

FOR THE HOMEBREWER & BEER LOVER

zymurgy®

GADGETS 2020

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13
RECIPES YOU
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VOL 43 • N°1

JANUARY/FEBRUARY 2020

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PURSUE WHAT'S POSSIBLE

What is your 2020 brew year's resolution?

To be better than 2019...
but in all seriousness,
I'd like to focus on water
profile and lagering.

I want to perfect
my imperial hazy
pastry milksh—.
Just kidding, I'm gonna
brew more Pilsner.

Go to more meetings for
my homebrew club!

John

Support
Independent
Craft Beer

Dave

INDEP
DENCE
MATTERS

Megan

HOPS
WATER

To take a whack at the
BJCP certification test
(with help from Millie's
note cards!)

Gary



Share more of my tasty
homemade beverages
with my AHA colleagues.

Millie



As a newly certified BJCP
judge, I'd like to judge
more competitions.

Get back into bottling
so it's easier to share
my brews!

Duncan



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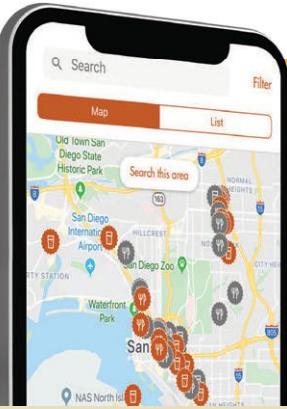


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Pumped for 2020

HAPPY NEW YEAR!

If you are reading this in the week or so after the Jan/Feb 2020 issue drops, I would like to wish you a happy, healthy, homebrew-filled holiday. If you're reading it afterward, I hope you *had* a happy, healthy, homebrew-filled holiday and that you are presently enjoying more success than I am at squeezing into those 2019 vintage pants.

I'm looking forward to 2020 for many reasons, but paramount among them is that I finally broke down and got a homebrew pump. I'd avoided doing so for a long time, having viewed a pump as just something else I'd need to sanitize and maintain. But, when I decided to double the size of my homebrew batches, it dawned on me that I could no longer rely on the trusty lift-and-dump wort transfer method that had served me so well for the better part of a decade.

So, I got a pump. And I wish I'd done so sooner.

Remember when all you needed to move house were a couple of friends (a prerequisite for at least one of whom was owning a pickup), a box of morning donuts, and a case of evening beer? Remember how cheap it was? Remember how much it sucked?

Previously flexible mattresses somehow gained temporary rigor mortis. That wooden bureau your grandma insisted you take turned out to have apparently been composed of cast iron. Every chair was just slightly wider than the doorway.

Then, one day a few years later—perhaps it was a job transfer or simply the wisdom and comparative financial security that come with age—a couple of uniformed folks showed up to your place with a proper moving rig, a hand truck, a pile of blankets, and unreasonable volumes of bubble wrap. Then you drove to your new house in a sensible sedan while all of your belongings just sort of magically tesserred their way over in parallel.

The next morning, you still woke up to stacks of boxes and couldn't put your finger on the coffeemaker, but your back felt OK and your knuckles looked remarkably un-grisly. Perhaps you stood in the kitchen and surveyed the new place, hands on hips, and exhaled with satisfaction.

This, my friends, is the elation that comes from using a homebrew pump.

Sure, a pump introduces a few new variables. Where's the closest GFCI outlet? How do I reliably quarantine hops and trub after the boil? But on balance, a pump offers more ups than downs (and, really, isn't that all a pump is meant to do in the first place?).

This is I-just-switched-from-bottling-to-kegging-level excitement. I am genuinely stoked to brew more in 2020 because of a pump. Fancy that.

Just as there are many exciting things in store for 2020 in general, there are also exciting things in store for your favorite magazine. You'll recall that we introduced a new look and feel for *Zymurgy* just over a year ago. With this issue, we are changing things a little more.

We are retiring Ask the AHA, the troubleshooting department formerly occupied by Dear Professor. Most of us get our homebrewing questions answered online these days in a matter of hours or minutes, and it no longer makes sense to dedicate a block of the magazine to Q&A. By all means, please continue to send us your homebrewing questions, but we'll address them in Dear *Zymurgy* henceforth.

In the reclaimed space, we are introducing a new department called You Can Ferment That! Homebrewers are often interested in fermenting much more



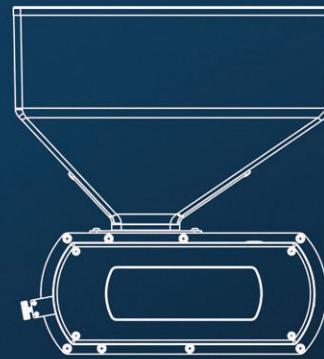
than just beer, mead, and cider, and you can easily use homebrew equipment you already own to make other culinary delights. *You Can Ferment That!* explores some of the other goodies that find places in our hearts and in our fermenters.

In this issue's inaugural installment of *You Can Ferment That!*, *Zymurgy* associate editor Amahl Turczyn takes a deep dive into sauerkraut. I've made sauerkraut a couple of times and highly recommend giving it a try. It's dead simple and tastes far better than anything you can buy in a store.

In the future, look forward to examinations of sourdough, vinegar, cheese, kimchi, hot sauce, and more. If you can ferment it, it's fair game. Be sure to check out the articles on apple cider vinegar and fermented hot sauce at HomebrewersAssociation.org to get a preview of the kinds of topics we have in mind. And if you consider yourself a bit of an expert on one or more of these fermented treats, let us know.

Until next time, keep fermenting, and I hope you are as pumped for 2020 as I am.

Dave Carpenter is editor-in-chief of *Zymurgy*.



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Features



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GADGETS 2020

From cleverly used common items to custom 3D-printed solutions, it's clear that many homebrewers love the problem-solving aspects of our hobby almost as much as the beer itself. Here are a few of the engineering marvels you've put into the service of beer.

By Zymurgy Readers



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JOPEN BEER

This high-gravity, spontaneously fermented Polish beer disappeared from everyday production in Gdańsk after the First World War. Nobody alive today knows how it tasted, and very few written records about its ingredients and production still survive.

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PURE WATER: REVERSE OSMOSIS WORKING FOR YOU

In this second installment of our two-part series on reverse osmosis (RO), you'll learn what to expect with RO system operation, what enhancements you might incorporate into your system, and how to maintain it.

By Filip Paprocki

By Martin Brungard



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BACKCOUNTRY BREWING

Eager to work Mother Nature's rich pantry into your next batch? Why not brew while you enjoy the great outdoors? Whether a weekend camping trip or a through-hike of the Pacific Crest Trail, brewing is the perfect excuse to get outside and practice your passion.

By Matt Wastradowski



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WHEN PROS CLONE HOMEBREW

For most of the 113 entries in this year's Great American Beer Festival® Pro-Am Competition, the experience is about more than the medal. It's a highly sought-after opportunity to brew on a commercial system and collaborate with a professional.

By Kristen Kuchar

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EDITOR'S DESK

Pumped for 2020

By Dave Carpenter



FROM THE GLASS

Nashville to Host Homebrew Con™ 2020

By Gary Glass

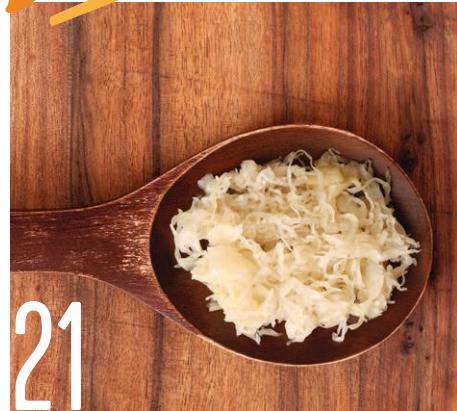


LAST DROP

No Boil, No Problem

By Steve Ruch

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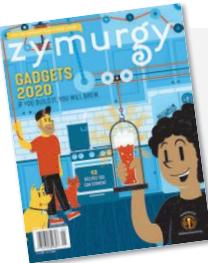


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	Jiggly Puff and Stuff
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	Little Red Bird



Cover Illustration
© James Olstein

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January/February 2020

zymurgy®

(zī'mərjē) n: the art and science of fermentation, as in brewing.



ON THE WEB

Find these homebrewing recipes and more on our website @ HomebrewersAssociation.org/homebrew-recipes

NOW ON Tap

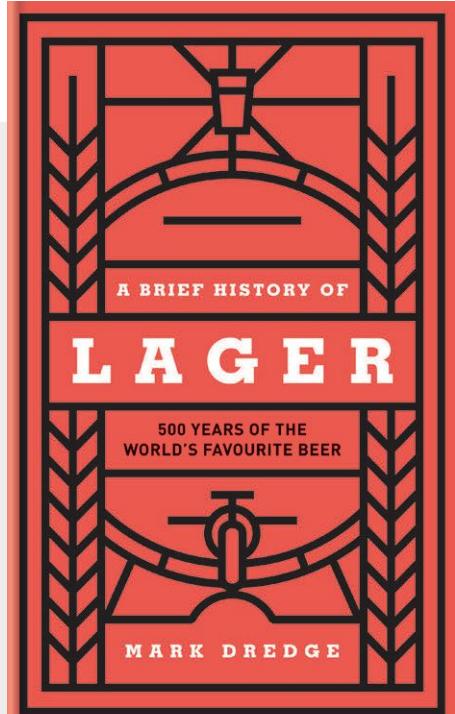
Beer Book

A BRIEF HISTORY OF LAGER BY MARK DREDGE

Despite the diverse selection of styles available today, pale lager remains the world's most widely consumed beer. Yet, Pilsner and its offspring occupy a mere blink of the eye in the history of brewing, dating only to the middle of the 19th century. Darker, sweeter lagers had been around a few centuries prior to that, but the half millennium that has elapsed since the Reinheitsgebot is still brief compared to the many thousands of years over which humans have been making beer.

Mark Dredge's *A Brief History of Lager: 500 Years of the World's Favourite Beer* explores the fascinating history of lager beer, from medieval monks to modern mega-brewers. Readers will learn how politics, industrialization, and advertising all influenced the development of lager beer as we know it today. The tale of cold-fermented beer is sure to educate and entertain history buffs and beer nerds alike.

A Brief History of Lager is published by Kyle Books, an imprint of Octopus Books, and is distributed in the U.S. by Hachette. [Learn more](#) at octopusbookusa.com.



Brewery News



Fort Collins, Colo.

On November 19, New Belgium Brewing Co. of Fort Collins, Colo., and Asheville, N.C., announced plans to sell the brewery to Lion Little World Beverages, an Australian company wholly owned by Kirin Brewery Company of Tokyo, Japan. In an open letter accompanying the announcement, New Belgium cofounder Kim Jordan explained the decision to sell.

At New Belgium, we've needed to balance the cash demands of our ESOP [employee stock ownership plan] and selling shareholders, with the operational need for more capacity (hence the brewery in Asheville) and the need to grow our brand by reaching more beer drinkers with our brand message. These are a lot of competing priorities and it has been difficult to do all of them as well as we'd like. As we surveyed the landscape over the last several years, we found that options to raise capital while being an independent brewer weren't realistic for us.

At press time, the all-cash deal was pending approval of New Belgium's employee shareholders and regulators.

Beer and Mead: The Perfect Marriage

By Denise Kruczky

The Mead Mamas, a female meadmaking group, are part of Michigan's CRAFT homebrew club and have been making mead since 2008. Our goal is to make the best mead possible and further the mead community. When not making award-winning meads, the Mead Mamas attend and host educational events to spread the word about mead and show support for the Michigan beekeeping community.

One such recent event was the Michigan Homebrew Festival (MHF), which took place in Lake Orion, Mich., on August 15, 2019. Celebrating its 10th anniversary in 2019, MHF is a festival hosted by Michigan homebrew clubs at which more than 200 homemade meads, beers, and other fermented beverages are served. (For more on MHF, see "The Michigan Homebrew Festival" by Pat Hyde in the Jan/Feb 2017 issue of *Zymurgy*.)



Pam, Jim, Sheri, Denise, and Scott at Homebrew Con.

It was important for us to showcase a marriage of beer and mead, as many Mead Mamas are married to homebrewers in CRAFT. Thus, we elected to serve braggot, an ancient drink historically associated with medieval Britain. Some say the word *braggot* is of Welsh origin and that *brag* means "malt" and *got* means "honeycomb." Traditionally, braggot referred to ale wort fermented with honey, ale blended with finished mead, or ale with honey and spices. The goal for modern meadmakers is to create braggot with perceptible characters of both mead and beer.

For a summertime twist, the Mead Mamas served braggot slushies at the festival. We



Karen, Sheri, Pam, Denise, and Jen at the Michigan Homebrew Festival.



Mead Mamas BDS

Belgian dark strong ale

Batch size: 5 US gal. (22.9 L)
Original gravity: 1.096 (11.4°P)
Final gravity: 1.022 (5.6°P)
Efficiency: 70%

Color: 36 SRM
Bitterness: 30 IBU
Alcohol: 10% by volume

MALTS & ADJUNCTS

12 lb. (5.44 kg) Dingemans Pilsner malt
2 lb. (907 g) Dingemans CaraMunich malt
1 lb. (454 g) torrified wheat
3 lb. (1.36 kg) Candi Syrup D-180

HOPS

1.5 oz. (42 g) Hallertauer Mittelfrüh, 5% a.a. @ 60 min
1.5 oz. (42 g) Styrian Goldings, 5% a.a. @ 15 min

YEAST

Imperial Yeast B63 Monastic

ADDITIONAL ITEMS

1 Whirlfloc Tablet, Boil 5.0 min

BREWING NOTES

Mash 60 minutes at 148°F (64°C). Lauter, sparge, and collect wort. Boil 60 minutes, adding Candi Syrup at flameout. Chill to 63°F (17°C), oxygenate for 90 seconds, and pitch yeast. Ramp temperature to 73°F (23°C) over 7 days. When specific gravity falls to 1.014 (3.6°P), rack, drop to 60°F (16°C) for 10 days and then to 45°F (7°C) for 3 weeks.

No-Boil Recipes

Who says you don't have enough time or space to brew? These simple small-batch recipes require no boiling and rely on malt extract to eliminate the need to mash. For more on no-boil brewing, see Last Drop on page 92 in this issue of *Zymurgy*.



Karen, Pam, and Denise managing mead braggot slushies at the Michigan Homebrew Festival

made them by mixing peach mead and Belgian dark strong ale in a slushy machine to create what might be the only braggot slushy ever seen at a beer festival. Also joining our braggot slushies were lavender-lemonade, mead multi-berry, and hopped cherry lemonade mead slushies. The cold, icy drinks were a hit with festival attendees and offered a valuable opportunity to educate the public on this lesser-known style of mead.

The recipe for our Belgian dark strong ale appears on the preceding page. To recreate the slushies we served at MHF, blend this beer with peach mead at a beer-to-mead ratio of 1:2 and run the resulting mixture through a slushy machine. Our peach mead was in the neighborhood of 12% to 14% ABV.

Brew This!



WTG? Stout

Recipe courtesy Steve Ruch

Be sure to cold steep the specialty grains *cold*. Leaving them out at room temperature will turn them sour.

Batch volume: 2 US gal. (7.6 L)
Original gravity: 1.048 (12°P)
Final gravity: 1.017 (4.2°P)
Color: 40 SRM
Bitterness: 0 IBU
Alcohol: 4.1% by volume

EXTRACTS

1.2 lb. (2.65 kg) golden light DME
12 oz. (336 g) pale ale DME
1.5 oz. (42 g) Munich DME

SPECIALTY GRAINS

8 oz. (227 g) roast barley
4 oz. (113 g) Briess Blackprinz malt
4 oz. (113 g) Weyermann Carafla II malt

HOPS

0.5 oz. (14 g) Styrian Goldings, steep 30 min

YEAST

1/2 sachet Fermentis Saflager S-33

ADDITIONAL ITEMS

1.6 oz. (45 g) sugar to prime

BREWING NOTES

Cold-steep the specialty grains overnight in 1 qt. (1 L) filtered water. On brew day, heat 1 gal. (4 L) water to near boiling, add the cold-steeped liquid, thoroughly mix in the extracts, add the hops, and steep for 30 minutes. Chill wort and pitch yeast. Bottle after two weeks.

Brew This!



I Got Your Nukey Brown Ale

Recipe courtesy Steve Ruch

Batch volume: 2 US gal. (7.6 L)
Original gravity: 1.050 (11.8°P)
Final gravity: 1.007 (1.65°P)
Color: 16 SRM
Bitterness: 0 IBU
Alcohol: 5.7% by volume

EXTRACT

2.2 lb. (1 kg) light LME

SPECIALTY GRAINS

6.4 oz. (179 g) Briess Victory Malt
4 oz. (113 g) crystal 80 malt
2 oz. (57 g) British pale chocolate malt

HOPS

0.5 oz. (14 g) Palisade, steep 30 min

YEAST

1/2 sachet Lallemand Nottingham

ADDITIONAL ITEMS

2 oz. (57 g) sugar to prime

BREWING NOTES

Heat 2 qt. (2 L) filtered water to 160°F (71.3°C). Place the specialty grains into a mesh bag and steep for 30 minutes in the hot water. Remove the grain bag, thoroughly mix in half the extracts, heat the water to near boiling, add the hops, and steep for 30 minutes more. Thoroughly mix in the remaining extracts, add 6 qt. (5.8 L) cold water, chill if necessary, and pitch the yeast. Bottle after two weeks.

The Rise and Fall of Homebrewing

By Michael Berrios

It's a scary title right? Why such a powerful statement?

With so many new breweries opening up, there's never been a better time for craft beer. You can get incredible variety now, and it's often just a matter of traveling less than a mile from your house.

We started homebrewing many years ago to make the beers we couldn't find, or the beers that were hard to find. We created beers that tapped into our wildest imagination. Our love for homebrewing came from tasting commercial beer and saying "more hops, more malt, more everything"—and we created it.

Now that we can get all of this without spending so much time to create it, is our passion, our way of life in jeopardy?

Seven years ago, I started a homebrew club called the Plymouth Pride Brew Club. We pay homage to some of the first homebrewers in America, the Pilgrims. The Pilgrims had to stop at Plymouth Rock to brew more beer, hence the name Plymouth Pride. My club has 21 members.

As more breweries opened up in recent years, some members just stopped homebrewing. Of our 21 members, only three or four of us still homebrew—the rest just drink craft beer. When I talked to my local homebrew shop, they were even worried because they have seen a decrease in customers. Why spend five hours brewing, two weeks fermenting, and another couple of days bottling or kegging when you can just walk down the street and get it in minutes?

Why continue to brew? Why stand outside in the bitter cold or sweltering heat? Why spend so much time, expend so much effort, and shed so much sweat and blood?

If you ask yourself those questions, you already know the answer: for the love of homebrewing. The fact that you created something you're proud of is the greatest feeling in the world, good or bad. Whenever, I hear someone say, "I could never brew a beer as good as that brewery," I ask "Why not?"

Homebrewing is all about imagining the impossible. So, as I write this and sip on my own homebrew, I say to all homebrewers past, present and future, keep homebrewing! (But you already know that.)

Michael Berrios has been homebrewing since 2006. He lives and brews in Skippack, Pa., and specializes in lagers and ciders. He hates saisons.



“
Whenever, I hear
someone say,
“I could never brew
a beer as good as
that brewery,” I ask
“Why not?”

— Michael Berrios,
Plymouth Pride Brew Club

Brew Over

In the recipe for Big Boi's Booty Sweat that appeared in the Sept/Oct 2019 issue, the hop schedule should read as follows:

0.5 oz.	(14 g) Warrior, 15.9% a.a. @ 60 min
1.5 oz.	(43 g) Citra, 13.2% a.a. @ 5 min
1.5 oz.	(43 g) Mosaic, 12% a.a. @ 5 min
2 oz.	(57 g) Citra Cryo, 22.2% a.a., whirlpool

2 oz.	(57 g) Idaho 7, 12.8% a.a., whirlpool
2 oz.	(57 g) Mosaic Cryo, 25.3% a.a., whirlpool
1.5 oz.	(43 g) Vic Secret, 21% a.a., whirlpool
2 oz.	(57 g) Mosaic, dry hop 6 days
4 oz.	(113 g) Citra, dry hop 3 days
4 oz.	(113 g) Idaho 7, dry hop 3 days

In the recipe for Chateau Gates Cyser that appeared in the Nov/Dec 2019 issue, the instructions under the Day 4–7 heading should refer to the specific gravity falling by 1/3, not 2/3.



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Nashville to Host Homebrew Con 2020



JUNE 18-20
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The 2020 AHA Homebrew Con is coming to Nashville (aka Music City), Tenn., June 18–20 at the Gaylord Opryland Resort. Music City should be on everyone's bucket list to visit. With the honky-tonks on Broadway, the Country Music Hall of Fame, historic music venues like the Ryman Auditorium and Grand Ole Opry, and the Johnny Cash Museum, Nashville is a must-see city. While Nashville is best known as a music destination, it also has an awesome culinary scene and unique local specialties like Nashville hot chicken. Of course, Nashville also boasts a great beer scene, with 20 breweries within the city limits fueled largely by an active homebrew community.

I love Nashville, and I'm especially excited to have Homebrew Con at the Gaylord Opryland, which, with nearly 3,000 guest rooms, can hold all Homebrew Con attendees under one roof! The resort features 18 restaurants, bars, and cafés, plus an indoor river, waterfall, and gardens. If you don't fancy the onsite food options, there are 32 additional food choices, including a Bavarian-themed restaurant/beer hall, at the Opry Mills mall next door to the resort. It's a short walk from the Gaylord, or you can take a free shuttle.

Bring the family and enjoy the onsite water resort, arcades, shopping at the Opry Mills mall, and the resort's 18-hole golf course. Gaylord guests get a free bucket of balls at the driving range daily.

To keep space rental costs reasonable, we depend on most attendees staying at the host hotel. By opting to stay there, you not only stay close to the action, but you also support the event and the AHA. When attendees stay outside the event's room block (e.g. at an Airbnb or another hotel), it reduces our total room nights booked,

which could increase costs for that year and make it more difficult to book future venues that consider the number of room nights associated with an event.

So, I hope you hear my plea and book your Homebrew Con stay at the Gaylord. You'll not only have a better time by not having to deal with transit, but you'll have more time to spend with fellow homebrewers at the event.

You can book your room now at the discounted Homebrew Con rate by visiting HomebrewCon.org, where you'll also find information about event registration, which opens March 10.

NATIONAL HOMEBREW COMPETITION

Are you going to take a shot at homebrew glory by entering the 2020 AHA National Homebrew Competition (NHC), the world's largest homebrew competition? By entering the NHC, you can see how your brews stack up against 10,000 other entries spanning 35 categories of beer, mead, and cider and compete for the most coveted medals in homebrewing (not to mention some pretty fantastic prize packages).

New for the 2020 competition, we are introducing a \$9-per-entry fee for Final Round entrants to the National Homebrew Competition. The First Round entry fee (\$16 per entry) will not change in 2020.

The introduction of the Final Round entry fee helps us offset rising competition expenses, particularly those associated with running the Final Round. Over the last 10 years, we've gone from 8 First Round judge centers to 13 and added seven categories, which has in turn doubled the number of Final Round entries to 1,300. Getting all those entries judged at Homebrew Con in a single day requires more than 250 judges and stewards. Because Final Round judging takes place in convention centers, costs for things like judges' meals and space rental are much more expensive than they are at typical competitions.

At \$9 per entry, the new Final Round entry fee still won't fully cover our expenses, but it will help ensure the competition continues to grow and remains sustainable through the next decade.

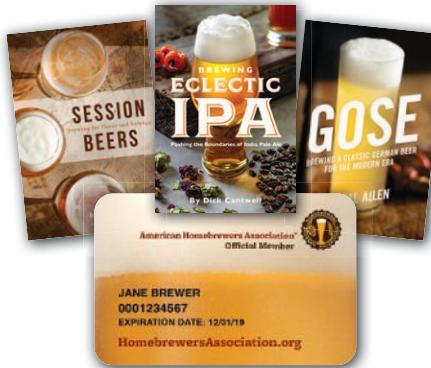
RADEGAST CLUB OF THE YEAR ENTRIES

Homebrew clubs host events that introduce the public to our beloved hobby, mentor new homebrewers to help them brew better beer, and generate funds for local charities. Clubs deserve recognition for all they do, and that's exactly what the AHA Radegast Club of the Year Award (AKA the Awesomeness Award) does.



If you are a member of a homebrew club that is doing great things, let us know about it by submitting an entry for the Radegast Club of the Year Award. The winning club earns a trophy from award sponsor Yakima Chief Hops and splits a \$1,000 cash award with a charity of the club's choice.

Entries are due by March 31. We'll announce the winner of the 7th annual Radegast Club of the Year Award during the awards ceremony at the 2020 Homebrew Con in Nashville on June 20. See the Community section of HomebrewersAssociation.org for more details.



LAST CHANCE TO GIVE THE GIFT

December 31 is not only New Year's Eve but it's also the last day to take advantage of our end-of-year Give the Gift membership offer. To celebrate the holidays, we're offering those who join the AHA, renew a membership, or purchase an AHA membership gift card their choice of one of three complimentary books (\$19.95 value) from Brewers Publications: *Brewing Eclectic IPA: Pushing the Boundaries of India Pale Ale* by Dick Cantwell (promo code: *GiftIPA*), *Gose: Brewing a Classic German Beer*

for the Modern Era by Fal Allen (promo code: *GiftGose*), or *Session Beers: Brewing for Flavor and Balance* by Jennifer Talley (promo code: *GiftSession*).

