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A Warm Welcome to Julia Herz

The Brewers Association (BA), parent organization of the American Homebrewers Association (AHA), recently announced the hire of Julia Herz as executive director of the AHA. I've known Julia for several years, and I'm excited to welcome her to the AHA. I'm even more excited to introduce her to you.

Julia has worn a hose clamp as a ring for over a decade, which tells you pretty much all you need to know. Well, that and she won a silver medal in the National Homebrew Competition in 2003. Oh, and she and I had been studying together for the Advanced Cicerone exam right when COVID-19 shut it all down, and I can tell you from that exercise that Julia's palate is impressive. (She recently went on to pass the exam; I, on the other hand, will have to try again.)



Her love of craft beer began long before Julia could even consume it. When she was growing up in Maryland, her parents would take her and her brother to the legendary Brickskeller tavern, a DC institution whose beer list—all bottles and cans—numbered in the hundreds long before most other restau-

rateurs were bold enough to try such a thing. Watching her foodie parents enjoy delectable dishes alongside handpicked beers no doubt planted the seed that would become Julia's lifelong passion for pairing beer with food.

Julia brewed her first beer, a Scotch ale extract kit, when she was a university student. "It was the best thing I'd ever tasted," she says, "because of the pride and intimate experience of brewing it."

After university, Julia worked at CNN in Washington, DC, for a time before quitting her job and road tripping with a friend for a year. Along the way, they visited enough welcoming breweries and pubs to convince Julia she wanted to pursue a career in the beer business instead of TV journalism.

In 1993, she volunteered at the Great American Beer Festival® (GABF). A couple of years later, at a beer festival in Beaver Creek, Colo., Charlie Papazian drew Julia's name from a hat to win an AHA membership. She has been a member ever since.

"I genuinely think this is a story you can't script," says Julia. "A petite, 100-pound female who flies under the radar and was a homebrewer for her own volition. I happened to get to Colorado after organically volunteering at GABF. Charlie Papazian picked my name out of a top hat. Now I get to lead the AHA. Wow."

I asked Julia what excites her most about leading the AHA, particularly during the continued disruption of a global pandemic.

"When you're a homebrewer, you're certain to be connected to a global community," she says. "You're not alone, and there are homebrewers who have your back across the world. You can connect with that community no matter the conditions. Whether in person or virtual, that connection remains. In 2017, homebrewers made 1.4 million barrels of beer, equaling one percent of total US beer production. That's a powerful statistic. Homebrewers



influence purchases. Homebrewers are incubators for experimentation."

I then asked what obstacles she thinks prevent would-be homebrewers from diving in. "Any new hobby is intimidating," she notes. "Paragliding, knitting, building birdhouses, brewing, and baking—you want to get it right."

"Meeting people where they are, to reduce intimidation, is important," she continues. "We're all a bunch of geeks who want to talk about what we're doing. The major roadblock is intimidation. I might be intimidated to talk to you. You might be intimidated to talk to me. We must approach each other on an even playing field."

Finally, I asked how best we as AHA members can help her succeed as director.

"Our 35,000+ members can be ambassadors for our hobby and association. The best way is to get others involved. But don't get overwhelmed and feel you have to brew 12 months a year. No matter how frequently you make beer, the value of AHA membership is large compared to the cost, as you are connected to world-class resources and the community all year long, day in and day out. I hope members believe this and also encourage others to join and bring their new ideas."

Every AHA member past and present has helped Julia get to where she is now. How can she help us go further as members in 2022? It's an ongoing story.

Welcome to the AHA, Julia!

Dave Carpenter is editor-in-chief of Zymurgy.

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GADGETS 2022

Today's homebrewers enjoy unprecedented access to purpose-built brewing equipment, but the DIY spirit remains very much alive. Zymurgy's annual Gadgets Issue celebrates that spirit.

By Zymurgy readers



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LOST FRUIT BEERS OF BELGIUM AND THE NETHERLANDS

Kriek lambic is made from sour cherries, the most traditional of which has become rare but all the more sought after: Schaarbeek. Is Schaarbeek really the original kriek, or did other fruit beers precede it?

