Specific Gravity: 1.050

Final Specific Gravity: 1.011

IBU: 17.5

ABV: 5.0%





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it may be more practical to just add them all up front if the percentage to the total extract is fairly small. The difference is fairly small, and it's one less thing to have to think about at the end of the boil.

Boil the Hops

Once you have created a partial-volume wort that has the same gravity and flavor profile as the original, you can boil your hops. And here is the nifty part: You can use the same hop quantities and boil times as the original recipe! The equation for calculating IBUs consists of estimating how

much alpha acid is going to be dissolved and isomerized into the wort, and then dividing that amount by the final volume to arrive at the final isomerized alpha acid concentration. These alpha acids will be isomerized based on the boiling time and wort gravity. The physical size of the boiling pot doesn't really affect the utilization like the boil gravity does, because the amount of alpha acid dissolved into the wort is still relatively small compared to the total volume.

Add the Remaining Extract

At the end of the boil, turn off the heat

and stir in the remaining extract. Let the wort sit for at least 1 full minute to pasteurize it, and then cool the wort to pitching temperature (preferably with a wort chiller). Don't let the wort sit hot for more than a couple of minutes before chilling, because that will promote the formation of dimethyl sulfide (DMS), a cooked-corn off-flavor common to pale malts.

Example: Hoppiness Is an IPA

Let's work through a complete example using one of the India pale ale recipes.

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OG: 1.065 (15.9 °P)

FG: 1.012 (3.1 °P)

ADF: 81%

IBU: 64

Color: 7 SRM (13 EBC)

Alcohol: 7 percent ABV (5.5 percent ABW)

Boil: 60 minutes

Pre-Boil Volume: 7 gallons (26.5L)

Pre-Boil Gravity: 1.055 (13.6 °P)

Extract	Weight	Percent
Light LME (2.2 °L)	9.75 lbs.(4.42kg)	84.8
Munich LME (9 °L)	0.5 lb. (227g)	4.3

Steeping Grains

Crystal (15 °L)	1 lb. (0.45 kg)	8.7
Crystal (40 °L)	0.25 lb. (113g)	2.2

Hops	IBU
Horizon 13% AA, 60 min.-1 oz. (28g)	49.7
Centennial 9% AA, 10 min-1 oz. (28g)	6.9
Simcoe 12% AA, 5 min-1 oz. (28g)	7.6
Amarillo 9% AA, 0 min.-1 oz. (28g)	0

Yeast

White Labs WLP001 California Ale, Wyeast 1056 American Ale, or Fermentis or Safale US-05

- Estimate the yield from the steeping grain. In this case, 1.25 pounds of crystal malt will be steeped in 3 gallons of water. Assuming 70 percent yield, this equates to:

$1.25 \text{ lbs.} \times 24 \text{ ppg} / 3 \text{ gal.} = 10 \text{ gravity points or } 1.010.$ Subtract these 10 points from the boil gravity. $55 - 10 = 45$

- Calculate the amount of extract to use in the boil. From the gravity equation $45 = x \text{ lbs.} \times 36 \text{ ppg} / 3 \text{ gallons.}$ The lbs. of extract is $45 \times 3/36 = 3.75 \text{ lbs. of LME.}$

- But what about the specialty extract—the Munich? Ideally, the wort composition in the partial boil should be the same as that in the full-sized boil. If the recipe had 50 percent light LME and 50 percent Munich LME, then you would want to do the same for the partial, and the 3.75 pounds needed in this example would be half light and half Munich. However, in this recipe the proportion of Munich is only 5 percent (i.e. 4/85), so it won't make a lot of difference whether you



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Hosted by Jim Burzynski and the Urban Knaves of Grain of Naperville, IL, this competition covers all BJCP 2004 beer styles (Categories 1-23). Extract must make up more than 50 percent of the fermentables. For more information, contact Jim Burzynski at james.burzynski@mwu.edu.

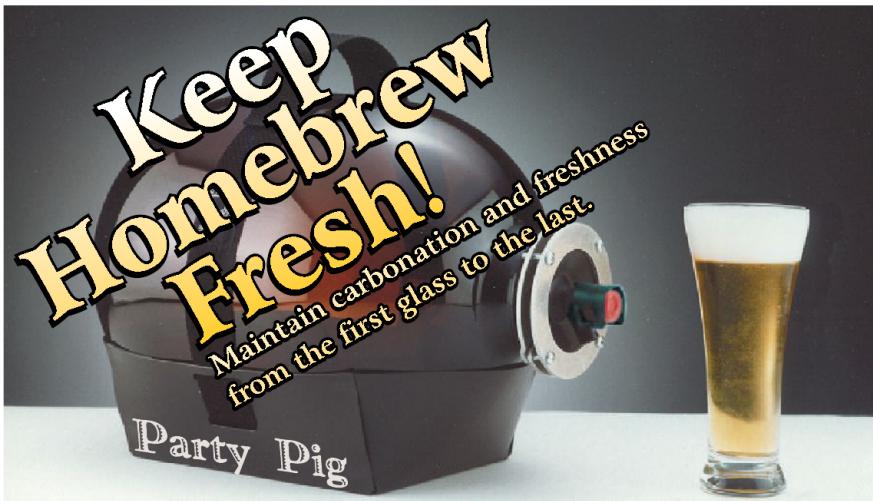
scale it, add it all at the beginning of the boil, or add it all at the end. We suggest adding it all at the beginning, which means that the 3 gallon boil consists of:

1.25 lbs. of steeping grain
0.5 lbs. of Munich LME
3.25 lbs. of light LME

- Steep the grains and add the extract. To get really technical, you would need to calculate exactly how much water the steeping grain will absorb and carry away (about 0.5 qt./lb. or 1L/kg), and balance that against the volume of the malt extract being added to get the right volume to steep the grains in to get the target gravity in the target volume. Don't bother. The yield from the steeping grain is also an estimate, close enough is good enough, and the simple calculations in Steps 1 and 2 will get you firmly in the ballpark.

- Boil the hops according to the recipe (same amounts, same times).

- Turn off the heat at the end of the boil and stir in the remaining extract. Let the high-gravity wort rest at high temperature for 1 full minute, and then chill and dilute to final volume in the fermenter.



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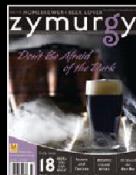
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Oak's Balancing Act

By Jason Petros

Oak has been used in brewing for many years, but recently it has seen a resurgence of interest due to its large flavor impact on both wine and beer. In the past, the oak flavors gained from storage in wood were considered to be a secondary benefit. Now, with the popularity of stainless steel fermenters and storage tanks, brewers and vintners alike are able to use these flavors as a creative addition to their products.

When used properly, oak can lend the most beautiful, full and rich properties of the wood and weave them delicately into the beer. When used improperly, oak can destroy the balance that you have worked so hard to achieve, and can taste like you are chewing on tree bark. A little knowledge on what oak is all about can be the difference between turning a good beer into an award-winner or lawn food.

What exactly happens when you put oak in beer? Oak is full of many flavorful and aromatic compounds and chemicals that, when added to beer, create another level of depth and complexity. Examples are furfural, which lends caramel sweetness, or eugenol, which is clove-like. Vanillin, the most recognizable flavor, tastes and smells like vanilla. Lipids, which constitute the oils, fats and waxes found in the wood, are responsible for oak lactones, which lend coconut and aromatic wood flavors. These are the basic flavors found in all types of oak, and the ones we as brewers are looking for. The important thing to think about when choosing oak for your beer is, “How will these flavors interact with the flavors already present?” Knowing which type of oak contributes which flavors is key in matching beer to wood.

The three most common types of oak are American, French and Hungarian, each with its own balance of flavor and complexity. American oak has a great aromatic sweetness along with a nice vanilla component. It provides a sweet and full mouthfeel to beer, easily paired with most malt combinations. French oak also has an aromatic sweetness as well as providing a full mouthfeel, along with cinnamon and allspice characters. It is widely praised for its sweet spice and “confectionary” flavor

compounds (custard, butterscotch, milk chocolate). Hungarian oaks are said to provide a high amount of vanillin properties, along with roasted coffee and bitter-sweet chocolate characters.

The flavor profile of oak is enhanced during the toasting process. Which compounds come out in what ratios depends largely on the variety of oak and the level of toast it received, ranging from light and untoasted to dark and heavy. When the oak is toasted, the characteristics unique to that varietal are brought out and defined. For example, American oak at a light toast level will lend a fresh wood and coconut character to your beers, but as toast levels increase to medium/medium-plus levels, these flavors are decreased and more vanilla and caramel notes are brought forward. Medium-plus is typically the best of all worlds in dealing with toast levels, as it brings out the qualities you would normally find in a heavier toast, without diminishing the vanilla and other “softer” qualities found in a lighter toast.

There are many different oak delivery methods, including aging your beer in a full-size barrel, and using sawdust or barrel replica kits. Oak chips and oak cubes are the simplest for homebrewers to use. A barrel is not feasible for many homebrewers, as they require a lot of hard work to keep them in good working order (clean, stored properly and bacteria-free). Sawdust can be hard to work with and will take some extra time to drop out in your beer, not to mention its lack of complex flavors. Staves and other barrel replica kits are geared more for use with large barrels that have lost much of their oak impact, and are often too large to be used easily in carboys. Chips and cubes, however, are very “user friendly” and do not need any sort of extra attention or care like their larger counterparts do.

JP's Bourbon Oak-Aged Oat Stout

All-Grain Recipe

Ingredients

for 5 U.S. Gallons (19 liters)

6.0 lb	(2.72 kg) English Pale Malt
0.75 lb	(0.34 kg) Pale Chocolate Malt (200-250L)
0.50 lb	(0.22 kg) Crystal 75L
0.40 lb	(0.18 kg) CaraFoam Dextrine Malt
0.25 lb	(0.11 kg) Carafa II
0.25 lb	(0.11 kg) Roasted Barley
0.25 lb	(0.11 kg) Wheat Malt
1.75 lb	(0.79 kg) Flaked Oats
1.0 oz	(28 g) Northern Brewer, 9.0% AA (60 min.)
1.5 oz	(43 g) Goldings, 4.75% AA (5 min.)
	White Labs WLP001
	California Ale Yeast or Wyeast 1056 American Ale Yeast

Original Target Gravity: 1.055

IBUs: 37

Directions

Mash at 152° F (67° C). Single infusion for one hour, with a one-hour boil. Ferment between 64-68° F (18-20° C). Add half an ounce of French oak chips in the fermenter. Soak one ounce of French oak cubes in just enough bourbon to cover the cubes for two weeks. Decant the bourbon and add the cubes to the keg and age.

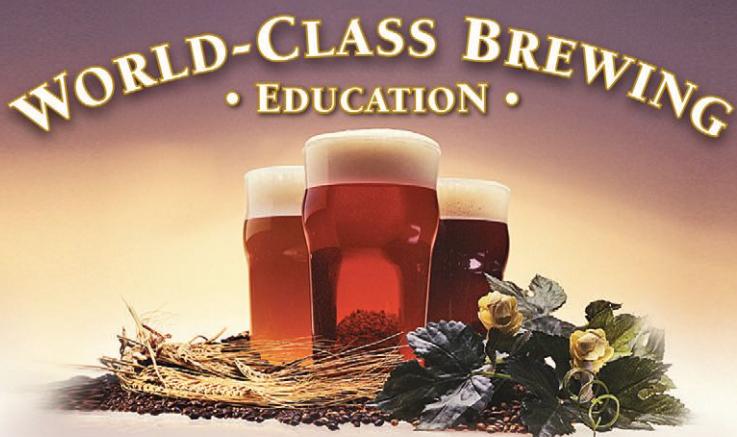
Oak Chips and Oak Cubes

Chips are flat shreds of oak, usually about two inches long. Because there are only two sides to an oak chip, the wood reacts quickly to the heat during toasting and both surfaces are toasted to an even level. This gives the wood a rather one-dimensional flavor. Chips have a very short extraction time in beer, usually about a week or so, which make them ideal for use in the fermentation process. Yeast will actually metabolize certain oak compounds, like vanillin and furfural, and leave much of the spice and other characteristics behind. This creates a nice foundation to build off of with any later oak additions. Beers that do well with this method include English bitters and American pale ales—styles that generally don't benefit from a longer aging time.

Oak cubes have several layers of toast due to the thickness and shape of the cube. A toasted oak cube will have varying degrees of color along each side—these layers represent the level of heat penetration during the toasting process. Heat is what brings out all of the different and wonderful flavors of the wood, and different temperatures with different woods for different lengths of time develop different flavors. Oak cubes replicate the complex flavors of a barrel better than chips because the cubes are able to have multiple toast levels like a barrel would. Think of it as “what you see is what you taste,” where the different colors of the cubes provide more flavors than the single color of the chips. Cubes also have a much longer extraction time, from about two weeks up to a year depending on the size of the cube (the beer has a lot more wood to penetrate than with a chip) and the longer extraction time enables the beer to absorb the full character of the oak, and not just one or two facets of it. Cubes are ideal for beers that require a lengthy aging process such as imperial stouts and barleywines.

The Process

Many homebrewers have not experimented with oak, mainly due to one fear—sanitizing! “How should I sanitize this stuff? Do I soak them in sanitizing liquid, boil them in water?” Sanitizers should not be used, as the sanitizer will be absorbed by the wood and carried over into your beer.



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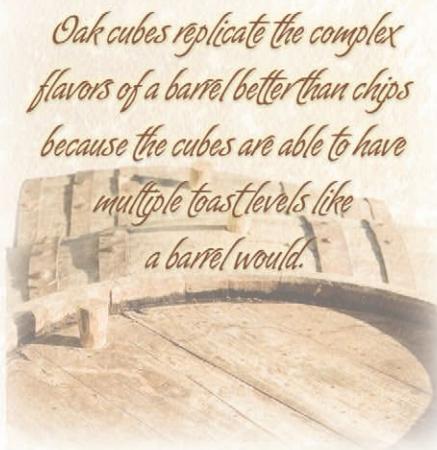
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A simple way is to steam the wood, killing anything that may be living inside. One method is to put the wood in a Pyrex measuring cup with just enough water to cover the wood. Cover the top with a saucer and heat it in the microwave until the water starts to boil. Turn the microwave off and let the wood steam for two minutes. Repeat the process twice. This should kill anything that may be living in the wood. Add the oak and the water left behind to the keg, as the water will have a nice oak essence to it. If you plan on soaking your oak in alcohol, such as whiskey, this is all the sanitizing you will need as the high percentage of alcohol will kill anything that may be living in the wood.

Kegs are the best container to store your beer while it is aging on oak. You can carbonate it at the same time, and it is much easier to pull samples than from a carboy. Once the beer has been racked into the keg, it is time to add the cubes. Eventually the cubes will end up sinking to the bottom of the keg, and because this is also where the dip tube will be pulling your samples from, you will no doubt taste a very unbalanced beer. Every three weeks or so, rock the keg gently back and forth to ensure the portion of the beer that is in contact with the oak gets properly mixed with the beer toward the top of the keg.

If you are interested in trying your hand at a bourbon-aged oak flavor, try soaking your cubes for two weeks in a few ounces of bourbon or whiskey, and discard the whiskey before adding the oak to your beer (I find Wild Turkey blends well with darker beers). It is very easy to overdo the addition of bourbons or whiskeys, and

JP's Bourbon Oak-Aged Oat Stout

Partial Mash Recipe

Ingredients

for 5 U.S. Gallons (19 liters)

3.25 lb	(1.47 kg) Light Liquid Malt Extract
2.0 lb	(0.90 kg) English Pale Malt
0.75 lb	(0.34 kg) Pale Chocolate Malt (200-250L)
0.50 lb	(0.22 kg) Crystal 75L
0.40 lb	(0.18 kg) CaraFoam Dextrine Malt
0.25 lb	(0.11 kg) Carafa II
0.25 lb	(0.11 kg) Roasted Barley
0.25 lb	(0.11 kg) Wheat Malt
1.75 lb	(0.79 kg) Flaked Oats
1.33 oz	(38 g) Northern Brewer, 9.0% AA (60 min.)
1.5 oz	(43 g) Goldings, 4.75% AA (5 min.)
	White Labs WLP001
	California Ale Yeast or Wyeast 1056 American Ale Yeast

Directions

Perform a mini-mash by mixing crushed grains with 2 gallons (7.6 liters) of 165° F (74° C) water. Stabilize temperature at 152° F (67° C) and let sit for 45 minutes. Sparge grains with 1 gallon (4.5 L) of 170° F (77° C) water. Stir in malt extract, bring to a boil and add hops as indicated in recipe. After boil, strain into fermenter with enough cold water to make 5 gallons (19 L). Aerate and pitch yeast once temperature drops below 72° F (22° C).

Add half an ounce of French oak chips in the fermenter. Soak one ounce of French oak cubes in just enough bourbon to cover the cubes for two weeks. Decant the bourbon and add the cubes to the keg and age.



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less is definitely more which is why I prefer letting the cubes "dose" the beer over time. The oak should be up front, with the booze layered softly under the malt. If the flavor is not pronounced enough after two months of being on the oak, adding bourbon straight to the keg is acceptable, but be careful not to overuse it.

Tasting the beer over the next few months is a great way to see how the flavors and oak compounds blend and merge into your beer. After the first week on the oak, you will begin to taste hints of different flavors, but I find that they really start to meld after about four to six months. The longer you leave your beer in contact with the wood, the more of these great compounds will become infused with your beer. The cubes will continue to add flavor up to about a year.