Go to HomebrewersAssociation.org/gift-membership/ to take advantage of this offer.

The Give the Gift offer is an excellent opportunity to get something when you renew your membership, even if it isn't due to expire for many months. The AHA is planning a modest dues increase coming in August 2020—our last dues increase was in 2014—so renew early, get a book, and take advantage of current membership pricing.

LEARN TO HOMEBREW DAY

Homebrewers around the world introduced 3,054 new homebrewers to our beloved hobby when we celebrated the AHA's 21st annual Learn to Homebrew Day on November 2, 2019. This year's event featured 199 Learn to Homebrew Day sites in eight countries. Events like Learn to Homebrew Day give us a hook for promoting homebrewing. Our media outreach, along with all the sites that sent out AHA Learn to Homebrew Day press releases, helped generate 17 news stories in TV, radio, print, and digital channels that reached an audience of 3,162,413—that's a lot of coverage for homebrewing. Thank you to all who participated in this year's festivities! The 22nd annual Learn to Homebrew Day falls on November 7, 2020.

LEGISLATIVE UPDATE

On November 1, the AHA, along with our parent organization the Brewers Association (BA), hosted a daylong homebrew demonstration in Washington, D.C.: the second annual Homebrew on the Hill, held in con-

2020 CALENDAR

The new year is upon us. Be sure to save these important dates on your 2020 calendar:

JANUARY 14–22

AHA National Homebrew Competition entrant application window

MID-FEBRUARY–MARCH 31

AHA Governing Committee election ballots accepted

MARCH 10

AHA Homebrew Con Nashville registration opens

MARCH 13–APRIL 5

AHA National Homebrew Competition First Round judging

MARCH 31

Deadline to submit entries for the AHA Radegast Club of the Year Award (see Community section of HomebrewersAssociation.org for details)

MAY 2

Big Brew

JUNE 18

AHA National Homebrew Competition Final Round judging in Nashville

JUNE 18–20

AHA Homebrew Con Nashville

AUGUST 1

Mead Day

SEPTEMBER 24–26

Great American Beer Festival®

NOVEMBER 7

Learn to Homebrew Day

Visit the calendar on HomebrewersAssociation.org for the most up-to-date listing of events, including upcoming AHA Rallies and AHA/BJCP-sanctioned homebrew competitions.

junction with National Learn to Homebrew Day. AHA events and membership coordinator Matt Bolling and BA government affairs manager Katie Marisic, along with local homebrewers from the DC Brewers, Brewers United for Real Potables (BURP), and Grains Result in Something Tasty (GRiST) clubs, joined members of Congress and their staffs to walk them step by step through the homebrewing process. About 60 people visited the event throughout the afternoon.

In December, the AHA and BA hosted our annual Capitol Hill Staff Homebrew Competition, which was open to any employee on Capitol Hill. The winning homebrew-

LEARN TO HOMEBREW DAY 2019

HANGAR 41
BREW CLUB



^ Hangar 41 Brew Club in Fort Myers, Fla.



< Gaines Street Gang
1st Learn to Homebrew day!



Get Down Brewing >

ers were announced at the BA Holiday Hill Tasting, where first-, second-, and third-place awards were presented in each category, as well as a best-of-show trophy. The winning homebrews were poured for members of Congress and their staffs at the event.

These activities in our nation's capital help us ensure that homebrewing remains federally legal for the indefinite future and, if the need arises, homebrewers get fair treatment on any federal legislation that might affect us.

In Pennsylvania, the AHA is working with local homebrewers, Brewers of PA (BOP), and counsel to resolve a new issue

preventing homebrew being served at charitable events in some municipalities. We will update members as more information is available.

In Ohio, the AHA, AHA Governing Committee member "Goose" Steingass, and the Legislative Service Committee have drafted homebrew legislation. Key stakeholders and legislators are reviewing the bill to hopefully have it introduced by the end of the year.

Until next time, happy homebrewing!

Gary Glass is director of the American Homebrewers Association.



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Sweet and Sour

Dear Zymurgy,

In the Nov/Dec 2019 issue of *Zymurgy*, Andrew Luberto presented an article on how to properly serve draught beer. He explained that the CO₂ bubbles in a beer's head form a barrier to prevent loss of flavor and that allowing CO₂ to escape makes for less bloating. This, he wrote, will enhance the tasting experience. But there's more to the story. Water and carbon dioxide combine to make carbonic acid:



Carbonic acid is sour, just like citric acid in oranges and acetic acid in vinegar. Pouring beer with a good head releases some of the dissolved CO₂, which reduces sourness and enhances the perception of sweetness. →

If you have ever tasted a soft drink that has gone flat, you may have noticed that it tasted overly sweet. This is undesirable in a soft drink, but a bit more sweetness in your beer is the reason behind “enhancing the tasting experience.”

Bat Bateman, PhD
New Carlisle, Ohio



ACETALDEHYDE HANGOVER

Dear Zymurgy,

I am a longtime reader of Zymurgy and appreciate your efforts to create great articles. However, I believe that Melissa Antone's statement that "Acetaldehyde is the cause of the hangover" (Beer School, Sept/Oct 2019) is misleading since it infers that acetaldehyde is the main or only cause.

While acetaldehyde may be a partial contributor to a hangover, my understanding is that the main cause of hangover symptoms is dehydration. Alcohol causes the body to produce more urine than normal, which reduces hydration. I believe readers should focus on consumption of alcohol and not acetaldehyde to minimize the risk of hangover.

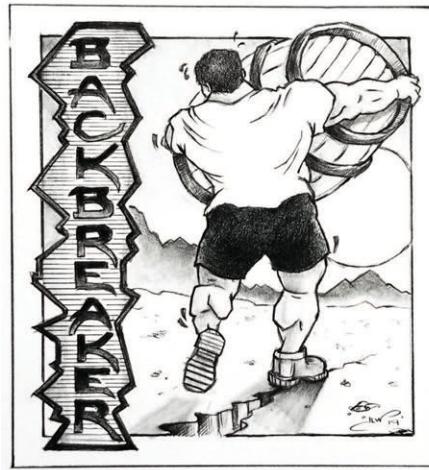
Yours sincerely,
Ian Johnson
Toronto, ON, Canada



DEAR ZYMURGY

Send your Dear Zymurgy letters to zymurgy@brewersassociation.org. Letters may be edited for length and/or clarity.

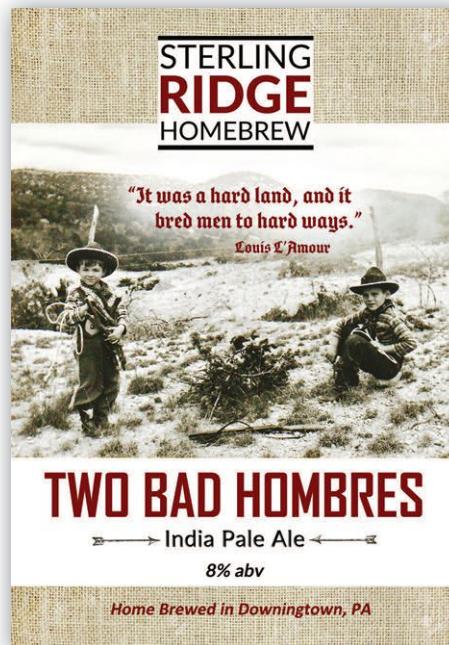
HOMEBREW LABEL SUBMISSIONS



Backbreaker brown porter was my first collaboration brew with my friend Scott. He has been all-grain brewing for years, is my homebrewing mentor, and works as a chiropractor. I asked my other friend, John Walsh, to come up with a label concept for Backbreaker. John is an amazing artist, and he nailed the

design in pencil and ink. He drew a giant of a man—maybe a porter?—moving a full barrel the hard way. Rolling it would be too easy!

Cheers,
Matt Hunter
Emmaus, Pa.



"Two Bad Hombres" seems to fit perfectly, along with the Louis L'Amour quote. The chosen brew, a clone of Heady Topper, is delicious. The name of my tiny brewery is Sterling Ridge Home Brew, also in honor of my dad. I use Photoshop to create all of my labels and then print them using online software.

I have been an AHA member for two years and a homebrewer for six.

Jamie Ridge
Downington, Pa.

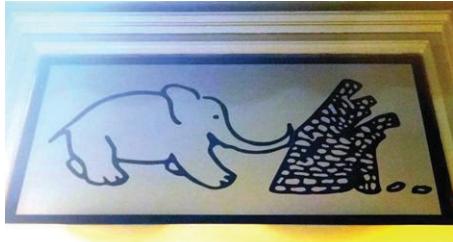
[More Homebrew Labels →](#)



SUBMIT YOUR LABEL

Do you make custom labels for your homebrew? Want it featured here in the pages of Zymurgy for all to see your work? Send them to us at HomebrewersAssociation.org/magazines/submit-bottle-label and we will take it into consideration!

I've wanted to use this image of my father and his brother playing cowboys in the late 1930s for a long time, but I had trouble coming up with a name and a beer recipe to do these two characters justice. The stories of their wild adventures growing up in the desert Southwest are family favorites, so the name had to capture the geography and their reputation for hilarious hijinks.



My wife and I were on our honeymoon in Dublin when we came across a pub in Temple Bar with no name, just a sign with an elephant knocking over a castle. We thought it was a great sign, so I snapped a picture.

Later, I was trying to think of a label for my Irish stout. I started going through pictures we had taken in Dublin, came across the sign, and knew I had to use it. I recreated the elephant, swapped the castle for a carboy with my Rowley Homebrewing logo, and put it on an Irish flag: my Dublin Dry Irish Stout label was born!

I have homebrewed for six years and have been a member of the AHA for five.

Jared Rowley
QUAFF
San Diego, Calif.



This label is for my Azacca Pale Ale, which is heavy on this hop varietal. Azacca is also the Caribbean Voodoo god of farming, hence the name Caribbean Voodoo. An authentic voodoo tapestry is the inspiration for the beer label and six-pack design. I have been an AHA member for two years, but I've been homebrewing for 25.

Mike Thigpen – Roswell, Ga.

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YOUR BIMONTHLY PINT OF CUTE

I love *Zymurgy* and look forward to every issue. One of my favorite sections shows pets of homebrewers.

Our local East Texas homebrew club, the Meisters of Brew, was having a brew day and my rescue Beagle Hound (half Beagle, half Basset Hound) Deveraux witnessed the care we all gave the primary fermenter as we sterilized, prepped, added wort, aerated, and celebrated. When the last person left at the end of the day, I went back into the kitchen and saw that Dev had curled up around the primary fermenter: she was obviously guarding it!



I can assure you that there is no more loving pet than a rescue animal. Deveraux came into our lives because someone had dumped her. She is now healthy and spoiled beyond all belief, but she loves to hang out with the club when we brew at her house. And obviously she feels a responsibility to guard the fruits of our labor.

Sincerely,
Mitchel Whitington
Meisters of Brew
Jefferson, Texas



Here's Doppelbock overseeing his latest brew day.

Brad Ellis
Noblesville, Ind.



Getting ready for a brew day with the able help of my brew dog, appropriately named Citra.

Dave Finnman
Johnstown, Colo.



Our new pup Barley was a quick study on her first brew day.

Cheers!
Kat Henry & Greg Dhuse
Chicago, Ill.

This is my Labradoodle, Dude. He likes to test the water temperature as I chill my wort, and you can tell by the face he makes whether or not it's good. In this picture, it's not properly chilled yet.

Jack Weldon
President, Draught Board Homebrew Club
Hayward, Calif.



Hello great people at *Zymurgy* and the AHA. Here is my brew dog Madi during a recent brew day. She loves being with me when I brew and knows that when I add the hops, it's time to go inside (she knows hops are bad for her). Thank you for all you do.

Ariel Figueroa
Albuquerque, N.M.

These are my brew buddies Clover (left) and Trinity (right). This is a rare action shot, as they normally supervise with their eyes shut.

Joseph Paolini
Seattle, Wash.



Sauerkraut

By Amahl Turczyn

Sauerkraut is German for “sour cabbage,” but food historians attribute its invention to the Chinese. Some 2,000 years ago, it provided sustenance for the laborers who built the Great Wall, although in that case the cabbage was pickled in rice wine rather than salt. Much later, it was used on Dutch sailing ships because it kept well without refrigeration and contained sufficient vitamin C to prevent scurvy, a common ailment for sailors of the time.

Today, we recognize the value of probiotics from lactic acid bacteria (LAB) in fermented foods such as sauerkraut and kimchi that boost our immune system and maintain healthy levels of microflora in the gut. That is, provided you don’t cook it first.

Making sauerkraut is easy, but it does require time and patience. If you don’t grow your own cabbage, you can come by it cheaply right around St. Patrick’s Day when it is often discounted, although it’s really never that expensive. Basically, sauerkraut is just shredded cabbage with about 1.5 percent salt added by weight. Pack it into jars or some other fermentation vessel, weigh it down so that it’s submerged in its own brine, and keep it cool until it’s fully fermented. This typically takes four to six weeks depending upon the temperature. Here’s the procedure in a little more detail.



SLICING

Sure, you can use a food processor for this, but a sharp knife makes for a finer-textured product. Weigh out the cabbages you'll be using, and multiply by 1.5 percent to get the amount of salt you'll need. You can use more salt than that, but it's healthier to have lactic acid be the primary preservative rather than salt. Use sea salt or some other pure, non-iodized salt.

Prepare the cabbage by removing any limp or discolored outer leaves, and then slice the head in half down the center of the core. Remove the tough core with two cuts in a wedge shape for each half. Lay the halves face down and slice into thin shreds as finely as possible. Those can go into a large bowl. As you work, sprinkle the piles of cabbage with your pre-measured salt and mix to distribute it evenly. The cabbage will begin to release water; keep mixing from the bottom of the bowl to further distribute the brine. After 20 minutes or so, it should be ready to pack.

PITCH SOME LAB

At this point, I like to cheat a bit. As with any LAB fermentation, getting the pH down quickly is always beneficial. There are natural bacteria and yeast on the cabbage leaves, and traditionally these were all that was necessary to make sauerkraut. However, unless you are vegan, you can add a starter culture of about a tablespoon of plain, active-culture yogurt per head of cabbage to jump-start fermentation and allow desirable LAB strains to take over quickly. The same LAB strains that make good yogurt make good kraut (and good beer, in most cases). Stir the yogurt in evenly, and it will seem to melt into the cabbage and disappear.

From a neutral pH of 7, sauerkraut will ferment to an ending pH of 3.5 or so on its own—but with a little help from a good yogurt strain, it can end up closer to 3. Don't add more yogurt than this amount though. It is possible (though I've never had it actually happen) for too much acid to form too quickly, leading to a finished product with a soft rather than crisp consistency. Keeping fermentation temperatures cool helps prevent this from happening.

PACKING

Now it's ready to pack. I usually make several gallons at a time, so I like using a food-grade Lexan container. Mason jars are fine, but they are more prone to spillage, and spilled, fermenting sauerkraut juice can be, shall we say, aromatic. Either container will let you visually gauge how far fermentation has come, though, which is a benefit you won't get with a traditional stoneware crock.



Many people like to beat the heck out of their kraut during the packing stage, since it provides stress relief and exercise, and tends to encourage more liquid development. If that's your thing, go to town. There are even special kraut packing tools resembling a barkeeper's muddler, only larger. A 1" diameter piece of dowel works fine too, but it's also fine to just use your (clean) fingers. At this point you'll need a weight of some sort to keep the cabbage completely covered in brine. If your vessel is round, like a stoneware crock, you can use an appropriately sized plate to weigh things down.

COVERING

If all the salted cabbage is in but you find you don't have sufficient liquid to keep the solids submerged, it is permissible to add liquid at this point. Water is fine. Some people also add live-culture apple cider vinegar to make up the volume and keep things nice and acidic. This means you'd be adding *Acetobacter* to your LAB—definitely not what you'd want to do with a sour beer—but with sauerkraut, it isn't such a bad thing.

The main microbial enemy you are trying to discourage is mold, so submerging is important. If you don't submerge all the kraut, you may notice mold growing on the exposed cabbage: if that happens, it's best to dump the batch and start over. With the square Lexan container, I've found a zip-top gallon freezer bag filled with water is just the right size and shape to act as a weight; plus, it's easy to see though it to make sure there are no air pockets underneath. Later in fermentation, bubbles aren't a bad thing though.

Properly submerged, the LAB will produce lactic acid and CO₂ during anaerobic fermentation, so any air present will be scrubbed out and replaced with carbon dioxide. You'll find that after a few days, the liquid level will increase as the salt draws more and more moisture out of the cabbage. That liquid is full of healthy bacteria, so feel free to draw off and bottle any extra. You might even get a tiny bit of carbonation forming in this tasty cabbage kombucha; sauerkraut juice is a great way to start the morning.

Cover your fermenter with plastic wrap and keep it in a cool, dark place, preferably around 60°F (15.5°C), though I've had good results at cellar temperatures of 55°F (12.7°C). Keep checking the color and pH of the kraut. Usually around 4 weeks it will begin to change color, going from green to a greenish yellow. Fermentation is complete when the pH dips below 3.5 and there is no longer any outgassing of CO₂. At that point, the sauerkraut is ready to be packaged and

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Sauerkraut juice is a great way to start the morning.

refrigerated. You could just store it in the original fermenter, in a cool basement or cupboard, but it will last longer in the fridge.

PACKAGING

Traditionally, folks use glass Mason-type jars for storage, which is fine, but since the kraut is much better for you uncanned, and therefore unheated, you won't be able to get a very good seal on those jars. They may even leak a little, depending upon the brine level. You still want to keep the kraut under its own brine; it's well protected by its own acidity, but even fully fermented, exposed kraut is still vulnerable to mold spoilage, particularly if it's not refrigerated.

For that reason, I like to use a vacuum sealer for long-term kraut storage. The bags are easy to fill, easy to store, and leak-proof, and they take up less space than jars. You can also pull all the gas out of the kraut before the bags are heat-sealed with a Food Saver-type device. That way, I know that any bubbles forming in the bag later on are CO₂; there shouldn't be much, if any.

Bagged and refrigerated, your crisp, tart kraut will keep for months (the bagged kraut pictured here was 6 months old and still tasty, but you probably shouldn't keep it that long). As long as it stays a bright yellow-green color, it should be fine—if it begins to brown or shows signs of mold, discard. There are hundreds of delicious kraut recipes online to experiment with. Just make sure not to cook it if you want to reap the full benefits.

Between the vitamin C and the probiotics, a little sauerkraut is said to boost the immune system, improve digestion, and add a bit of healthy fiber to your diet. A quick internet search lists a host of other purported benefits, from preventing cancer to helping you sleep or lose weight, but I can't attest to the accuracy of those claims. I just like sauerkraut because the tart, bracing lactic acidity and slight saltiness reminds me of a good Gose beer, but with a crisp, crunchy texture and a whole lot less alcohol.

Amahl Turczyn is associate editor of Zymurgy.

An illustration of a blue glass bottle with a white label that says "MoreBeer! THE BREWING NETWORK". The bottle is surrounded by green hops and golden wheat stalks.

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Sauerkraut

Batch volume:
about 1 quart (1L), with liquid

FERMENTABLES

1 head (approx. 2.2 lb./1 kg) green or red cabbage

OTHER INGREDIENTS

1 Tbsp. (15 g) plain active-culture yogurt (optional)
1.5% (15 g) sea salt (or any non-iodized salt)
Water or vinegar to cover cabbage (optional)

NOTES

Wash cabbage and remove outer leaves if necessary. Using a sharp knife, halve the cabbage down the center of the core. Remove core. Slice cabbage into fine ribbons. Sprinkle with salt and toss occasionally for 20 minutes until cabbage begins to release water. Mix in yogurt evenly, if using. Pack into a glass, plastic, or other acid-safe container, bruising cabbage with extreme prejudice to encourage more liquid if desired. Weigh down solids so that they remain submerged in liquid, topping up with water or cider vinegar if necessary. Cover fermenter with plastic wrap and ferment in a cool (55–65°F, 13–18°C) place for 4–6 weeks until kraut yellows, stops off-gassing, and has reached a pH of at least 3.5. Package in liquid and refrigerate for up to 3 months.



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Editor's Note: This article originally appeared in the July/August 2019 issue of *The New Brewer*, the professional brewer's counterpart to *Zymurgy*.

Traditional Berliner Weisse



Berliner weisse was once synonymous with the culture and identity of its city, much like lambic in Brussels, Münchner helles in Munich, and Pilsner in Pilsen. Over the past 30 years, the style has faded away for various reasons.

But traditional Berliner weisse is undergoing a resurgence of sorts. Pale and refreshing, with a low alcohol content, this German wheat beer is known for its clean, lactic sourness and high carbonation.

Up to a million hectoliters (approximately 850,000 barrels) of Berliner weisse was

brewed by approximately 50 breweries in the style's heyday in the 19th century. The beer was not only consumed in beer gardens but was often a part of everyday life. Some used Berliner weisse to replace infected drinking water, buying buckets of the beer from breweries and taking it home to let it mature.

On the other end of the spectrum, the upper class drank aged Berliner weisse, which had been allowed to mature for up to 11 years, from crystal goblets in extravagant beer salons.

Schneeeule Marlene: Marlene is the flagship Berliner weisse at Schneeeule (Snowy Owl) Brewery in Berlin.

BIRTH OF A STYLE

In 1648, after the Thirty Years' War and subsequent plague, the population of Berlin had been reduced to fewer than 10,000 citizens. To counteract this, Frederick the Great issued a tolerance edict in October 1685, laying the foundation for the immigration of roughly 20,000 Huguenots—persecuted in France because of their Protestant religion—to Brandenburg and

“... Berliner weisse was considered the first mass-produced, highly carbonated, bottle-conditioned beer in the world.”

Berlin. In contrast to other immigrants, the Huguenots were allowed to brew, and soon began producing a light wheat beer.

In 1741, Carl Landré and his Huguenot family built one of the most important weissbier breweries. At that time, wine was also cultivated on a large scale in Berlin, as street names such as Weinbergsweg still signify today. The region was not suitable for Champagne production, so the Huguenot immigrants applied their knowledge of bottle aging to the beer brewed in Berlin.

The main vessel for Berliner weisse was a sturdy stoneware bottle called a *kruke*, which could withstand the Champagne-like pressure of carbonation. The kruke was quite heavy and therefore unsuitable for export, but since the beer was produced and distributed only locally, nearly all beer was bottled. As early as 1765, Berliner weisse was considered the first mass-produced, highly carbonated, bottle-conditioned beer in the world.

Beginning in 1806, Napoleon and his troops occupied Berlin for two years. Legend has it that the troops loved Berliner weisse so much that they dubbed it the “Champagne of the North.” A unique culture of beer indulgence developed in the roughly 700 taverns that served the drink.

At the end of the century, modern production technology ensured stable and consistent quality from legendary brands such as Landré, Gabriel & Jäger, Groterjan, Breithaupt, and Willner. The Berliner weisse of that time was matured up to 11 years by the publican, receiving endearing titles like *Edelweisse*, *Champagnerweise*, or even *Rieslingweise*. But most connoisseurs knew the aged version of the beer by its title, “one from



After years of studying Berliner weisse and wild yeast at TU Berlin, Ulrike Genz founded the only brewery in Berlin (and the world) that is entirely focused on traditional Berliner weisse.

the shelf.” Other matured versions were called *Sandweisse* since they were buried in sand for several months. Some breweries created higher alcohol versions with 12 to 18°P original gravity (1.048 to 1.074 SG), calling them *Vollweisse* or *Märzenweisse*.

Weisse was often drunk with a caraway schnapps called *stripe*. The addition of sweet syrups or juice was common only when it was given to children, or in order to mask off-flavors in a badly brewed version.

END OF AN ERA

The domination of weisse in the Berlin market began to fade with the rise of bottom-fermented beer. In 1883, the first Linde refrigeration machines were used in Berlin, making it possible to produce lagers year-round, more economically, and in larger quantities.

At the beginning of the 20th century, when taxes on beer increased, many of the smaller breweries were no longer profitable and had to close or were scooped up by larger competitors. World War I resulted in massive increases in the price of raw materials and worker shortages. The Great Depression and the destruction of Berlin toward the end of World War II almost caused the once-radiant Berliner weisse culture to fade into oblivion. In 1940, there were only 10 Berliner weisse breweries left in the city, and by 1970, only four.

After all the major breweries (such as Schultheiss, Kindl, Willner, and Bürgerbräu) were taken over by the Radeberger Group in the late 1990s, Berliner weisse was still produced in Berlin under the Berliner Kindl



Berliner weisse is a mixed culture, bottle-conditioned beer with an original gravity of 7 to 8 degrees Plato and a low alcohol content (3% to 4% ABV). Traditionally, the mixed culture includes Brett.

brand. But this kettle soured beer is not bottle fermented using *Brettanomyces*, resulting in a lack of the complexity that was characteristic of the traditional style.

RESURRECTION

A few breweries in Berlin have made the effort to bring back traditional Berliner weisse, resurrecting the nuanced traditional alternative to overly fruited sours. At Schneeeule Brewery (“shnee-oy-luh,” or snowy owl in German), we produce only Berliner weisse. Our flagship is Marlene, a 7°P (1.028) beer without any additions. It is fermented with a culture based on a *Brettanomyces* strain isolated out of an old Willner bottle, responsible for the fruity, wine-like aroma of the beer. We advocate that syrup is not necessary with Marlene. Other modern breweries like Brewbaker, Lemke, and Berliner Berg have added a traditional Berliner weisse to their portfolios.