By Roel Mulder



46

ZOIGLBIER

Zoiglbier is less a kind of beer than a commitment to an age-old brewing tradition that has long since vanished across most of Bavaria. You know the beer's flowing when you come across the Zoigl star hanging above a tavern door.

By Franz D. Hofer



55

JEKYLL AND HYDE

What happens when you come across a new yeast strain you have not used or tasted before? Omega's Jovaru yeast, a Lithuanian strain, is noted for its Belgian characteristics. A split batch revealed results that were not entirely anticipated.

By Dustin S. Henry



60

CRUSHING IT

Professional cidermakers told us about seven-day, dawn-to-dusk work weeks and how dumping a batch means wondering how you'll pay rent. But all have one thing in common: a passion and desire to share a love for well-crafted cider.

By Kristen Kuchar

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A Warm Welcome to Julia Herz

By Dave Carpenter



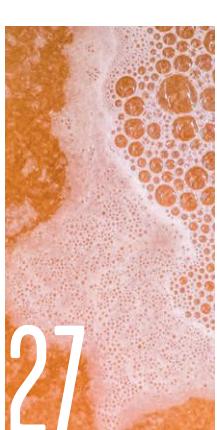
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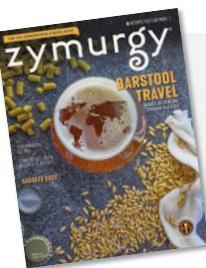
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Product Announcements

FERMENTIS DRY YEAST AVAILABLE IN 100-GRAM PACKETS

When we first heard that Fermentis was making yeast available in 100-gram pouches, we asked ourselves when a homebrewer would ever need that much yeast. And then we remembered we like high-gravity lagers and ran the numbers. If you want to direct pitch 10 gallons (37.8 L) of 1.074 (18°P) doppelbock wort using an appropriate pitch rate, you need more than 1 trillion yeast cells. Turns out, that's just about 100 grams of dry yeast. Fancy that.

Fermentis yeasts have long been available in 11.5-gram sachets (great for solo homebrewers), 500-gram bricks (great for sharing in your homebrew club) and 10-kilogram foil hard packs (great for pros). These new 100-gram pouches offer more choice to homebrewers and nanobrewers.



NOW ON
Tap

Like the 11.5-gram sachets we're all familiar with, these 100-gram packs are sealed in an inert-gas environment to protect the yeast within. If you're ready to pitch a lot of yeast, ask your favorite homebrew retailer about these new mega-pouches from Fermentis.

ALPET D2 QUAT-FREE SURFACE SANITIZER NOW ORGANIC LISTED

Interest in organic foods continues to grow, and homebrewing is no exception. If you're already going the extra mile to source organic malts, hops, yeasts, and other brewing ingredients, it's worth ensuring that your cleaning and sanitation processes are consistent with your chosen approach.

Alpet D2 Quat-Free Surface Sanitizer, first made available in 2017, is now OMRI Listed, which means it can be used as a cleaner or sanitizer in commercial operations that maintain organic standards. The Organic Materials Review Institute (OMRI) offers organic certifiers, growers, manufacturers, and suppliers an independent review of the products intended for use in certified-organic facilities, and OMRI Listed products are allowed for use in certified-organic facilities under the USDA National Organic Program.

Alpet D2 Quat-Free Surface Sanitizer is a great choice for homebrewers, organic or not, who prefer an out-of-the-box (out-of-the-bottle?) sanitizer that doesn't require mixing. Like all the best homebrew sanitizers, this one requires no

rinsing, and it leaves no residue behind. On clean food-contact surfaces, including non-porous waterproof gloves, Alpet D2 Quat-Free kills 99.999 percent of eight pathogens in 60 seconds, including *Staphylococcus aureus*, *Escherichia coli*, *Escherichia coli* O157:H7, *Pseudomonas aeruginosa*, *Salmonella typhimurium*, *Listeria monocytogenes*, *Enterobacter sakazakii*, and *Vibrio cholerae*. Alpet D2 Quat-Free also kills 99.9 percent of tested bacteria in 10 seconds on clean, non-food contact surfaces, including non-porous, waterproof footwear like your rubber brew boots.