A great way to get that deep, complex oak characteristic is to use a one-two punch of chips in the fermenter and cubes in the keg. Adding oak chips to the fermenter will allow the beer to absorb some of those basic oak flavors we are looking for, and gives the cubes a nice foundation to build on when they are added to the beer after fermentation. Half an ounce of chips per 5 gallons of wort is a nice place to start. You may find some beers need less, and some need more. Feel free to experiment and find a starting point that best suits you. The best part about oak is that it complements almost any beer!

Making beer and using oak are very similar: they are both easy to do, yet the best results require a subtle hand that is achieved only by repetition. If your first wood-aged beer does not turn out right, try again, maybe with less oak, or a different toast level—or perhaps a different varietal altogether. Maybe a blend of American chips and French cubes is the answer for your porter—who knows? Above all else, be patient. The world of oak awaits!

Jason Petros wants to drink your oaked beers, and can be found working at MoreBeer.com, and broadcasting on TheBrewingNetwork.com and CBS AM 1550 in San Francisco. He would like to thank Shea A.J. Comfort from yeast-whisperer.com for his technical information on oak.



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Roll Out the Barrels

Aging in an oak barrel can be an excellent activity for a homebrew club, or a determined homebrewer. Here are two such examples.



Bourbon Barrel Orange Blossom and Buckwheat Mead

Brewed by homebrewer Brad Dahlhofer

A member of our brewing club (Fraternal Order of Renaissance Draughtsmen) notified me that he had a line on a bourbon barrel for the club and wanted to know if I would be interested in one for myself. I jumped at the chance. I'd been wanting to do a variation on a buckwheat mead aged in a bourbon barrel for a long time. I had absolutely no idea what I was getting into. On the day it arrived, I met him in the parking lot at his work and together we hoisted the barrel into my VW camper van. I shoved some scraps of wood on either side to keep it from rolling around and took off for home and whatever lay ahead of me.

While the mead fermented in the primary, I pondered how I should go about preparing the barrel before use. After checking some brewing forums, I decided that I could only make things worse if I tried to clean and sanitize it. So I popped open the bung and racked the mead directly into the barrel.

The Batch

This 60-gallon batch was split into two 30-gallon batches (due to equipment limitations). The information that follows is for each 30 gallon batch. The barrel is 55 gallons, so I planned to reserve the 5 remaining gallons for topping up the barrel.

The Recipe

Bourbon Barrel Orange Blossom and Buckwheat Mead

Ingredients

for 30 U.S. gallons (113 liters)

96 lb	(43.5 kg) Orange Blossom honey
20 lb	(9.07 kg) Buckwheat honey
0.88 oz	(25 g) Potassium Carbonate
2.11 oz	(60 g) Lalvin 71B yeast
2.6 oz	(75 g) GoFerm
1.9 oz	(54.6 g) Fermaid K
1.9 oz	(54.6 g) DAP

Target Original Gravity: 1.140

Target Final Gravity: 1.010 - 1.030 (I can blend or back sweeten if necessary).

Making the Must

We were using buckets of honey, so we dumped about half a bucket of honey into a spare bucket and added approximately 0.5-1 gallon of hot water. We stirred the honey and water with a drill attachment mixer (works very well



for this) until it was well blended. Then we dumped it into the fermenter. We used hot water and a high-temp, long-handled spatula to scrape all the remaining honey from the bucket.

When all the honey was added, we topped up the fermenter to 30 gallons with cool water. Then we added 25 g (5g per 6 gallons) of potassium carbonate. Here were our results.

Batch 1

SG: 1.142

pH: 4.86

must temp: 79.5° F (26° C)

Batch 2

SG: 1.138

pH: 4.83

must temp - (did not take reading)

Note: All the water used (unless otherwise specified) was filtered using an in-line charcoal filter.

We had approximately 2/3 bucket (about 40 lbs) of buckwheat honey available and approximately 6 lbs of additional orange blossom honey (from a leftover batch) that we used. That is how we came up with 20 lbs of buckwheat and 96 (1 1/2 buckets + 6 lbs) lbs of orange blossom.

Fermentation

We had a very vigorous fermentation. The must looked like it was in a slow boil. We captured a video of it because we couldn't believe our eyes. The video is at the Web site below. The final gravity of the two batches was 1.032 and 1.026. When blended it put us right at the high end of our estimates. Total abv measured about 15 percent.

Tasting Note

The flavor is not as sweet as you would imagine with a FG of 1.030. It is very well balanced by the alcohol and is not syrupy. This mead has a good amount of body.

There is definitely a lot of alcohol harshness, but it's still very young. I am also picking up a very strong flavor from the buckwheat honey. It is more than I was hoping for. However, I do know from experience that the buckwheat harshness will subside with extensive aging. I was already expecting to age this mead for about two years (maybe in the barrel, maybe not), so my hope is that when it's ready to bottle the buckwheat will be a subtle side note to add complexity—the kind of thing that you won't exactly be able to put your finger on.

One thing's for sure—it is already picking up a very nice bourbon flavor that is blending well with the earthy flavors and aromas of the buckwheat honey. I'm not certain how long I'll keep it on the barrel, so I'll just have to taste it each time I top it up. What a great hobby!

You can read more about this batch at <http://forum.allaboutmead.com/viewtopic.php?f=2&t=11>

Brad Dahlhofer has been a homebrewer since 1998 and founded the B. Nektar honey winery in 2006 in Ferndale, Mich.

Suffolk Strong Bourbon Barrel Barleywine

Brewed by Ann Arbor Brewers Guild

In April 2006, AABG members got together to fill their newly acquired bourbon barrel with barleywine. Eleven 5-gallon batches of the same recipe were brewed by members in order to fill the barrel. Since then, AABG members have taken some out for sampling at meetings. Some members have withdrawn their 5-gallon share, and other members have added newly fermented beer (from the same recipe.) Every time it is tasted, the beer is different. It has consistent oak/vanilla aroma, some bourbon flavor, and a modicum of tartness. Sometimes it is sweeter, sometimes more sour, but always interesting.

In terms of preparing the barrel for the barleywine, recipe creator Jeff Renner said, "We kept the barrel sweet for the two months before filling by dumping a

1.75 liter of cheap bourbon in it, then kept it in a Michigan garage late winter-early spring. We dumped the bourbon before filling with the barleywine. The dumped bourbon was much better as it had picked up some of the 12-year-old barrel strength from the wood."

The Recipe Suffolk Strong Bourbon Barrel Barleywine

Ingredients

Recipe for 5 U.S. gallons (19 liters)
(Based on 65-percent efficiency)

16.5 lb	(7.4 kg) Maris Otter pale malt (84.3%)
2.0 lb	(0.9 kg) Briess Special Roast

1.0 lb	malt (10.2%) (0.45 kg) UK crystal 45L (5.1%)
1.0 oz	(28 g) UK chocolate (0.3%)
3.75 oz	(106 g) East Kent Goldings (5.7% aa) 60 min, 60 IBU
1.0 oz	(28 g) East Kent Goldings (5.7% aa) 15 min, 8 IBU

WhiteLabs WLP022 Essex yeast or other English ale yeast

Original Gravity: 1.095

IBUs: 68

For more on the Ann Arbor Brewers Guild project, go to <http://aabg.org/2007/10/10/bourbon-barrel-barleywine/>.

Tips for Using Barrels

The following tips from craft brewers on using bourbon barrels are from the November/December 2007 issue of *The New Brewer*, *Zymurgy*'s sister publication for professional brewers.

Matt Van Wyk, Flossmoor Station Brewery: The only thing I do before filling is soak the outside for several days to help them swell a bit. Then I fill with a blanket of CO₂ and fill with beer. I don't like to rinse out the last squeezin's of booze! I usually use them once only, but have just tried to reuse with a long, hot soak of water in between uses. I don't let them sit dry as they will dry out and become leaky. In my experience, using freshly emptied barrels is best to get the most out of the "what was in the barrel" flavor. When you use it successive times you will get much more of a subtle flavor.

John Harris, Full Sail Brewing: Most of our aging has taken place in used bourbon barrels. The beers we have released are an Imperial Porter and an Imperial Stout. Both styles held up to the cask quite well. We only use the casks one time. I feel this gives the beer the full character of the barrel. Through the years we have used casks of different ages, everything from seven-year-old Jim Beam to 15-year-old Four Roses. There are definite differences between these casks. The newer casks impart a more intense flavor into the beer. We will age from 10 to 12 months in the casks. This also allows the beer to get the full effect of the bourbon and also begin to pick up wood character. I feel the first effect the beer gets is the hot alcohol followed by the oak.

Lauren Salazar, New Belgium Brewing: French oak is a great material to harbor both anaerobic and aerobic bacteria and wild yeast—it makes all kinds of fantastic sours: malic acid (green apple), lactic acid (clean sour), acetic acid (fruity, slight vinegar aromas/sour), even butyric acids (these are kind of bile-like).

Todd Ashman, FiftyFifty Brewing Co.: To get to the end result the required ingredient is not really an ingredient at all...it is time. When barrel aging in used spirit barrels, it is imperative to get the beer in the barrel to expand and contract, permeating the wood during this process. This will bring out flavors from the wood as well as the spirit that previously aged in the barrel. I personally feel that using the barrel once is adequate; when second and further uses are possible the character is diminished. Since most spirits barrels are charred they are difficult to completely clean, and those risks must be weighed. I use a rule of 125 days of aging as a bare minimum.

Vinnie Cilurzo, Russian River: If you are using Pediococcus, you must use Brett, as the Pedi works and kicks out diacetyl. If there is Brett presence, the fermentation of the Brett will (over time) reduce the diacetyl.

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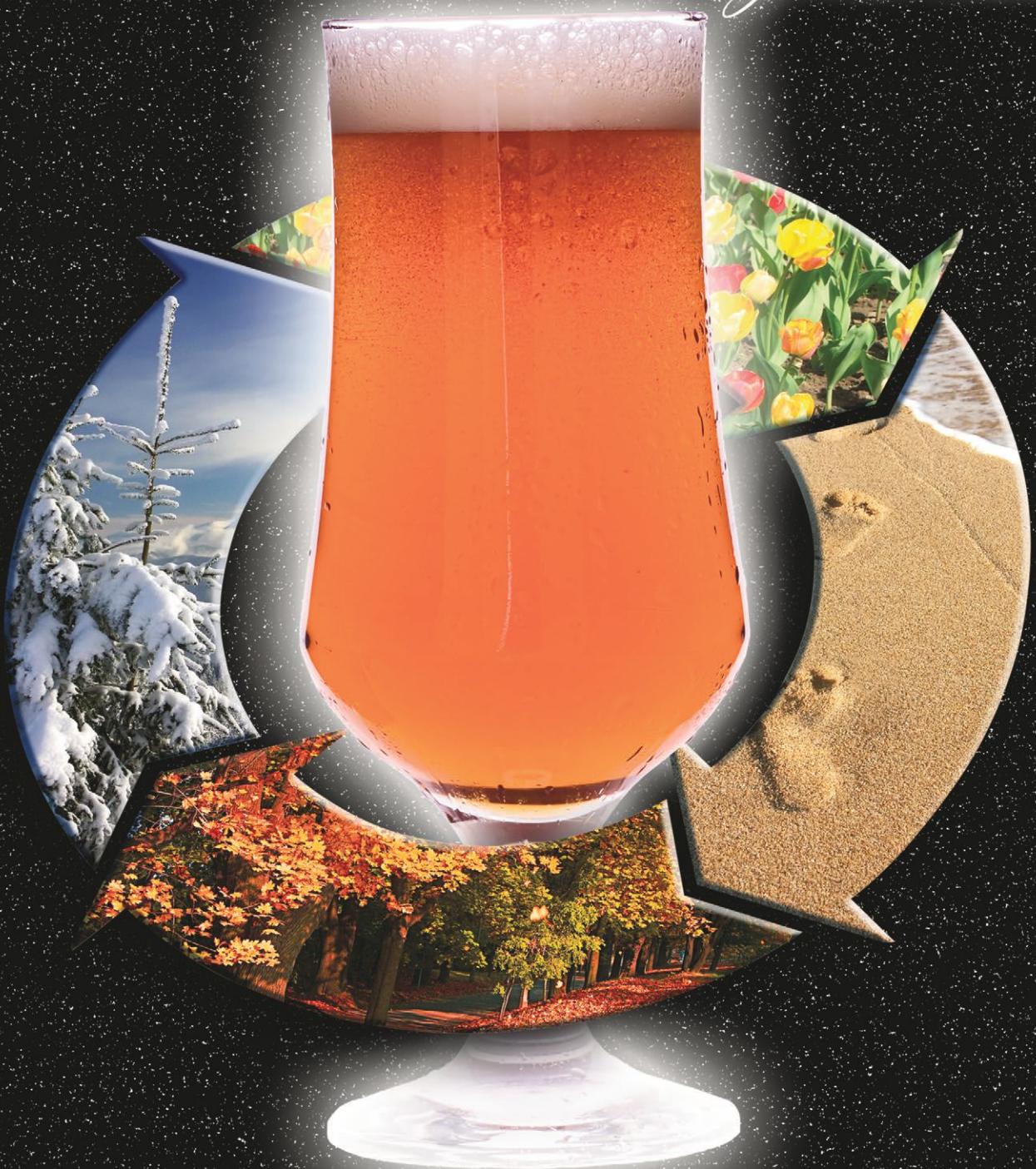
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A Saison for Every Season

by Drew Beechum



As sure as this planet twirls around the sun, I know there is always a reason for a Saison. While brewers around me dabble with their Pale Ales, DIPAs and barleywines, I find myself thinking months ahead to my next funky farmhouse. My brewing calendar resembles the pages of *The Old Farmer's Almanac* (Page 129, June 2008: "Brew a Saison Automné," "Plow and Gun Combo Patented, 1862.")

My Saison epiphany came not from the farmlands of Wallonia, but from L.A.'s oldest (and now no longer brewing) brewpub, Crown City Brewing of Pasadena. Brewer Jay Baum dropped an unknown glass of beer in front of me and let the unusual smells confound my newbie nose. Some hops, some spice, a little malt and a whole wallop of weird opened my eyes to the existence of the style. Nights of studying every Saison I could find led to years of brewing with no end in sight for the experiment.

A Tale of Two Breweries

Founded in the mid 1800s, the Tourpes-based Brasserie Dupont stands as the paragon of Saison brewers. Until the recent explosion of exploration, their Vieille Provision Saison was the single hallmark of the style. The crisp, herbal, citrusy, spicy aroma is just the beginning. Dupont claims no spice additions to their beer; the spice-like flavors are the result of the hot ferment method I favor. In the 50s the Super (aka "stronger") Saison rose from Dupont's tanks in the form of the twin Moinettes, Blonde and Brune, their most popular beers domestically. They do not refer to them as Saisons, but they still carry the hallmark dry earthy flavors. The 1960s introduction of their winter gift, Avec Les Bon Voeux, reinforced the modern Super concept. Thankfully, this beer, one of my favorites, moved from seasonal production to year-round availability.

The best way to see the farmhouse in action and enjoy the wares is to follow the lead of Matt Stinchfield, who led a small tour of dedicated drinkers in 2001. Matt timed our arrival in the town to the annual Tourpes en Activité. Imagine a small-town Iowa fair advertised by road signs, but replace the corn dogs and cot-

ton candy with crepes and every beer from Dupont!

Matt shares responsibility for the Saison for Every Saison project because he took us to the crazy, scary wonderful world of Fantôme. In 1988 Dany Prignon, a homebrewer and tourism director for his region, founded Fantôme in a crumbling farmhouse outside of Soy. Careful with the doors here—close one too hard and the others swing open. Must be the ghost at play!

Everything is done by hand and on repurposed equipment. Family and friends fill, cork, cap and label each bottle. If you show up on the right day, the double-espresso-wired Dany may enlist your help mucking out the lauter. His brewery, built on the back of his year-round Saison, shot to infamy with the release of the dandelion-infused Pissenlit. His reckless abandon and secret kettle additions infuse the seasonal releases with an air of irresistible mystery. That spirit directly inspired the playful nature of my Saison brewing.

Basics of the Style

Two categories of modern Saison exist: the classic workers' tipple and the more recent "super" Saison. The traditional

Saison comes in between 5 and 6.5 percent abv to provide refreshment without dissolution. The super Saisons instead sprawl across the spectrum in color, bitterness, spiciness and alcoholic power. Brewers use super Saisons for their wilder experimentations. Uniting both disparate types are their fantastically potent and unique yeasts and low terminal gravities.

Saisons consist of European Pilsner malt traditionally accented with portions of Munich, Vienna and wheat malt. To achieve the style's signature low terminal gravity, lower saccharification temperatures capable of producing simple fermentable sugars are used. I use single infusion mashes, but my Automné recipe uses a traditional step mash schedule from Brasserie à Vapeur, brewers of Saison Pipaix. Simple sugar additions help drop the terminal gravity and boost apparent dryness.

For bite and aroma, classic hop choices include the earthy East Kent Goldings, floral Styrian Goldings or the spicy noble hops. Saisons carry a healthy bitter bite from a Belgian perspective, not a hop crazed American view! Keep the bitterness restrained to avoid conflicting with the yeast.

Spices are a touchy subject. Before appropriate strains of yeast were available, it was common to chuck heavy doses of coriander, black pepper, ginger, grains of paradise and cinnamon to recreate the classic profile. With proper yeast and fermentation techniques generating a complex and integrated profile, spices take the role of accent, so tiny amounts have great power.

Yeast

Unlike our early experimentation days, there are now multiple suitable strains available from our commercial yeast supplies, ready to chomp on the nearest sugar supply. Astute readers will notice that none of the recipes assigns a preferred yeast strain. In the past, WLP565 or Wyeast 3724 have been my cultures of choice, but I encourage you to play and find your own favorite.