INGREDIENTS

Berliner weisse is a mixed-culture, bottle-conditioned beer with an original gravity of 7 to 8°P (1.028 to 1.032 SG) and a low alcohol content (3 to 4% ABV). Traditionally, the mixed culture includes Brett.

Brew
This!



Traditional Berliner Weisse

Recipe courtesy Wolfram Lange,
former brewmaster of Schultheiss Brauerei in Berlin.

Batch volume: 5 US gal. (18.9 L)
Original gravity: 1.030 (7.5°P)
Final gravity: 1.002 (0.6°P)
Color: 2 SRM

Bitterness: 5 IBU
Efficiency: 75%
Alcohol: 3.6% by volume

MALTS

2.6 lb. (1.17 kg) Pilsner malt
2.6 lb. (1.17 kg) wheat malt

HOPS

0.4 oz. (11 g) Spalt Select, added during the final decoction

YEAST & BACTERIA

Wyeast 1007 German Ale or White Labs WLP003 German Ale II

Berliner Brettanomyces or White Labs WLP645 Brettanomyces clausenii

White Labs WLP672 Lactobacillus brevis

BREWING NOTES

Directions: Mash in at 52°C (125°F) and rest for 15 minutes. Heat to 64°C (147°F) and rest for 45 minutes; then heat to 72°C (161°F) and rest for 45 minutes. During this last rest pull a 3-liter decoction, add the hops, and boil for 30 minutes. Combine decoction and mash, heat to 77°C (171°F), vorlauf, and lauter. Heat collected wort to 85°C (185°F) and start whirlpool. Cool to 18–20°C (64–68°F) and run off into fermenter.

Fermentation: Add 10% old Berliner weisse (pH < 3.5, minimum 2 months old) in fermenter; if not available, pre-acidify wort with lactic acid to a pH of 4.1–4.3. Pitch 19 mL of thick slurry from the mixed culture. Activate the yeast slurry 12 hours before with starter wort. Ferment at 20–25°C (68–77°F) for 2–3 months or until stable gravity is reached.

Bottling: When bottling, use a mixture of old and young beer or, if not possible, priming sugar. Target an additional extract of 1.7°P (7 SG points). The result should be 3.5 vol. (7 g/L) of CO₂. The beer should be kept at 18–20°C (64–68°F) for at least 3 weeks to develop the appropriate aroma and carbonation.

Sensory Outcomes: In the beginning, the beer tastes and smells slightly lactic—a bit like grainy yogurt—but at around 4–8 weeks develops the typical bouquet of apricot and peaches. Later in bottling, it may develop a minimal funk that often manifests as hay-like aromas.

EXTRACT VERSION

Due to the decoction mash and mash hopping technique, it is not possible to exactly reproduce this beer using extract. Nonetheless, you can still brew a delightful Berliner weisse by dissolving 4 lb. (1.81 kg) wheat liquid malt extract in hot water and then steeping the hops in the resultant wort for 30 minutes at 93°C (200°F). Chill wort to 18–20°C (64–68°F), transfer to fermenter, and proceed as above.

Malt

The malt bill of a Berliner weisse consists simply of Pilsner and wheat malt. The amount of wheat has varied over the decades, ranging from 33 to 80 percent in most recipes. This ratio has been influenced both by personal preference and technical limitations—not every lautering system can handle 80 percent wheat. The malts should be slightly under-modified with a high protein content. Most *Lactobacillus* have the ability to cut up long-chain proteins to obtain amino acids,

negatively impacting foam stability. Adding more longer-chained proteins through under-modified malt counteracts that scenario. Another technique employed to improve foam stability is preacidifying the wort to a pH below 4.5 before pitching.

It has been said that oats were once a part of the mash bill, too, but in most historic accounts they are not mentioned (oats were considered inferior in the 19th century brewing world). Lactose and kilned or crystal malt have no place in a traditional Berliner.

Hops

In contrast to many American styles, hops are a side note to Berliner weisse—3 to 7 IBUs are usually targeted in order to let the *Lactobacillus* do its work. Higher IBUs can prevent *Lactobacillus brevis* from souring sufficiently. (See the Mixed Culture section below.) Traditionally, the hops were boiled during the decoction stage so that the rest of the beer didn't need to be boiled.

Water

Berlin's water is fairly hard (300 mg/L CaCO₃). Sulfate and chloride ratios are mostly balanced at around 100 ppm. Sodium levels are in the higher range of 30 to 70 ppm. Most breweries typically did not treat their water to brew traditional Berliner weisse.

Mixed Culture

The mixed culture used to ferment Berliner weisse is the heart and soul of the style. Berliner weisse defied the purity of single-strain yeast beers made popular by the work of Louis Pasteur, resulting in a fruity, wine-like aroma.

In 1987, Dr. Frank-Jürgen Methner discovered that the source of these fruity aromatics was *Brettanomyces*, which can convert acids into esters. The most important esters in Berliner weisse are ethyl-lactate and ethyl-acetate, which create a delicate bouquet of apricot and peach without the addition of fruit. Methner also identified the species of *Lactobacillus* that was dominant in Berliner weisse: *Lactobacillus brevis*.

The *Saccharomyces* used in the mixed culture was a neutral, non-phenolic strain. Another interesting insight from Methner's study is that *Lactobacillus* and *Saccharomyces* had no noticeable impact on the ester make-up of the finished beer, leaving *Brettanomyces* as the main flavor driver in the mixed culture. However, Brett needs help to accomplish these flavor contributions. Recent examinations by Canada's Escarpment Laboratories found that most isolated *Brettanomyces* strains are either *bruxellensis* or *anomalous*, which are notoriously bad fermenters on their own. They must be paired with *Saccharomyces* and *Lactobacillus* to create their bright, fruity, and not overly funky flavor.

Strains of the magical Berliner Brett can be cultured from bottles of traditionally produced Berliner weisse like Schneeeule, Von Seitz, or Schell's Starkeller. Alternatively, a variant of *Brettanomyces clausenii* can be obtained from your favorite yeast lab.

BREWING PROCESS

Process-wise there are a few oddities to the style, the biggest being that Berliner weisse is not boiled. In the past (1940 and earlier), the

beer was mashed many different ways, while the process adapted to advancements in science. Step mashes were common even in the early days, but temperature rests were sporadic. Traditionally, 38°C (100°F) was often used for an acid rest; in modern times this process was replaced by adding phosphoric acid or acid malt to lower the mash pH. This was followed by a protein rest at 44–55°C (111–131°F); however most modern malts with a Kolbach index above 35% do not typically need a protein rest. A combined mash rest around 60–66°C (140–150°F) was used for saccharification. Mash out was traditionally performed at 75°C (167°F).

For hop isomerization, the most common method was to add a decoction step. A small portion of the mash was boiled for 30 minutes and added back in to reach a certain mash step. In decoction, there are two different types of pulls: *Dickmaische*, or thick mash, and *Dünnmische*, or thin mash. Before 1950, it was the thin portion that was typically pulled for the hop addition decoction boil.

Wolfram Lange, retired brewmaster from Schultheiss, who has 20 years of experience brewing the style, has kindly provided a traditional recipe for Berliner weisse. The processes have been adapted to suit both the homebrewing and craft brewing world.

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Ulrike Genz is founder and head brewer of Schneeeule (Snowy Owl) Brauerei in Berlin. After years of studying Berliner weisse and wild yeast at TU Berlin, she founded the only brewery in Berlin (and the world) that is entirely focused on traditional Berliner weisse. Benedikt Koch is an avid homebrewer and beer historian, focusing on northern German beer styles such as Berliner weisse, gose, and Lichtenhainer. When he's not brewing, he tries to share and gain knowledge on the Facebook group Milk the Funk.

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GADGETS 2020

14th Annual Homebrew Gadgets

By
Zymurgy
Readers

Zymurgy's annual Gadgets issue showcases the creative DIY spirit of homebrewing. More purpose-built homebrew equipment is commercially available than ever before, but that hasn't tempered the ingenuity AHA members apply in the service of beer. From cleverly used common items to custom 3D-printed solutions, it's clear that many homebrewers love the problem-solving aspects of our hobby almost as much as the beer itself.

We were especially impressed this year with the variety of hoists and pulleys that readers have built to lessen the burden of lifting heavy loads like full kegs and brew-in-a-bag (BIAB) grain bags. Our collective backs thank you. And thank you to everyone who submitted gadgets this year. Please keep sending us your stories for the 2021 issue, and check out HomebrewersAssociation.org and the AHA Forum for more great DIY ideas.

PREPPING & ORGANIZING

MILK CRATES

We use a milk crate whenever we have to move liquids from one vessel to another. It elevates the container we're siphoning from above the sink where the other containers are being filled.

Ross Murphy
Lakewood, Colo.



BEER BUFFET

On brew day, it's nice to weigh and mill your grains in the same location. I repurposed an old kitchen buffet into a cabinet to house my grain mill and accessories such as scales, flasks, tri-clover fittings, etc. Kitchen buffets have declined in popularity and can be bought inexpensively. I paid \$40 for a nice Basset brand with dovetail joints through my local craigslist.

The brew buffet is on wheels so I can move it out of the way when it's not in use. In addition to mounting the electrical box, grain mill, and motor, I removed a shelf to make room for the grain bucket. I plan on painting the buffet with chalk paint to freshen it up.

Raymond Nonnie | *Urban Knaves of Grain*
Carol Stream, Ill.



STACKING HOPS TINS

I purchased a tiffin carrier on a business trip to India and found it to be the perfect tool for organizing pellet hop additions on brew day. A tiffin carrier is a stackable stainless steel lunchbox used in much of Asia. I measure my hop additions directly into each tin, starting from top to bottom, in order of hop addition. After all hop additions have been measured into the tins and the tiffin box is restacked and clamped shut, it can be moved around without fear of spilling. A quick internet search shows that you don't need to travel to India to purchase your own.

Konrad Schlenner
CRAFT Homebrew Club
Orion Township, Mich.



DRYING RACK FOR HOPS

I use a hanging herb drying rack to dry my homegrown hops.

Gerald Barthel
Prescott, Wash.



BREW DAY

PORTABLE BIAB HOIST

I'd done several batches using the brew-in-a-bag (BIAB) method before deciding that I needed to find a trouble-free way to suspend the bag. There's nothing like a hot bag of soaked grain spewing wort all over to make the inventive mind go to work.

I've been using this gadget for many years. It's durable, portable, easy to use, and not terribly expensive. Set up and tear down literally take seconds. I can't imagine I will ever need to replace anything except maybe the paracord.

My wife custom made the BIAB bag, so there's a loop on one of the lower corners through which I feed the paracord and then attach the hoist snap hook. It causes a nice point to form at the other lower corner from which the bag drains.

Terry Gores
Tacoma, Wash.



BUILD TERRY'S WELDLESS BIAB HOIST

If you're handy, you might already have most of these parts laying around. The key to making this rig portable is that the top pipe slides through the tees on the top of the four supports. All the pipe is $\frac{1}{2}$ ". I added safety chains, but I have never had an incident in which the supports tried to spread apart. Tees located 12" above the supports' feet have their open ends pointing out so that the S-hooks can simply sit in the openings and let the supports spread as far as the chains allow.

Tools

- 2 pipe wrenches
- drill or drill press
- drill bits for the cleat and eye hook

Galvanized Pipe

- 1 4' length of $\frac{1}{2}$ " pipe
- 4 6' lengths of $\frac{1}{2}$ " pipe
- 4 1' lengths of $\frac{1}{2}$ " pipe
- 4 $\frac{3}{4} \times \frac{3}{4} \times \frac{1}{2}$ " tee fittings
- 4 $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$ " tee fittings
- 4 $\frac{1}{2}$ " end caps
- 2 $\frac{1}{2}$ " plastic thread protectors
(these usually come with the pipe)

Hardware

- 1 eyebolt with nut
- 1 3" cleat
- 1 bag hook (your choice)
- 4 S-hooks for the safety chains
- 2 40" lengths of chain
- 1 10' length of paracord

Instructions

1. Drill a hole through the center of the 4' length of $\frac{1}{2}$ " pipe and attach the eyebolt using a nut.
2. Build the first support by connecting a 6' length of $\frac{1}{2}$ " pipe to a 1' length of $\frac{1}{2}$ " pipe using a $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$ " tee fitting. Attach a $\frac{3}{4} \times \frac{3}{4} \times \frac{1}{2}$ " tee fitting to the end of the 6' section. Attach a $\frac{1}{2}$ " end cap to the end of the 1' section.
3. Repeat step 2 for the remaining three supports.
4. Align the $\frac{3}{4}$ " openings of the tees at the ends of the supports.
5. Slide two supports onto one end of the 4' length of $\frac{1}{2}$ " pipe, threading the pipe through the $\frac{3}{4}$ " openings of the tees.
6. Repeat step 5 using the other two supports on the other side of the 4' length of pipe.
7. Attach plastic thread protectors on either end of the 4' pipe.
8. Drill holes in one of the supports and attach the 3" cleat.
9. Raise the frame to the position shown in the picture, and use the S-hooks and chains to secure the supports in place.
10. Thread one end of the paracord through the eyebolt and attach the bag hook to it.
11. Wrap the other end of the paracord around the cleat as needed to suspend your BIAB bag above the wort.

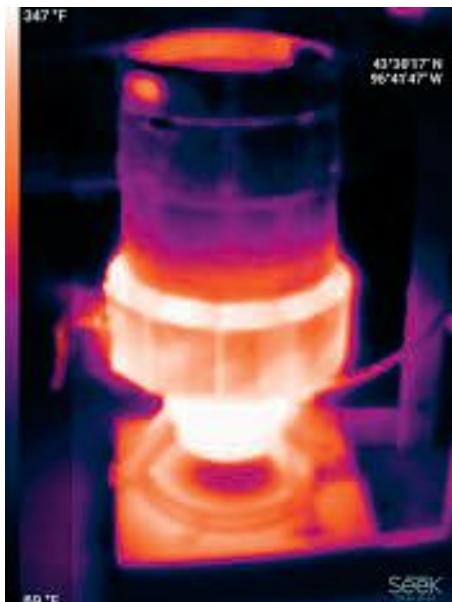
RING OF FIRE

I live in Sioux Falls, S.D., and while standing around in cold garages and sheds waiting for pots to boil, I repeatedly heard, "This takes too long. Why doesn't someone make something to speed this up?" Instead of focusing on ways to increase heat, I investigated how to better use and control the heat that's already there. That was the beginning of the Ring of Fire and my company, Wild Man Industrial.

The Ring of Fire is a heat shield that attaches to your brew pot to capture the heat that is normally lost out the sides. Angled vanes on the inside direct the heat against the kettle wall and swirl it around the pot to increase heat transfer into your wort. This gives the homebrewer a cost-effective way to gain the efficiency benefits of a double-walled pot.

A modular design makes it universally adjustable: adding or subtracting individual heat-directing links adjusts the Ring of Fire to conform to any size pot. There are also links that can accommodate accessories like sight glasses. I have wrapped pots ranging in size from 5-gallon stockpots all the way up to 100-gallon PsychoBrew kettles. More details can be found at wildmanindustrial.com.

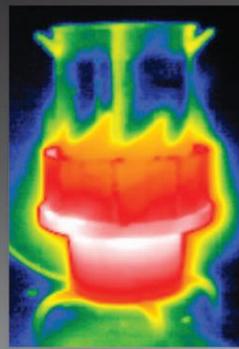
Joshua Mulder
Big Sioux Brewing Society
Sioux Falls, S.D.



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TRUB TUBE

I built and tested a trub filter that separates out solids before the wort goes through the plate chiller. I've used it for more than 40 batches and it works well.

Norm Ryder
True Grist
Woodstock, Ontario, Canada



COLLAPSIBLE STOVE

I have been very happy with my Woodland Power Stove. It is not typically marketed to homebrewers, but it solves a common problem: where to store your brew kit? The stove easily supports my 10-gallon kettle, and it folds down and packs into a sturdy bag when I'm done. I raise it up on a milk crate with a cement patio tile on top for the perfect working height.

Scott Toland
Los Angeles, Calif.



OUT, DAMMED HOPS!

I whirlpool my wort after the boil, but in recipes with lots of hops, the trub cone collapses when the liquid level gets low. I made this simple brass dam that slips over the drain tube and keeps most of the kettle hops out of the fermenter.

Norman Lane
Daytona Brew Club
Ormond Beach, Fla.

BIAB BREW BRACKET

My father Ed homebrewed when I was young, and I remember his letting me dabble with his plastic pails and rudimentary equipment. I started brewing in college in 2009 and have brewed off and on for most of my adult life. I just got into all-grain brewing in the last few years. The birth of my first son in 2015 derailed my homebrewing, but after the birth of my second son in 2017, I moved my brewing out of our kitchen and into the basement, which really helped.

The only time I could brew completely undisturbed was after everyone had gone to bed. Starting a brew at 9 or 10 p.m., though, became an exhausting all-night ordeal, and I started looking for ways to shorten the traditional all-grain process so I could get some much-needed sleep while also brewing quality beer. I chose to brew in a bag.

I purchased a brew bag and was having good results but still fell short of the mark even after incorporating some dunk sparging. Recognizing this issue, my father and I set out to build a device that would enable us to alternate between wringing the bag and fly sparging the grains. Thus was born the Tim and Ed Gioia Brew Bracket.

The brew bracket lets you keep the BIAB bag straps in the center to wring out and squeeze the grains and then move the straps to the outer hooks to open the bag up for fly sparging the grains over the brew kettle. The results have been excellent, and I have not missed a target gravity since incorporating this bracket.

Tim Gioia
Hudson Valley Homebrewers
Wappingers Falls, N.Y.





PUMP RIG

At many brew day events, I have noticed pumps lying on wet floors and power cords creating trip hazards. Plus, every time the brewer wanted to shut off the pump, they had to pull the plug. Hence, I built this handy pump setup with its own carrying handle. It is built using $\frac{3}{4}$ " PVC pipe and a waterproof switch with a 15' power cord to safely get you away from the work area and reduce trip hazards. I trimmed an inexpensive cutting board to size with a table saw to support the pump and switch. Furniture plugs on the bottoms of the legs eliminate vibrations and make it run whisper quiet.

David Kilgore | **Primetime Brewers**
Jenison, Mich.



BUILD TIM & ED'S WELDED BREW BRACKET

Home Depot carries varying lengths of $1\frac{1}{2}'' \times \frac{1}{4}''$ flat stock for the piece that attaches to the center of the bracket, but if you weld you should be able to find something suitable. Even a fender washer would work.

Materials

- 1 36" length of steel square tube, $1\frac{1}{2}'' \times \frac{1}{16}''$
- 1 rigid eye snap hook, $5\frac{1}{8}'' \times 3\frac{7}{8}''$
- 3 welded rings, $1\frac{1}{4}'' \times 1\frac{1}{2}''$
- 4 spring links or carabiners, $5\frac{1}{16}'' \times 3''$
- 1 flat stock $1\frac{1}{2}'' \times 1\frac{1}{2}'' \times \frac{1}{4}''$ thick

Instructions

1. Cut the square tube into two sections with lengths of $18\frac{3}{4}''$ and $17\frac{1}{4}''$.
2. Cut the $17\frac{1}{4}''$ length from step 1 into two equal sections $8\frac{5}{8}''$ long.
3. At the center point of the $18\frac{3}{4}''$ piece, tack weld the $8\frac{5}{8}''$ pieces onto either side to form a square cross.
4. Center the $1\frac{1}{2}'' \times 1\frac{1}{2}''$ piece of $\frac{1}{4}''$ thick flat stock on the square cross and fully weld all edges of tubing to it.
5. Weld the ring to the top of the flat stock.
6. Cut the remaining two rings in half and weld each half to the bottom end of all four ends of tubing.
7. Weld the snap hook to bottom center.

GET A HANDLE ON OXYGENATION

This is a simple 3D-printed handle, flow-meter mount, and tube guide to use with 1.4-ounce (40.1-gram) Bernzomatic oxygen cylinders. Using a flow meter stretches out the number of batches that can be oxygenated from a single cylinder. The printed components just make it a tight, easy-to-use setup.

Stephen Vander Wal
Milltown Mashers
Northfield, Minn.



BUILD STEPHEN'S OXYGEN RIG

Stephen was generous enough to share the solid model files for his gadget so interested Zymurgy readers can build it. The files are available to download at HomebrewersAssociation.org/jf20. Once you have them, you can send them to a 3D printer and let the magic happen.

If you don't own a 3D printer or know someone who does, you can often find them at maker spaces and public libraries. Or upload the files to one of the many online retailers that will fabricate the parts and ship them to your house.

In addition to the 3D printed components, you'll need the following parts to complete the build:

- 1 JIAWANSHUN Oxygen Air Flow Meter,
0.1–1.5 L/min.
- 1 mini oxygen regulator
(available at many homebrew retailers)
- 1 14" length of $1\frac{1}{4}$ " ID, $3\frac{1}{8}$ " OD
PVC tubing, plus additional tubing to connect your oxygenation stone or wand
- 2 3"-4" diameter worm clamps
- 3 $3\frac{1}{16}$ "- $3\frac{1}{4}$ " diameter tube worm clamps

Assembly is simple. Just look at the accompanying images and make it so. Once the rig is all put together, you can attach your preferred oxygenation stone or wand to the flow meter output with tubing and let'er rip.



DRAUGHT LINE RINSER

I've always found it troubling that pouring just one beer from the faucet introduces the potential for contamination. I make it a priority to do whatever it takes to keep my equipment clean and sanitized, which includes seasonal overhauls to my draught system and rinsing the faucets after every use.

One day, while using the three-way valve on my counter-pressure bottle filler to purge and fill bottles, I realized I could implement a similar method in my draught system. I installed a three-way valve inside my kegerator that lets me switch between two sources.

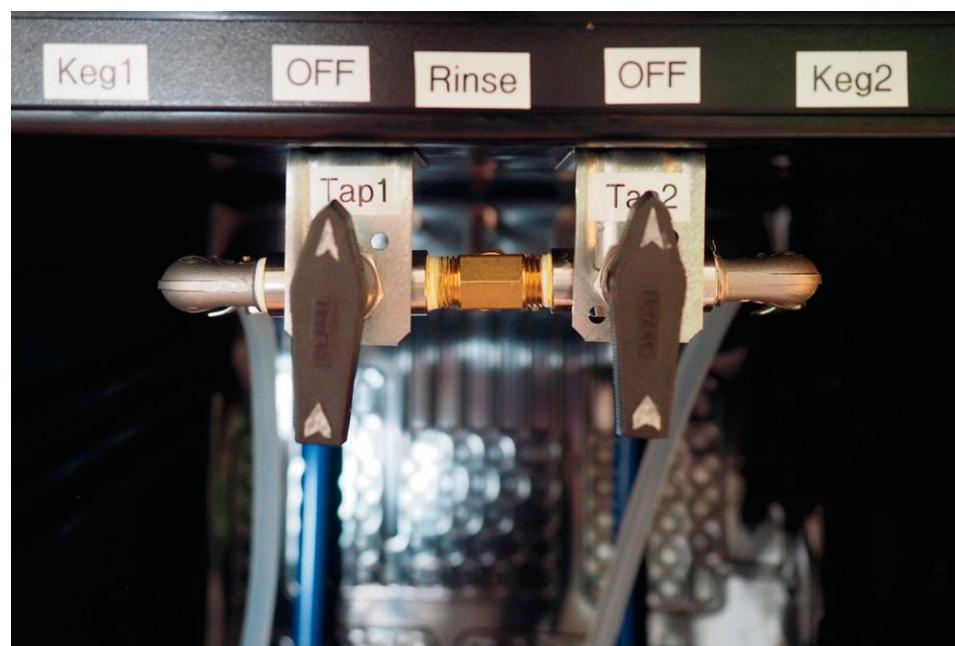
I keep an extra keg filled with a mild San Star solution. After I pour a beer, I switch the source from the beer keg to the rinse keg and open the faucet to purge the beer lines and taps. This not only keeps beer from sitting in the lines outside the fridge, but it gives the lines and faucet an internal rinse and keeps them in contact with sanitizer between servings.

Bryce Gibson
San Diego, Calif.

GLOVES

Five bucks at Harbor Freight, these gloves save me \$20 in specialty lotions post-brew.

Jake Huolihan | Parker Hop-Aholics
Parker, Colo.



AUTOMATED CHILLER CLEANER

Cleaning my plate chiller proved to be labor intensive. To alleviate some of the cleaning pains, the auto-washer was born. Simply hook up the plate chiller to the auto-washer and hit go. It automatically backflushes and reverses flushing directions until turned off. It cleans itself while I'm cleaning everything else.

Mike Weisz
Muddy River Mashers
Bismarck, N.D.



CLEAN BEER



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PACKAGING & SERVING

KEG HOIST

My gadget is a swinging, sliding, block-and-tackle keg hoist for loading and unloading full kegs into a tall keezer. The height of my keezer made it difficult to lower full kegs in and lift full kegs out, but this block-and-tackle hoist provides mechanical advantage for handling the weight. You can purchase everything you need, except maybe the block and tackle, at Home Depot.

The hoist base that mounts to the wall studs and the frame for the wheel assembly is made of $\frac{3}{4}$ " plywood. The pipe is 1.5" galvanized rigid conduit. Floor flanges are used on the bottom of the pipe/hoist for a base swivel and at the end as a stop. The wheels are just replacement lawnmower wheels with the rubber cut off. Wheels are sandwiched between the triangular-shaped plywood with $\frac{1}{2}$ " bolts.