The classic Saison strains require rougher than normal treatment to get the job done. My methodology consists of pitching a large, decanted yeast cake into well-chilled wort (65° F or less) and then letting the ferment rise naturally, to wherever it will. This encourages full attenuation and pleasant, not harsh, yeast phenols and esters. This works even in the SoCal summer heat. I have pushed the WLP565 up to 90° F with great success. Saison yeasts are finicky and appear to stall out. Give the yeast some time (a week or two) and it comes back alive. If the ferment is truly stuck, a dose of neutral ale yeast (US-05) can complete the job.

Wyeast

3711 French Saison: If you like citrus aromas, this is the yeast for you. Brewers report rich, digestible peppered grapefruit results. While it will ferment hot, Wyeast recommends slightly cooler temperatures for this strain.

3724 Belgian Saison: This is the standard Wyeast Saison yeast, available year round. This and WLP565 are the strains that require the most attention to achieve their maximum potential. This strain is spicy, tart and crisp with an acidic bite to the finish.

3725 Biere de Garde: From the area of Soy-Ereze, a vigorous fermenter that produces a more restrained farmhouse spiced character. Soft fruity characters increase with fermentation temperature.

3726 Farmhouse Ale: From another classic Belgian brewery known for a small range of Saisons, this yeast produces an aggressive phenolic and spicy aroma. It attenuates well and runs best in the upper 70s to ferment to finish.

White Labs

WLP565 Belgian Saison: This is the stuff of legends. Slightly funky and earthy with a deep spicy bite, with the right treatment and patience the yeast can drop a 1.080 beer to 1.010 or lower.

WLP566 Belgian Saison II: A platinum strain available in July/August. Speedier than its cousin, 566 has a subdued character in comparison with a stronger clove character coming through.

WLP568 Belgian Saison Blend: New from White Labs and produced in response to the finicky nature of 565, this blend is intended to push the beer drier and faster and still retain the definitive Saison character.

The Recipes

A note on these Saison "styles": In Belgium, there really are no rules. The following recipes outline a way of thinking about a year of Saisons and reflect some of the trends seen from commercial brewers. Many thanks go to my fellow Saison aficionado and brew partner, Jim Kopitzke, for playing along and working these out with me.

Printemps

As the sun begins to rise and workers return to the field, they need a refreshing and warming beer to ward off the last cold wintery touch. Playing with the grassy smell of newly prepared fields, the Printemps recipe starts with a heavy touch of wheat against a backdrop of spicy Tettnanger flavor and Styrian Golding aroma. Unspiced, this beer leans heavily

on the wheat to provide a soft sweetness. Controlling the fermentation temperature will modify the aroma and flavor profile to a neutral Wit-like base. This recipe ends up a stronger and wheatier version of the miner's ale, Grisette.

Été

The classic Saison, the quaff of the farmhands, inspires this recipe. Burnished orange with hop-enhanced rocky, foamy head, it arrives just waiting for a long pull to civilly quench thirst. My Été has evolved endlessly, changing year to year. Like many Saison recipes of the late 90s, heaps of coriander, pepper, orange peel, ginger and more found their way into the kettle and left a sticky, sweet, spicy mess. Ugh! The recipe grew in strength as the spice additions shrank. With newly inspired confidence, I was able to get a large batch of yeast rocking in the hot Los Angeles summer. Reaching a target terminal gravity of 1.010 or less, the beer is a potent reminder of the fieldwork at hand. Brisk, but not overwhelming, bitterness sweeps the bone-dry beer from the palate. The bare additions of kettle spices round out the flavor without overriding the characteristic yeast bite.

Dave's Original Saison

Dave Logsdon of Wyeast shares his more traditional Saison recipe. The small touch of acidulated malt adds just a touch of piquancy to the final product, like the twinge of acidity found in the products of smaller brewers.

Automné

The role of the Scots in the brewing history of the world has gone undersung. <Scottish accent>They're used to it and don't need your stinking praise. <Scottish accent> Looking beyond the effect wrought on Trappist beers and the world famous Duvel (mutated McEwan's yeast? Really?), there are a number of Scotch Ales roaming the Belgian countryside. Exploring the breweries of the region, you can see the Scottish influence in breweries known for their Saison style beers: Scotch Silly, McChouffe and certain vintages of Fantôme Automné.

Starting with a winning Scotch ale recipe, I morphed the recipe to make it feel like a Belgian homage to Scottish brewing traditions. I know a Belgian brewery would never use Maris Otter (or Scottish Golden Promise) malt as the base, but it felt right to me. The 90-minute boil adds the sweet hit of kettle caramelization, while the brown sugar pushes to the Belgian desire for dry finishes. The smoky raisin-scented Billington's Dark Brown Molasses Sugar is my favorite for the extra aroma kick.

Knowing Fantôme's predilection for adding local produce, I assume that the squashy notes found in some Automnè versions come from squash meat. To that end, a reduction in bittering and addition of roasted (or canned) pumpkin flesh to the mash yields a sweeter, slightly hazy version called Potiron.

d'Hiver/Infernal

Wallonian winters can be flat out nasty, fit for neither man nor beast. Flowing to the rescue, the d'Hiver/Nöel style of Saison is the biggest of the bunch with artfully hidden warmth and a rich spiciness. Versions like Dupont's Avec are big, golden hoppy monsters and others are Saison spins on Belgian Christmas beers.

Inspired by the Fantôme Spéciale De Noel, our Saison d'Hiver is a big chocolate galoot of a beer. Additions of cinnamon and vanilla bring to mind rich cakes and cocoa. However, the attentive will notice two d'Hiver recipes and assume there's a story involved.

Jim and I developed the first recipe over a few years' experimentation and honed it into a strong favorite. Our fourth batch went horribly, delightfully awry. Jim's steady and reliable mash tun developed a bad case of stuck lautering. Our spirits sank and we despaired as the lauter repeatedly brick walled. We struggled mightily with the stubborn mess. Our best efforts, stirring the mash, floating it, blowing back, yielded the barest trickle of wort. Defeated, hungry and annoyed, we slumped over a pint and a burrito, solutions failing us.

After a two-and-a-half-hour lunch and beer commiseration break, we threw in the towel and went to clean. Greeting us was 5.5 gallons of beautiful, luscious black wort at 1.122. We added a gallon of water, fired the burner and brewed a half-sized ultra strong batch of goodness. After a rollicking ferment, the beer finished at a dry 1.016 or 14-percent abv. Jim nicknamed it "the Widow Maker." The smooth deceptive body lured you to a quick pint and a nap on the couch. The Infernal recipe attempts to recreate this happy accident without adding stress.

Experimental: Springtime in Amarillo

The Belgians thumb their nose at strict styles and so should you. Brasserie d'Achouffe recently released Houblon Chouffe Dobbelon IPA Tripel, a hybrid "Belgian IPA," as tasty as the name is confusing. Even better, a blend of Amarillo, Saaz and Tomahawk hops playfully merges with Achouffe's distinct yeasty pear aroma. Needing a yeast cake for the Saison Hiver Infernal and possessing a few ounces of grapefruit love, aka Amarillo, Houblon Chouffe's spirit infected a new Printemps, "Springtime in Amarillo." The result is a juicy, bright and bracing Saison Wheat IPA with a punch of bitterness that satisfies hop cravings even in these trying times.

Experimental: Brut Houbblonee

Revisiting my "Et tu Brut" article from May/June 2006, the club has kept up an annual Brut brew. Heading into the unseen jaws of the looming hop crisis, the outgoing Maltose Falcons' board tackled a project, the Brut Houbblonee (or Brut du Board). This time instead of a Belgian Strong Ale, we pulled out a meaner Avec Les Bon Voeux-inspired Super Saison. Clocking in at a whopping 12 percent, 47 IBUs and a sprightly six volumes of CO₂, the bottles shoot the corks a good 60 feet. The brisk carbonation pumps the huge hop aroma and flavor straight up your nose and through your tongue. Even better, some of the beer got a large, dry hop dose of Liberty. If the previous Brut recipes did not convince you to give this a whirl, I heartily encourage you to take a chance!

Go Forth and Brew

When we get down to the nub, I see an endless variety of beers falling under a "Saison" moniker. This mantra crystallized when a brewer and master judge I admire remarked about the d'Hiver, "I never would have thought of a black Saison, but all the earthiness, funkiness and spiciness of a Saison are there."

Remember, the Belgians have no rules! Throw the guidelines out the window! Follow the example of Dany and



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Fantôme; be bound not by the strictures of the Saison style authorities, but by the fertile fields of your fancy.

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

Saison Printemps

Ingredients

for 5.5 U.S. gallons (20.8 L)

6.25 lb	(2.83 kg) Belgian Pilsner Malt
6.25 lb	(2.83 kg) German Wheat Malt
0.50 lb	(0.22 kg) Aromatic Malt
0.50 lb	(0.22 kg) Caramel Pils Malt (Crystal 8L)
1.00 lb	(0.45 kg) Candi Sugar
1.75 oz	(50 g) Styrian Goldings Pellet Hops, 4.6% AA, 60 min
0.75 oz	(21 g) Tettnanger Pellet Hops, 4.5% AA, 20 min
0.75 oz	(21 g) Styrian Goldings Pellet Hops, 4.6% AA, 0 min
Yeast:	See text for a selection of Saison yeasts to choose from

Original Gravity: 1.073

SRM: 5.8

IBU: 33

70% efficiency

60 minute boil

Directions

Mash at 151° F (66° C) (use 1.33 qt/lb of strike water) for 60 minutes. Boil for 60 minutes adding hops as indicated in the recipe. Add the Candi Sugar during the last 5 minutes of the boil.

Extract Version

9.5 lb	(4.31 kg) Liquid Wheat Malt Extract
0.50 lb	(0.22 kg) Aromatic Malt
0.50 lb	(0.22 kg) Caramel Pils Malt (Crystal 8L)
1.50 lb	(0.68 kg) Candi Sugar
1.75 oz	(50 g) Styrian Goldings Pellet Hops, 4.6% AA, 60 min

0.75 oz (21 g) Tettnanger Pellet Hops, 4.5% AA, 20 min

0.75 oz (21 g) Styrian Goldings Pellet Hops, 4.6% AA, 0 min

Yeast: See text for a selection of Saison yeasts to choose from.

Extract Version

4.00 lb (1.81 kg) Extra Light Dry Malt

4.00 lb (1.81 kg) Liquid Wheat Malt Extract

1.50 lb (0.45 kg) Candi Sugar

1.75 oz (50 g) Styrian Goldings Pellet Hops, 5.2% AA, 60 minutes

2.00 oz (57 g) Saaz Pellet Hops, 3.0% AA, 5 minutes

0.25 tsp Black Pepper, coarsely crushed, 5 minutes

0.25 tsp Coriander, coarsely crushed, 5 minutes

Peel from half an orange, grated (no pith), 5 minutes

Yeast: See text for a selection of Saison yeasts to choose from

Directions

Steep grains in 2 gallons (7.6 L) of water at 150° F (66° C) for 30 minutes, then rinse with 0.5 gallon (1.9 L) of hot water. Stir in half of the malt extract and bring to a boil. Add hops as indicated in the recipe. When 5 minutes remain in the 60 minute boil, remove from burner and add the candi sugar and remaining malt extract then return to boil for last 5 minutes. Strain into fermenter with enough cold water to make 5.5 gallons (20.8 L).

Saison Été

Ingredients

for 5.5 U.S. gallons (20.8 L)

9.00 lb (4.08 kg) Belgian Pilsner Malt

3.00 lb (1.36 kg) German Wheat Malt

0.50 lb (0.22 kg) Vienna Malt

0.25 lb (113 g) Acidulated Malt

1.00 lb (0.45 kg) Candi Sugar

1.75 oz (50 g) Styrian Goldings Pellet Hops, 5.2% AA, 60 min

2.00 oz (57 g) Saaz Pellet Hops, 3.0% AA, 5 min

0.25 tsp Black Pepper, coarsely crushed, 5 min

0.25 tsp Coriander, coarsely crushed, 5 min

Peel from half an orange, grated (no pith), 5 min

Yeast: See text for a selection of Saison yeasts to choose from

Original Gravity: 1.069

SRM: 4

IBUs: 34

70% efficiency

60-minute boil

Directions

Mash in at 120° F (49° C) (1.2 qt./lb strike water) for a 20 minute protein rest. Raise to 150° F (66° C) and hold 60 minutes before mashing out. Boil for 60 minutes adding hops and spices as indicated. Add candi sugar with 5 minutes remaining in the boil.

Directions

Bring 2.5 gallons (9.5 L) of water to a boil, remove from burner and stir in half of the malt extract then return to boil. Add hops and spices as indicated in the recipe. When 5 minutes remain in the 60 minute boil, remove from burner and add the candi sugar and remaining malt extract then return to boil for last 5 minutes. Strain into fermenter with enough cold water to make 5.5 gallons (20.8 L).

Saison Automné

Ingredients

for 5.5 U.S. gallons (20.8 L)

13.75 lb (6.23 kg) Maris Otter Malt

0.50 lb (0.22 kg) Biscuit Malt

0.33 lb (150 g) Crystal 75L

0.33 lb (150 g) Wheat Malt

1.00 lb (0.45 kg) Dark English Brown Sugar

1.6 oz (45 g) Styrian Goldings Hop Pellets, 4.6% AA, 60 min

0.5 oz (14 g) Saaz Hop Pellets, 3.0% AA, 20 min

Yeast: See text for a selection of Saison yeasts to choose from.

Original Gravity: 1.081

SRM: 15

IBU: 26

70% efficiency

90 minute boil

Directions

Mash in at 152° F (67° C) (1.2 quarts/lb strike water) and hold for 60 minutes. Boil for 90 minutes adding hops as directed in the recipe. Add sugar with 5 minutes remaining in the boil.

Extract Version

11.5 lb	(5.21 kg) Light Liquid Malt Extract
0.50 lb	(0.22 kg) Biscuit Malt
0.33 lb	(150 g) Crystal 75L
1.00 lb	(0.45 kg) Dark English Brown Sugar
1.6 oz	(45 g) Styrian Goldings Hop Pellets, 4.6% AA, 60 minutes
0.5 oz	(14 g) Saaz Hop Pellets, 3.0% AA, 20 minutes
Yeast:	See text for a selection of Saison yeasts to choose from.

Directions

Steep grains in 2 gallons (7.6 L) of water at 150° F (66° C) for 30 minutes, then rinse with 0.5 gallons (1.9 L) of hot water. Stir in half of the malt extract and bring to a boil. Boil for a total of 60 minutes. Add hops as indicated in the recipe. When 5 minutes remain in the boil, remove from burner and add the sugar and remaining malt extract then return to boil for last 5 minutes. Strain into fermenter with enough cold water to make 5.5 gallons (20.8 L).

Saison Automné Potiron

Add to the mash 1 29-oz (0.85 L) can of prepared unspiced pumpkin or oven roast (350° F/177° C) enough sweet pumpkin meat to yield 1.8 lb (0.81 kg) of flesh. Reduce the bittering charge to 1 oz (28 g) of Styrian Goldings at 60 minutes.

Saison d'Hiver

Ingredients

for 5.5 U.S. gallons (20.8 L)

11.5 lb	(5.21 kg) Belgian Pilsner Malt
0.60 lb	(0.27 kg) Crystal 120L
1.0 lb	(0.45 kg) Munich Malt
0.4 lb	(0.18 kg) Vienna Malt
0.4 lb	(0.18 kg) Wheat Malt
0.25 lb	(0.11 kg) Carafa Malt
0.50 lb	(0.22 kg) Turbinado Sugar
0.75 lb	(0.34 kg) Dark Candi Sugar
1.4 oz	(40 g) Styrian Goldings Hop Pellets, 4.7% AA, 60 minutes
0.5 oz	(14 g) Saaz Hop Pellets, 3.5% AA, 20 minutes
I	vanilla bean, split and scraped (secondary)
I	cinnamon stick (secondary)
Yeast:	See text for a selection of Saison yeasts to choose from.

Original Gravity: 1.080

SRM: 29

IBUs: 32

70% efficiency

90 minute boil

Directions

Mash in at 149° F (65° C) (1.25 quarts/lb strike water) and hold 60 minutes. Boil 90 minutes adding hops as indicated in recipe. Add turbinado and candi sugar for last 5 minutes of the boil. Add vanilla bean and cinnamon stick to the secondary and age one month.

Extract Version

9.5 lb	(4.31 kg) Light Liquid Malt Extract
0.60 lb	(0.27 kg) Crystal 120L
0.50 lb	(0.22 kg) CaraMunich Malt
0.25 lb	(0.11 kg) Carafa Malt
0.50 lb	(0.22 kg) Turbinado Sugar
0.75 lb	(0.34 kg) Dark Candi Sugar
1.4 oz	(40 g) Styrian Goldings Hop Pellets, 4.7% AA, 60 minutes
0.5 oz	(14 g) Saaz Hop Pellets, 3.5% AA, 20 minutes
I	vanilla bean, split and scraped (secondary)
I	cinnamon stick (secondary)
Yeast:	See text for a selection of Saison yeasts to choose from.

Directions

Steep grains in 2 gallons (7.6 L) of water at 150° F (66° C) for 30 minutes, then rinse with 0.5 gallons (1.9 L) of hot water. Stir in half of the malt extract and bring to a boil. Boil for a total of 60 minutes. Add hops as indicated in the recipe. When 5 minutes remain in the boil, remove from burner and add the sugar and remaining malt extract, then return to boil for last 5 minutes. Strain into fermenter with enough cold water to make 5.5 gallons (20.8 L). Add vanilla bean and cinnamon stick to the secondary and age one month.

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Saison d'Hiver Infernal

Ingredients

for 5.5 U.S. gallons (20.8 L)

23.5 lb	(10.66 kg) Belgian Pilsner Malt
1.5 lb	(0.68 kg) Munich Malt
1.5 lb	(0.68 kg) Special B Malt
1.0 lb	(0.45 kg) Vienna Malt
1.0 lb	(0.45 kg) Wheat Malt
0.5 lb	(0.22 kg) Carafla Malt
1.0 lb	(0.45 kg) Dark Candi Sugar
2.5 oz	(71 g) Styrian Goldings Hop Pellets, 4% AA, 60 minutes
1.0 oz	(28 g) Saaz Hops Pellets, 4% AA, 20 minutes
I	vanilla bean (split and scraped), 0 minutes
I	cinnamon stick, 0 minutes
Yeast:	See text for a selection of Saison yeasts to choose from.

Mash (Schedule based on notes from Brasserie à Vapeur)

Protein Rest 122° F (50° C) 12 minutes (1 quart per pound)

Low Rest 131° F (55° C) 15 minutes

Beta Rest 142° F (60° C) 30 minutes

Alpha Rest 154° F (68° C) 30 minutes

Original Gravity: 1.130

Final Gravity: 1.016

SRM: 34.4

IBU: 29

90 minute boil

Directions

Boil 90 minutes adding hops as indicated in recipe. Add candi sugar for last 5 minutes of the boil. Add vanilla bean and cinnamon stick at knockout.

Extract Version

13.25 lb	(6.01 kg) Extra Light Dry Malt Extract
1.5 lb	(0.68 kg) Special B Malt
0.5 lb	(0.22 kg) CaraMunich Malt
0.5 lb	(0.22 kg) Carafla Malt
1.0 lb	(0.45 kg) Dark Candi Sugar
2.5 oz	(71 g) Styrian Goldings Hop Pellets, 4% AA, 60 minutes
1.0 oz	(28 g) Saaz Hops Pellets, 4% AA, 20 minutes

I	vanilla bean (split and scraped), 0 minutes
I	cinnamon stick, 0 minutes
Yeast:	See text for a selection of Saison yeasts to choose from.

Directions

Steep grains in 2 gallons (7.6 L) of water at 150° F (66° C) for 30 minutes, then rinse with 0.5 gallons (1.9 L) of hot water. Stir in half of the malt extract and bring to a boil. Boil for a total of 60 minutes. Add hops as indicated in the recipe. When 5 minutes remain in the boil, remove from burner and add the sugar and remaining malt extract then return to boil for last 5 minutes. Add the vanilla bean and cinnamon stick when you turn off the burner and let steep for 15 minutes before straining into fermenter with enough cold water to make 5.5 gallons (20.8 L).

Boil for 75 minutes. Add hops and spices as indicated in recipe.

Extract Version

7.5 lb	(3.40 kg) Extra Light Dry Malt Extract
0.25 lb	(0.11 kg) German Crystal Malt (25L)
3.0 oz	(85 g) Belgian Biscuit Malt
3.0 oz	(85 g) Belgian Aromatic Malt
1.0 oz	(28 g) East Kent Goldings, 4.75% AA, 60 minutes
0.5 oz	(14 g) Hallertau Hersbrucker, 4.75%AA, 60 minutes
0.5 oz	(14 g) East Kent Goldings, 4.75% AA, 15 minutes
0.25 oz	(7 g) Belgian Sweet Orange Peel, 15 minutes
0.5 tsp	Crushed Coriander, 15 minutes
0.25 tsp	Grains of Paradise, 15 minutes
0.25 oz	(7 g) Belgian Sweet Orange Peel, 2 minutes
Yeast:	See text for a selection of Saison Yeasts to choose from.

Dave's Original Saison

(courtesy Dave Logsdon of Wyeast Laboratories, Inc.)

Ingredients for 5 U.S. gallons (18.9 L)

15.0 lb	(6.80 kg) Belgian Pilsner Malt
0.25 lb	(0.11 kg) Acidulated Malt
0.25 lb	(0.11 kg) German Crystal Malt (25L)
3.0 oz	(85 g) Belgian Biscuit Malt
3.0 oz	(85 g) Belgian Aromatic Malt
1.0 oz	(28 g) East Kent Goldings, % AA, 60 minutes
0.5 oz	(14 g) Hallertau Hersbrucker, %AA, 60 minutes
0.5 oz	(14 g) East Kent Goldings, % AA, 15 minutes
0.25 oz	(7 g) Belgian Sweet Orange Peel, 15 minutes
0.5 tsp	(14 g) Crushed Coriander, 15 minutes
0.25 tsp	Grains of Paradise, 15 minutes
0.25 oz	(7 g) Belgian Sweet Orange Peel, 2 minutes

Yeast: See text for a selection of Saison yeasts to choose from.

Original Gravity: 1.070-1.075

IBU: 30

Directions

Mash in at 155° F (68° C) and hold 20-30 minutes. Sparge with 175° F (79° C) water.

Springtime in Amarillo

Ingredients

for 5.5 U.S. gallons (20.8 L)

7.0 lb	(3.17 kg) Belgian Pilsner Malt
4.0 lb	(1.81 kg) German Wheat Malt
0.5 lb	(0.22 kg) Aromatic Malt
0.5 lb	(0.22 kg) Turbinado Sugar
1.25 oz	(35 g) Amarillo Pellet Hops, 8.4% AA, 60 minutes
0.50 oz	(14 g) Amarillo Pellet Hops, 8.4% AA, 20 minutes
1.00 oz	(28 g) Amarillo Pellet Hops, 8.4% AA, 0 minutes

Yeast: See text for a selection of Saison yeasts to choose from.

Original Gravity: 1.062

SRM: 8

IBU: 46

Directions

Mash at 153° F (67° C) (1.2 qt/lb strike water) for 60 minutes. Boil 60 minutes adding hops as indicated in recipe. Add turbinado sugar for last 5 minutes of the boil.

Extract Version

2.5 lb (1.13 kg) Extra Light Dry Malt Extract
5.5 lb (2.49 kg) Liquid Wheat Malt Extract
0.5 lb (0.22 kg) Aromatic Malt
0.5 lb (0.22 kg) Turbinado Sugar
1.25 oz (35 g) Amarillo Pellet Hops, 8.4% AA, 60 minutes
0.50 oz (14 g) Amarillo Pellet Hops, 8.4% AA, 20 minutes
1.00 oz (28 g) Amarillo Pellet Hops, 8.4% AA, 0 minutes
Yeast: See text for a selection of Saison yeasts to choose from.

Directions

Steep grains in 2 gallons (7.6 L) of water at 150° F (66° C) for 30 minutes, then rinse with 0.5 gallons (1.9 L) of hot water. Stir in half of the malt extract and bring to a boil. Boil for a total of 60 minutes. Add hops as indicated in the recipe. When 5 minutes remain in the boil, remove from burner and add the turbinado sugar and remaining malt extract then return to boil for last 5 minutes. Strain into fermenter with enough cold water to make 5.5 gallons (20.8 L).

Brut d'Houblonee

Ingredients for 5.5 U.S. gallons (20.8 L)

13.75 lb (6.23 kg) Belgian Pilsner Malt
0.67 lb (0.30 kg) Flaked Wheat
0.5 lb (0.22 kg) Wheat Malt
0.25 lb (0.11 kg) Munich Malt
1.75 lb (0.79 kg) Cane Sugar
0.60 oz (17 g) Magnum Pellet Hops, 14.0% AA, 60 minutes

1.25 oz (35 g) Styrian Goldings Pellet Hops, 5.25% AA, 30 minutes
1.00 oz (28 g) Styrian Goldings Pellet Hops, 5.25% AA, 15 minutes
0.50 oz (14 g) Styrian Goldings Pellet Hops, 5.25% AA, 0 minutes
0.50 oz (14 g) Czech Saaz Pellet Hops, 3.50% AA, 0 minutes
Yeast: See text for a selection of Saison yeasts to choose from.

Original Gravity: 1.091

SRM: 4.7

IBUs: 46

Directions

Mash at 148° F (64° C) (1.3 qt/lb strike water) for 60 minutes. Boil 60 minutes adding hops as indicated in recipe. Stir in cane sugar for last 5 minutes of the boil.

Extract Version

8.0 lb (3.63 kg) Extra Light Dry Malt Extract
1.5 lb (0.68 kg) Liquid Wheat Malt Extract
1.75 lb (0.79 kg) Cane Sugar
0.60 oz (17 g) Magnum Pellet Hops, 14.0% AA, 60 minutes
1.25 oz (35 g) Styrian Goldings Pellet Hops, 5.25% AA, 30 minutes
1.00 oz (28 g) Styrian Goldings Pellet Hops, 5.25% AA, 15 minutes
0.50 oz (14 g) Styrian Goldings Pellet Hops, 5.25% AA, 0 minutes
0.50 oz (14 g) Czech Saaz Pellet Hops, 3.50% AA, 0 minutes
Yeast: See text for a selection of Saison yeasts to choose from.

Directions

Stir half of the malt extract into 2.5 gallons (9.5 L) of water and bring to a boil. Boil for a total of 60 minutes. Add hops as indicated in the recipe. When 5 minutes remain in the boil, remove from burner and add the cane sugar and remaining malt extract then return to boil for last 5 minutes. Strain into fermenter with enough cold water to make 5.5 gallons (20.8 L).



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Bremin' down THE haus in Zimzinnati

The Queen City
Hosts Homebrewers
By Brian & Jenny Becker



Beer has traveled a meandering journey throughout the United States. While George Washington, a homebrewer, was serving as President back East, a large portion of the country was moving westward to open up the frontier and build settlements such as Cincinnati. As always, brewers followed to provide the new settlers with one of the main staples of life: beer. From the original settlers with their English-style ales and porters to the influx of German immigrants in the mid-19th century with their lagers and great brewing tradition, Cincinnati has solidified its place in the pantheon of American brewing.

The great beer traditions continue in Cincinnati to this day. Cincinnati is home to Oktoberfest-Zinzinnati, the largest authentic Oktoberfest outside of the original in Munich, and is also home to the world's oldest Bock festival. In the 1880s, Cincinnati brewers developed a tradition of releasing all of their bock beer on the same day. Cincinnati is also the home of "Beer and Sweat," the world's largest all-draft homebrew competition.

All of this has led to a strong local homebrewing community, resulting in Cincinnati being chosen as the first location outside of Colorado to host the AHA National Homebrewers Conference (1989). The path comes full circle in 2008 with this year's National Homebrewers Conference: Brewin' Down the Haus in Zinzinnati.

The People

Local homebrewers have spent countless hours planning and organizing the conference. Host clubs include Cincinnati's Bloatarian Brewing League (BBL) and the Cincinnati Malt Infusers

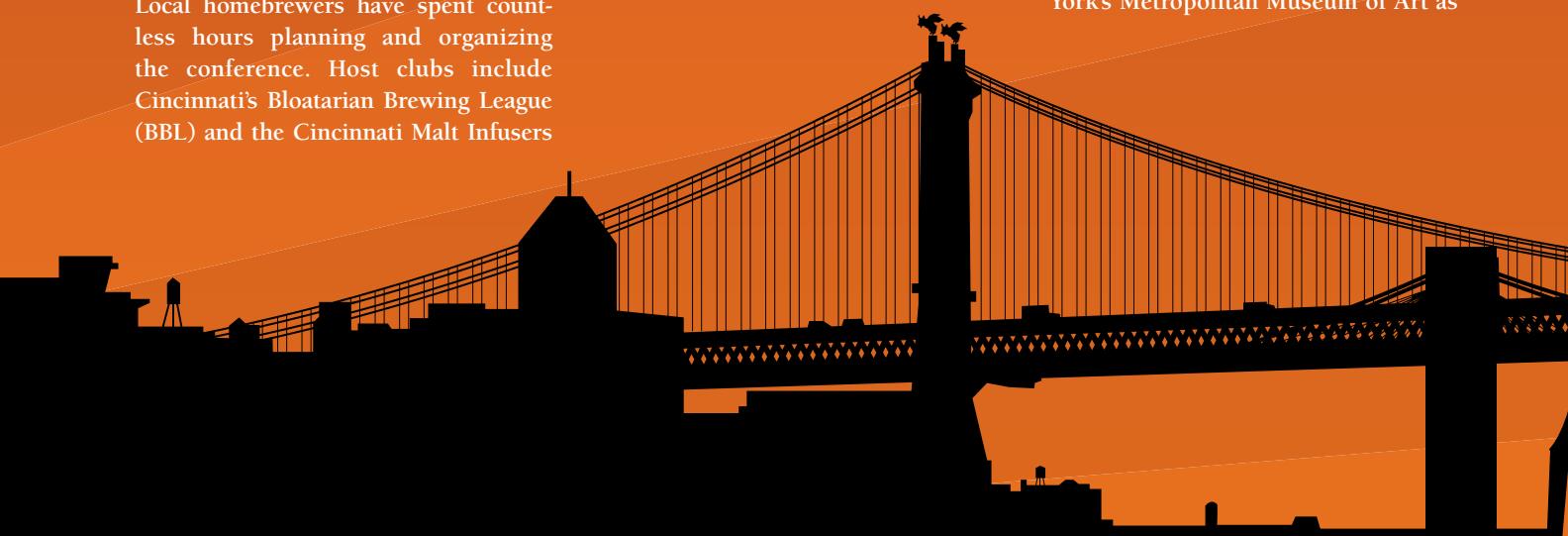
(CMI). Also playing a big role are members of the Dayton Regional Amateur Fermentation Technologists (DRAFT); Columbus' Scioto, Olentangy, and Darby Zymurgists (SODZ); the Louisville Area Grain and Extract Research Society (LAGERS); New Albany's Fermenters of Special Southern Indiana Libations (FOSSILS); Lexington's Brewers of Central Kentucky (BOCK); and West Virginia's Greater Huntington Homebrewers Association (GHHA). BBL has hosted Beer & Sweat every August since 1988. The clubs have been coming together at this and other regional competitions over the years and decided it was time to join together to provide a taste of what the area has to offer.

The chairman of the local organizing committee is Rob Westendorf, assisted by Jeff Graff. Westendorf has been a homebrewer since 1994 and will soon

be brewing his 300th beer (look for "Batch 300" at Club Night). A member of the Bloatarian Brewing League, Westendorf is also a BJCP national judge. Graff has been homebrewing since 1998 and is a veteran of more than 100 batches. He owns Paradise Brewing Supplies and is a member of the Cincinnati Malt Infusers.

Diversions

There are many reasons to arrive a few days before the conference: to ride the roller coasters at Kings Island amusement park, visit the William Howard Taft National Historic Site, cruise along the Ohio River, or catch a Cincinnati Reds game. In a recent Zagat Survey of the top 25 attractions in the United States, Cincinnati had three: Newport on the Levee, the Cincinnati Zoo and Botanical Gardens, and the Newport Aquarium. Not only that, but the Cincinnati Art Museum tied with New York's Metropolitan Museum of Art as





Newport on the Levee offers 350,000 square feet of fun—unique shopping, international dining, an AMC 20 stadium-style-seating movie theater, live street entertainers, a video game world at GameWorks, the Funny Bone Comedy Club featuring performances by national comedians, the Shadowbox Cabaret, a sketch comedy and rock-n-roll club, Oh My Godard Gallery, an art gallery featuring the original work of Michael Godard and other internationally-renowned artists, a world under-the-sea at the Newport Aquarium, and dramatic Cincinnati downtown skyline views. In May 2004, Zagat Survey announced that Newport on the Levee was selected as the No. 1 Mall/Shopping Attraction for Families in the United States.



Hofbräuhaus Newport



the best art museum in the nation! The only city with more top 25 attractions on the list was New York.

Believe it or not, Cincinnati is a must stop for the foodie. About 10 miles north of the conference is Jungle Jim's International Market. Jungle Jim's has been described as a theme park of food and has grown over the years to a 300,000-square-foot food extravaganza and tourist destination, offering more than 130,000 different items from 70 countries. Jungle Jim's also offers beers from all over the world and an exclusive selection of fine Belgian beers. They stock more than 1,200 different brews, feature a 30-foot Cold Beer Cave, and offer brewing supplies and glassware. The Spouse's Program will feature a free tour of Jungle Jim's.

A trip to Cincinnati is not complete without a sumptuous serving of Cincinnati chili followed by a scoop of Graeter's ice cream. Cincinnati-style chili originated when Tom Kiradjieff invented the style in 1922 by modifying a Greek stew and serving it over hot dogs and spaghetti. To try this local specialty, visit either Skyline Chili or Gold Star Chili, both with multiple locations throughout the Greater Cincinnati area. Enjoy the chili in its traditional manner, as a three-way (chili, spaghetti and shredded mild cheddar cheese), four-way (with beans or onions), or five-way (with beans and onions). This is best followed by a trip to Graeter's for a scoop of their famous ice cream. Made in small batches using the French pot method, Graeter's boasts what many, including Oprah, have called the best ice cream they have ever tasted.

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For a sense of Cincinnati German history and culture, try one of the many wursts (sausages) or other pork delicacies that led to Cincinnati being called Porkopolis as early as 1843, when it was one of the world's leading pork processors. Be on the lookout for goetta, a peasant food of German origin that is popular in the greater Cincinnati area. It is composed of ground meat (primarily pork shoulder), oats and assorted spices and is readily available in local grocery stores. For a full selection of handmade wursts, try Findlay Market, Ohio's old-

est continuously operated public market and one of Cincinnati's most famous institutions.

Pre-Conference Events

Cincinnati may be known for its chili restaurants, but a French bistro will host the first pre-conference activity on Tuesday, June 17. Jean-Robert de Cavel, a three-time James Beard Foundation Award Best Chef nominee, owns JeanRo Bistro, where conference-goers can enjoy a special beer pairing dinner.