The pipe assembly attaches to the plywood base with pipe straps. Place some carpet or other material between the clamps and the pipe to smooth the swinging action and prevent metal-against-metal grinding. Kicking out the base of the pipe assembly from the wall causes the "horizontal" member to be slightly tilted toward the wall. This way, when you have a keg hooked up, the weight will counteract the tilt and be more level for wheeling the kegs over the top of the keezer. Some trial and error should be expected to get it balanced right.

Design and construction credits must be shared with my friend Ron Therrio, who provided the bulk of the brainpower in developing this system.

Michael Putt
Silverado, Calif.



FLEXIBLE JOCKEY BOX

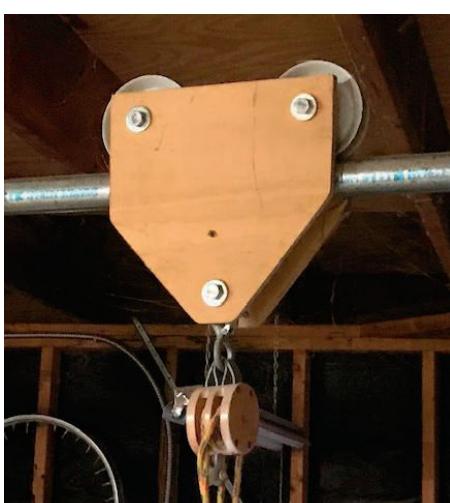
Our dual-tap serving cooler holds two 2.5-gallon kegs and a 1-gallon keg to supply the built-in glass rinser. External 5-gallon kegs can be used instead by placing cooling coils in the cooler to turn it into a jockey box. The "beer glasses" on top light up for evening events. A photo frame mounted to the front displays our menu and club info.

Peter Terzian
Brandon's Bootleggers
Brandon, Fla.

A BETTER REGULATOR KNOB

The knob on my regulator gets stiff and difficult to turn at higher pressures. Its shape also makes it very hard to grip. My friend with a 3D printer designed and printed a piece that fits the regulator perfectly, making it much easier to turn.

Bryan M
Lawrence Township, N.J.





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BOTTLE WASHING UNIT

I turned an ice chest into a bottle washing unit by connecting a garden hose to a bottle washer attachment with standard garden hose threads.

Gary West
Worthogs Brew Club
Albuquerque, N.M.



BRU2-D2

BRU2-D2 is a self-contained, two-tap mini keg cooler system. One keg is 2.5 gallons and the other is 1.75 gallons. Once carbonated and chilled in my kegerator, I transfer the kegs to the rolling cooler and pack it with ice for traveling. After reaching my vacation destination, party, competition, campsite, or whatever, I add the drip tray, tap the kegs, and keep the beer flowing with a mini CO₂ pump or a hand pump.

A removable tablet can be attached to the front of the cooler with rotating full-color labels for each beer to display names and stats for other beer geeks. There is also enough extra room in the cooler for a sixer of bottles or cans to provide beer for a variety of tastes while still leaving enough room inside to carry the drip tray and pumps while traveling, too.

Brad Caldwell
Pickens Homebrew Club
Pickens, S.C.



CUSTOM BOTTLE CARRIER

I have always been concerned that the cardboard boxes my empty bottles came in were not sturdy enough to use for bottles I have filled with homebrew, so I came up with a simple idea to create a heavy-duty bottle box. This sturdy container keeps bottles secure and protected from the light.

I started with a plastic box that would hold a dozen 22-ounce bomber bottles. I chose the Sterilite 7.5 Gallon/28 Liter Stackable Tote.

For the bottle separator, I took a length of 1"×12" board and cut it to 10" wide by 13.5" long. I then drew a grid on the board to locate the center points for the holes. Across the 10" width, I drew lines 1.75" from both edges and at 3.25" intervals in between. Across the 13.5" length, I drew lines 1.875" from both edges and at 3.25" intervals in between.

Using a 3" hole saw, I cut 12 holes in the board and then painted it white using paint left over from another project. I then friction fit the separator board in the tote box and filled it with a dozen bottles from my inventory.

John Ottarson
Pontiac Brewing Tribe
Lake Orion, Mich.





KEEZER DRIP TRAY

There are plenty of articles showing how to build a keezer collar, but very few address the problem of adding a drip tray. You dare not drill through the sides of your chest freezer to mount it for fear of piercing the copper pipe that weaves its way through the side of the freezer. I decided to try a stainless-steel tray with wooden angle supports mounted with strong two-sided tape. I added a threaded drain and PVC pipe to provide additional support.

I jacked up the keezer with two-by-fours to get the $\frac{1}{2}$ " PVC underneath it. Then I braced the pipe tight to the bottom of the freezer and added a grade for drainage efficiency.

John Wicks

Society of Akron Area Zymurgists (SAAZ)
Wooster, Ohio



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A. H. Lichname thor.
B. S. Elisabet Hospital
C. S. Jacobs thor.

Mullen. K. Hoche thor. N. Schwerke München. Q. S. Johannes.
Krina. L. Zeughäuse. O. Tuncker Schießgarten. R. S. Maria.
men Closter. M. Gefangen thurn. P. H. Geist Hospital. S. Recht Ste Rathaus.
T. K.
V. K.
X. K.



One of the most famous brewers in Gdańsk was Johann Hevelius (lat. Joannis Hevelius 1611-1687), who also happened to be a great astronomer of his time.



1. Artus Hof.
 2. Ma. Logament.
 3. Roggen Haus.
 4. S. Barbara Hospital.
 5. Gymnasium zur H. Dreifaltigkeit.
 6. S. Petrus.

7. Der Hagels Berg.
 8. Mühlau flüß.
 9. Weyzel flüß.
 10. Schottland Vorstadt.
 11. die Oß See.
 12. Neugarten Vorstadt. und Solzenberg.
 13. Bischofsberg.

Jopen Beer

By Filip Paprocki

IN THE OLD TOWN of the Polish city of Gdańsk, a street named Piwna leads from the Great Armory directly to the impressive Saint Mary's Church, one of the largest red brick churches in the world. Piwna means "beer street." But before the Second World War, when Gdańsk held the status of a free city (Freistadt Danzig in German), and German influences were very strong, the street was called what it had been for centuries: Jopengasse.

That is where our story of Jopen beer begins.



Jopengasse leading to Saint Mary's Church.

One could argue whether Jopen, pronounced “YO-pen,” was indeed a beer at all. It was undoubtedly a malt-based fermented beverage (mainly barley malt, but probably also wheat), but with an original gravity of 45 to 55°P (OG 1.180 to 1.220), it was not what you would call a session beer. Other sources say there were lower-gravity versions of around 19°P (OG 1.076), but this is still quite high for an ordinary beer.

Because of its high density and great nutritional value, Jopen was consumed in small portions and often treated more like a medicine than a beverage.

Today, many Polish brewers consider Jopen the Holy Grail of beer styles. It disappeared from everyday production in Gdańsk in 1918, just after the end of the First World War. Nobody alive today knows how it tasted, and very few written records about its ingredients and production still survive. It is more a myth than an ordinary beer style.

Unlike Grodziskie (Grätzer) beer, which is well documented thanks to the Polish Homebrewers Association, we can only guess if the Jopen we are making resembles the historical style or not.

THE MEANING OF JOPEN

Linguists have two hypotheses about where the name comes from. The first says that the word *Jopenbier* comes from *Schuffe* or *Schope*, a kind of wooden scoop in the form of a small barrel that was used in medieval Gdańsk breweries to transfer mash water. The same tool was used by members of brewer's guild to quench fires in the town. It is possible that the name *Schuffenbier* or *Schopenbier* later became *Jopenbier*.

The second and more probable theory claims that *Jopenbier* comes from the German word *Joppe*, which was a kind of tight, warm jacket worn by women in winter. As mentioned, *Jopenbier* was so strong

and nutritious, it was often consumed as a medicine to promote a feeling of warmth, so that might be the connection between clothing and beer.

A SHORT HISTORY OF THE STYLE

If you look at maps of what was once known as the Kingdom of Poland, you can see one long blue line coming from the mountains in the south to the Baltic Sea in the north. This is the Vistula, sometimes called “the queen” of Polish rivers. In the 15th century, when Jopen beer is first mentioned in historical records, there were no highways for transportation. Instead, people relied on river barges to transport goods. As a consequence, it was not uncommon to have major port cities spring up where a river met a large body of water. This was the case where the Vistula River emptied into the Baltic Sea at Gdańsk. Over the centuries, the city became famous for grain storage. Remains of its old granaries and grain warehouses can still be seen along the river banks.

In 15th-century Gdańsk, the grain trade's common unit of measurement was the *łaszt* (pronounced “washt”), with a volume equal to 3,282 modern liters. Because it was volumetric, the weight of one *łaszt* differed from another depending upon the type of grain. For example, a *łaszt* of wheat weighed 2,400 kg (5,280 lb.), but a *łaszt* of rye weighed 2,190 kg (4,818 lb.), and the same unit of barley weighed 1,780 kg (3,916 lb.). The largest Vistula barges, called *szkuta* (or “shkuta”), could carry up to 50 *łaszt* of grain.

Grain storage in the city of Gdańsk made it one of the largest brewing hubs in the Polish Kingdom, and even in this part of Europe. More than 300 breweries operated there at the beginning of the 15th century, although they were quite small compared to later industrial facilities, sized more like today's craft breweries.

Also, like modern craft brewing, guilds were an important part of the industry in Gdańsk: some for brewery owners, who were often the brewmasters as well, and some for maltsters. These two groups played key roles in Gdańsk's history over the centuries, and it was all possible because of the town's greatest export: Jopen beer. Jopen beer had a following in what is now Germany, Scandinavia, and England. Many even added it to other styles of beer to boost color, flavor, and strength. Some versions of Jopen had the consistency of a thick syrup that could be kept for a long time without any negative impact to its taste.

IT was believed that mold was only dangerous for beer when it came from the fermentation vessel; if introduced directly from the air, mold and wild yeast could instead produce flavors and aromas similar to those of Port wine.

One of the most famous brewers in Gdańsk was Johann Hevelcke (lat. Joannis Hevelius 1611–1687), who also happened to be a great astronomer of his time. Eventually inheriting several breweries, he became wealthy enough to step away from brewing and occupy himself with what he liked most: observing the moon, stars, and comets.

Gdańsk breweries produced around 30 different kinds of beer, which can be categorized into four main groups. Starting with the richest and noblest, they were Jopenbier, Danzigerbier, Tafelbier, and Krolling. The first three were made in the ordinary way, and the difference between them mainly came down to the amount of malt used, and consequently the amount of extract, calories, and alcohol. The fourth kind of beer, Krolling, was made by pouring additional hot water onto the spent grains of a previous

batch. It was therefore a very weak beverage, only consumed by those who couldn't afford the stronger beers.

JOPEN PRODUCTION

Jopenbier was known as a double beer, which in this case means it was brewed with twice as much malt as was used for standard beers such as Danziger. According to the few remaining recipes, one barrel of Jopen required 183 kg (403 lb.) of the highest-quality malt. After mashing, only the first wort was used, while the remaining grist was sparged to make beers of lower gravity. This parti-gyle technique of using one mash to create many beers of differing strengths was common in many of Europe's brewing centers.

The first wort was then reduced by lengthy boiling to achieve Jopen's incredibly

Ministra Zytopœia.
Faæla equa, Nympha, rotas trabo, rasa repugo,
Dat vires Cereris vis mihi coæla vadis.



Braver Magd.
Die Braver Magd so in gemein/
Mit lebren Tonnen rumpelein herein.
Die ledign Gfœß reinigun vnd spielein/
Ins Brauhaus bringen/ vnd wider fülln.

Servants with beer casks.

Brew
This!



PIWO JOPEJSKIE

This traditional but extreme jopen beer recipe is provided courtesy of Arek Wenta, founder and owner of AleBrowar, in the city of Lębork. It was one of Poland's first craft breweries.

The recipe calls for a 25-hour boil. That's right: 25 hours. You've been warned. Note that Lubelski hops also go by the names Lublin and Lubelska; Saaz is a good substitute if you can't get them. If you cannot source Lomik hops, Northern Brewer will work well. We haven't even attempted to calculate color or bitterness for this beast of a beer.

CAUTION! It is impossible to know what molds, yeasts, and bacteria will grow in spontaneously fermented wort. Consuming traditionally brewed jopen beer carries some element of risk. Proceed with caution.

Batch volume:	2.66 US gal. [10 L] – before trub losses
Original gravity:	1.205 (45°P)
Final gravity:	1.115–1.175 (27–39°P)
Alcohol:	4.5–12% by volume, depending on attenuation

MALTS

19.8 lb. [9 kg] Pilsner malt

HOPS

2.1 oz. [60 g] Lubelski, 4% a.a. @ start of boil, removed after 3 hours
0.9 oz. [25 g] Lomik, 4.6% a.a. @ start of boil, removed after 3 hours

BREWING NOTES

Mash for 10 minutes at 52°C [125°F], 60 minutes at 63°C [145°F], 20 minutes at 72°C [161°F], and then 5 minutes at 77°C [170°F]. Lauter and sparge to collect a pre-boil volume of about 9 gallons (34 L) of 15°P- [1.061 OG-] gravity wort.



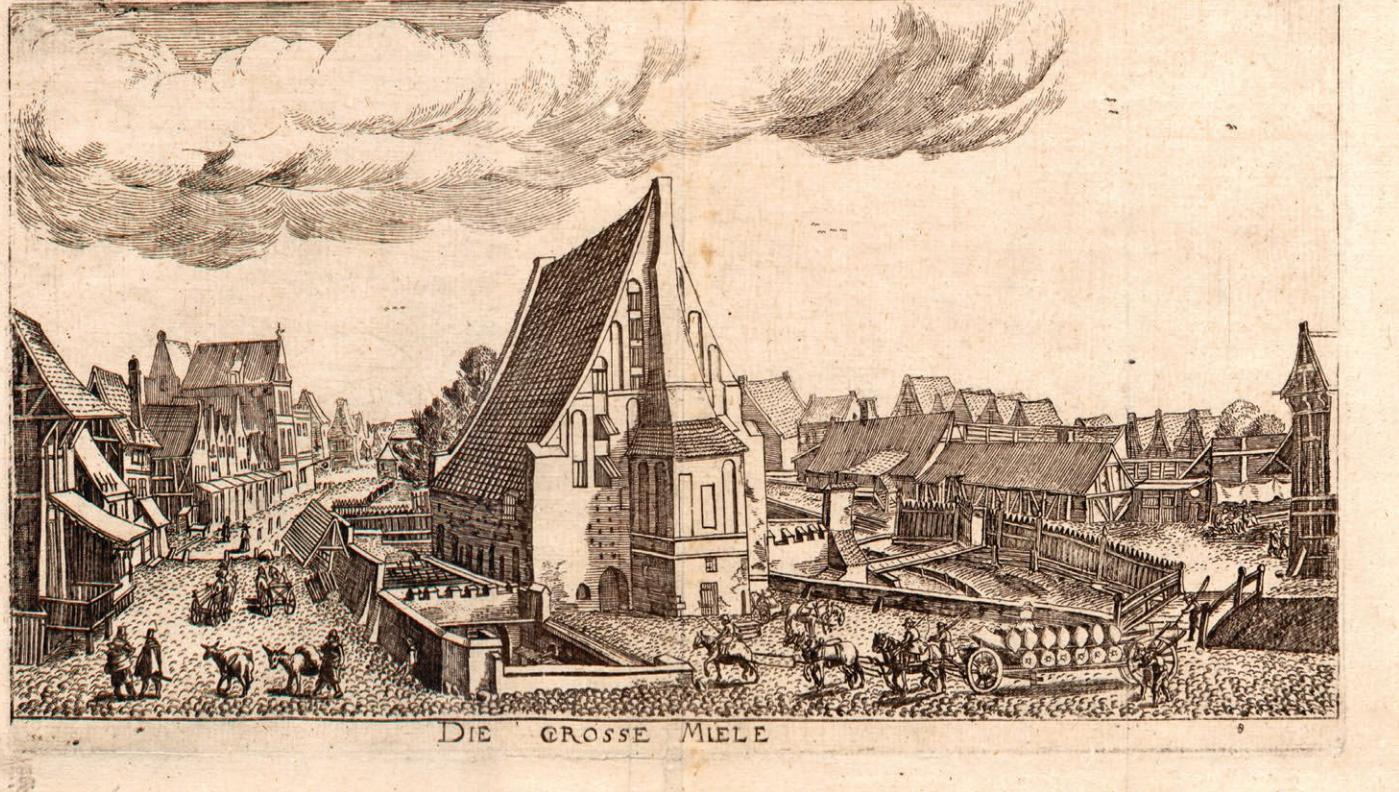
Mold covers the surface of spontaneously fermented Jopen beer.

Boil hops in a muslin bag in the wort for the first 3 hours, then remove them. Continue with boil, reducing wort to an OG of 1.205 (45°P). When you hit your target gravity, chill wort to 17°C (63°F) and rack to a fermenter.

Inoculate with your choice of mixed-fermentation yeast and bacteria, or go the traditional route and place the uncovered fermenter in the moldy cellar of an old house to spontaneously ferment. Take gravity readings monthly to monitor fermentation and package when specific gravity has stabilized.

EXTRACT VERSION

Substitute 15.2 lb. (6.89 kg) liquid Pilsner malt extract for the Pils malt. Dissolve extract thoroughly in reverse osmosis water and top up to desired boil volume. Boil time can be reduced to one hour for hop utilization.



DIE GROSSE MIELE

The Wielki Mlyn (Great Mill) of Gdansk.

Brew
This!



MODERN JOPEN BEER

This recipe is provided courtesy of Darek Czaja, a homebrewer from the region of Pomerania. The beer won first place at a homebrew competition in Krakow in 2017.

Magnum hops are a suitable substitute for the Magnat specified in the recipe.

Batch volume: 3.78 US gal. (14.3 L)

Original gravity: 1.205 (45°P)

MALTS

22 lb. (10 kg) Pilsner malt

4.4 lb. (2 kg) Munich malt

2.2 lb. (1 kg) Vienna malt

HOPS

5.28 oz. (150 g) Magnat 11.2% a.a. at start of boil

YEAST & BACTERIA

Fermentis SafAle US-05

Wyeast 3763 Roeselare Ale Blend

BREWING NOTES

Using a water-to-grist ratio of 3:1 by weight (10.3 gal./39 L), mash 60 minutes at 68°C (154°F) and then 10 minutes at 78°C (172°F). Lauter, sparge, and collect 60 L (15.9 gal.) of 12°P (1.048) wort.

Add hops in a muslin bag and boil 3 hours, then remove hops. Continue to boil until wort gravity has risen to 45°P (1.205).

Chill wort to 17°C (63°F) and rack to a fermenter. Pitch US-05 and ferment for one week. Add a slurry of Roeselare Ale Blend and allow to ferment and condition at 20°C (68°F) for 1 year.

EXTRACT VERSION

Substitute 16.75 lb. (7.6 kg) liquid pale malt extract for the pale malt, 3.25 lb. (1.47 kg) liquid Munich malt extract for the Munich malt, and 1.6 lb. (726 g) Vienna malt extract for the Vienna malt. Dissolve extract thoroughly in reverse osmosis water and top up to desired boil volume. Boil time can be reduced to one hour for hop utilization.

high starting gravities. Most sources claim the original extract of the beer was between 45 and 55°P, meaning the original gravity was 1.180 to 1.220. The concentrated wort was then poured into flat vessels resembling coolships, which aerated and cooled it. Exposure to the open air then started a spontaneous fermentation. It was believed that mold was only dangerous for beer when it came from the fermentation vessel; if introduced directly from the air, mold and wild yeast could instead produce flavors and aromas similar to those of Port wine.

After 15 to 30 hours of inoculation time, it was transferred to fermentation vessels where it developed a thick layer of mold on the surface, initially white, then becoming green after a few weeks. The mold layer was removed after some time to enable yeast fermentation. With such a high initial gravity, the beer foamed and frothed violently during fermentation. For that reason, Jopen fermenters were usually only filled halfway to minimize loss of the precious liquid. After two to three months of fermentation, the still-young beer was racked to small casks and left to mature for a year or longer. Egg whites or boiled isinglass were often added to these casks as finings.

Jopen was only brewed in the cool months from September to May. The main ingredient

was light malt, but keep in mind that the light malt of four to five centuries ago was considerably darker than what we have now. After such a long boil, the wort would have become dark brown, and because malt was kiln dried over a wood fire, we can guess Jopen must have had some smokiness.

Initial fermentation took place in wooden huts, the inside walls of which were covered with mold. During annual cleaning, one of the walls would be left uncleansed to maintain its capacity to inoculate. One theory suggests that Jopen was fermented in the same cellars where imported wines were kept, so that wort was "infected" naturally by wine yeast. It is also possible that wine was deliberately added to Jopen to speed fermentation.

A recipe for Jopen beer is described in the 1865 fundamental work of G.E. Habich, *Schule der Bierbrauerei* ("School of Brewing"):

From 1,000 kg of barley malt and 5 kg of hops, we can manufacture about 10.5 hL (1,050 liters) of beer. After an infusion mash, the wort is run off and boiled for more than 20 hours. It is then cooled down to 12.5°C (54.5°F).

The beer is made using spontaneous fermentation. Fermentation starts usually in July, however the process runs the same

way if beer is brewed in January or April. The young beer is soon covered with a thick, white-green mold. This mold, along with a very characteristic yeast, start a main fermentation which lasts until the end of September. The beer then becomes clear and may be poured out of the fermentation vessel. At this stage the beer gravity is around 19°Blg [degrees Balling].

The beer is dark brown, sweet, and very rich in taste. The smell is nice, which is probably a consequence of very slow fermentation. You cannot drink too much of this beer—it is very concentrated and complex in taste. It is, however, perfect to mix with other types of beer, which may explain why it's such a popular import for countries such as England.

The clarified beer may be left to mature in barrels for one year without losing its quality. Attenuation, of course, continues during that time.

JOPEN BEER TODAY

Since 2011, a beer revolution has swept across Poland, and it is still growing fast. It should come as no surprise that sooner or later, someone would take up the challenge and attempt to brew Jopen beer commercially.

The Olimp brewery did just that in 2018, and it caused a small scandal, because it is located in Toruń, a town south of Gdańsk on the banks of the Vistula river. Homebrewers and craft brewers alike in Gdańsk felt almost insulted: they could not stand the fact that their town's historic specialty beer was now being brewed somewhere else.

Fortunately, there were no lawsuits, and now in 2020, we can enjoy glasses of Jopen brewed in Gdańsk. Finally, our beer has returned home.

RESOURCES

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Filip Paprocki was born in Gdańsk, and it's still his home. An avid homebrewer, he is also founder and president of Fermentum Mobile, the first Polish company to manufacture liquid yeast for brewing. 



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PURE WATER

Reverse Osmosis Working for You

By Martin Brungard

In the first installment of this two-part article (“Pure Water: How Reverse Osmosis Works,” Jul/Aug 2019), we discussed the mechanics of the reverse osmosis (RO) process and the components of a typical residential RO system. This second installment will help you understand what to expect with RO system operation, what enhancements you might incorporate into your system, and how to maintain it.

What to Expect During RO Operation

RO systems do require some understanding of their operation. A new RO membrane should be flushed for at least an hour prior to using the product water. It takes a while for the membrane to become properly hydrated and for the ion rejection to reach its expected performance. The initial ion removal performance for an RO system may not be very good and it could take several days of operation for the removal performance to reach its peak. This is normal.

System Enhancements to Consider

There are certain things you can look for and do to enhance your RO system. Here are some common system enhancements and best practices to get the most out of your reverse osmosis experience.

Use Industry-Standard Equipment

Residential RO equipment has become widespread and reliable. Filters, membranes, and housings are largely standardized and in most cases interchangeable. That standardization helps keep equipment cost and replacement parts economical. Avoid RO systems that use special or proprietary equipment. They aren't any better and they are likely to be more costly in the long run. Look for a system that uses industry-standard 10- or 20-inch filter cartridges and the 1.8-inch diameter, 12-inch length ("1812" configuration) RO membrane cartridge. If you are on a municipal water supply, don't skimp on the size of the carbon filter in your RO system, since undersized carbon filters are more likely to let chlorine compounds through to your membrane. Compact or inline carbon filters should be avoided since they are likely to be undersized for the RO system flow.

Another normal aspect of RO system operation is that the raw water temperature affects both the quality and quantity of RO water produced. Cold raw water improves the RO water quality, but it reduces the RO water output from your system. Slow water production is a fact with residential RO systems. Even if you buy the highest capacity residential RO system available, it will still mean that you could be waiting hours to produce enough water for brewing. Plan ahead or incorporate a tank into your system to store your RO water. RO storage was covered in part one of this series.

If a carbon filter is included in a RO system, that filter should be flushed with water before placing it into the system to help remove fine carbon particles from the filter. Those particulates can clog or damage the membrane. If there is a second sediment filter downstream of the carbon filter, it will capture the particles and flushing the carbon filter is optional.

One important ion that will be almost entirely removed from RO product water is the essential yeast nutrient zinc. Zinc is often present at adequate levels in many raw water supplies, but it is depleted from RO water. Any brewer using a significant proportion of RO in their brewing should use a zinc supplement or yeast nutrient to help replenish that critical ion in their brewing water.

And speaking of ions, brewing beer with RO water can produce a better result than brewing with tap water if your tap water has too much ionic content. However, using RO or distilled water without adding some mineral content can leave your beers tasting bland. Tailoring your brewing water with modest levels of the major water ions (calcium, magnesium, sodium, sulfate, and chloride) can enhance the flavor of your beers. A brewing chemistry calculator such as Bru'n Water can assist in planning proper mineral and acid additions for brewing. Using RO water enables you to add only the ions that you actually want in your next brew.