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Begin Wednesday with a short journey on the Bourbon Trail. Almost all of the bourbon consumed in the world is made in a small, defined area in Kentucky south and west of Cincinnati. Buses will head two hours south and visit two of the great distilleries: Buffalo Trace Distillery and the Woodford Reserve Distillery. After a catered lunch at Woodford Reserve with renowned Kentucky chef David Larson, continue on to Alltech's Lexington Brewing Company to sample their Kentucky Bourbon Barrel Ale and gather ideas on how to barrel-age your own beer. Conference-goers will also have an opportunity to acquire their own barrels.

Staying closer to home, tour the unique Over-the-Rhine and West End districts, home of many breweries in the pre-Prohibition era. As early as 1856,



Cincinnati was home to more than 40 breweries. The tour will start with lunch at Mecklenburg Gardens, one of the oldest traditional German restaurants and bars in the city. The tour will include many of

the remaining brewery buildings in Cincinnati along with a stop at BarrelHouse Brewing Company.

An evening pub crawl will offer the opportunity to explore Hofbrauhaus Newport, the first authentic Hofbrauhaus in America, to drink liters of German beer made in accordance with the Reinheitsgebot, eat the best pretzels in town, or dance to an oompah band. The pub crawl will also visit the Newport's other beer attraction, the Beer Sellar on the Ohio River with its 60 taps and 120 bottles. Unusual for a pub crawl, the bus will stop at a retail liquor store, The Party Source. With more than 2,500 beers, The Party Source in Bellevue, Ky. serves as a one-stop destination for an unparalleled selection of microbrews and imports. The pub crawl will also visit the heart and soul of Cincinnati—Fountain Square, arguably the best location of any Rock Bottom Restaurant & Brewery.

The Conference

The three-day conference will start on Thursday, June 19 at the Sheraton Cincinnati North, 15 miles from downtown Cincinnati. As an added bonus, the Sheraton is also connected to Cincinnati's newest indoor waterpark, CoCo Key Water Resort.

The conference offers a dynamic list of speakers to fulfill the never-ending quest for beer knowledge, including an expert panel that will discuss the sensory evaluation of bourbon barrel-aged beer. The

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COMMEMORATIVE BEER AND MEAD

The 2008 AHA National Homebrewers Conference features one very special German Imperial Cream Ale and one most unusual mead. See what you'll be sampling at the AHA Conference in Cincinnati June 19-21—or, better yet, brew some of your own and bring it to Cincinnati to compare with the originals.

The first recipe is Bosmo's Imperial Cream Ale, developed as a joint project between homebrewers and professional brewers in Greater Cincinnati. The name is in honor of the Blootarian Brewing League's iconic mascot, Bosmo, but the style is a tribute to the long history of excellent relationships between the homebrewing community and the professional brewers of the area. Cream ale was chosen as the base style because it was popularized in Cincinnati. Some people think ale brewers created cream ale to compete with the new lager beers in the latter part of the 19th century. Others believe the German brewmasters in America simply applied their experience with German ales to create cream ale. Either way, we're sure you'll enjoy it!

Collaborators include Ray Snyder of the Blootarian Brewing League, Kevin Spatz of Boston Beer Co. and the Blootarian Brewing League, and most of the professional brewers of the Greater Cincinnati breweries: BarrelHouse Brewing Company (www.barrelhouse.com), Christian Moerlein Brewing Company (www.christianmoerlein.com), Hofbrauhaus Newport (www.hofbrauhausnewport.com), Cincinnati's Rock Bottom Restaurant & Brewery (www.rockbottom.com), and Cincinnati's Boston Beer Co. brewery (www.samueladams.com).

The second recipe is a variation of Chuck Boyce's Atomic Fireball Mead recipe profiled in Randy Mosher's book *Radical Brewing*. Boyce collaborated with fellow Blootarian Brewing League member Roxanne Westendorf in creating this variation for the 2008 AHA Conference. In order to produce enough mead for the AHA Conference, this was brewed as a joint project between homebrewers and Don Outterson, professional meadmaker of Woodstone Creek Winery and Distillery. Several members of the Blootarian Brewing League and the Cincinnati Malt Infusers helped Outterson produce this extraordinary mead.



Fireball Mead

Recipe by Chuck Boyce

Ingredients

for 5 U.S. gallons (19 liters)

- | | |
|----------------|---|
| 18.0 lb | (8.16 kg) lightly flavored honey such as clover |
| 2 tsp | (10 mL) Fermax yeast nutrient |
| 2 tsp | (10 mL) yeast energizer (optional) |
| | Lalvin 71B-1122 Narbonne Dry Wine Yeast (2 packs) |

Ingredients added after primary fermentation

- | | |
|---------------|---------------------------------------|
| 0.5 oz | (15 mL) cinnamon oil or more to taste |
| 5 tsp | (25 mL) potassium sorbate |

Original Target Gravity: 1.135

Final Target Gravity: Keep it sweet—at least 1.030, as high as 1.060!

Notes: For higher gravity, give it at least a year to blend. Thanks to the Boston Beer Company for donating the honey used for this mead!

Directions

Activate yeast in warm water. Pasteurize honey and water at 150° F (65.5° C) for 30 minutes. Cool and transfer to carboy. Add enough water to make 5.5 gallons. Add yeast and remaining ingredients. Add 0.5 tsp or more of cinnamon oil to the secondary or at bottling, adjusting for your own taste. Once fermentation has ceased and the final target gravity is reached add 5 tsp (25 mL) of potassium sorbate to stabilize the mead and to stop fermentation from restarting. Once mead has cleared, bottle.

conference's keynote speaker will be Cincinnati native Jim Koch, founder and brewer of Boston Beer Co. In the mid-1990s, Koch returned to his hometown to purchase the Hudepohl-Schoenling Brewery, where his father had apprenticed in the 1940s. In January 2005, Koch embarked on a major renovation and

expansion of the Boston Beer Co. brewery in Cincinnati.

Twenty-five professional brewers will gather for Pro-Brewers Night, celebrating the theme of "Oktoberfest in June." Come prepared to sample fine German fare and exciting beers from our professional

brethren. Don't be surprised to see some chicken hats at this event as Cincinnati is the yearly home of the world's largest chicken dance. All other silly hats are welcome and encouraged.

The craziness will continue during Club Night. Enjoy the efforts of your fellow

Bosmo's Imperial Cream Ale

Recipe by Rick Debar of the BarrelHouse Brewing Company and Ray Snyder of the Bloatarian Brewing League

All-Grain Recipe

Ingredients

for 5 U.S. gallons (19 liters)

9.75 lb	(4.42 kg) two-row Brewers Malt
1.25 lb	(0.57 kg) Flaked Maize
0.6 lb	(0.27 kg) Briess Cara-Pils Malt
1.25 lb	(0.57 kg) Corn Sugar (boil for 90 min.)
0.75 oz	(21 g) Hallertau Mittelfruh Hop Pellets, 4.5% alpha acid (45 min.)
0.9 oz	(26 g) Willamette Hop Pellets, 5.5% alpha acid (45 min.)
1.1 oz	(31 g) Hallertau Mittelfruh Hop Pellets, 4.5% alpha acid (5 min.)
	White Labs WLP001 California Ale Yeast

Original Target Gravity: 1.071

Approximate Final Gravity: 1.014

Approximate color: 3.8 SRM (7.5 EBC)

IBUs: 37

ABV: 7.45%

Brewhouse Efficiency: 75%

Wort Boil Time: 90 minutes

Directions

Use a step mash with time + 15-minute steps starting at 121° F (49° C) for 30 minutes, 145° F (63° C) for 45 minutes, and 158° F (70° C) for 60 minutes. Mash out at 168° F (76° C) and sparge with 166° F (74° C). Collect enough wort (about 6.12 gallons or 23.17 liters) to end up with 5 gallons (19 liters) after a 90-minute boil, chill to 68° F (20° C), rack to fermenter, pitch yeast and aerate well. Pitch two packages of yeast or a half-gallon starter. Ferment at 61-62° F (16-17° C) for 4 to 5 days, then rack to secondary fermenter and cellar for three to four weeks at 45-50° F (7-10° C). When ready, bottle and condition for a minimum of two weeks.

Partial Mash Version

Ingredients

for 5 U.S. gallons (19 liters)

4.5 lb	(2.04 kg) Extra Light Dry Malt Extract
2.5 lb	(1.13kg) two-row Brewers Malt
1.25 lb	(0.57 kg) Flaked Maize
0.6 lb	(0.27 kg) Briess Cara-Pils Malt
1.25 lb	(0.57 kg) Corn Sugar (boil for 90 min.)
1.0 oz	(28 g) Hallertau Mittelfruh Hop Pellets, 4.5% alpha acid (45 min.)
1.0 oz	(28 g) Willamette Hop Pellets, 5.5% alpha acid (45 min.)
1.1 oz	(31 g) Hallertau Mittelfruh Hop Pellets, 4.5% alpha acid (5 min.)
	White Labs WLP001 California Ale Yeast

Directions

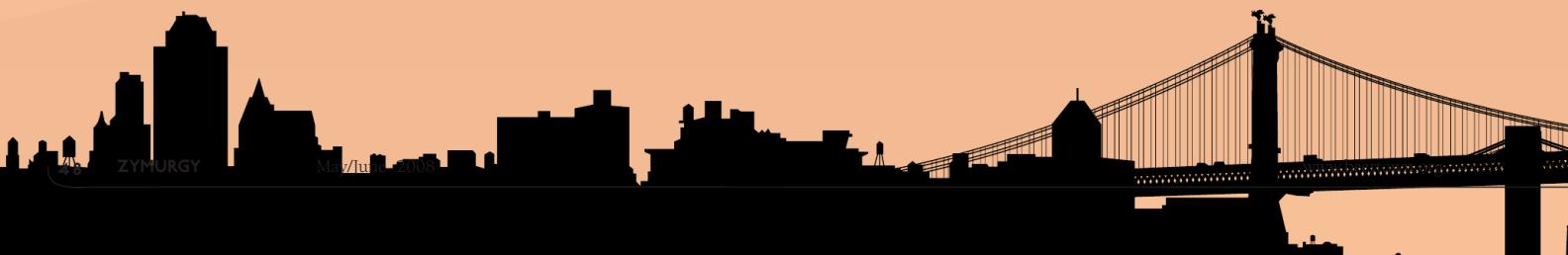
Perform a mini-mash by mixing grains with 1.25 gallons (4.7 L) of 162° F (72° C) water. Stabilize temperature at 150° F and hold for one hour. Raise temperature to 168° F (76° C) and sparge with 1.5 gallons (5.7 L) of 166° F (74° C) water. Stir in half of the malt extract and corn sugar, then bring to a boil. Boil for 45 minutes, adding hops as directed. When 5 minutes remain, remove from burner and stir in second half of the malt extract and corn sugar. Return pot to the burner, add last hop addition and boil for last 5 minutes. Strain into a fermenter with enough cold water to make 5 gallons (19 L). When temperature drops to 68° F (20° C), pitch yeast and aerate well. Pitch two packages of yeast or a half-gallon starter. Ferment at 61-62° F (16-17° C) for 4 to 5 days, then rack to secondary fermenter and cellar for three to four weeks at 45-50° F (7-10° C). When ready, bottle and condition for a minimum of two weeks.

homebrewers in the Hospitality Suite and the outdoor "Bier Garten" tent. Lederhosen and polka music are encouraged!

The 2008 conference officially concludes with Saturday's Grand Banquet and National Homebrew Competition Awards Ceremony. Notwithstanding live podcasts, this is the earliest you can find out who the nation's best homebrewers are.

If you haven't been to Cincinnati since the last time the AHA National Conference was here, don't be surprised if you don't recognize the city after all the changes and yet discover that almost everything seems the same. That's the beauty of Cincinnati: comfort and tradition combined with the desire to move forward. We look forward to welcoming you to Zinzinnati!

Brian and Jenny Becker are longtime members of the Bloatarian Brewing League. Brian started homebrewing in Hogtown (Gainesville, Fla.) and has continued his passion in Porkopolis, while rearing the couple's two budding homebrewers. Jenny works as an External Relations executive with The Procter & Gamble Company to support Brian's homebrewing "hobby."



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 score-sheet. We invite you to download your own scoresheets at www.bjcp.org, pick up a bottle of each of the beverages and judge along with them in our Commercial Calibration.



A traditional Irish-style red ale and a German-style lager were on the menu for our beer judges this issue.

Goose Island Kilgubbin Red Ale, brewed by Goose Island Beer Co. in Chicago, is a tribute to the Irish people who settled on Kilgubbin Island in Chicago more than 100 years ago. First, a bit of history. The 160-acre Goose Island is the only island on the Chicago River. Irish immigrants moved to the island in the 1800s and it became known as Kilgubbin after their original home in Ireland.

Crafted in the Irish tradition, Kilgubbin Red Ale is brewed with roast barley and chocolate malts, giving it a rich ruby color. Malted rye contributes a spicy finish. It checks in at 4.5 percent abv, with our judges describing it as a nice session beer.

Suggested pairings include corned beef with horseradish, grilled lamb chops and Polish sausage with sauerkraut.

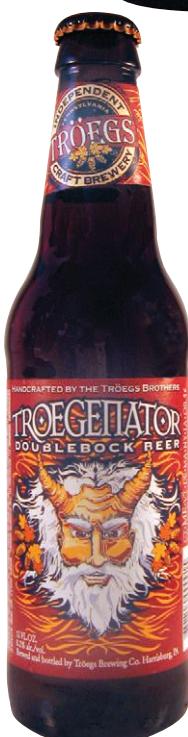
Next up is Troegenator Double Bock from Tröegs Brewing Co. in Harrisburg, Pa.

"The inspiration for the Troegenator came after a trip to the Andechs Monastery in Germany," says Chris Trogner, brewery vice president. "One thing we admired about their doublebock was the soft, rounded malt character and deceiving smooth strength (without being too cloyingly sweet). The Troegenator is similar."

Troegenator is brewed with 60 percent Munich malt. It pours into a glass with a bronze to brown color, fluffy white head and bready malt aroma. It leaves a rich, warming feeling with subtle spicy flavors.

The Troegenator is 8.2-percent alcohol by volume and is brewed with Pilsner, Munich, chocolate and dark crystal malts. It pairs well with grilled steaks and stews, and can be a nice complement to sweet, non-chocolate desserts.

Our expert panel includes David Houseman, a Grand Master III judge and competition director for the BJCP from Chester Springs, Pa.; Beth Zangari, a Grand Master level judge from Placerville, Calif. and founding member of Hangtown Association of Zymurgy Enthusiasts (H.A.Z.E.); Scott Bickham, a Grand Master II judge from Corning, N.Y., who has been exam director or associate exam director for the BJCP since 1995; and Gordon Strong, a Grand Master IV judge, principal author of the 2004 BJCP Style Guidelines and president of the BJCP Board who lives in Beavercreek, Ohio.



ON THE WEB

BJCP Style Guidelines

www.bjcp.org

Tröegs Brewing Co.

www.troegs.com

Goose Island Beer Co.

www.gooseisland.com

THE SCORES



Kilgubbin Red Ale—Goose Island Beer Co., Chicago
BJCP Category: 9D Irish Red Ale

THE JUDGES' SCORES FOR KILGUBBIN RED ALE



Aroma: Roasted barley and roasted malt aromas dominate on first pour. Light grassy hop note in the background. No DMS. No diacetyl. No alcohol. No off-aromas. Very much in the Irish tradition. (10/12)

Appearance: Brilliant clarity. Reddish-brown color. Tight, light-tan head with excellent head retention. Very nice presentation. (3/3)

Flavor: Roasted barley and malt dryness up front and in the finish with caramel and toffee in the mid-palate. Balancing hop bitterness supported by bitterness from roasted barley. Little hop flavor although some grassy notes. Very low diacetyl. No DMS. No noticeable alcohol. Some clovey/peppery flavor that's not appropriate for the style but contributes a distinctive character to this beer, accentuating the roast dryness. Dry, balanced finish. (15/20)

Mouthfeel: Medium body. Mouthfeel perception is lighter due to dryness and carbonation. Dryness prevents any perceived creaminess. No alcohol warmth. No astringency. (4/5)

Overall Impression: Kilgubbin is quite drinkable and largely accurate to the Irish Red Ale style. The dryness is a bit over the top and the deliberate spicy note from the addition of rye malt is very interesting but a distraction to the style. Still it's very close to those I've had in Dublin with a meat pie and mushy peas. Very refreshing, similar to lighter and sour beer styles. (8/10)

Total Score: (40/50)



Aroma: Low toasted, roasty malt with some light caramel notes and a hint of graininess. Also a whisper of diacetyl, as acceptable for the style. No hop aroma noted. Very clean. (10/12)

Appearance: Burnished copper color with golden highlights. Fine off-white bubbles form a film of foam that persists, though not as a fully formed head. Brilliant clarity. (3/3)

Flavor: Malt forward with almost coffee-like roasted character, albeit at a very low level. Hint of caramel and butter, with a roasted flavor in the middle, and roasted dry finish characteristic of roasted barley. No hop flavor detected, however there is a low balancing hop bitterness in the finish, which does not linger. A bit of sweetness and alcohol emerge in the flavor as the beer warms. This beer is exactly balanced among all components, with all at subdued levels. (16/20)

Mouthfeel: Light body with prickly carbonation. No astringency or alcoholic warmth. Finish is clean and dry. (4/5)

Overall Impression: A very flavorful beer without the heaviness that some higher alcohol, fuller bodied, or highly hopped styles can present. Just the right amount of butter and toffee with a clean roast finish. The carbonation is a little higher than a pint in a U.K. pub, but this example has all the same flavors and quaffability. A lovely session beer. (7/10)