Soften the Raw Water

If your raw water is very hard or has iron or manganese, using softened raw water can help reduce membrane fouling problems for your RO system. Ion-exchange softeners replace calcium, magnesium, iron, and manganese ions in your raw water with either sodium or potassium ions. Since sodium and potassium ions do not readily form mineral scale, softened water causes fewer problems and potentially provides longer life for RO membranes. Another advantage of using softened water for your RO system is that the system's wastewater flow can be substantially reduced and its water efficiency can be enhanced (see Waste Restrictor Revision below). However, there are also drawbacks to this pre-treatment. Softening does waste water and it will slightly increase the concentration of either sodium or potassium in your RO product water. Ion-exchange softening can be illegal in some places since it adds salt to the wastewater, making the wastewater less recyclable.

Auto-Shutoff Valve

If your RO system will remain connected to your raw water supply and your system uses some sort of vessel to store your product water, an auto-shutoff valve in the system prevents needlessly flushing water through the system into wastewater. That valve senses when the flow of product water has stopped (full tank) and turns off the raw water supply so that the membrane flushing flow also stops. While an auto-shutoff valve is not a requirement, they are typically included in many vendors' systems.

Pressure Gauges

Monitoring the water pressure on the inlet and outlet sides of the sediment and carbon filter assembly is the best way to assess when sediment filters have become clogged and need replacement. Adding pressure gauges (Figure 1) on the inlet and outlet piping allows you to monitor the pressure drop through your filters. Figure 2 shows where those gauges should be placed. For the typical residential RO system, installing gauges is easy:

1. Turn off water supply.
2. Cut water tubing at appropriate locations.
3. Insert tubing into push-fit fittings.
4. Turn on water supply.

With new filters, the pressure drop through the filters is likely to be a few pounds per square inch (psi) or tenths of a bar. When the pressure difference between the gauge readings increases into the 10 to 20 psi range, you can make the informed decision that it's time to replace filters. For typical municipal water supplies, the water has little sediment

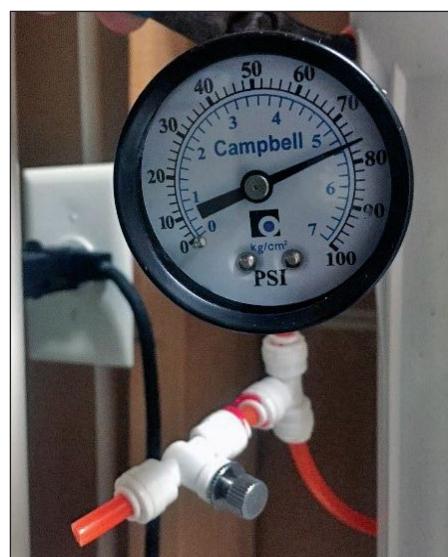


Figure 1:
Pressure gauge and sample tap.

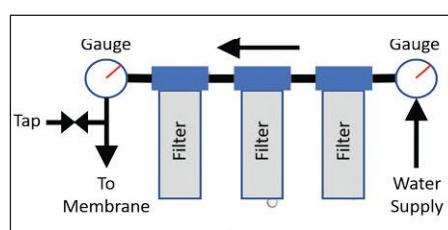


Figure 2: Gauge configuration.

Table 1: Waste restrictor pairings.

RO Membrane Capacity (gal./day)	Typical System Waste Restrictor Flow Rates (mL/min)	Waste Restrictor Flow Rates for Good Raw Water (mL/min)
25	250	200
50	500	350
75	750	500
100	1000	650



Figure 3: Typical waste flow restrictor.

and it could easily take years before filters need replacement. Replacing sediment filters at regular time or volume intervals is unnecessary and more costly. Replace filters only when the pressure drop is high.

Sample Tap

Including a water sample tap on the outlet side of your carbon filter (Figure 1) lets you periodically sample the water and test it for total chlorine content (see below). As long as the total chlorine content in that filtered water sample is zero, there is no need to replace an activated carbon filter. Premature carbon filter replacement costs you money.

Auto Flushing

If your water supply is very hard and your membrane clogs quickly, incorporating an auto-flush valve on the system's waste line can help prolong membrane life by periodically performing a high-flow flush across the raw water side of the membrane. Normal RO system operation creates a buildup of ion concentrations that can cause membrane scaling and clogging if they are too high. Auto flush valves are typically operated by an electronic timer that regularly triggers the flush to reduce the ion concentration in the waste side of the membrane. Most people don't have water hard enough to require this enhancement, but auto flushing can help extend membrane life for those who do. Auto-flushing does waste more water.

Waste Restrictor Revision

Typical residential RO systems are configured to waste a certain percentage of the total raw water inflow in order to keep the membrane from fouling with mineral deposits (scaling). That waste percentage is typically set fairly high since the system supplier wants to avoid



Figure 4:
Total dissolved solids (TDS) meters.

membrane fouling with almost anyone's water. If your raw water isn't very hard or has been pre-treated by ion-exchange softening, then it is possible to reduce the waste percentage by replacing the flow restrictor on the wastewater discharge pipe (see Figure 3). The typical restrictor flow rates paired with various residential membrane capacities are shown in Table 1. Raw water that has less than about 30 mg/L calcium and silica can be considered to be "good" raw water and using a waste restrictor with a lower flow rate can improve your water use efficiency without fouling your membrane. Suggested restrictor rates for good water are also shown in Table 1.

Total Dissolved Solids Monitoring

Monitoring total dissolved solids (TDS) in your RO product water is the best way to assess if the system is performing well. Regular monitoring will alert you when your membrane is not removing TDS as well as it should. TDS meters are very simple electronic instruments that should last a long time, and they generally require no maintenance or calibration. A handheld unit can be used to spot check RO water samples, or an inline unit can be used to check TDS without collecting samples. Examples of TDS meters are shown in Figure 4. In any case, TDS meters are relatively inexpensive and should be a tool that all RO users employ.

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by Lesaffre

Soaking a Reverse Osmosis Membrane

To soak a cartridge, remove it from the RO housing and place the cartridge in a cylindrical container such as a tall vase or glass that is sufficiently tall and wide to allow the cartridge to be fully submerged. Non-metallic containers are recommended. A piece of PVC pipe with an end cap could also be used as a container.

Mineral Scale Removal

Soak the cartridge in an acid solution for at least a couple of hours to help dissolve calcium carbonate scale and iron buildup. A good acid solution for homebrewers is citric acid in distilled water since citric acid is typically available from homebrew shops. Add 20 grams of solid citric acid to each liter of distilled water. This solution is a hazardous substance, so use protective eyewear, gloves, and clothing. Place the cartridge vertically in the container so that the end with exposed spirals is up. Fill the container with the solution to fully submerge the cartridge. If significant bubbling occurs, that is evidence that calcium carbonate is present on the membrane. When bubbling stops, replace the acid solution and soak again. Rinse the cartridge with tap water after the acid soak and before reinstalling in the RO membrane housing.

Organic and Biologic Removal

Soak the cartridge in a strong lye solution for at least 8 hours. Add 1 gram of lye

crystals (sodium hydroxide) per liter of water to produce a solution with a pH of 12 to 13. This is a very hazardous solution and protective eyewear, gloves, and clothing are required. Use great care! Place the cartridge in the container as described above and soak. Rinse cartridge with tap water before reinstalling in the housing.

Membrane Preservation and Sanitation

If you disconnect your RO system from your tap water supply for long periods, it may be helpful to remove the RO cartridge and preserve it. Use a sodium metabisulfite solution as the preservative. Don't use any solutions that contain chlorine, chlorine dioxide, iodine, or iodophor to sanitize the membrane, as these will destroy the RO membrane. Add 10 grams of sodium metabisulfite powder to each liter of distilled water. Soak the cartridge in the solution as described above and observe that most of the air has bubbled out. Store the cartridge in a sealed plastic container along with some of the solution. The solution does have a short life, but it helps sanitize the membrane prior to storage.

Membrane Rewetting

If a RO membrane has somehow dried out and you want to rehydrate the cartridge to use again, use a solution of half pure ethanol and half water (no, you can't use beer), and soak the cartridge for at least 15 minutes as described above. Rinse the cartridge with tap water prior to reinstalling in the housing.

Maintenance

Owners should expect that occasional system maintenance will be required to keep their RO system operating. There are several maintenance aspects that RO owners should be aware of.

Housings

Typical residential RO units use plastic housings for filters and membranes. Don't overtighten the threaded housings or they could break. Use silicone grease on the threads and O-rings of housings to help them seal without overtightening. Silicone grease (aka keg lube) can be obtained at homebrew shops and hardware stores.

Don't keep your RO system in an area subject to freezing weather or the water-

filled housings could freeze and break. Bring the system indoors or drain it completely in freezing weather.

RO Membrane Maintenance

Mineral scale, biologic growth, and organic compounds can plug up RO membranes and reduce their output and efficiency. If the membrane is still producing water with low TDS, but not much of it, cleaning the membrane could extend its life. While cleaning may not be as easy as replacing an underperforming RO membrane cartridge, these are simple and inexpensive techniques for membrane cleaning and revitalization. If the TDS of the product water is significantly higher than what it was when the cartridge was new, cartridge replacement is the only alternative.

For most residential RO systems, recirculating cleaning chemicals through the RO cartridge is not feasible. For that reason, soaking the cartridge is a better alternative. See the sidebar "Soaking a Reverse Osmosis Membrane" for details on how to do this. Residential cartridges don't normally expose the RO membrane, but if yours does, remember that you should never touch the membrane itself—only handle the plastic inlet and outlet parts.

After any of these treatments, be sure to allow your system to run for at least an hour and waste the output in order to flush treatment solutions out of the system. These treatments can help extend the life of your membrane when you find that its output flow falls significantly below its original performance. RO membranes do have a finite life, and you can generally expect that a membrane should last between two and five years.

If you find that your system output decreases significantly before reaching that age range, it may be a sign that a waste restrictor with a higher flow rate is needed. While higher waste flow rate does mean that your system will have lower efficiency, it could extend the membrane life.

Waste Restrictor Maintenance

The high TDS wastewater leaving the membrane unit can sometimes clog the waste flow restrictor orifice in the RO system. If your membrane has clogged or clogs prematurely, the waste restrictor may need replacement or cleaning. To clean, remove the waste restrictor from the system tubing and soak the restrictor for several hours in an acidic drain cleaner or lime scale cleaner to restore the restrictor's rated flow capability. If the restrictor clogs in the future, it is an indication that a restrictor with a higher flow rate is needed. Replace the flow restrictor after cleaning.

Sediment Filter Monitoring

By equipping your system with pressure gauges on the upstream and downstream sides of your filters, you can assess when the sediment filters actually require replacement. While clogged sediment filters could reduce RO system output, a more likely cause of reduced system output is a clogged membrane. Rely on pressure gauge readings to guide sediment filter replacement.

Carbon Filter Monitoring

Carbon filters are only needed if you receive water from a public water supply. Public water supplies are typically disinfected with chlorine compounds. Keeping chlorine compounds away from your RO membrane and out of your brewing water is one of the most important aspects of RO system operation.

The typical recommendation is to replace a system's carbon cartridges on a regular time or water volume basis. Because the flow rate through a residential RO system is low, a carbon filter can actually last significantly longer than the few thousand gallons that most manufacturers quote. Regular replacement is not necessary when you know how to sample and test your filtered raw water for chlorine compounds.

The typical raw water flow through a residential RO system is fairly low and standard 2.5-inch by 10-inch carbon filter units can readily remove chlorine from the water. Water supplies with chloramines make removal more challenging, but multiple or larger carbon filter units can help assure chloramine removal.

A sample tap (Figure 1) after the carbon filter allows you to collect a water sample and test it to find out if the carbon filter is removing all chlorine compounds or if it is undersized or needs replacement. Collecting a test sample is easy. Open the sample tap and *slowly* collect a sample large enough for testing. Do not open the tap too much to draw off a sample quickly since that can overwhelm the carbon filter and draw chlorine compounds through it.

Testing is inexpensive and quick. A typical swimming pool test kit for *total* chlorine content can determine if your filter is removing *all* chlorine compounds. Inexpensive pool test kits often use an indicator chemical called orthotolidine, or OTO. While OTO is not the most modern of testing methods, it is well-suited for our use. Use a swimming pool test kit that uses liquid OTO solution. *Do not* use chlorine test strips: they degrade more quickly and poorly measure the very low (zero) chlorine concentrations that we are looking for. A couple of notes on OTO solution: OTO is believed to be a possible carcinogen (*so don't drink it*) and the solution

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degrades over time and should be replaced every few years.



Figure 5: Swimming pool test kit.

Pool test kits (Figure 5) come with a clear vial with colored (yellow) panels that help you estimate total chlorine content in a water sample. (*Many pool test kits also come with a pH test indicator. Ignore it since it's not suited for brewing.*) The first step is to perform the test on a sample directly from your unfiltered sink faucet. Drops of OTO are added to the water sample in the vial as directed by the test kit instructions and the tap water color should typically show at least 0.5 mg/L (ppm) of total chlorine content. This test helps prove that your OTO solution is still viable and working. If the unfiltered water does not report any chlorine content, it may be time to replace your OTO solution.

Rinse that sample out of the vial using RO water and collect a sample from the sample tap downstream of the system's carbon filter. Add the required number of OTO drops and the sample should be clear. If it is clear, add a few more drops of OTO solution to the vial to account for a weak OTO solution. If it is still clear, your carbon filter is still performing as intended. Any increase in yellow color in your test sample indicates that chlorine compounds are making it through your carbon filter and that filter needs immediate replacement. Don't panic if there is some chlorine after the carbon filter since RO membranes can tolerate low levels for a short time. Do replace the carbon filter as soon as possible.

If your sample testing shows that chlorine compounds are making it through a new carbon filter unit after a few days of operation, it is likely that the carbon filter unit is too small and additional or larger carbon filter units are needed.

Water Quality Monitoring

The purity of the water produced by a RO system is the most important criterion for monitoring. Testing RO water for TDS is a rapid and reliable method for assessing purity. While a TDS meter is not a preci-

sion instrument, it is adequate to show how your RO water quality varies over time. Regularly check the TDS of your RO water and note what the TDS content typically is. Seasonal variation in the water supply and water temperature can cause the TDS value to vary. If you measure a consistent and significant increase in TDS content (say, more than, 25 ppm), it may be time to replace the membrane.

Better Brewing Water

Now you know how RO works and how you can make it work better for you. Using the advice from this and the previous article, you can select and maintain the system and components you need to produce high-quality brewing water. Remember that water makes up at least 95 percent of your beer, and pure water can enable you to make better beer.

Martin Brungard is a civil and environmental engineer who has provided water and wastewater consulting services to municipal and industrial clients for over 30 years. He brews in his basement brewery using reverse osmosis water to craft great beer. He is the author of Bru'n Water software and the Bru'n Water website for brewing water knowledge.



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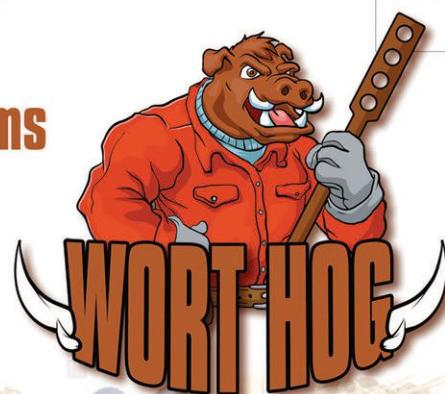
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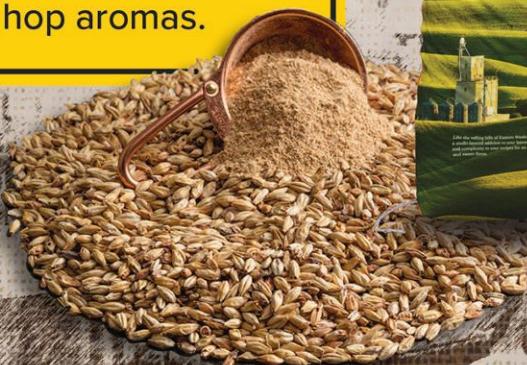


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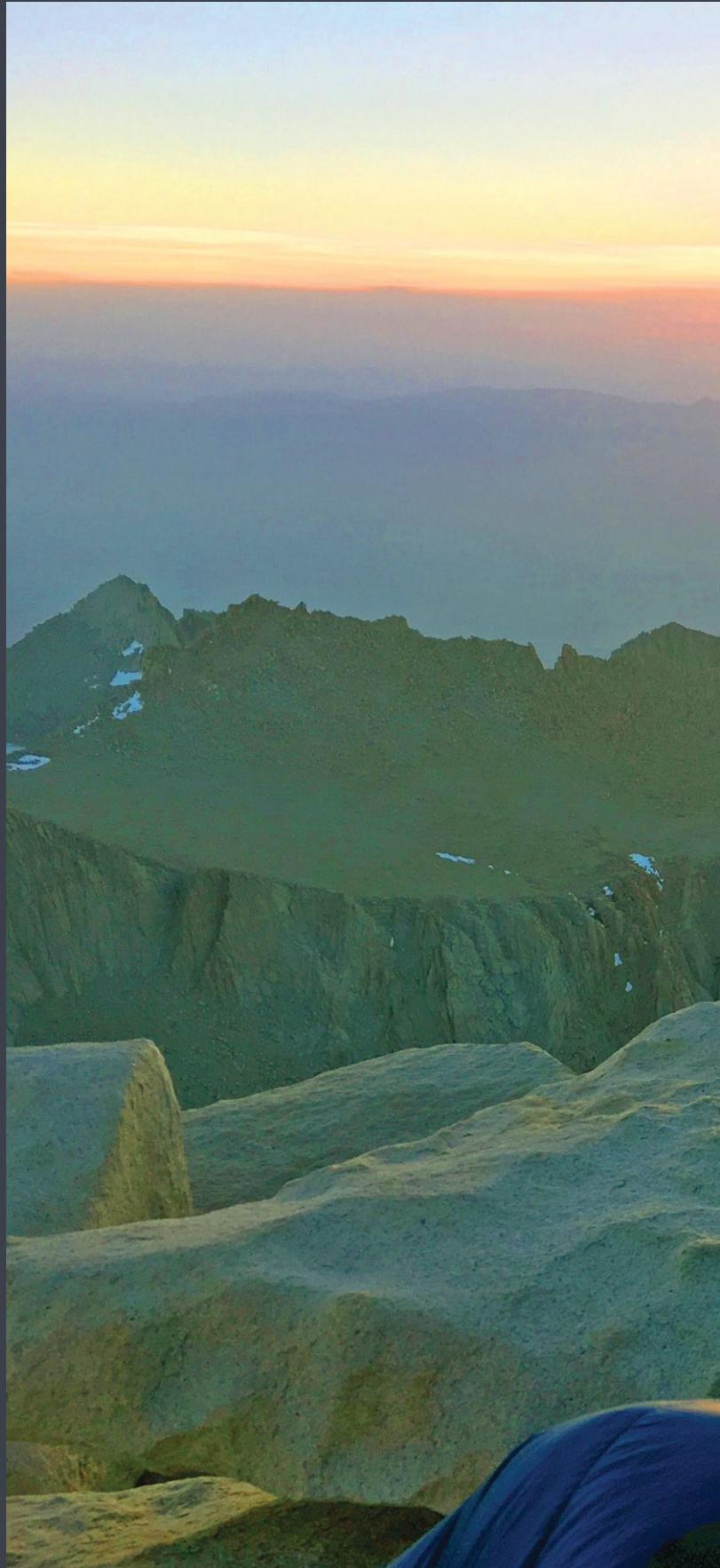
In the summer of 2015, brewer Matt Leef found himself at a crossroads.

Leef had enrolled in Oregon State University's Fermentation Science program three years earlier and was well on his way to industry success, having interned for Flat Tail Brewing in Corvallis, Ore., and later working in Boston Beer Company's research and development facility.

He was happy, but something was missing. "For years, I'd had a hankering to go hiking and hike a really long trail," he says. "It was really hard for me to compartmentalize the idea of moving away from brewing and moving into hiking only, so I struggled with that for a while: Do I even want to go hiking if I can't brew at the same time?"

That's when it hit him: "Why don't I just bring it with me?"

When Leef set out on the Pacific Crest Trail (PCT) the following year, he toted along a DIY brew kit, cobbled together mostly from backpacking equipment, and would go on to brew 25 pint-sized "batches" while hiking 1,700 miles (2,700 km) of the world-famous footpath that spring and summer. Leef crafted most of those beers with ingredients he found along the way, from sagebrush needles in the Mojave Desert to pine needles and huckleberries in Oregon and Washington.





YOUR GUIDE
TO CREATING
AWESOME ALES
IN THE GREAT
OUTDOORS

By Matt Wastradowski



Matt Leef's trail-made beers on Mount Whitney.



Left: Aric Attebery poses with one of his backcountry brews along the Pacific Crest Trail; Right: Matt Leef brews a beer with a pine cone.

That year, he inspired his friend and former boss, Dave Marliave, brewmaster and co-owner at Flat Tail Brewing, to try something similar while Marliave took a dirt bike trip through the Oregon backcountry. And the following summer, Leef met chef and homebrewer Aric Attebery, encouraging him to try trail brewing as well. “I had that moment of having my mind blown,” Attebery says of their first conversation. “It just kind of stuck with me.”

Attebery started brewing while hiking the PCT in 2019 and has since brewed more than a dozen one-pint batches himself. Doing so didn’t just yield a crisp, refreshing beer; it joined him to a long lineage of resourceful brewers. “I like the connection with brewing history,” he says. “You’re getting back to the basics, the heart and the history of brewing. You’re using everything around you.”

But one doesn’t need to hop on a dirt bike or hike thousands of miles to start brewing in the wild. Indeed, aspiring homebrewers can practice their passion on something as low-key as a day hike or weekend camping trip.

So, if you’d like to work Mother Nature’s rich pantry into your next batch, here—in seven easy steps—is how to brew great-tasting beer in the great outdoors.

» STEP 1: GRAB THE RIGHT GEAR

Brewing in the backwoods doesn’t take a sizeable financial investment. Marliave has foraged for wild ingredients and, in 2016,

YOU'RE USING
SODA BOTTLES
AND BACKPACKING
EQUIPMENT THAT
YOU PROBABLY
ALREADY HAVE.

ARIC ATTEBERY

brewed beer on a backcountry dirt bike trip through the Cascade Range in southern Oregon. He says that DIY ethos adds to the appeal: “One of the attractive parts of this type of brewing is that you don’t have a \$500 brew kit,” he says. “You’re using soda bottles and backpacking equipment that you probably already have.”

No, he’s not exaggerating for effect.

Leef started brewing on the trail while hiking the Pacific Crest Trail in 2016—earning the trail name Brew Hiker in the process—and ferments his ales in a one-liter sparkling water bottle.

The equipment doesn’t get much more complicated from there. Here’s a suggested packing list.

Brew kettle: Leef and Attebery both use a basic backpacking cook pot, which holds up to 750mL of water—just enough to brew a pint—and is fueled by a gas-powered canister stove.

Water treatment tools: Filter your water to remove sediment. Because the water will be boiled, chemical water purification products such as chlorine drops or iodine aren’t necessary.

Fermentation bottle: Leef and Attebery both rely on a 1-liter sparkling water bottle for fermenting their beers. Plastic works well, since it can be reused and expands as the beer ferments and pressure builds. Attebery, in particular, singles out Smartwater bottles, which he says withstand more pressure and last longer than comparable bottles.

Steep sack: This one’s optional, but Attebery uses a small nylon mesh bag—many cook pots come with such a bag—for steeping hops, extra grain, spices, herbs, or other ingredients.

Aluminum foil or Mylar foam: Consider something to shield your beer from light pollution. Leef wraps his water bottle in aluminum foil, while Attebery created an insulated beverage holder from a converted Mylar foam bag.

Beer ingredients: Bring along packs of your preferred yeast strain (more on this later), along with hop pellets (should you so choose) and dry malt extract. And if you won’t be around a water source, don’t forget to pack at least one liter of water.

»» STEP 2: KNOW YOUR YEAST

You won't get very far without the right yeast strain. "If you want to brew out in the middle of nowhere, you just need to know a few small steps," Leef says. "And it's really not that hard, as long as you choose the right yeast."

He suggests finding a yeast strain that holds up in wild temperature swings, which can be common in deserts and other wide-open environments. Even as daytime temperatures in the Mojave Desert or along the Continental Divide National Scenic Trail might reach the 80s or 90s Fahrenheit (upper 20s Celsius), it's not unusual for nighttime lows to reach the 30s and 40s °F (single digits °C). He started with a Belgian strain—White Labs WLP644 *Saccharomyces "bruxellensis"* Trois—and says it continues producing alcohol even as nighttime temperatures hover near freezing.

Similarly, Attebery opts for a saison yeast strain for most batches, since it has a high heat tolerance and can adapt to a large spectrum of temperature swings. "You have to be prepared; you're going to have strong phenols and esters, so the yeast is going to be pretty expressive if you're in an area like that," he says. Lallemand Nottingham also works well in a wide range of temperatures.

Matt Leef enjoys a trail-brewed beer at the northern terminus of the Pacific Crest Trail.





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Far left: Aric Atteberry brews with a small pot and plastic water bottles along the trail; Left: Aric Atteberry holds up a beer brewed along the Pacific Crest Trail; Right: Matt Leef.