Total Score: (40/50)



Aroma: First impression is raspberries, as odd as that may seem, with a faint roast character in the background. As the beer warms, the berry character gradually separates into a moderate fruitiness overlaying caramel and grainy malt. It could have more toasted malt with less graininess, but the aroma is intriguing. (9/12)

Appearance: Reddish-copper with excellent clarity. The head is white in color with a mixture of foam sizes. The carbonation is appropriate for the style. (3/3)

Flavor: The malt provides some depth and fullness, and the desired caramel character is present but a little subdued. The raspberry notes are present here as well, with the combination of fruitiness, a slight sourness and a touch of astringency that I associate with that fruit. This is pleasant, but was not quite what I expected. The hop bitterness is sufficient to balance, and there is no discernible hop flavor—both of which are appropriate for the style. (14/20)

Mouthfeel: The body is light to medium, with just enough CO₂ to make it refreshing without too much carbonic acid. There is a light astringency from the roasted malt, but at an acceptable level for this style. (4/5)

Overall Impression: This is a complex and well-made beer, and is probably a popular session beer where it is available. It does not quite nail my interpretation of the Irish Red Ale style, with the balance leaning a little too strongly toward fruitiness. A more rounded malt character, with a little less roast and graininess, would soften the edges. (7/10)

Total Score: (37/50)



Aroma: Moderate grainy and toasty caramel malt with the barest hint of roast. Moderate fruity esters. Medium-light earthy hops. Hint of alcohol. The esters are somewhat high for style. The grainy character dominates with esters a close second. As it warms, the toasty and slightly roasty malt character becomes dominant. (10/12)

Appearance: Tall, frothy, off-white head. Crystal clear. Light copper color. The head retained very well for this style. (3/3)

Flavor: Caramel/grainy malt flavor. Slightly watery palate with a dry finish tasting of barely perceptible roasted grain. Medium-low bitterness allows the malt to stand out in the balance. Medium to medium-high esters. Deep caramel malt flavor is most dominant. Some carbonic bite. As it warms, the caramel develops a rounder flavor with a toasty toffee flavor. Very light alcohol flavor. No diacetyl. As it warms the roast also becomes more apparent. (16/20)

Mouthfeel: Medium-high carbonation. Medium body, seems a bit lighter due to the carbonation level. No warming despite the light alcohol flavor. (4/5)

Overall Impression: A very nice example. It changes character as it warms, but it is very drinkable over a wide temperature range. I prefer it slightly warm, as the caramel is tastier to me than the grainy flavor. The malt flavors and balance are great. The esters seem fairly high, otherwise it's clean. The hops are nicely restrained. The bit of roast is at the upper end of the style. A little less esters and roast would make this beer nearly perfect. (8/10)

Total Score: (41/50)



THE JUDGES' SCORES FOR TROEGENATOR DOUBLE BOCK



Aroma: Alcohol aroma most dominant followed by a caramel and toffee maltiness without dark fruit or bready notes. No hop aroma. No DMS. No diacetyl. Very clean fermentation without fruity esters. (10/12)

Appearance: Deep mahogany color and brilliant clarity. Thin, tan, rocky head with adequate retention somewhat limited by the alcohol. (3/3)

Flavor: Clean alcohol defines the flavor presentation. Hot but not fusel. Malt has chocolate notes but not the breadiness and complexity that larger quantities of Munich malt yield, although there is some light prune character. No hop flavor. Fairly high and balancing hop bitterness results in a balanced finish that exhibits alcohol and some sweetness but not cloying. Clean lager fermentation without diacetyl, DMS or esters. Very nice. (17/20)

Mouthfeel: Medium to medium-full body. Significant alcohol warming. Smooth without astringency or harshness. (5/5)

Overall Impression: A very good doppelbock, especially as it warms a bit. This is a lighter version of the style, exhibiting alcohol and chocolate notes rather than the complexity of a darker version utilizing a much higher proportion of Munich malt. While I prefer the classic interpretation with greater bready melanoidins, this is still a very good beer to sip on cold winter nights, perhaps with a good cigar. (8/10)

Total Score: (43/50)



Aroma: Immediate rich, toasty malt hits the nose before the beer gets from bottle to glass. Prune fruitiness and melanoidin malt dominate the barest hint of spicy, peppery hop. A slight acid note I associate with Munich malts emerges as the beer warms a bit. Very clean, with no off aromas. (8/12)

Appearance: Brilliant clarity, rosy copper color; off-white, persistent head forms of creamy, fine bubbles that leave an elegant lace on the sides of the glass. (3/3)

Flavor: Toasty, bready malt first, with melanoidin richness that follows the aroma. Prune fruitiness comes forward mid-palate. Some alcohol flavor in the finish accentuates the plum, prune components. No hop flavor. Sweet, toasted Munich malt is accented by a slight hop bitterness at the end, giving evidence of hops that are otherwise not present in the flavor. As the beer warms a bit, it becomes even more malt oriented, with a different sweetness and a toasted flavor that lingers long after the beer is gone. (17/20)

Mouthfeel: Medium full body with firm, creamy carbonation. Some alcoholic warmth lingers in mouth and throat. Not astringent or cloying. (4/5)

Overall Impression: Rich, but not heavy, and alcoholic without being hot, this beer has all the characteristics of its classic German predecessors. As it warms a bit, it opens up to greater complexity and drinkability, making for a potentially dangerous tablemate. A great dessert on its own, this beer would also be a great accompaniment to a slice of German chocolate cake. This is what I expect a doppelbock to be. (8/10)

Total Score: (42/50)



Aroma: Toffee notes emerge first, with a touch of dark Munich malt in the background. The stone fruit notes, reminiscent of figs and dates, are pleasant but a little higher than in Andechs or other classic examples. Alcohol and tropical fruit notes are also present, along with a touch of chocolate. (8/12)

Appearance: Deep mahogany in color with brilliant clarity. The light beige head is tightly beaded and has good staying power. This is a beautiful beer! (3/3)

Flavor: The desired maltiness is present, but has predominantly toffee and caramel notes with melanoidins from Munich malt as secondary flavors. The dark fruits carry over from the aroma and bridge to a moderately dry finish with a medium hop bitterness and a touch of roast. The maltiness fades a little too quickly, rather than enveloping and caressing the palate. There is a lot of complexity, but the flavor profile has a series of spikes rather than a balanced spectrum. (14/20)

Mouthfeel: The finish has some astringency from the alcohol and dark Munich malts, but this character is common in some examples of this style. The body is a little light, but this is not unexpected due to the high level of ethanol. (3/5)

Overall Impression: This is a very nice beer that lives up to its billing as being inspired by Andechs. It is not quite as smooth as that example, but would move a step closer with a little more malt complexity, a fuller mouthfeel and less alcohol and roast in the finish. The dark fruit character and the malt/alcohol balance are more reminiscent of an English Old Ale. (7/10)

Total Score: (35/50)



Aroma: Rich, malty sweetness with an emphatic Munich malt character. Strong melanoidins, toasty malt, a slight whiff of bread crusts are all very positive. Moderate esters (grapes, plums), a bit high for style. No hops. Clean lager character. (10/12)

Appearance: Low off-white head, settled quickly. Very clear, with a crystalline depth often found in stronger beers of quality. Very deep copper color. (2/3)

Flavor: Strong Munich malt flavor with a high ester profile. Initially sweet and malty, lasting through the palate. Slightly harsh, bitter finish—my impression is that this is from alcohol rather than hops. Clean fermentation other than the esters. Malt definitely dominates, with rich melanoidins. Medium bitterness, but seems higher with the alcohol bite. The malt has a slightly chocolate-like roasted flavor that becomes a bit distracting in the finish. (13/20)

Mouthfeel: Medium-high carbonation. Medium-full body, lightened a bit with carbonation. Hot alcohol warmth detracts. Seems like it might be young. (3/5)

Overall Impression: Great malt profile and clean lager character. The ester profile seems quite high and is distracting. Rather big and hot—really needs to lager much longer to smooth out the alcohol profile (or it should be a smaller beer if served this young). Right now, the alcohol level throws off the bitterness and mouthfeel, making the beer seem a bit out of style. The malt seems a little too dark in character; the chocolate flavors are a little strong. If this beer is cellared for another few months, it will certainly taste better. (7/10)

Total: Score: (35/50)

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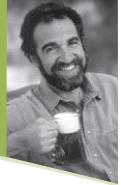
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by Charlie Papazian



A Jokester for the Tropics

I'm hot. It's humid. There's an overhead fan circulating the heavy tropical air. Palm trees and infinite green seem to extend beyond the monkey-inhabited forest just across the street. I'm thirsty and on holiday in Bali, Indonesia.

It's been 30 years since I visited this one of 10,000 Indonesian islands. I returned on my vacation, curious to see what differences have evolved. There are Western style toilets everywhere. Internet broadband is more available than where I live. There's even a store called Bali Deli that's a condensed version of Whole Foods USA, though not affiliated. The well known painter I met in 1978 is now an important 64-year-old Hindu holy man. He, his wife and brother remembered me. The ubiqui-



The spirits of Hinduism overlook fields in and around Ubud, Bali, where most of the cafes and restaurants served Bali's microbrewed ale in proper glassware.



Invisible monkeys beckon one's thirst for hop-enhanced ale in Ubud's lush tropical forests.

Jokester Mild Ale

All-Grain Recipe

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

5.0 lb	(2.3 kg) Maris Otter pale malt
1.0 lb	(454 g) English Brown malt
5.0 oz	(140 g) English Crystal (15 L)
4.0 oz	(113 g) Belgian aromatic malt
3.0 oz	(84 g) Belgian Special-B malt
8.8 oz	(250 g) dark Brazilian rapadura sugar (or other dark sugar with caramel and molasses character)
1.75 oz	(49 g) UK Fuggles hops 4.7% alpha (8.2 HBU/230 MBU) 60 min
0.75 oz	(21 g) UK Kent Goldings hops 6.3% alpha (4.7 HBU/132 MBU) 60 min
1.0 oz	(28 g) UK Kent Goldings hops 6.3% alpha, 5 min
2 drops	from pipette of Styrian Golding hop oil
0.25 tsp	(1 g) powdered Irish moss English-style ale yeast
0.75 cup	(175 ml measure) corn sugar (priming bottles) or 0.33 cup (80 ml) corn sugar for kegging

Target Original Gravity: 1.039 (10 B)

Approximate Final Gravity: 1.011 (2.5 B)

IBU's: about 50

Approximate Color: 16 SRM (12 EBC)

Alcohol: 3.7% by volume

Directions

A step infusion mash is employed to mash the grains. Add 7 quarts (6.7 liters) of 140° F (60° C) water to the crushed grain, stir, stabilize and hold the temperature at 132° F (53° C) for 30 minutes. Add 3.5 quarts (3.3 liters) of boiling water and bring temperature up to 155° F (68° C) and hold for about 30 minutes. Raise temperature to 167° F (75° C), lauter and sparge with 3.5 gallons (13.5 liters) of 170° F (77° C) water. Collect about 5.5 gallons (21 liters) of runoff. Add 60-minute hops and bring to a full and vigorous boil.

The total boil time will be 60 minutes. When 10 minutes remain add the Irish moss. When 5 minutes remain add the 5-minute hops. After a total wort boil of 60 minutes turn off the heat and place the pot (with cover on) in a running cold-water bath for 30 minutes. Continue to chill in the immersion or use other methods to chill your wort. Strain and sparge the wort into a sanitized fermenter. Bring the total volume to 5.5 gallons (21 liters) with additional cold water if necessary. Aerate the wort very well.

Pitch the yeast when temperature of wort is about 70° F (21° C). Ferment at about 70° F (21° C) for about one week or when fermentation shows signs of calm and stopping.

Add two drops of hop oil to one-half ounce of ethanol or high strength neutral spirits. Dissolve and disperse into solution and observe that it turns milky in appearance. Add 4 ounces of beer to this alcohol and hop oil mixture and then add to secondary fermenter. Rack from your primary to the "hop oiled" secondary. If you have the capability "cellar" the beer at about 55° F (12.5° C) for about one week. Prime with sugar and bottle or keg when complete.



A thirsty fishing village on isolated Bali's east coast. No pub in sight, but where there's a will there's beer—and we found it.

tous 5-percent international light lager, Bir Bintang, is now served cold from a refrigerator without the need to add chunks of ice.

There are thousands of other changes you can imagine. It is now the 21st century—that says a lot. But my thirst for cold beer in a tropical climate has not changed. My wife and I landed in early January, after experiencing the Southeast Asian craft-style beer mecca that Singapore is becoming. What food! What a surprising variety of lagers and

ales brewed by the city-state's micro and pub brewers. But that's a story for another time. We had left Singapore for our principal destination, Bali.

Day one: first things first. In the guise of needing lunch, I turned to the beer list. Storm Brewing Pale Ale, Iron Stout, Bronze Ale and Golden Ale hurled themselves at me from the beer menu. My sense of reason assaulted, I internalized my feelings. Never in my 30-year absence would I have anticipated a microbrewery on this predominantly Hindu and Muslim island.

The labels proclaimed words like Styrian Goldings, Maris Otter, chocolate and crystal interspersed with jagung, ragi and Sumber Hidup. Things looked promising. We had our first Storm Beer and it was good. It seemed to be available everywhere there were tourists like us. Trying to find the brewery was another story. No luck. Despite my network of contacts and taking a look at their Internet site, the whereabouts of their brewery never emerged. Nevertheless, we were pleased

to have an option, though I often wavered between the refreshingly cold temperatures in which Bir Bintang was served and the somewhat moderately cool temperatures Storm always seemed to be. Both brands were always at or under a seemingly national limit of 5 percent abv.

What kind of beer would I brew for a tropical climate? This I've thought about often. I'd want to have a brew that had more guts, more balls, more hops, more malt—yet at a refreshing 3.5- to 4.0-percent alcohol content. I continue to lament that the only beer cultures that have seemed to manage to achieve great robust flavor in their mildly alcoholic brews are England and Germany (more on Germany in a future column). In England, their ordinary bitter (which I have depicted in this column in issues past) and mild ales have all the potential to possess the character I desire. My beer desire in Bali went unfulfilled. I like hop character in my beer and what I was experiencing in Bali and virtually everywhere else I've been on the planet shortchanges the potential for a truly legendary beer for tropical circumstances.

I certainly enjoyed the options in far off and exotic Bali, but my desire was cellar-ing at home, which upon returning was immediately kegged. I am now fully enjoying my tropical imaginations even though there's snow on the ground, the wind is blowing and the tropical breezes are very far away.

I've always said that if you are a home-brewer, you can always take pleasure in knowing that when you are traveling, things are always getting better at home.

Jokester Mild Ale is my own recipe, showcasing the subtle flavors of some very distinctive malts and sugars. Used in moderation, the malt character in this beer creates balance even with an elevated hop bitterness, flavor and aroma. Nothing is overdone. I like the lively character of malt and hops in my low alcohol beers. At 3.7 percent one might simply assume a lack of body, hop and malt character. Not so with Jokester Mild Ale. Note the 50 BUs of bitterness. The number is deceiving. Yes, that's quite a bit, but with the particular variety of hops I use and the

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moderate addition of specialty malts, balance reigns. Note that, using a pipette, I've added two drops of Styrian Goldings hop oil. No more. No less. If you can get your hands on some it's worth experiencing. When used in moderation, the flavor and aroma become well integrated and are not

"removed" from the beer.

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

Charlie Papazian is founder of the American Homebrewers Association. 

Jokester Mild Ale

Mash/Extract Recipe

Ingredients

for 5.5 U.S. gallons (21 liters)

4.0 lb	(1.82 kg) very light malt extract syrup or 3.2 lb (1.45 kg) very light DRIED malt extract
1.0 lb	(454 g) English Brown malt
5.0 oz	(140 g) English Crystal (15 L)
4.0 oz	(113 g) Belgian aromatic malt
3.0 oz	(84 g) Belgian Special-B malt
8.8 oz	(250 g) dark Brazilian rapadura sugar (or other dark sugar with caramel and molasses character)
1.75 oz	(49 g) UK Fuggles hops 4.7% alpha (8.2 HBU/230 MBU) 60 min
1.0 oz	(28 g) UK Kent Goldings hops 6.3% alpha (4.7 HBU/132 MBU) 60 min
1.0 oz	(28 g) UK Kent Goldings hops 6.3% alpha, 5 min
2 drops	from pipette of Styrian Golding hop oil
0.25 tsp	(1 g) powdered Irish moss
0.75 cup	English-style ale yeast (175 ml measure) corn sugar (priming bottles) or 0.33 cup (80 ml) corn sugar for kegging

Target Original Gravity: 1.039 (10 B)

Approximate Final Gravity: 1.011 (2.5 B)

IBU's: about 50

Approximate Color: 16 SRM (12 EBC)

Alcohol: 3.7% by volume

Directions

Heat 2 quarts (2 liters) water to 172° F (77.5° C) and add crushed grains to the water. Stir well to distribute heat. Temperature should stabilize at about 155° F (68° C). Wrap a towel around the pot and set aside for about 45 minutes. Have a homebrew.

After 45 minutes add heat to the mini-mash and raise the temperature to 167° F (75° C). Pass the liquid and grains into a strainer and rinse with 170° F (77° C) water. Discard the grains. Add to the sweet extract you have just produced more water, bringing the volume up to about 2.5 gallons (9.5 liters). Add malt extract and 60 minute hops and bring to a boil.

The total boil time will be 60 minutes. When 10 minutes remain add Irish moss. When 5 minutes remain add the 5-minute hops. After a total wort boil of 60 minutes turn off the heat. Immerse the covered pot of wort in a cold water bath and let sit for 15-30 minutes or the time it takes to have a couple of homebrews. Strain out and sparge hops and direct the hot wort into a sanitized fermenter to which 2.5 gallons (9.5 liters) of cold water has been added. If necessary add cold water to achieve a 5.5 gallon (21 liter) batch size. Aerate the wort very well.

Pitch the yeast when temperature of wort is about 70° F (21° C). Ferment at about 70° F (21° C) for about one week or when fermentation shows signs of calm and stopping.

Add two drops of hop oil to one-half ounce of ethanol or high strength neutral spirits. Dissolve and disperse into solution and observe that it turns milky in appearance. Add 4 ounces of beer to this alcohol and hop oil mixture and then add to secondary fermenter. Rack from your primary to the "hop oiled" secondary. If you have the capability "cellar" the beer at about 55° F (12.5° C) for about one week. Prime with sugar and bottle or keg when complete.

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by Amahl Turczyn Scheppach

Upper Mississippi Mash-Out



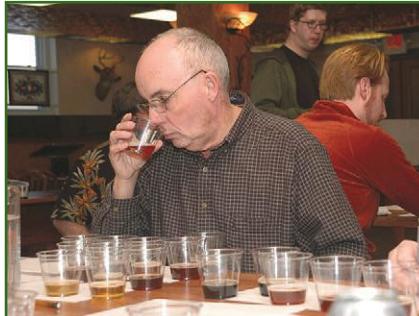
The seventh annual Upper Mississippi Mash-Out, held January 25-26, took place at the Klub Haus in St. Paul, Minn. In all, 808 entries were judged for the 2008 event. We talked to organizer Al Boyce to get his perspective.

Zymurgy: How long have you been organizer, and how have things evolved over the years?

Al Boyce: Steve Fletty and I have switched off organizing the Mash-Out since its inception. I have been the organizer for the 2007 and 2008 competitions. Next year, Kris England will be the competition organizer.

Four of us began the Upper Mississippi Mash-Out in 2002: Jeff Cotton, Steve Piatz, Steve Fletty and me. We were in a BJCP class together, and started it when we heard that Northern Brewer had decided not to hold its St. Paul competition that year. We had no budget the first year, so we got as much donated as we possibly could. We held the competition at Harwell's Steakhouse in Shakopee, where one of our volunteers, Jonathan Crist, was the brewmaster. Judging in a darkened restaurant amidst the aromas of steak and the clatter of dishes was distracting, but we were grateful for the space. We had 12 compressed categories. By comparison, this year we expanded to 46 categories, splitting out several BJCP subcategories into their own medal round.

We have added to and/or improved the Mash-Out every year since it started. This



year, Kris England arranged a speech during Saturday's lunch by Stan Hieronymus, author of *Brew Like a Monk*. We added the "Indoor Pub Crawl" three years ago, and last year Mike Behrendt added a service for our judges whereby we would pick up growlers for them from 12 local and

regional breweries and brewpubs and deliver them at the competition. And in 2005 Manny Krug, Chef Instructor at the St. Paul College Culinary Program, started catering our beer dinner. This year's meal was an amazing 14-course Belgian-themed banquet!

Dusseldorf Altbier

Recipe by Chris Smith, Minnesota Home Brewers Association, Minneapolis, Minn.
(Gold medal, Category 7C Dusseldorf Altbier)

Ingredients

Recipe for 5.5 gallons (21 liters)

9.3 lb	(8.42 kg) Munich malt
1.0 lb	(0.94 kg) pale malt
0.25 lb	(227 g) caramel Munich malt
	120L
0.88 oz	(25 g) whole Northern Brewer (9.3% a.a.) 90 minutes
0.5 oz	(14 g) whole Hallertau Hersbrucker (3.3% a.a.) 15 minutes
1.0 oz	(28 g) whole Sterling (6% a.a.) dry hop
	Wyeast No.1007 German Ale yeast

Original Gravity: 1.055

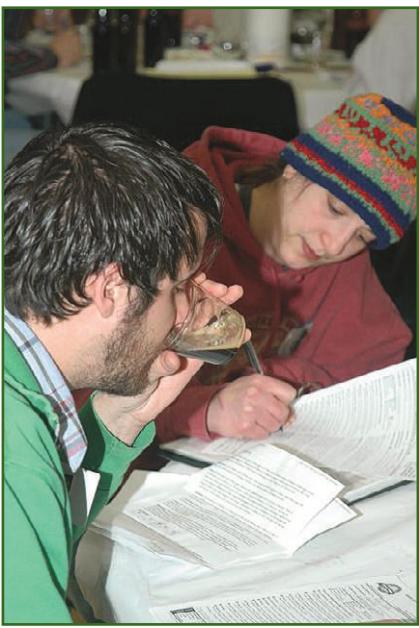
Final Gravity: 1.014

Directions

Use a step infusion mash with rests at 122° F (50° C) for 25 minutes, 148° F (64° C) for 15 minutes, and 156° F (69° C) for 15 minutes. Ferment in primary for 7 days at 60° F (16° C), then condition 5 days in secondary at 60° F (16° C), and 30 days in tertiary at 32° F (0° C).

Extract Version

Substitute 8.5 lb (3.85 kg) of liquid Munich malt extract for the Munich and pale malts. Steep caramel Munich malt in 2 gallons (7.6 L) of cool water and heat to 170° F (77° C). Sparge with 1 gallon (3.78 L) of hot water. Stir in malt extract and bring to a boil. Add 1.5 oz (43 g) of Northern Brewer hops. Boil for a total of 60 minutes, adding the remaining hops as indicated in the above recipe. After a 60 minute boil, strain into a fermenter with enough cold water to make 5.5 gallons (21 L). Follow the fermentation procedure described above.



Zymurgy: How was the Klub Haus as a venue?

AB: We have held the Mash-Out at the Klub Haus, a community hall in St. Paul, since 2006, and they have been a gracious host to us each year. It is a two-floor building, so we can have judging upstairs and our hospitality area downstairs. They provide all of the tables and chairs. We bring our own coolers (giant picnic coolers). We hope to hold the competition there for as long as they'll have us.

Zymurgy: You had 808 entries this year. Is this typical?



AB: The Mash-Out has steadily grown through 2007. We were actually down a bit this year from last year, when we had 919 entries. We expected less this year because we eliminated our "late entry" ability, and went to all online registration. We felt both changes were necessary so that we could schedule all the judging in a timely fashion. We received entries from 29 states and one Canadian province (Alberta) this year.

Zymurgy: What sort of mead entry numbers do you typically see?

AB: We received 56 mead entries this

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AHA SPECIAL EVENTS

For Information on 2008 AHA Rallies, please see www.AHArally.org

April 30

AHA 30th Annual National Homebrewers Conference—Early-Bird Registration Ends
Contact: Bradley Latham, Phone: 888-822-6273 x 145, E-mail: bradley@brewersassociation.org Web: www.AHAconference.org

May 3

AHA Big Brew/National Homebrew Day

Contact: Janis Gross, Phone: 888-822-6273 x 134, E-mail: Janis@brewersassociation.org Web: www.beertown.org/events/bigbrew/index.html

May 17

AHA Rally—C.B. and Potts Broomfield, CO. Contact: Kathryn Porter, E-mail: kathryn@brewersassociation.org Web: www.AHArally.org

May 18

AHA Rally—Bridgeport Brewing Co. Portland, OR. Contact: Kathryn Porter, E-mail: kathryn@brewersassociation.org Web: www.AHAconference.org

June 19-21

AHA 30th Annual National Homebrewers Conference Cincinnati, OH. Contact: Bradley Latham, Phone: 888-822-6273 x 145, E-mail: bradley@brewersassociation.org Web: www.AHAconference.org

July 31

AHA Rally—Boston Beer Co. Boston, MA. Contact: Kathryn Porter, E-mail: kathryn@brewersassociation.org Web: www.AHArally.org

August 2

AHA Mead Day Contact: Janis Gross, Phone: 888-822-6273 x 134, E-mail: Janis@BrewersAssociation.org Web: www.beertown.org/events/meadday/index.html

year, plus two more in our "Eis-Anything!" category, and one in our "New Entrant" category. Last year we received 66 entries total.

Zymurgy: Did you get a good judging pool this year? Where do the majority of your judges come from?

AB: We had 128 great volunteers this year from nine states, including one from Alabama (Rich Heller) and New Mexico (Stan Hieronymus). Seventy-nine of these judges were BJCP trained, includ-

ing one Grand Master IV judge (Gordon Strong, also the BJCP president). We also had 10 national judges, and two AHA “meadmaker of the year” judges (Curt Stock and Steve Fletty) judging meads for us. The majority come from the Minneapolis/St.Paul metro area, where we usually hold three BJCP classes and tests each year (and have a waiting list!)

Zymurgy: What clubs play an active role in either participation in or support of the event?

AB: The Saint Paul Home Brewers Club and the Minnesota Home Brewers Association sponsor the contest. Many of us are members of both clubs; they each have their charms! Other clubs represented this year were the Ames Brewers League, Blue Ox Brewers Society, Bull Falls Brewers, Cross River Alliance of Zymurgists, Fellowship of Oklahoma Ale Makers, Foam on the Range, Green Bay Rackers, Jayhops, Milwaukee Beer Barons, Mississippi Unquenchable Grail Zymurgists, Northern Ale Stars, Prairie Homebrewing Companions, Raccoon River Brewers Association, and Society of Oshkosh Brewers.

Zymurgy: What was your best sponsor this year?

AB: By far our biggest sponsor is Chris Farley at Northern Brewer, who in addition to giving literally thousands of dollars in gift certificates and merchandise and allowing us to ship to his warehouse and drop off entries at his store, also pays the postage for us to return scoresheets and medals. We couldn't do the contest without Chris and Northern Brewer's generous assistance.

Zymurgy: What were some of the more unusual entries you received?

AB: One of the New Entrant beers was a 1908 historical recipe made by deliberately (so they said) souring the grain with lactobacillus prior to brewing. The judges decided that some historical recipes weren't made anymore for good reasons. We also had a mead made with macadamia nut honey and Atomic Fireball candies.

Zymurgy: Have you noticed an improvement in the quality of entries in the competition over the last several years?

AB: The quality of beers entered in the Mash-Out has definitely improved! Only 5 percent of our entries this year were scored less than “Good,” and Chris Smith won a gold with a Dusseldorf Altbier for

which he received a 47.7 average score, getting a perfect 50 from one BJCP Master judge! If you win even a bronze medal at the Mash-Out, you can be very proud.

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





KUDOS—BEST OF SHOW

AHA/BJCP Sanctioned Competition Program

<p>September 2007 Michigan Renaissance Festival Homebrew Competition, 74 entries—Dan Frechette, Lake Orion, MI.</p> <p>January 2008 Big Beers, Belgians & Barleywines Homebrew Competition, 204 entries—Wedding IPA, Rich Krah, Thornton, CO. Great Alaska Beer and Barley Wine Festival - Barley Wine Only, 34 entries—Pelican Pub and Brewery, Pacific City, OR. 5th Doug King Memorial Specialty & Lager Beer Competition, 70 entries—Matthew Bourbeau, Woodland Hills, CA. Upper Mississippi Mash-Out, 808 entries—Beer: Kris England, St. Paul, MN.</p> <p>February 2008 9th Annual Domras Cup Mead Competition, 22 entries—Mike Tripka, Bluffton, SC. KLCC Microbrew Festival Homebrew Competition, 128 entries—Westside Pale Ale, Doug Turnbull, Eugene, OR.</p>	<p>The Great Northern Brew-Ha-Ha, 260 entries—Steve Piatz, Eagan, MN. 3rd Annual Peterson Homebrew Fest, 150 entries—Ryan Thomas, Westminster, CO. Beerfest, 158 entries—Alexis Spencer, Melbourne, Victoria, Australia. 2008 Fur Rondy Homebrew Competition, 60 entries—Rory Petrak, Seward, AK. Homebrew Alley 2, 248 entries—Scott Ofslager, Albion, NY. AHA Club-Only Competition Dark Lagers, 49 entries—Mike Zukowski, Roseville, MI. America's Finest City Homebrew Competition, 305 entries—Julian Shrago, Garden Grove, CA. The 5th Annual Brewhouse Brewoff, 37 entries—Kurt Stenberg, Edmonton, AB. Leap Beer Brew-Off, 207 entries—Dan Schlosser, Wauwatosa, WI.</p> <p>March 2008 19th Annual Regale and Dredhop, 340 entries—Michael Bade, Littleton, CO.</p>
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AHA/BJCP SANCTIONED COMPETITION PROGRAM CALENDAR



Want to discuss judging, beer styles, competitions and exams? Join the BJCP Members Forum at www.bjcp.org/phpBB2/index.php.

To register a new competition, please go to www.bjcp.org/apps/comp_reg/comp_reg.html. Check the AHA or BJCP Web sites to see the latest calendar of events. Competition organizers: please remember to submit your results promptly using our electronic system. Competitions not filing organizer reports will not be allowed to register in the future.

Interested in becoming a beer judge? See www.beertown.org/homebrewing/scp/judge.html for information.



May 3

Green Mountain Homebrew Competition

South Burlington, VT. Contact: Lewis Greitzer, Phone: 802-658-2621, E-mail: lewis@together.net Web: www.mashers.org

May 4

Silver Dollar Fair Homebrew Competition

Chico, CA. Contact: John Abbott, Phone: 530-345-9656, E-mail: JABREWV@aol.com

May 4

West Coast Brewers Festival Commercial

Competition Citrus Heights, CA. Contact: Dwight Bradish, Phone: 916-470-8334, E-mail: dwight@goldcountrybrewers.org Web: www.matsonian.com/wcbf/index.htm

May 10

AHA Club-Only Competition Extract Beers

Naperville, IL. Contact: Jim Burzynski, Phone: 630-479-1285, E-mail: james.burzynski@mwu-mail.midwestern.edu Web: www.beertown.org/homebrewing/schedule.html

May 10

Spirit of Free Beer Ashburn, VA. Contact: Bruce Bennett, Phone: 703-594-3344, E-mail: Brucetbennett@verizon.net Web: www.Burp.Org

May 10

Goblets of Gold 2008 Homer, AK. Contact: Laurence Livingston, Phone: 907-235-2656, E-mail: ringoffiremeadery@alaska.net

May 10

San Diego County Fair Craft Brewers Competition Del Mar, CA. Contact: Jonathan Stevens, Phone: 619-694-9779, E-mail: zuvarvi@cox.net Web: www.sdfair.com

May 10

18th Annual Carolina Brewmasters U.S. Open Mooresville, NC. Contact: Philip Folse, Phone: 704-504-0592, E-mail: pfolse@carolina.rr.com Web: www.carolinabrewmasters.com/USOpen.html

May 16

Amber Waves of Grain Grand Island, NY. Contact: Richard Cunningham, Phone: 716-695-3211, E-mail: ric.cunningham@bocedwards.com Web: awoghomebrew.com

May 16

Enchanted Brewing Challenge Albuquerque, NM. Contact: Michael Griesmeyer, Phone: 505-255-6120, E-mail: webpage_editor@dukesofale.com Web: www.dukesofale.com

May 17

Brewmasters' Open Roswell, GA. Contact: Bob Wall, Phone: 404-731-5717, E-mail: brewdude-bob@comcast.net Web: www.brewmastersopen.com

May 17

12th Annual BEER Homebrew Competition

Lake Grove, NY. Contact: Mike Voigt, Phone: 631-848-2261, E-mail: MSBCV@verizon.net Web: www.hbd.org/beer

May 17

2008 WI State Fair Homebrewer's Show West Allis, WI. Contact: Dan Schlosser, Phone: 414-464-5714, E-mail: dan.schlosser@wi.rr.com

Web: www.beerbarons.org/competitions/wsf/index.html

May 17

26th Annual Oregon Homebrew Festival

Corvallis, OR. Contact: Robert Saathoff, Phone: 541-929-3045, E-mail: r.saathoff@comcast.net Web: www.hotv.org

May 18

The Liquid Poets' 1st Annual Liquid Poetry Slam

Fort Collins, CO. Contact: Alex Grote, Phone: 970-407-0717, E-mail: lp.eventscoordinator@gmail.com

May 18

13th Annual Big Batch Brew Bash

Houston, TX. Contact: Donald Sajda, Phone: 281-351-7541, E-mail: rodon@flash.net Web: www.thekgb.org

May 18

The Elevator Homebrew Competition

Columbus, OH. Contact: Mark Beery, Phone: 614-327-1537, E-mail: beerm123@yahoo.com

May 30

2008 Longshot Western Regional San Francisco, CA. Contact: John Watson, Phone: 408-732-6193, E-mail: jswatson@yahoo.com Web: www.samueladams.com/promotions/LongShot/Default.aspx

May 31

Puget Sound Pro-Am Competition

Kent, WA. Contact: Mark Emiley, Phone: 206-251-1344, E-mail: markemiley@earthlink.net Web: www.bewbc.org/pro-am

May 31

Aurora Brewing Challenge

Edmonton, AB, Canada. Contact: Matthew Smolak, Phone: 780-437-3397, E-mail: aurorachallenge@hotmail.com Web: www.ehg.ca

May 31

San Joaquin Fair Homebrew Competition

Stockton, CA. Contact: Rick Reineman, Phone: 209-952-1481, E-mail: rick@reineman.com Web: www.brewangels.com

June 3

North American Beer Awards

Idaho Falls, ID. Contact: Gregg Smith, Phone: 208-403-2499, E-mail: Gsmithbeer@aol.com Web: www.NorthAmericanBrewers.org

June 7

Boneyard Brew-Off

Urbana, IL. Contact: Anthony Benjamin, Phone: 217-531-9508, E-mail: anthonybenjamin@gmail.com Web: [www.BoneyardUnionofZymurgicalZealots/brewoff.html](http://net-files.uiuc.edu/ro/www/BoneyardUnionofZymurgicalZealots/brewoff.html)

June 7

Alameda County Fair Homebrew

Competition Pleasanton, CA. Contact: Roger St. Denis, Phone: 408-225-5834, E-mail: meadguy@yahoo.com Web: www.draught-board.org/babo/2008Announcement.htm

June 7

Boston Region Longshot Competition

Boston, MA. Contact: Michael Fairbrother, Phone: 603-234-9582, E-mail: fairbrother@nhbrewers.com Web: www.nhbrewers.com/LongShot/registration.php

June 14

New York State Fair Homebrewers

Competition Syracuse, NY. Contact: David Meszko, Phone: 315-469-3062, E-mail: dmeszko@twcny.rr.com Web: www.saltcity-brew.org

June 19

AHA National Homebrew Competition 2nd Round

Cincinnati, OH. Contact: Gordon Strong, Phone: 937-429-2953, E-mail: strongg@earthlink.net Web: www.beertown.org/events/nhc/index.html

June 22

21st Annual Southern California Regional

Homebrew Championship Corona, CA. Contact: Jim Delperdang, Phone: 951-686-4710, jimdelperdang@earthlink.net Web: www.hop-heads.com

June 22

San Diego County Fair Homebrew

Competition Del Mar, CA. Contact: Jonathan Stevens, Phone: 619-694-9779, E-mail: zuvarvi@cox.net Web: www.sdfair.com

July 12

Indiana State Fair Brewers Cup

Indianapolis, IN. Contact: Anita Johnson, Phone: 317-257-9463, E-mail: BrewersCup@indianastatefair.com Web: www.brewerscup.org

July 12

Amador County Fair Homebrew Competition

Plymouth, CA. Contact: William F. Tarchala, Phone: 209-223-1976, E-mail: wtarchala@mufil.com Web: www.brewangels.com

July 12

Amador Invitational Commercial Microbrewery

Competition Plymouth, CA. Contact: William F. Tarchala, Phone: 209-223-1976, E-mail: sharkbrew@gotsky.com Web: www.brewangels.com

Reader Advisory: Warning!