»» STEP 3: DON'T FORGET TO SANITIZE

It's hard to keep clean in the great outdoors—but sanitization is of the utmost importance. Get any dirt and grime out of your cook pot before boiling, clean your water bottle with chlorine drops or another water purification tool (at least before your first batch), consider picking your ingredients with plastic gloves, and don't forget to wash your hands.

Once you've run a batch through your water bottle, though, sanitizing the bottle becomes less important on subsequent beers. If it hasn't been too long since your last brew using a particular bottle, that yeast culture is likely still kicking—and, as Leef puts it, "I just assume that the yeast is going to be strong enough to overpower anything else that's trying to live in the culture."

»» STEP 4: FIND YOUR INGREDIENTS

Different climates produce different ingredients, and that influences the kinds of beer you can brew in a given region.

Along the Pacific Crest Trail, Leef and Atteberry altered successive batches to reflect the changing scenery. Early on, both used sagebrush, abundant in the Mojave Desert, as an aromatic and bittering agent before switching to pine needles in Oregon. (Leef even brewed a couple beers with tree bark in the Beaver State.) And while on his dirt bike trip in 2016, Marlave also used fir needles in lieu of hops.

Further north, Leef and Atteberry brewed with huckleberries and blueberries

YOU JUST HAVE THIS ONE LITTLE BOTTLE, AND IT'S SUCKING UP ALL THIS HEAT WHILE YOU'RE HIKING, AND IT FERMENTS PRETTY FAST.

ARIC ATTEBERY

growing alongside the trail. Atteberry says the berry notes get lost amid the saison yeast's expressive character—but Leef, using his Belgian yeast strain, wound up with a wine-like beverage that hit the spot. "It was one of the best things I've ever tasted," he says.

And before you start indiscriminately picking berries or other plants, Marlave warns to make sure you know what you're picking: "If you're going to be out in the woods, harvesting natural wild ingredients, you need a certain base level of knowledge about those ingredients," he says. "There are a lot of things that look edible but

aren't—and fermenting that isn't going to make it not poisonous."

»» STEP 5: TIME TO BREW

Once you've assembled your ingredients and have sanitized your equipment, it's finally time to brew.

First things first: Bring your water to a boil in the cook pot. Once boiling, stir in a little dry malt extract—Leef and Atteberry use about four ounces per one-pint batch (240 g/L)—and bring the water back to a boil, just long enough to dissolve the extract.

At this point, add your bittering agent. Leef and Atteberry both recommend pine needles, pine cones, sagebrush, or juniper branches. Occasionally, Atteberry tosses in five or six hop pellets—or 0.05 ounces (1–2 g) of whole leaf hops, if available—when not using trail ingredients.

After boiling, Leef and Atteberry recommend cooling your wort, still in the pot—ideally, in a nearby stream or snowdrift.

While the pot cools, add a pinch of yeast to your water bottle (assuming this is your first batch with a specific bottle—or if you haven't used that bottle in a while). Once the wort has cooled completely, pour it into the water bottle—though only until the bottle is about three-quarters full.

As they fill the water bottle, Leef and Atteberry occasionally experiment with different additives; Atteberry sometimes adds a dollop of honey for a higher alcohol content, while Leef occasionally adds pine needles or sage leaves for a more flavorful beer.

And this is where the fun begins.



STEP 6: FIGURE OUT FERMENTATION

Immediately after filling the water bottle, Attebery puts the screw-top cap on (loosely, to allow for air flow) and shakes the bottle to oxygenate the wort. And here, both hikers recommend removing the cap, letting the foam settle, squeezing the bottle so the wort rises to just below the spout—and screwing the cap on for good, tightly this time. This gives the bottle room to expand over the ensuing days as carbon dioxide develops.

At this stage, the hikers recommend keeping an eye on the bottle. As it expands—quickly on brew day, a bit more slowly over subsequent days—open the cap to let some of the gas out (Attebery calls this “burping”) and tighten the cap again as the bottle reverts to its previous shape.

Attebery and Leef “burp” their beer every day for about four or five days, at which point they stop altogether, allowing residual fermentation to naturally carbonate the beer.

While the beer ferments, both hikers try to shield the bottle from sunlight—Leef with his aluminum foil, Attebery with the Mylar foam bag he created for the purpose.

Back home, homebrews might take up to a month for primary fermentation, then another week or two for carbonation and bottle conditioning—but the process is much faster on the trail. “You just have this one little bottle, and it’s sucking up all this heat while you’re hiking,” Attebery says. “And it ferments pretty fast.”

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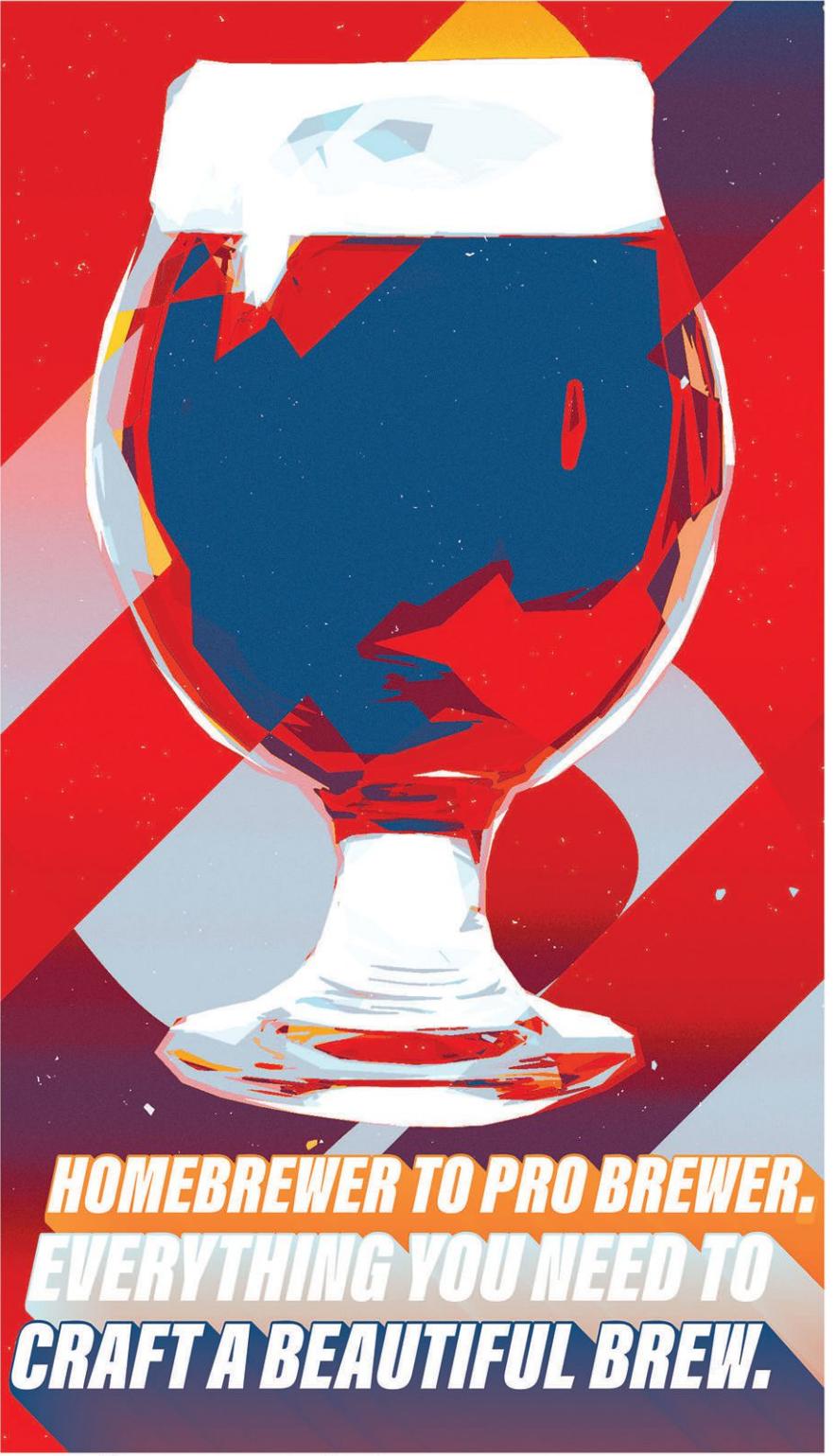
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CORRECTLY, IT'S
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ARIC ATTEBERY

Roughly a week after brewing, the beer is ready for consumption. Just be sure to chill the bottle before opening; doing so helps strike the right balance between pressure, carbonation, and temperature. "If there's too much pressure in the bottle, or if the bottle's too warm before you open it, it's going to foam up like crazy," Attebery says.

For a more refined beer—cleaner and a little less hazy—Leef recommends setting the bottle upright one evening near the end of fermentation. The following morning, once the yeast and other particulates have settled near the bottom, decant the fermented beer into a second bottle—and cap that new bottle off, letting the fermentation and carbonation process play out over another day or two.

» STEP 7: ENJOY

Leef and Attebery have brewed roughly 50 trail beers between the two of them (and counting). And while the DIY process of backcountry brewing might seem a little haphazard, both agree the results bear out their unconventional methods.

"They almost all tasted really good," Leef says of his beers. "The sage I used was really my favorite; it paired well with the other flavors that the yeast produced."

Attebery echoes the sentiment. "It's pretty much the freshest beer you're ever going to drink," he says. "If you do it correctly, it's kind of an expression of your journey that you're drinking. And, to me, that connection—and getting to the roots of brewing—is simple, easy, and so much fun."

Matt Wastradowski is a travel and outdoors writer based in Portland, Ore. He has written about beer, outdoor adventure, and travel for numerous outlets, including Outside, Northwest Travel & Life, and the REI Co-op Journal. He is a co-author of the upcoming 2020 edition of Moon Pacific Northwest Hiking, which highlights the region's best, most beautiful hiking trails. Connect with Matt at wastro.net.

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When Pros Clone Homebrew

By Kristen Kuchar



Winning Recipes from the 2019 Great American Beer Festival® Pro-Am Competition

Of all the medals that were presented at the 2019 Great American Beer Festival (GABF), none quite compare to those awarded in the Pro-Am Competition. This unique event pairs a professional brewer with a member of the American Homebrewers Association who has previously won an award in an AHA/BJCP-sanctioned competition.

For most of the 113 entries in this year's Pro-Am, the experience is about more than the medal. It's a highly sought-after experience for

a homebrewer to brew on a commercial system and to collaborate with a professional, as well as to receive feedback, learn, and grow. "It makes you a better brewer," says Erich Purcell, this year's GABF Pro-Am Silver winner.

But it isn't just a win for the homebrewers. Each of the three pro brewers who took home awards this year got their own start with homebrewing. The Pro-Am offers professionals a chance to



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reconnect with their amateur brewing roots and continue supporting the homebrew community, which in turn continues to support the entire craft beer industry.

"I think maintaining that connection to the homebrew community is super important," says Ross Koenigs, research and development brewer at New Belgium, who brewed this year's Silver Medal beer. "It helps us stay grounded and connected to where we come from."

All the brewers who took home medals in this category, amateur and

pro alike, sing the praises of the amazing experience that is the Pro-Am and are nothing but appreciative of all they've gained.

Kristen Kuchar is a Colorado-based writer and editor covering craft beer. She has contributed to CraftBeer.com, Beer Connoisseur, Beer Advocate, Brewing News, and many other publications.



Gold Medal

Distemper

IMBIB Custom Brews with AHA Member Lance Newlin

When homebrewer **Lance Newlin** bought a whiskey barrel three years ago to start aging his homemade creations, he didn't dream it would result in the top prize at the 2019 GABF Pro-Am.

"I knew it was a good beer when I brewed it originally, but I didn't know it was good enough to win gold at the Great American Beer Festival," Newlin says. He describes his beer, brewed with the IMBIB brew crew, as something that appeals to a lot of different beer drinkers' palates. "It's a sour beer, but it's definitely not too tart," he says. "The blonde aspect makes it lighter in body than a dark barrel-aged beer."

Homebrewing was a natural for Newlin, who always liked beer and has a degree in forensic science. "I enjoy the creative part of it and coming up with recipes, but also the technical part of it, too," he said. He'd been participating in competitions for the last several years and says it made sense to give this one a try. He decided to age an award-winning Belgian-style blonde ale in red wine barrels for about a year and then bottle condition it for four months.

The Pro-Am Competition is a great opportunity for homebrewers, Newlin says, and he had an amazing experience brewing with IMBIB brewmaster Jason Green. "The key was replicating the culture in the barrel," Newlin says. "The commercially brewed beer is almost indistinguishable from the homebrew," he adds.

Matt Johnson, IMBIB jack of all trades, describes the beer as similar to a blonde Flanders ale. "It has all these cherry, fruity characters in the aroma and flavor with hints of red wine with a nice sharpness," Johnson says. Newlin's beer was chosen from 80 entries IMBIB had at their Battle for the Pro-Am Competition, which included only Belgian-style and sour beers. "We did the battle last year knowing that some of the beers entered would need long-term aging," Johnson explains. Johnson said working with Newlin was an incredibly positive experience. "Lance is a phenomenal brewer," he said.

Newlin, as well, had a fantastic time and thought the creative aspect was exciting. "It was fun to create this beer because it is so different than any other beer out there," he said. The entire Pro-Am experience in general was a great one, and he wholeheartedly encourages other homebrew enthusiasts to go for it. "There's no downside to participating," he says. "If you don't win the local competition, at least you get good feedback and an opportunity to improve."

And of course, winning the gold medal isn't too shabby either. Both Newlin and Johnson were in shock when the award



was announced. "You never expect to win," Johnson says. He adds that people were excited to have a chance to try the beer firsthand, which was available at the festival. "A few judges came up and said [the Pro-Am] is a legit [competition], and you should really be very proud," he says.



Distemper

Lance Newlin, 2019 GABF Pro-Am Competition,
with Jason Green, Matt Johnson, and the rest of the IMBIB brew crew.

Batch volume: 5.5 US gal. (20.8 L)

Original gravity: 1.064 (15.8°P)

Final gravity: 1.014 (3.5°P)
after initial fermentation

Final gravity: 1.005 (1.8°P) after barrel aging

Bitterness: 13 IBU

Alcohol: 7.7% by volume

MALTS

9.39 lb. (4.26 kg) Weyermann Pilsner malt
2.46 lb. (1.12 kg) Weyermann 10°L Munich malt
9.9 oz. (281 g) aromatic malt
6.5 oz. (184 g) table sugar, plus 5 oz. (142 g)
more after fermentation

HOPS

0.3 oz. (8.5 g) Millennium @ 90 min
0.8 oz. (23 g) Saaz @ 0 min

YEAST

White Labs WLP540 Abbey IV Ale Yeast
Wyeast 3763 Roeselare Ale Blend (resident strain
from wine barrels)

BREWING NOTES

Mash for 60 minutes at 149°F (66°C). Add first dose of sugar 10 minutes before the end of boil; second dose should be made into a syrup and boiled 10 minutes before adding to secondary. Beer was divided into two red wine barrels and aged for 12 months. One barrel contained the original Roeselare culture from Lance's winning homebrew. The other contained the IMBIB house Roeselare culture. Both were unique mixed cultures coming from their respective barrels. Beer was blended after aging at a 1:1 ratio. It was then bottle conditioned for 3 months prior to serving at GABF.

EXTRACT VERSION

Substitute 6.25 lb. (2.83 kg) liquid Pilsner malt extract for the Pilsner malt. Mash remaining grains at 150°F (66°C) for 45 minutes or until full conversion of starches. Rinse grains, dissolve extract thoroughly in reverse osmosis water, and top up to desired boil volume. Proceed with boil, adding sugar as specified above.



Silver Medal

Leicht

Precarious Beer Project with AHA Member Joel Miller

Joel Miller's award-winning Leicht was inspired by hazy IPA burnout.

"I decided to challenge myself with brewing lagers," he says, when he needed a change from brewing IPAs. He wanted to brew something light that had more flavor than domestic lager. The beer has a little bit of hop character and a cracker backbone to it, he describes. "I just liked the style—something light and refreshing and a 'beer-tasting' beer," he says.

Leicht won the light lager table at the 2018 Dominion Cup (Virginia's largest homebrew competition), where it also took second best in show. It went on to win its category at the CASK Beer Blitz 2019, where it took best of show.

The beer appeals to everyone, from the traditionally domestic beer drinkers to craft beer enthusiasts, he says. "It's a beer basically for everybody," Miller notes. This could be attributed to the simple recipe with a little bit of body, some bittering hops, overall balance, and low alcohol.

With the great-tasting beer Miller was producing, it was a given for Greg Fleehart, head brewer at Precarious Beer Project, to work with the talented homebrewer. "Joel had brought some of his homebrews by and blew me away with the quality of his beer," Fleehart says. "He's a really easy guy to get along with and a knowledgeable brewer," he adds. The head brewer appreciated Miller's flexibility and trust of Fleehart's process, especially in lager brewing.

Fleehart describes the beer as similar to a low-alcohol Munich helles, with flavors of a lightly toasted baguette. "It's a really easy-drinking beer but with tons of flavor and texture," Fleehart says. "The yeast has a really nice ester, more character than your average lager yeast."

Fleehart himself started out as a homebrewer, so it's only fitting his first time winning a GABF medal was at the Pro-Am. Receiving a medal from Charlie Papazian is a dream he has now achieved.

Miller was ecstatic when he won. "We knew we had a solid beer, but there were over 100 solid beers there." At the ceremony, the announcer could barely get out the *t* in *leicht* and Miller and the Precarious Beer Project team were jumping up and screaming. "It was a cool experience to get to go down across the stage," Miller says.

His overall goal when homebrewing is to take inspiration from his favorite local spots. "I enjoy creating the best beers I can that I can share with family and friends," Miller says. He was honored to work with Fleehart for this challenge. "I really respect



the beer Greg is brewing," Miller says.

"It was a great experience all around," Miller says, adding that the Pro-Am Competition is a great chance for homebrewers to gain exposure and see how professional brewing works. "It makes it even better coming away with a medal," he adds.



Pre-boil volume: 7.5 US gal. [28.4 L]

Post-boil volume: 6 US gal. [22.7 L]

Original gravity: 1.039 [9.8°P]

Final gravity: 1.009 [2.3°P]

Est. efficiency: 85%

Boil time: 90 minutes

Bitterness: 17 IBU

Alcohol: 3.9% by volume

MALTS

6.5 lb. [2.95 kg] Weyermann Pilsner malt

1 lb. [0.45 kg] Weyermann Munich Type 2 malt

HOPS

0.5 oz. [14 g] German Magnum, 9% a.a. @ 90 min

0.25 oz. [7 g] Hallertau Mittelfrüh, 3.7% a.a. @ 10 min

OTHER INGREDIENTS

Lactic acid

Calcium chloride

Kettle finings @ 15 min

Yeast nutrient @ 0 min

Biofine Clear

YEAST

Jasper Yeast Augustiner Lager or Omega Augustiner Lager yeast

Joel Miller, 2019 GABF Pro-Am Competition, with Greg Fleehart of Precarious Beer Project.

BREWING NOTES

Use lactic acid to get mash pH down to 5.2–5.4 [a touch of calcium chloride is fine, too]. Acidify sparge water to pH 5.0 using lactic acid. Mash 30 minutes at 147–150°F [64–66°C] and then at 158–160°F [70–71°C] for another 30 minutes. Vorlauf until clear, lauter, and sparge.

Adjust kettle pH to 5.0–5.2. Boil, whirlpool, chill to 51°F [11°C], pitch yeast, and oxygenate. Ferment at 54°F [12°C]. With 8 gravity points [2°P] remaining to terminal gravity, cap, spund, or bung if possible and let temperature rise to 60°F [16°C]. Let rest at 60°F for at least 48 hours, perform a forced diacetyl test [hold a small sample at 170°F/77°C for 30 minutes, cool, and taste compare with an unheated sample], and make sure it passes before crashing to 33°F [1°C]. Transfer after a few days to your serving keg, adding Biofine Clear for fining. Carb to 2.6 vol. [5.2 g/L] of CO₂. Lager until clear and tasty.

EXTRACT VERSION

Substitute 5.75 lb. [2.61 kg] liquid Pilsner malt extract for the Pilsner malt and 12 oz. [340 g] liquid Munich malt extract for the Munich malt. Dissolve extracts thoroughly in reverse osmosis water and top up to desired boil volume. Proceed with boil.



Bronze Medal

Chess with Checkers

New Belgium Brewing Co.
with AHA Member Erich Purcell

Erich Purcell had trouble navigating beer menus when he moved to craft beer mecca Fort Collins, Colo., from Hawaii. He figured the best way to learn about beer was to have a go at making it himself. His first year brewing, he made 52 1-gallon all-grain batches with the goal of learning as much as he could about malts, yeasts, hops, and techniques.

Chess with Checkers is something Purcell calls a house beer that he brews fairly regularly. "I love tripels, but I can't drink them the way I want to drink beer. So, I started pulling the recipe down to try to get it to a more quaffable strength but still retain that Belgian flavor," he says.

He describes it as a Pilsner with a pile of Belgian flavor. "It still has a hoppiness that you don't see in many Belgian beers, but it's backed up by all of the esters and phenols that you do expect," he says.

That's exactly what stuck out to Ross Koenigs, research and development brewer at New Belgium Brewing Co., who said it's a beer that every brewer wants to make and to drink. "It was bright and crisp and had all that great Belgian character, but supremely drinkable and super well balanced," Koenigs says. When working with the recipe, Koenig's goal was for Purcell to experience what bringing a beer into the world looks like at New Belgium.

"I can't express how wonderful it was to work with the New Belgium family," Purcell says. He adds that the real prize is being able to brew his beer on New Belgium's system.

Purcell appreciates homebrew competitions not only for the wins but for the feedback. "Tell me what's wrong, and tell me why," he says. The feedback from judges is different than what you'd receive from family and friends trying your beer, he adds. "It's a true technical review of the beer," he says. Getting to work with a pro, however, takes things up another level. Purcell says

it's like a graduate-level course in brewing. "You think you understand brewing, but being around a professional brewer with in-depth knowledge doubles your collective knowledge about beer," he said.

Koenigs also sings the praises of the Pro-Am experience. "Of all the things that the GABF does and does well, Pro-Am is one

of the most special," he says. For Koenigs, it's a connection back to his homebrewing roots, where he started 15 years ago, when everything was out of his garage or his backyard. "It's an honor and a privilege to show [the homebrewers] a bit of what we do," he says. "And at the end of the day, it's just kind of fun."





Chess with Checkers

Erich Purcell, 2019 GABF Pro-Am Competition,
with Ross Koenigs of New Belgium Brewing Co.

Pre-boil volume: 6.5 US gal. (24.6 L) Post-boil volume: 5.5 US gal. (20.8 L) Original gravity: 1.052 (12.8°P) Final gravity: 1.008 (2°P) Est. efficiency: 68% Boil time 90 minutes Bitterness: 35 IBU (Tinseth) Color: 3.7 SRM Alcohol: 5.8% by vol.	YEAST Wyeast 3787 Trappist High Gravity ale yeast	MALTS 8 lb. (3.63 kg) German Bohemian Pilsner malt 1.5 lb. (0.68 kg) American white wheat malt 0.25 lb. (113 g) acidulated malt 0.75 lb. (340 g) cane sugar @ 30 min	HOPS 1.5 oz. (42 g) Perle, 6.8% a.a @ 60 min 1 oz. (28 g) Perle, 6.8% a.a @ 30 min 1 oz. (28 g) Hallertau Hersbrucker, 3.4% a.a @ 5 min	EXTRACT VERSION Substitute 1.25 lb. (0.57 kg) liquid wheat malt extract for the wheat malt and 5.75 lb. (2.61 kg) liquid Pilsner malt extract for the Pilsner malt. Omit acidulated malt. Dissolve extracts thoroughly in reverse osmosis water and top up to desired boil volume. Proceed with boil.
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OTHER INGREDIENTS

Whirlfloc @ 5 min
Yeast nutrient @ 5 min
Keg finings (gelatin)



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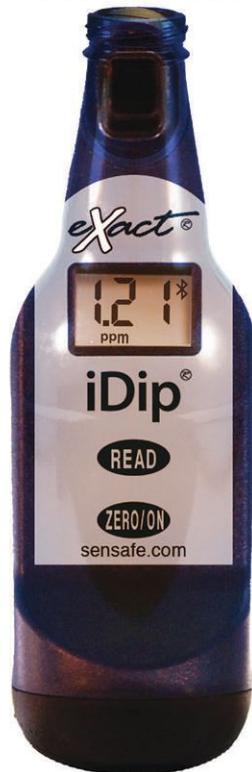
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R079

The Sowers Cup 2019

By Amahl Turczyn

Organized by Nebraska homebrew club the Lincoln Lagers, the 2019 running of the Sower's Cup took place October 11 and 12, 2019, and is a proud participant in the High Plains Brewer of the Year and Midwest Homebrewer of the Year circuits. Former club president Jeff Anderson provided details on his esteemed club's history and the competition.

"The Lincoln Lagers have been an active club for 26 years," Anderson states. "I had the privilege of being the club's president during our 25th [year] and have since passed the duty on to Jeremy Goehring for 2019." (Goehring, by the way, claimed best-of-show mead at this year's competition, along with co-brewer Dustin Deisher—more on this champion brewing pair in a bit.)

Anderson says the Sower's Cup is now in its sixth year and has grown into quite a substantial event since its inaugural running. "We started fairly small, at 300 entries, but each year we've increased our entry cap. We thought it would be fun to use Nebraska area codes for a few years, so we've set caps at 308, then increased to 402, and for the last three or four years have settled in at 500 entries. We almost always hit our entry cap but, as competitions go, we always judge a few less than the full amount. Last year, we judged 440 entries and this year we have 418 beers, ciders, and meads."