These pages are rated XG (eXtra Geeky) by the Bureau of Magazine MuckyMucks. Items in this section may contain raw data, graphic functions, full statistics and undiluted biochemistry. Keep away from poets, squeamish novices and others who may find the joyously technical nature of this prose to be mindbendingly conceptual or socially offensive. Also, because of the complex nature of brewing science, there is no guarantee that you will live longer, brew better or win any awards in the next homebrew competition based upon the conclusions presented here.

Mashing, Target Gravity and Hops

By Steve Holle

Editor's Note: The following discussion presents a step-by-step overview of some important calculations for the advanced homebrewer. The procedures are excerpts from A Handbook of Basic Brewing Calculations that have been modified for use by the homebrewer. Many of the scientific principles supporting the calculations that are explained in detail in the book are only summarized in this discussion to focus on applying the calculations to a typical brew.

The usefulness of the equations is illustrated through the brewing of 10 gallons of beer (12 °Plato, 35 IBU) using a typical homebrewing system consisting of a 15-gallon mash/lauter tun and 15-gallon kettle. The steps are presented sequentially so that the reader can understand how the various steps and outcomes relate to each other.

Mashing

Infusion mashing is most easily accomplished using well-modified malts and a single temperature rest. The goal is to heat the mash water to the correct temperature that will provide the desired equilibrium mash temperature after mixing it with the grain. Since we know the weight of grain, the weight of mash water and the temperature of the grain, all we need is to solve for the temperature of the strike water. Because water holds more heat than grain, we also need to use the adjustment factor of 0.4 applied to the grain's weight to reduce its heat capacity relative to water.

Strike Water Temperature Formula

$$\frac{[(0.4 \times \text{grain wt}) + \text{water wt}] \times \text{rest temp} - (0.4 \times \text{grain wt} \times \text{grain temp})}{\text{water weight}}$$

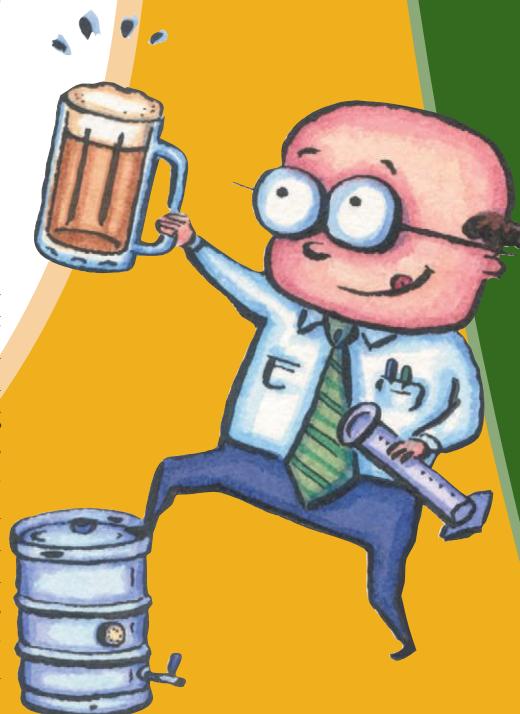
One gallon of water at room temperature weighs about 8.32 pounds; however, the density of water decreases and its volume increases as its temperature increases; therefore, at mashing temperatures, 1 gallon only weighs about 8.15 pounds. Consequently, if we measure our mash water hot, we would use 8.15 lb/gal. Results will also improve if the mash vessel has been preheated to the mash-in temperature.

Sometimes a multiple temperature mash regime is needed. In this case, the initial mash temperature is achieved using the previous Strike Water Temperature formula. The following formula calculates the amount of boiling water that must be added to achieve the second rest temperature.

Weight of Boiling Water Formula

$$\frac{(MHC \times \text{mash wt}) \times (\text{target temp} - \text{current temp})}{\text{water temp } (194^{\circ}\text{ F} / 90^{\circ}\text{ C}) - \text{target temp}}$$

The Weight of Boiling Water formula includes another variable called *mash heat capacity*, (MHC), which, like the heat capacity of grain, recognizes that the heat capacity of the mash is less than the boiling water. The temperature of boiling water is understated at 194° F, not 212° F, to provide for heat loss on transfer and heat absorbed by the mash vessel. (Note that 212° F/100° C are boiling temperatures at sea level, and the boiling point decreases as altitude increases. Also the weight of 1 gallon of boiling water is 8.0 pounds, not 8.32.)



Mash Heat Capacity (MHC)

$$\frac{(0.4 \times \text{grain weight}) + \text{water weight}}{\text{grain weight} + \text{water weight}}$$

Another technique to raise the temperature of the mash is removing a portion of the mash and boiling it. When the boiled mash is added back to the main mash, the re-combined mash is raised to a new rest temperature.

Decoction Volume

$$\frac{\text{total volume} \times (\text{target temp} - \text{start temp})}{(194^\circ \text{ F} / 90^\circ \text{ C}) - \text{start temp}}$$

For example, if we want to mash in at

122° F with our 17.4 pounds of grain at 70° F, to what temperature must we heat the 43.5 pounds of mash water?

Strike Water Temperature

$$\frac{[(0.4 \times 17.4 \text{ lb}) + 43.5 \text{ lb}] \times 122^\circ \text{ F} - (0.4 \times 17.4 \text{ lb} \times 70^\circ \text{ F})}{43.5 \text{ lb}}$$

$$= \frac{(50.5 \times 122) - 487}{43.5} = \frac{5,674}{43.5} = 130^\circ \text{ F}$$

The second rest temperature of 152° F will be achieved by boiling a decoction. The decoction should be heated by raising the temperature by 1-2° F each

minute and then holding the decoction at ±158° F for about 15-20 minutes to convert the starches to sugar before raising the decoction to boiling. Note that a temperature of less than boiling is used in the equation. This assumption creates a larger decoction volume to allow for cooling upon transfer and raising the temperature of the mash vessel. The decoction should be added slowly to the main resting mash (and not vice versa), and the mash temperature checked before adding 100 percent of the decoction so the target rest temperature is not exceeded. If all of the decoction is not needed, allow the unused portion to cool to the target temperature before adding it back.

Decoction Volume

$$\frac{6.75 \text{ gal} \times (152^\circ \text{ F} - 122^\circ \text{ F})}{194^\circ \text{ F} - 122^\circ \text{ F}}$$

$$= 202.5/72 = 2.80 \text{ gal}$$

(and the rest mash is, therefore, 3.95 gal)

The final mash out temperature is 162° F that we will achieve by an infusion of boiling water.

Mash Heat Capacity

$$\frac{(0.4 \times 17.4 \text{ lb}) + 43.5 \text{ lb}}{17.4 \text{ lb} + 43.5 \text{ lb}}$$

$$= 50.5 / 60.9 = 0.83$$

Weight of Boiling Water

$$\frac{(0.83 \times (17.4 \text{ lb} + 43.5 \text{ lb}) \times (162^\circ \text{ F} - 152^\circ \text{ F}))}{194^\circ \text{ F} - 162^\circ \text{ F}}$$

$$\frac{= 50.5 \times 10}{32}$$

$$= 15.80 \text{ lb, or } 1.9 \text{ gal @ } 68^\circ \text{ F or } 2.0 \text{ gal @ } 212^\circ \text{ F}$$

Using multiple infusions of boiling water will create a larger, more diluted mash. Our original mash volume was 6.75 gallons. Adding 1.9 gallons will increase both the mash volume to 8.65 gallons and the minimum mash tun size from 8.75 to 11.25 gallons (8.65 gal x 1.3).

Achieving the Target Gravity

Earlier, (see July/Aug 2007 *Zymurgy*) we estimated that we will have 12.0 gallons of

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cool wort after lautering. However, the wort will be boiled, and water at 20° C (68° F) occupies only 96 percent of the volume of boiling water. So, the 12.0 gallons of cool wort will expand to 12.5 gallons upon reaching a boil ($12.0 \text{ gallons} \div 0.96$). Also, we can expect the pre-boil wort gravity to be lower than the desired ending gravity since we will concentrate the wort by evaporation. In this example, the kettle full wort was measured at 10.0° Plato. Therefore, we need to determine how much evaporation must occur to reach the target gravity of 12° Plato. A simple mixing equation provides the answer:

$$\text{Wort Volume}_{\text{start}} \times {}^{\circ}\text{Plato}_{\text{start}}^{\text{a}} = \text{Wort Volume}_{\text{end}} \times {}^{\circ}\text{Plato}_{\text{end}}^{\text{a}}$$

$$12.5 \text{ gal} \times 10.0^{\circ}\text{P} = \text{Wort Volume}_{\text{end}} \times 12^{\circ}\text{P}$$

$$(12.5 \times 10.0) / 12 = 10.4 \text{ gal}$$

^a SG can be used in this equation, but “excess gravity” described earlier must be used. That is, 12° Plato that equals SG 1.048 would be represented as 48, and 10° Plato that equals SG 1.040 would be represented as 40.

If we multiply the ending hot wort volume of 10.4 gallons by the expansion factor of 0.96, we determine that the ending cool volume will equal 10.0 gallons ($10.4 \text{ gal} \times 0.96$). Why do we care what the hot and cool volumes of wort are? First, the hot volume indicates that we can stop our boil when the hot kettle volume is 10.4 gallons. Second, the hop charge should be based on the cool ending volume of 10.0 gallons.

The preceding methods obviously require an accurate measurement of kettle volume. If the kettle doesn’t have graduated volume markings stamped into its side, it will be necessary to calibrate a measuring stick prior to brewing by filling the kettle in known increments (e.g. 1 gallon, 2 gallons, etc. until it’s full) and marking the dip stick with the corresponding volume after each increment of water is added.

Hops

The utilization rate for isomerized alpha acids that impart bitterness (measured in international bittering units, or IBU) to beer increases with the length of the boil, typically ranging from about 5-percent

utilization when boiled for five minutes to as much as 30 percent when boiled for an hour. Since the last addition of flavoring hops is intended to impart the character of the hop oils rather than bitterness, the small amount of bitterness contributed by the flavor hops is subtracted from the desired total IBU. So, the first step is to determine the IBU contributed by the flavoring hops.

Predicted IBU of Flavoring Hops

$$\frac{\text{utilization \%} \times \text{alpha acid \%} \times \text{oz} \times 7,490}{\text{gallons}}$$

The first hop addition for bitterness is

then calculated via the following formula after the desired IBU is adjusted for the bitterness determined in the prior calculation.

Oz of Bittering Hops=

$$\frac{\text{gallons} \times \text{desired IBU}}{\text{utilization \%} \times \text{alpha \%} \times 7,490}$$

The volume of wort used in these calculations is the final 10 gallons of cool kettle wort after boiling. So, if we want to isomerize 35 IBUs in the beer using hops with 4-percent alpha acid, and a final hop addition of 1.5 ounces five minutes before the end of the boil (5-percent utilization),



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how much bittering hops (pellet form) must be added and boiled for one hour (30-percent utilization)?

Predicted IBU of Flavoring Hops

$$\frac{0.05 \times 0.04 \times 1.5 \text{ oz} \times 7,490}{10.0 \text{ gal}}$$

$$= 22.5 / 10.0 = 2.25 \text{ IBU}$$

Oz of Bittering Hops

$$\frac{10.0 \text{ gal} \times (35 - 2.25)}{0.3 \times 0.04 \times 7,490}$$

$$= 328/90 = 3.6 \text{ oz}$$

Evaporation Rates and Timing Hop Additions

In order to know when to add the bittering hops, we first need to determine how long it will take to concentrate the cool wort from 12 to 10 gallons, or in other words, evaporate 2.0 gallons, which is 17 percent of the original volume (2.0 gal/12.0 gal). From past experience, we know that the kettle and burners evaporate about 1.33 gallons per hour, so it will take 1.5 hours to boil the volume down to 10 gallons (2.0 gallons ÷ 1.33 gal/h = 1.5 h). If we boil the bittering hops for one hour, the hops should be added 30 minutes after the wort commences boiling.

If we are unsure of the evaporation rate, we can allow the kettle to boil for 20 minutes, measure the volume, and estimate the volume that will evaporate each hour. In our example, 0.44 gallons will evaporate after 20 minutes. Since 20 minutes is only 33 percent of one hour, we divide 0.44 gal by 0.33 and find that 1.33 gal is the expected volume evaporated per hour.

In the next (and final) installment we will discuss yeast pitching rates and carbonation.

Steve Holle is author of *A Handbook of Basic Brewing Calculations*. He is a member of the Brewers Association, Master Brewers Association of the Americas and Beer Judge Certification Program, and is an associate member of the Institute and Guild of Brewing, London.

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Philly Pours it On

Earth to Philadelphia: Received your message and you're obviously delusional. That's what I thought the first time I heard Philadelphia declare itself *the Best Beer-Drinking City in America*.

Admittedly, I hadn't been in the City of Brotherly Love for several years. OK, 30 years. But this is Philadelphia we're talking about. The city where they pelted Santa Claus with snowballs at a football game. The city where they think cheesesteak is a major food group. The city where the most popular tourist attraction is a bell. And it's broken.

Sure, hometown hero Ben Franklin knew his way around a brew kettle. But the last time he stirred a wort was well over 200 years ago. And I guarantee you that Philadelphia's second most famous citizen, Rocky Balboa, wasn't sipping Saison Dupont after running up the steps of the Museum of Art.

Is it really possible, I wondered, that gritty, blue-collar Philadelphia had transformed itself into America's beer mecca? I needed convincing.

I got my chance in March when I was invited, along with a handful of other journalists, to visit the city, tour some local beer haunts and attend the kickoff of the first-ever Philly Beer Week, a collection of beer-themed events taking place over 10 consecutive days. With equal parts skepticism and curiosity, I eagerly accepted.

Philly did not disappoint. In my three-day getaway, I discovered a city with an overabundance of atmospheric pubs, breweries and beer cafés. But as any seasoned beer traveler knows, a great beer culture is as much about people as it is places.



Mayor Michael Nutter at the Philly Beer Week kickoff event.

It shouldn't be surprising, then, that local characters all played a part in my trip's most memorable adventures including:

- Having dinner at Monk's Café hosted by co-owner Tom Peters. Monk's is the country's best-known Belgian beer bar and a former Philly favorite of the late Michael Jackson. While posing for photos following dinner, Peters cradled magnums of Rochefort like a proud papa with a newborn babe.
- Touring the Old City with beer historian Richard Wagner. As we visited the sites of Colonial-era watering holes, I learned that much of the history of this country was, quite literally, shaped over pints of ale in Philadelphia taverns.
- Meeting Mayor Michael Nutter at the Philly Beer Week kickoff event at the Marketplace at East Falls. To be a great beer town, you don't have to have a mayor who shows up at a local beer event to tap the first keg, but it doesn't hurt.
- Posing for pictures with Rocky Balboa. The lovable palooka provides a perfect Philly photo op between beer stops.

So Philadelphia, you've done yourself



Tom Peters poses inside Monk's Café.

proud and I raise a glass to you. There's no doubt that Philly is a world-class beer town. But is it the best beer-drinking city in America? After an all-too-brief visit, I can't honestly say. But I hope to do a lot more research.

Dan Rabin is a beer and travel writer from Boulder, Colo., and a member of Hop Barley & the Alers Homebrew Club. He suggests you visit www.gophila.com/beer to help plan a brew-themed trip to Philadelphia.

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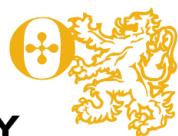
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