The roots of the competition run deep, and many club members who now play key roles in the organization of the event were also instrumental to its conception. "One of our former presidents, Jason McLaughlin, was integral in getting the competition up and running. He spent the event's first three years as its main organizer, and currently serves as judge coordinator. Competition organizer Gwyn Evans is in her third year of organizing and is planning to pass the torch to someone new after the conclusion of this year's event."

Of the 177 registered participants at the 2019 Sower's Cup, some of the hardest-working were the selfless volunteers



From left, Jeremy Goehring, John Daly (KC Biermeisters) and Dustin Deisher

without whom a competition of this size would be impossible to pull off. Continues Anderson, "Competition organizing always requires an army of volunteers, so many of our club members pick up tasks like organizing data (scoresheets, registration software, website data, etc.), while many others volunteer time to judge, steward, and help feed and even house some of our traveling friends." These are the unsung heroes of any large competition.

Thanks to local trade organization the International Brotherhood of Electrical Workers (IBEW), an appropriately sized and outfitted venue for the event was easy

to come by. "For the first handful of years, we hosted the Sower's Cup in the brewery at Ploughshare, one of our now-gone local breweries," Anderson states. "But we have now found a permanent home at our local IBEW event space. The IBEW Local 265 event space is *amazing* and helps us provide an outstanding venue for both our competition and our awards banquet (they have a full kitchen!)"

Sponsorship of the event is undertaken by a truly impressive list of both national and local businesses. "We have a ton of sponsors," Anderson enthuses. "Some of the national ones include BSG, Briess,



Sower's Cup Best of Show - Beer winner Darren Vaughn.

Blichmann, and BeerSmith. Local sponsors include not only cash donors like KrosStrain Brewing, White Elm Brewing, and Zipline Brewing, and our professional scale-up sponsors CODE Beer, Boiler Brewing, and Stone Hollow Brewing, but we also get a lot of support from our local homebrew shops, Kirk's Brew and Patriot Homebrew Supply. There are really too many sponsors to list." Those scale-up opportunities are much like the GABF Pro-Am, in which the top three finalists in certain Sower's Cup categories are automatically entered in each brewery's self-run scale-up competition.

"We always try to have a mini convention of sorts," Anderson continues. "We invite experts each year to present an array of topics. Of the most memorable might be Drew Beechum, who gave his famous 'Brewing on the Ones' talk about recipe formulation. Curt Stock taught us all about session meads and staggered nutrient additions, along with Amanda Burkemper, who spoke on how we can all become better beer judges. When John Palmer had his most recent update to *How To Brew* published, he came and visited us. Last year, Rodney Kibzey came to talk about how he became the winningest winner in all 50 states. This year, Carvin



“
Use
knowledge
from people
in your local
club or from
other great
brewers
you have
networked
with.

— Jeremy Goehring and Dustin Deisher

Wilson, whom you may know as a newly elected governing board [AHA Governing Committee] member, joined us to discuss mead and honey varietals."

Using club and competition resources to give back to those in need locally has been challenging of late due to outdated state legislation concerning beer and homebrewing, but Anderson states that it won't be long before that will also be part of the Sower's Cup. "Due to Nebraska's strict laws, we are just getting back into community involvement and charity, so we don't have much to talk about there



Sower's Cup Best of Show - Mead winners Jeremy Goehring (left) and Dustin Deisher.

just yet—but we'll be sure to let you know when we get that ball rolling again."

Normally the event awards best-of-show prizes for beer, mead, and cider categories, but this year only a beer and a mead placed with top honors. As mentioned earlier, the brewing duo of **Jeremy Goehring and Dustin Deisher, themselves Lincoln Lagers, won the mead prize.**

It all started for Goehring and Deisher six years ago—they were in a band that had recently broken up, recalls Geohring. "One night we were playing the video game *Skyrim* and we noticed the title character drank a lot of mead for health. We needed a new hobby and we had always talked about brewing, as we were longtime craft beer fans. So, we took the plunge and went to our local homebrew store to pick up supplies That was the beginning."

With a little help from the internet and some well-known mead luminaries, plus a ready supply of honey for experimentation—"My boss at the time kept bees so we had access to local wildflower honey," Goehring explains—the two were soon brewing for, entering, and winning competitions.

"Back in our early days we drew inspiration from patrons of the Got Mead website. And Ken Schramm. It was shortly after that we stumbled upon a Facebook group called the Modern Meadmakers. That site was started by Jon Talkington. We continue to draw inspiration from the amazing members of that site, including Marek Leczycki, Tom Repas, Scot Schaer, Carvin Wilson, and Tim Thomssen. That's a very short list of the talented meadmakers in that group."



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From left, John Daly, Carvin Wilson, Jeff Anderson, and Jason McLaughlin




Jiggly Puff and Stuff

BJCP Category M1C: Sweet Mead

Jeremy Goehring and Dustin Deisher, Lincoln Lagers, 2019 Sower's Cup Best of Show - Mead

Batch volume: 5 US gal. (21.5 L)
Original gravity: 1.090 (21.5°P)
Final gravity: 1.030 (7.5°P) after back-sweetening

FERMENTABLES
 13 lb. (5.9 kg) meadowfoam honey
 [plus more to back-sweeten]

YEAST
 Lalvin D-47

OTHER INGREDIENTS
 Go Ferm
 Stabilizers, clarifiers as needed

BREWING NOTES
 Rehydrate yeast with Go Ferm. Pitch yeast and ferment at 62°F (17°C). Follow the TOSNA (tailored organic staggered nutrient additions) procedure. Once primary is done, rack, stabilize, and back-sweeten with more meadowfoam honey to achieve a gravity of 1.030 (7.5°P). After mead clears, rack it to a keg and carbonate with 2.5 vol. (5 g/L) of CO₂.

Using this sort of wisdom to best advantage, they explain, is critical to success when entering competitions. "Use knowledge from people in your local club or from other great brewers you have networked with. There's a wealth of experience out there, and applying that knowledge will make you a better brewer overall," they advise.

Goehring and Deisher don't only make meads, however. In addition to traditional and spiced honey wines, their favorite beers to brew include German-style lagers and Belgian-style ales. They hope to carry some winning momentum with entries into a couple of little upcoming competitions: none other than the Masters Champion of Amateur Brewing and the National Homebrew Competition.




Dodgy Wanker

BJCP Category 11A: Ordinary Bitter

Darren Vaughn, Fellowship of Oklahoma Ale Makers (FOAM), 2019 Sower's Cup Best of Show - Beer

Batch volume: 5.5 US gal. (20.8 L)
Original gravity: 1.040 (10°P)
Final gravity: 1.012 (3°P)
Color: 8 SRM
Bitterness: 42 IBU
Alcohol: 3.7% by vol.

MALTS
 6.53 lb. (2.96 kg) Maris Otter malt
 0.47 lb. (213 g) Special Roast malt
 0.47 lb. (213 g) 10°L Munich malt
 0.47 lb. (213 g) Carafoam
 0.25 lb. (113 g) 120°L caramel malt

HOPS
 1.5 oz. (43 g) East Kent Goldings, 4.7% a.a. @ 60 min
 0.76 oz. (22 g) East Kent Goldings, 4.7% a.a. @ 30 min
 0.58 oz. (16 g) East Kent Goldings, 4.7% a.a. @ 0 min

YEAST
 Wyeast 1968 London ESB Ale

OTHER INGREDIENTS
 1 tsp. Irish moss @ 10 min

BREWING NOTES
 Mash for 60 minutes at 152°F (67°C)

EXTRACT VERSION
 Substitute 5 lb. (2.27 kg) liquid pale Maris Otter malt extract for the Maris Otter. Steep remaining grains at 155°F (68°C) for 30 minutes. Remove grains, dissolve extract thoroughly in reverse osmosis water, and top up to desired boil volume. Proceed with boil.

Darren Vaughn of the Fellowship of Oklahoma Ale Makers (FOAM) homebrew club claimed the best-of-show beer prize at this year's Sowers Cup. He got into the hobby about eight years ago at the same time he was beginning to take an interest in craft beer. "My coworker asked me if I knew how to make beer and if I would want to try," he remembers. "So, I purchased a turkey fryer, a beginner's homebrew kit, and an extract kit for Rouge Shakespeare Stout. As I drank the first bottle, I was hooked. I never looked back."

Vaughn relies on his local community of homebrewers, his local brew shop, and his fellow club members to keep his brewing on track. "The new friends and mentors from my local homebrew community continue to help and inspire me, as well as my local supply shop, High Gravity, and of course my club, FOAM. We have several very confident brewers and excellent judges in our group. Many people in this community even welcome new brewers into their homes for a brew day as a way of offering mentorship."

Vaughn admits that he's not picky about the styles he likes to brew and drink. "I have a very wide palate," is the way he puts it. "There are few beers I don't enjoy. I especially prefer darker beers that showcase a good malt profile. I am influenced by Britain (Scotland and Ireland included), German, and Belgian styles. As for brewing, I brew seasonally, but I always keep an easy-drinker on tap for friends and family who come for a visit."

Keys to his success at competitions come down to consistency of process and careful measurement. Vaughn is what you might call a methodical brewer. "I approach every beer or brew session the same way. I use BeerSmith, and my homebrewery is standardized to allow for predictable, reliable results. The parameters I pay particular attention to are mash temperature and pH, thorough recirculation of the mash and second runnings, and wort pH going into the kettle. I discovered wort pH can have significant influence on hop bitterness. For fermentation, I always use a yeast calculator and pitch an appropriate amount of yeast, whether I'm using liquid or dry. And I keep fermentation temperatures in check."

He's also fond of brewing gadgets and has added quite the arsenal over the years. "My homebrewery includes a three-vessel system, stainless kettles, with an Igloo cooler for a mash tun. My boiler has an auto stir to aid in wort clarification or to keep hops in suspension if I choose to do a hop stand. I use propane burners, and I mill my own grain. My brewing water is purified with a large carbon filter, and I ferment in an upright freezer with a Johnson Controller [sic] thermostat setup."

Despite all the clever technology, he offers a warning not to take things too seriously. "There are many methods and techniques to achieve a great beer, but only employ more advanced techniques when you are ready. Your brew day should be fun!"

What's next for this best-of-show winner? "I have a few irons in the fire," Vaughn states. "I'm plugging in different specialty malts, trying to create my ideal Pilsner. And I am going to switch base malts on my favorite Belgian pale ale recipe—it scores well now, but I can do better. My awesome wife Susie loves barrel-aged stouts, so I'm working in that direction as well. And lastly, an electric brewery is on the horizon. I want better control over my mashing process."

Amahl Turczyn is associate editor of Zymurgy.



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The book cover features the title "SIMPLE HOMEBREWING" in large, bold, red letters. Below it, the subtitle "GREAT BEER. LESS WORK. MORE FUN." is written in smaller letters. The cover shows a bottle of beer and a glass filled with beer. A small inset photo at the bottom shows two men, Drew Beechum and Denny Conn, smiling. The background of the book cover is yellow.

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Relax, Don't Worry, Have a Homebrew!

That mantra rings as true today as it did in 1978 when Charlie Papazian cofounded the American Homebrewers Association with Charlie Matzen. Homebrewing can be as simple or as complex as you want to make it, but the first step is always to relax and not worry.

To aid your relaxation and help you get the most out of *Zymurgy*, here are some standard assumptions and methods for our recipes. Of course, when a recipe says to do something different, follow the recipe. But you can always fall back on these general tips to brew great beer.



ON THE WEB

For more detailed info, head over to HomebrewersAssociation.org and dive into our How to Brew resources.

BREWING WITH ZYMGURGY

MAKING WORT

Most recipes in *Zymurgy* offer an all-grain version and a malt extract or partial-mash alternative. Pick the procedure you prefer and prepare some wort! Some recipes

might include a water profile. If you can't (or don't want to) deal with water chemistry, don't worry about it: just go ahead and brew! Extract brewers needn't add minerals to water.



Malt Extract Recipes

Making wort from malt extract is easy.

- Crush specialty grains, if any.
- Place milled grains in a mesh bag and tie it off.
- Steep bag of grains in 150–160°F (66–71°C) water for 30 min. in your brew pot.
- Remove bag of grains from the pot.
- Fully dissolve extract in the hot, grain-infused water (if there are no specialty grains in the recipe, you can skip directly to this step).
- Top up with water to your desired boil volume. (Leave some room for foam!)

All-Grain and Partial-Mash Recipes

Unless otherwise specified, all-grain brewers can conduct a single-temperature infusion mash with these parameters:

- Water/grain ratio: 1.25 qt./lb. (2.6 L/kg)
- Mash efficiency: 70%
- Mash temperature: 150–153°F (66.7–67.2°C)
- Mash duration: 60 minutes

Partial-mash recipes make the same assumptions but use a smaller amount of grain and augment the wort with malt extract.

BOILING

No matter how you get here, everyone loves adding hops.



- Boil time is 60 minutes unless otherwise stated.
- Boils are assumed to be the full batch volume, but you can also boil a concentrated wort and top up with water in the fermenter.
- Hop additions are given in minutes before the end of the boil.

Brew Lingo

Every field has specialized language, and homebrewing is no different. Here are some of the key terms, abbreviations, and acronyms you'll find throughout Zymurgy.

AA – alpha acid

ABV – alcohol by volume

AHA – American Homebrewers Association

BBL – US beer barrel (31 US gal or 117.3 L)

BIAB – brew in a bag

BJCP – Beer Judge Certification Program

Chico – American ale yeast, AKA Wyeast 1056, WLP001, SafAle US-05, and others

CTZ – Columbus, Tomahawk, and Zeus: interchangeable high-alpha-acid hops

DME – dry malt extract

DMS – dimethyl sulfide, an off flavor similar to canned corn or cooked vegetables

DO – dissolved oxygen

EBC – European Brewing Convention (beer color)

FG – final gravity

FWH – first wort hops, added to the boil kettle as it fills with sweet wort after mashing

HERMS – heat exchange recirculating mash system

HLT – hot liquor tank

IBU – international bitterness unit

LHBS – local homebrew shop

°L – degrees Lovibond (malt color)

LME – liquid malt extract

LTHD – Learn to Homebrew Day

MLT – mash-lauter tun

NHC – National Homebrew Competition

OG – original gravity

°P – degrees Plato (density of wort or beer)

RIMS – recirculating infusion mash system

RO – reverse osmosis, a water purification process that removes most dissolved ions

SG – specific gravity (wort/beer density)

SMaSH – single malt and single hop

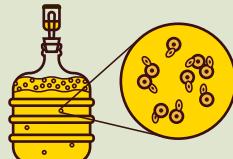
SMM – S-methyl methionine, precursor to dimethyl sulfide (DMS)

SRM – Standard Reference Method (beer color)

FERMENTING & CONDITIONING

Pitch yeast into chilled and aerated or oxygenated wort.

- Use twice as much yeast for lagers as you do for ales.
- Ales ferment at 60–70°F (15–20°C). Lagers ferment at 45–55°F (7–13°C).
- Condition ales at room temperature or colder for a week or two.
- Condition lagers at close to freezing for several weeks if you can (traditional but not required).



BOTTLING & KEGGING

If you bottle,

- Use 1 oz. of dextrose (corn sugar) per gallon of beer (7.5 g/L) for a good, all-purpose level of CO₂.
- Use less sugar for less fizz.
- Take care with higher carbonation levels—many single-use beer bottles aren't designed for high pressure.



If you force carbonate in a keg,

- Use the chart to dial in the gauge pressure on the regulator.



- Add 0.5 psi (35 mbar) for every 1,000 feet (300 meters) you live above sea level.
- To convert psi pressures to mbar, multiply by 69.
- To convert volumes of CO₂ to g/L, multiply by 2.

REGULATOR PRESSURES (PSI) FOR VARIOUS CARBONATION LEVELS AND SERVING TEMPERATURES

TEMP (°F)	VOL. CO ₂										
	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1
33	5.0	6.0	6.9	7.9	8.8	9.8	10.7	11.7	12.6	13.6	14.5
34	5.2	6.2	7.2	8.1	9.1	10.1	11.1	12.0	13.0	14.0	15.0
35	5.6	6.6	7.6	8.6	9.7	10.7	11.7	12.7	13.7	14.8	15.8
36	6.1	7.1	8.2	9.2	10.2	11.3	12.3	13.4	14.4	15.5	16.5
37	6.6	7.6	8.7	9.8	10.8	11.9	12.9	14.0	15.1	16.1	17.2
38	7.0	8.1	9.2	10.3	11.3	12.4	13.5	14.5	15.6	16.7	17.8
39	7.6	8.7	9.8	10.8	11.9	13.0	14.1	15.2	16.3	17.4	18.5
40	8.0	9.1	10.2	11.3	12.4	13.5	14.6	15.7	16.8	17.9	19.0
41	8.3	9.4	10.6	11.7	12.8	13.9	15.1	16.2	17.3	18.4	19.5
42	8.8	9.9	11.0	12.2	13.3	14.4	15.6	16.7	17.8	19.0	20.1

■ = PSI

Source: Brewers Association Draught Beer Quality for Retailers



Sanctioned Competition Program

AUGUST 2019

Washington State Fair, Puyallup, 145 entries
Ryan Wallace, Mt. Vernon, WA

Butte County Fair Home Brew Division, 11 entries
Chris Lovett, Durham, CA

Copa de Cerveceros Caseros del Perú, 80 entries
Manuel Cortez, Lima, Perú

Academy of Taste III, 31 entries
Dr. Vaughn Swart, Bloemfontein, South Africa

Intervarsity Brewing Competition 2019 Central University of Technology, 64 entries
University of Stellenbosch, Stellenbosch, South Africa

Red Brick Brew 2019, 38 entries
Gary Haygood, Vicksburg, MS

WBC Smash, 8 entries
David Anderson, Auckland, New Zealand

5th Annual Champlain Valley Fair Homebrew Contest, 30 entries
Brian Mulhall, Essex Junction, VT

Concurso Homebrew SBB2019, 108 entries
Matheus Oyo Valentim, Brasília, Brazil

IV Concurso Interno da ACerva Goiana, 27 entries
Felipe Vancetto, Anápolis, Brazil

I Concurso dos Cervejeiros Artesanais da Encosta da Serra (CAES), 47 entries
Jonne Sachetti, Orleans, Brazil

9º Concurso Interno del CCCUY, 130 entries
Andrés Sica, Montevideo, Uruguay

Copa Atelier da Cerveja de Cervejeiros Caseiros, 23 entries
Rafael Pontes Freita, São Caetano do Sul, Brazil

SEPTEMBER 2019
2019 3 Stars Brewing Homebrew Extravaganza, 10 entries
Jake Grover, Washington, DC

Dogg Dayzz Homebrew Competition, 159 entries
Kevin Olson, Raymore, MO

Kansas State Fair Homebrew Competition "Red, White and Brew," 22 entries
Aaron Harbutz, Wichita, KS

Trevor Ramirez Rocktoberfest 2019, 129 entries
Russell Berger, Portland, OR

Santa Cruz County Fair Homebrew Competition, 54 entries
Marcos Santana, Campbell, CA

Hogtown Brewers Florida Weisse Intraclub Competition, 7 entries
Jackie Rothberg, Gainesville, FL

Big Muddy Monster Homebrew Competition, 103 entries
Karl Babcock, Morris, IL

Tanglefoot Homebrew Competition, 52 entries
Steve Seithel

Western Australian State Amateur Brewers Competition, 332 entries
Scott Wardale, Perth, Australia

SABSOSA, 342 entries
Tim Mitolo, Adelaide, Australia

5th Hebei Homebrew Exchange Match, 48 entries
Xiaotian Shen

Sonoma County Harvest Fair, 76 entries
Paul Kohlmann, Windsor, CA

Campionato Italiano MoBI - Movimento Birrario Italiano, 89 entries
Jacopo Deola, Italy

Surubeer Cup 2019, 81 entries
Nicolas Warencchia, Paraná, Brazil

Fugetaboutit, 189 entries
Kevin Foster, Chamblee, GA

Welsh National Homebrew Competition, 315 entries
William Cory

Salt City Homebrew Club Annual Competition, 171 entries
Christopher Scott, Fayetteville, NY

VicBrew - Victorian Amateur Brewing Championship, 460 entries
Michael Bowron, Melbourne, Australia

V Copa CervaSerra de Cervejas, 43 entries
Marcos Luís Nart, Caxias do Sul, Brazil

10º Concurso Estadual de Cervejeiros ACerva Paulista, 53 entries
Jonas Geiss, São Paulo, Brazil

Tulsa State Fair Homebrew Competition, 109 entries
Mac Butcher, Tulsa, OK

It's Uge, 15 entries
Mike Burk, San Francisco, CA

Viasat Homebrew Competition, 23 entries
Brian Findley

Primera Copa Escuela de Cervezas - Centro Cervecerio, 7 entries
Hernán de los Santos & Augusto Arezo, Tacuarembó, Uruguay

Competencia Nacional de Homebrewers Panama 2019, 25 entries
Jorge Moreno, Panama

Vale do Lupulo BrewShop - Cervejeiro Destaque Setembro/2019, 10 entries
Gustavo Fiquene

NSW State Competition, 438 entries
Joe Valente, Sydney, Australia

Alamo City Cerveza Fest, 310 entries
Bradley Janowski, Austin, TX

NOLA on Tap 2019 Homebrewer's Competition, 51 entries
Luke Hammonds, Hammond, LA

The Big Fresno Fair Homebrew Competition,
77 entries
Jacob Fleener, Fresno, CA

Brewfest, 238 entries
Matthew Proch, Warren, OH

King of the Mountain IX, 137 entries
Tyler Johnson & Collin Szeles, Cleveland, OH

The Great Irish Kveik off, 40 entries
Daryl Doyle, Wicklow, Ireland

2º Concurso Aberto ConCerVap, 89 entries
Jonas Geiss, Guarulhos, Brazil

MCM Homebrewer of the Year Q3, 4 entries
Mike Neville, Dearborn, MI

Brewtus Mashimus 2019, 43 entries
Greg Hinton, Yorba Linda, CA

Roberts Cove Germanfest Home Brew Comp 2019, 36 entries
Ed Moore, Centennial, CO

Hillsdale County Fair Beer Show, 15 entries
Christopher Hamilton, Hillsdale, MI

Crystal Lederhosen, 103 entries
Ed Walkowski, Waverly PA

Blue Ridge Brew Off, 283 entries
Joshua Veronee, Blythewood, SC

Concorso Wide Open - Expo una Birra per Tutti, 60 entries
Andrea Fabio Broli, Italy

Home Brew & Chill, 27 entries
Keith Reesman, Greensburg, PA

Valkyries Horn, 272 entries
Rick Helps, St. Croix Valley, WI

Arizona Society of Homebrewers 2019 Fall Classic, 188 entries
Justin Cossette

New South Brew Off, 149 entries
Evan Comeaux, Memphis, TN

ANABWS, 132 entries
Michael Cousemaker, Sydney, Australia

Brew in the Lou, 138 entries
Eric Smith, St Louis, MO

I Concurso Homebrewer FIBCER, 14 entries
Alberto Morcاجuelo Higueruela, Burgos, Spain

Pacific Brewer's Cup, 401 entries
Craig Corley, Santa Monica, CA

Smithville Wingfest & Chili Cook-A-Roo, 7 entries
Chris Nester & Fernando Ortiz

Ultreya Beer Viana ACCNR, 120 entries
Sergi Martinez Arnal, Valencia, Spain

OCTOBER 2019

Copa de Invierno - Fermentos Caseros de Costa Rica 2019, 34 entries
Erick Reiche

[Continued >](#)



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Gluten Free Homebrew Competition, 8 entries
Stuart Cole

Alaskan Homebrew Competition, 111 entries
Kent Ficek, Juneau, AK

Valhalla: The Meading of Life, 176 entries
Scott Behrens, Okeechobee, FL

Old Forge BIG Beer and Odd Ale Competition, 26 entries
John Spinella, New Hartford, NY

Schnapp Hans Cup, 160 entries
Jeff Landers, Hoffman Estates, IL

Hoptoberfest! by the Homebrewers of Peoria, 32 entries
Cathy Wizgird, Bloomington, IL

O'Connor's 7th Annual Home Brew Contest, 98 entries
Chad Bocian, Grand Rapids, MI

Fresh Hop Ale Festival, 46 entries
Beth Hawes, Redmond, WA

Lupuleros Fall Challenge 2019 Reinheitsgebot, 8 entries
Eguiza Romano Vargas, Zapopan, Mexico

Brixtoberfest, 176 entries
Nathan Peterson, Bartlett, IL

Concurso de Cervejeiro Caseiro da Casa OLEC Salvador, 24 entries
Silvino Andrade Neto, Salvador, Brazil

The Sower's Cup, 416 entries
Darren Vaughn, Tulsa, OK

Kongress IPA, 30 entries
Miguel Greiner, Córdoba, Spain

III Copa Kylix de Hidromel - Caseiros, 42 entries
Ricardo Hahn, Dois Irmãos, Brazil

Oktobersbest Homebrew Competition, 178 entries
Andy Melchers

7th Urimal Beer Competition, 90 entries
Sung Min Yoon, Seoul, South Korea

Pumpkin Challenge Homebrew Tijuana, 11 entries
Samuel González, Tijuana, Mexico

CPARC Fest, 11 entries
Brent Baskin, Port Matilda, PA

Prague Homebrewing Competition, 104 entries
František Sýkora, Těrlicko, Czech Republic

2019 The 8th Taiwan Homebrew Competition, 218 entries
Tyler Rubin, Taipei, Taiwan

WBC October 2019 - 16A Sweet Stout, 12 entries
Stu Ure, Auckland, New Zealand

Ibrew Challenge, 500 entries
Ryan Gomez, Singapore

1º Concurso de Cervejas Caseiras Agora é Cerveja, 17 entries
Luciano Bush, Rio de Janeiro, Brazil

I Concurso Regional-Sudeste das ACervAs, 167 entries
Flávio Martins, Belo Horizonte, Brazil

Northshore on Tap, 12 entries
Chris Humble

Warsaw Homebrewers Competition 2019, 289 entries
Session IPA, Paweł Twardak, Krakow, Poland

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NoVA Classic Homebrew Competition,
150 entries
Steven Schwark, Cheverly, MD

SFBC Funks Homebrew Competition, 82 entries
Chris Luederitz, Kitchener, ON, Canada

Michigan Mead Cup, 157 entries
Dustin Deisher & Jeremy Goehring, Lincoln, NE

32nd Annual Southern California Regional Homebrew Championship, 234 entries
Jeff Koehler, Pasadena, CA

14th Annual New England Regional Homebrew Competition (NERHBC), 418 entries
Patrick Schneider, Lyle, WA

III Concurso Homebrewer de Córdoba, 51 entries
Nuno Filipe Oliveira (Historical) & Juan Picón (Clásicas)

3º Concurso de Cerveja de Marechal C. Rondon, 30 entries
Cesar Magagnin, Cascavel, Brazil

Ida Grove Wine & Bier Contest, 40 entries
JR Bumann, Ida Grove, IA

Southern New England Regional Homebrew Competition, 337 entries
Ian Anderson

Winnipeg Brew Bombers Pro/Am Brew Challenge, 398 entries
Alex Cochran, Vancouver, BC, Canada

QUAFF COC - Cider v. Mead, 8 entries
Ryan Fowler, San Diego, CA

Spooky Brew Review, 164 entries
Jeff Landers, Hoffman Estates, IL

Australian Amateur Brewing Championship 2019, 350 entries
Simon Bourman, Queensland, Australia

Belgian Styles Homebrew Competition "Isvirk Belga," 41 entries
Tomas Sirtautas

Carolina Home Brewing Competition Final Invitational, 6 entries
Allen Smith

Brewtober Chilifest, 27 entries
Justin McGinnis, Fayetteville, AR

2nd Annual Société du Lambic Club Sour/Wild Beer Competition, 31 entries
Michael Lettieri, San Diego, CA

Salmonid Grim Reaper Challenge 2019, 34 entries
Jeff Shearer, Victor, MT

NOVEMBER 2019

Stupid Sexy Flanders, 37 entries
Jonathan Leech, Dublin, Ireland

California State Homebrew Competition, 168 entries
Robbie Proctor, Pleasant Hill, CA



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In this edition, we look at two ancient, nearly lost styles of wheat beer. Witbier, or Belgian white ale, was revived from obscurity by Belgian brewer Pierre Celis in the 1960s, and now thanks to homebrewers and craft brewers alike, it enjoys worldwide popularity. It is made with flaked, unmalted wheat, sometimes oats, and malted barley, so it's one of the original naturally hazy beers. Traditionally, it is also spiced with coriander and orange peel.

Allagash Brewing Company in Portland, Maine, makes a softly fruity, cloudy →

Judges' Score ALLAGASH WHITE

Allagash Brewing Company, Portland, Maine

BJCP Category 24A, Witbier



DAVE HOUSEMAN



SANDY COCKERHAM

→ witbier with a silky texture that weighs in at 5% ABV and has a mere 13 IBUs of bitterness. They use Curaçao orange peel, oats, and both malted and unmalted wheat. Rob Tod, Allagash's founder, started the company way back in 1995, and when they opened that year, the brewery only made one beer: Allagash White.

The next style our judges examine is Grätzer beer from Poland, a pale smoked wheat ale also known as Piwo Grodziskie. It has two names because its town of origin in Poland was originally called Grodzisk, but later became Grätz when Poland was part of German-speaking Prussia.

Although *Radical Brewing* author Randy Mosher includes an "authentic 1884 version" of this beer style with an original gravity of 1.057 (13.5°P) and 5% to 5.7% ABV, more modern interpretations are considerably lighter—the BJCP's range is 1.028 to 1.032, with 2.5% to 3.3% ABV.

Sketchbook Brewing, in Evanston, Ill., makes a version that lands somewhere in between at 4.4% ABV and features loads of wood smoke with Saaz hops to bitter. Brewmaster Cesar Marron is passionate about historical beers, and we thank him heartily for making a modern interpretation of this rare historical style available to craft enthusiasts.

AROMA

Spicy, peppery phenols dominate with a bready malt character. There are light fermentation esters and a light orange/citrus aroma. No hop aroma as expected. No overt alcohol aroma. No diacetyl or DMS. Quite inviting. **10/12**

APPEARANCE

Pale yellow color. Very hazy as is appropriate to style. Big, dense, rocky, white head with excellent retention. **3/3**

FLAVOR

Spicy, peppery phenols up front with low fermentation esters and light citrus/orange notes. There is an assertive bitterness that may be as much from the orange and coriander as from any hops. Bready malt finishes just to the dry side of balanced, resulting in a crisp finish. No hop flavor. There is a sense of complexity but all quite balanced. No DMS or diacetyl. Just a little alcohol presence noted. **18/20**

MOUTHFEEL

Medium to medium-light body. Lively carbonation, crisp finish, and spicy phenols provide a perception of lighter mouthfeel. Well attenuated with a lingering astringency/bitterness supported by a soft palate. Low alcohol warming. **5/5**

OVERALL IMPRESSION

A nearly classic example of the witbier style. The citrus notes in this example aren't as prominent as expected, while the phenols are a bit more assertive than anticipated. However, as the beer warmed in the glass, this sensation moderated quite a bit. This beer is very refreshing and drinkable. The balance and complexity are excellent. I'd love to cook a pot of mussels with this beer and then enjoy them with a fresh glass of the same. **9/10**

AROMA

At the start there is a moderate bready maltiness with a light sweetness that makes me think of candy or honey. Medium-light spice: pepper, a hint of clove, and bright coriander. There are low, citrus-zesty aromas and I note a very low herbal hop aroma. **10/12**

APPEARANCE

The beer pours a pale straw color and is moderately hazy but has no particulates. A moderate-sized white head lasts for a minute or more. **3/3**

FLAVOR

Medium-low grainy wheat malt character, with honey and vanilla, followed by moderate spicy notes of pepper and coriander. Moderate, pithy bitterness at the finish seems boosted by the spice additions. Moderate citrus flavor melds with a light, clean tartness to give a lovely brightness. Medium-low herbal hop flavor and low warming alcohols. **17/20**

MOUTHFEEL

Medium body with a medium-high level of carbonation. I find this crisp, yet it has a light creamy sensation after the initial carbonic zing fades. There are medium-low astringent notes that linger. Dry finish with light tartness. **4/5**

OVERALL IMPRESSION

A well-crafted and nicely spiced witbier. Spice aroma and flavor are vibrant and have none of the vegetal, celery, or hammy flavors that can plague this style. These are fresh and inviting. My only issue with this sample is some excess astringency that lingers on the palate. The yeast character is well done and I detect no off aromas or flavors. I'd enjoy drinking this beer anytime! **8/10**

TOTAL SCORE 42/50

TOTAL SCORE 45/50



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Judges' Score GRODZISKIE

Sketchbook Brewing Co., Evanston, Ill.

BJCP Category 27, Historical Beer: Piwo Grodziskie



GORDON STRONG



SCOTT BICKHAM

AROMA

Moderate smoke: clean, not burnt, harsh, or acrid. Light bready character. Low floral hops. Clean fermentation character. Smoke dominates. **9/12**

APPEARANCE

Moderate haze [should be clear]. Pale yellow color, dulled by haze. Low white head settles quickly. **2/3**

FLAVOR

Full, wheaty-bready palate with moderate smoke. The smoke is woody and clean, not greasy or bacony. Dry but full finish, not crisp. Clean fermentation character, not sour. The bready flavors cover some of the smoke in the aftertaste. Moderate bitterness, balanced, even with malt. Light floral hop flavor. **14/20**

MOUTHFEEL

Medium-full body—usually much lighter. Moderate carbonation—usually much higher. Not warming but seems like a full beer. Smoke flavors don't add astringency. **3/5**

OVERALL IMPRESSION

Nice clean smoke character but the beer seems a bit big—too high in alcohol and body. This should be a lighter, smaller, crisper beer. The bitterness gets a bit lost, too. Lowering the gravity and keeping the bitterness and smoke the same would make it more authentic. Lighter body, crisper finish, and higher carbonation would also help the drinkability. Usually this style has a higher apparent bitterness. Well made but has a few style issues. Nicely drinkable, regardless. **7/10**

TOTAL SCORE 35/50

AROMA

Initial impression is of moderate-low notes of underripe bananas with a hint of green pepper, but these give way to a soft, sweet smokiness. There is a little honey character, but it marries well with the smoke. The aroma becomes smokier as it breathes and the yeast aromatics fade. **10/12**

APPEARANCE

Amber color with a very slight haze that is forgivable given the wheat malt base. Medium carbonation with excellent retention. **2.5/3**

FLAVOR

Begins with low malt sweetness and light toasted notes, but main flavor component is a medium-low, soft, silky smokiness. The banana character noted in the aroma is also present as a background flavor. The hop bitterness is low, but the very low tannins dry out the finish and keep everything in balance. **17/20**

MOUTHFEEL

The mouthfeel is quite soft thanks to a low body and a carbonation level that is moderate rather than high enough to add a carbonic bite. There is no significant astringency, which keeps the beer smooth. No perceptible alcohol. **4.5/5**

OVERALL IMPRESSION

This beer is very enjoyable, with a label that speaks to the Polish origin. It's good to see this beer also coming back into vogue in its native country, with the artistic variations one finds with both Polish food and craft beers. This interpretation is on the smooth side, with a balance between smoke, silkiness, and a little fermentation character to add complexity. While hops are often a more prominent part of the profile, this example is still immensely quaffable. **8/10**

TOTAL SCORE 42/50



JUDGING

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 commercial beers (or meads or ciders) using the BJCP scoresheet. We invite you to download your own scoresheets at bjcp.org, pick up a bottle of each of the beverages and judge along with them in our Commercial Calibration.

OUR EXPERT PANEL

Includes Dave Houseman, a Grand Master VII level judge and competition director for the BJCP from Chester Springs, Pa.; Sandy Cockerham, a Grand Master VI level judge from Indianapolis, Ind. and an associate exam director and Midwest Representative for the BJCP; Scott Bickham, a Grand Master IV 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 XIII judge, principal author of the BJCP Style Guidelines, and president of the BJCP board who lives in Beavercreek, Ohio.



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Little Red Bird



By J. K. Bywaters

I don't want to know if this is true for any of you. But I know that there are people in the world who cannot abide the winter, who loathe the cold, and even those who despise the snow.

For some, the entire season is an affront and an assault, one they feel approaching them even in the days of autumn, as the light begins to fade and the days grow ever shorter. A sort of grimness settles over them, marked by a stiffening of the jaw, a furrowing of the brow, and perhaps even a temporary hardening of the heart.

The winter has never done that for me. It isn't that I don't feel the loss of the light or the absence of the daylight hours—I do. It isn't that I don't notice or don't experience a change in energy levels, outlook, or mood. It isn't that I walk around blithely oblivious to the fact that all of the leaves have gone from the trees.

I see the starkness of the twigs, like writing on the sky, and I look forward to the

emergence of the green leaves of the spring. I try to pay attention to the days, which even from the very first day of the winter have already begun to lengthen. Winter is a season of growing light, and I savor it.

There are foods I only want to eat in the winter—the saltier stuff, the pickled things, richer and heartier fare. There are things I only want to drink when it's cold outside—hotter stuff and stronger stuff. There is music that is only for the wintertime. Isn't there something special about a song you only hear a few times each year, but that can instantly evoke memories or a whole mood?

Isn't there something indelible, something positively triumphant, about coming in from the cold—certainly the very act of being able to come in from the cold is triumphant in the first place—and then, to be able to have a mug of mulled wine or of hot tea? Brilliant. And if anyone has ever tended a garden through the summer months and then put up a peck

of pickled peppers, or made a marinara sauce from the tomatoes and basil you've grown, or watched your grandmother can cherries or make apple butter, then you must know the joy of opening that jar in the winter, months later, and swallowing the very light of summer.

I love that.

I love so much the feeling of carrying a part of one season, of one time, into another. To savor its presence like that is a form of ritual. But the summer gives us so much, you know? The summer is filled with such bounty. It's easier to bring the summer into the winter. To do it the other way is harder. It is easy to overlook the gifts that winter brings us. It is easy to think they are small, few, and far between. And there are many people, I know, who shudder and shiver at the notion of bringing anything from the winter into the summer.

But one year, on the night of the very last day of winter, I discovered a way. That year,

Brew
This!



Little Red Bird

Bière de miel with blood orange zest and juice

Recipe courtesy J. K. Bywaters

Over the years, I've made several snowmelt beers. Saisons have been the go-to (including a dark saison d'hiver), but I've also made a snowmelt bitter and the braggot detailed below.

Batch volume: 5 US gal. (18.9 L)

Original gravity: 1.084 (20.2°P)

Final gravity: 1.017 (4.3°P)

Color: 6 SRM

Bitterness: 66 IBU

Alcohol: 8.8% by volume

MALTS

8 lb.	(3.63 kg) Pilsner malt
3 lb.	(1.36 kg) soft red wheat flakes
8 oz.	(227 g) honey malt or Brumalt
8 oz.	(227 g) oats

HOPS

1.75 oz.	(50 g) Motueka @ 60 min
2 oz.	(57 g) Motueka @ 10 min
2 oz.	(57 g) Motueka @ 1 min

ADDITIONAL ITEMS

3 tsp.	(15 mL) fresh blood orange peel, zested @ 5 min
--------	---

24 oz. (710 mL) blood orange juice @ 1 min
2 lb. (907 g) wildflower honey @ knockout

YEAST

Saison yeast

BREWING NOTES

Mash for 90 minutes at 152°F (67°C), lauter, sparge, and collect wort. Boil 90 minutes, adding hops, orange zest, orange juice, and honey as indicated. Chill wort to 65°F (18°C) and ferment at that temperature until specific gravity stabilizes at or near 1.017 (4.3°P). Age 3–4 weeks and bottle or keg with 3 vol. (6 g/L) CO₂.

PARTIAL-MASH VERSION

Reduce the Pilsner malt to 2 lb. (907 g) and eliminate the red wheat flakes. Mash 2 lb. (907 g) Pilsner malt, honey malt, and oats for 90 minutes at 152°F (67°C). Dissolve 6.6 lb. (2 kg) wheat liquid malt extract in the resulting wort, top up to desired boil volume, and proceed with the boil.

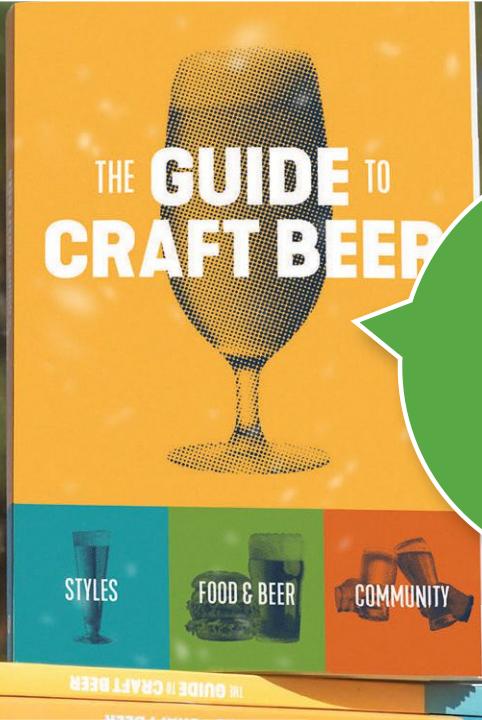
on the very last day of winter, it snowed. For anyone who has spent a winter into spring in Virginia, you will probably have a more accurate picture of what it is like in that third week of March. By that point, we have probably already had one or two days in the 80s. You have probably already gone outside without wearing any shoes at least once. To

get any snow at all that late in the year is a fluke. But that year, we got eight inches! Eight inches! On the very last day of winter.

What novelty! I loved it. *What a gift!* I thought. And the snowfall had given me an idea. As it started to get dark, I began to gather all the boiling kettles, the crock-pots, the Dutch ovens, the stewpots. I took

up the largest, longest spoon I had, and I opened my back door. I went to work. I filled them all. Before I went to bed that night, I put a pot of snow on top of every radiator in the house.

The next morning, I poured it all together and found that I had more than eight gallons of snowmelt. It made me think



What's INSIDE?

- 80+ beer style descriptions
- Food pairing suggestions
- Craft beer tasting log



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of my great-grandfather, a man known as Papa John, who, after his dinner, was fond of saying “it was good, what there was of it ... and there was plenty.” Eight gallons of snowmelt would do just fine. I filtered it. And I poured quite a lot of it into a great big mash tun filled with malted Belgian barley, flaked wheat, and even some rice hulls. And I waited. And you all must know what came next.

Not to make too long a tale of it, but there came a day, some three months later, that was the longest day of the year. And on that day, I sat outside, sweating in the heat, and opened a bottle of saison ale brewed entirely from the snows of winter. I sat outdoors on a summer evening, and I savored the cold, and the winter come and gone.

J. K. Bywaters is an award-winning storyteller, author, and brewer. His work has appeared in print in publications ranging from Holistic Healing magazine to the anthologies of Bibliotheca Alexandrina; recently online at resolutegent.com; and on the judging tables of central Virginia's Dominion Cup. He has been telling tales, brewing ales, and tramping about in the woods for some time now, and cordially invites you to follow him on Facebook and Twitter.



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No Boil, No Problem

For more than 14 years, I brewed 3- to 5-gallon all-grain batches with 45- to 60-minute mashes and boils. But not anymore. Space constraints now make those batches untenable, and compromise is the name of the game. My equipment limits the volume I can boil, so I developed a workaround: no-boil brewing.

No-boil beer kits have been around for a long time, and most current offerings are of good quality. My first no-boil beer was a Munton's Nut Brown Ale kit I brewed a couple of years ago. Being a bit of a contrarian, I swapped brown rice syrup for the sugar called for in the instructions. The resulting beer had a nice, crisp, lager-like edge. While I don't plan to repeat the brown rice syrup experiment, I'm not averse to using other forms of sugar such as turbinado or molasses in no-boil beer.

Recipe formulation is one of my favorite parts of homebrewing, so I got to work formulating some 2-gallon no-boil batches. My first used one type of extract and one hop, which turned out OK. My second attempt used three extracts and six different hops and turned out much better. I'm currently nearing the end of a batch of no-boil stout, and I have a batch of British brown ale that just finished bottle conditioning and is my best effort yet (see recipes for WTG? Stout and I Got Your Nukey Brown Ale in this issue of *Zymurgy*).

Lots of homebrewers get started with no-boil beer kits, but you don't have to restrict yourself to beer. I never boil cider or mead either.

I got into the habit of making cider in the summer months to avoid heating up my kitchen when I didn't have air



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Recipe
formulation
is one of
my favorite
parts of
homebrewing.

conditioning. When I don't feel like processing a ton of apples, I scout around the local grocery stores for single-variety juices like Honeycrisp, Opal, Granny Smith, and Pink Lady to blend together. But even when I'm feeling ambitious, I still use plain juice like Tree Top 3 Apple Blend as a base and mix in smaller amounts of various apples, sort of like combining extracts and specialty grains for beer. Other fruits can also be added: pear, blackberry, cherry, and coconut are all great options.

I've made several batches of mead over the last 20 years and have never boiled any of them. I heat filtered water to near boiling, thoroughly mix in the honey, chill the must, and pitch the yeast. I've always had good results. I have an awesome 17-year-old, 18% ABV meadowfoam cherry mead and a 16-year-old, 18% ABV batch of raspberry mead made with raspberry honey (I'm sadly down to my last bottle of each). I've since switched to using less expensive honey when I plan to add fruit. A pymeant with generic clover honey and store-brand white grape juice turned out pretty good.

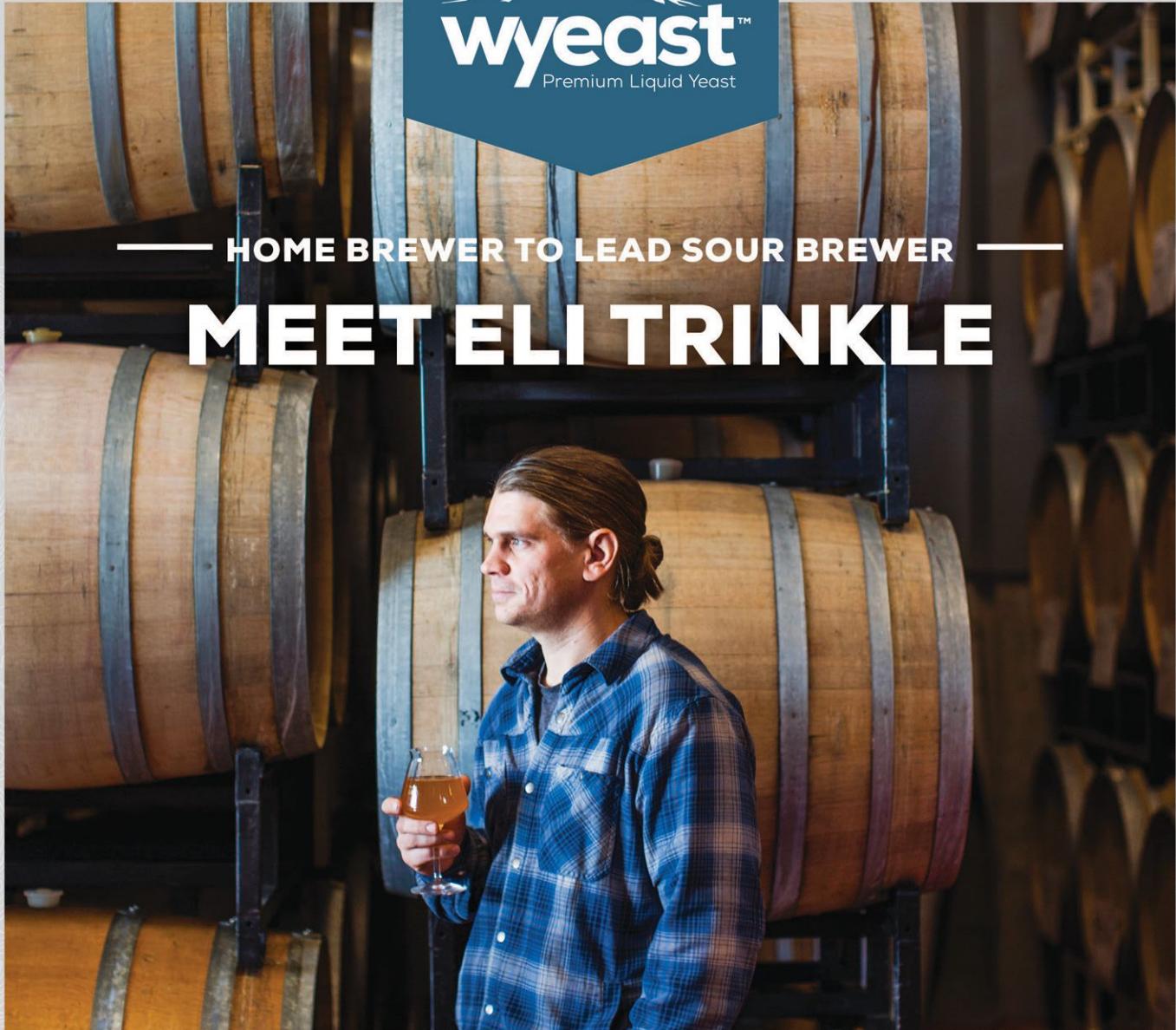
I've proven, at least to myself, that if one really wants to get their brew on, they can find a way to negotiate pretty much any circumstance. So far, the only "drawback" that I have found to my no-boil approach is that these batches have not cleared very well. So, I see no alternative but to brew some hefeweizen or maybe a hazy, juicy NEIPA.

Steve Ruch lives in Crescent City, Calif., and has been homebrewing for more than 20 years. He is a regular contributor to Zymurgy.



— HOME BREWER TO LEAD SOUR BREWER —

MEET ELI TRINKLE



Eli Trinkle of Upland Brewing Co. was immediately drawn to home brewing after being introduced to it by his neighbor. After just one month of owning his own home brew setup, Eli was brewing all-grain with Wyeast smack-packs and kegging his own beer. He admits he was so intrigued by the process, it consumed his life. He spent countless hours researching and experimenting—he even worked as an assistant brewer while finishing his degree in engineering technology. Post-graduation, Eli decided that instead of pursuing more education, he'd turn his passion for brewing into a career.

Today, Eli has crafted a diverse portfolio of award-winning sours for Upland. He attributes his present-day brewing devotion to his colleagues at Upland, to the people of Bloomington, IN and the pride associated with pioneering a quality fermentation product. At Wyeast we share these same values, which is why we're pleased to toast the work of Eli and the rest of the Upland Brewing team.



See wyeastlab.com for homebrewing recipes from Eli and other commercial craft brewers.

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