Alpet D2 Quat-Free Surface Sanitizer is NSF listed, Kosher, Pareve, and Halal certified.





Blichmann Engineering Celebrates 20 Years

Homebrewers today may take stainless fermenters and decked-out tri-clamp boil kettles for granted. But back in 2001, when John Blichmann founded Blichmann Engineering in Lafayette, Ind., most of us were doing the best we could with anything we could piece together (see “Gadgets 2022” in this issue of Zymurgy for more on that DIY can-do approach).

It all started with The Fermenator, a stainless-steel cylindroconical fermenter specifically designed for homebrewers. Since then,

Blichmann’s catalog has expanded to include more than 70 products. Alongside Blichmann Engineering’s flagship homebrew line, spinoff brands Anvil Brewing Equipment and Blichmann Pro Brewing cater to cost-conscious homebrewers and commercial brewers, respectively.

“This industry is only growing, and we hope to continue serving everyone who loves brewing as much as we do,” says president and founder John Blichmann.

Cheers to 20 years, John!



Give the Gift of Homebrewing

Still looking for a gift? For a limited time, purchase a one-year new membership or renewal and receive your choice of *Brewing Eclectic IPA: Pushing the Boundaries of India Pale Ale* by Dick Cantwell or *Designing Great Beers: The Ultimate Guide to Brewing Classic Styles* by Ray Daniels. Visit HomebrewersAssociation.org/offers/give-the-gift to take advantage of this promotion, but don’t wait. The offer ends January 4.



2022 Calendar

The new year is upon us! Be sure to save these important dates on your 2022 calendar:



March 22–April 4:

AHA National Homebrew Competition entrant application, registration, and payment window

February 15–March 31:

AHA Governing Committee election ballots accepted

March 22:

AHA Homebrew Con™ Pittsburgh registration opens

April 10:

Deadline to submit entries for Radegast Club of the Year

May 7:

Big Brew

May 20:

Deadline for Homebrew Shop of the Year nominations

May 24–June 3:

AHA National Homebrew Competition shipping window

June 21–23:

AHA National Homebrew Competition judging

June 23–25:

AHA Homebrew Con Pittsburgh

August 6:

Mead Day

October 6–8:

Great American Beer Festival

November 5:

Learn to Homebrew Day

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

Radegast Club of the Year Entries

Homebrew clubs aren't mere drinking societies. They host events that introduce the public to our 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 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 splits a \$1,000 cash award with the charity of the club's choice.

Entries are due by April 10. We'll announce the winner of the 8th annual Radegast Club of the Year Award during the awards ceremony at the 2022 AHA Homebrew Con in Pittsburgh, on June 25. See HomebrewersAssociation.org for more details.



2021 Radegast Club of the Year
Diablo Order of Zymiracle Enthusiasts (DOZE), Concord, Calif.



Brewers Association Continues Efforts to Legalize USPS Shipping of Alcohol

By Marc Sorini, Katie Marisic, and Pete Johnson

Shipping alcohol in the United States has long been problematic for individuals. Each state has its own laws that govern shipping of alcohol and even specify the types of beverages that can and cannot be shipped. For example, while many states have authorized US wineries to ship wine to in-state consumers, far fewer (11 plus the District of Columbia) authorize brewers in another state to ship beer to their consumers.

These state laws are exacerbated by the prohibition on mailing alcohol in all its forms through the United States Postal Service (USPS). Not surprisingly, this ban on alcohol shipments has its roots in Prohibition-era concerns that illicit shipments of alcohol beverages would undermine laws designed to enforce temperance.

The Prohibition experience leaves an indelible mark on US alcohol policy through its embrace of both federalism and states' rights. In the decades prior to national Prohibition, many states enacted prohibition laws banning the sale of alcohol within their borders. Not surprisingly, thirsty consumers in "dry" areas and eager businesspeople responded by embracing direct-to-consumer shipping in

the late 1800s and early 1900s. What's more, certain (now defunct) legal doctrines embraced by federal courts at the time limited states' authority to interfere with such shipments as long as the alcohol remained in its "original package" en route to consumers. Congress responded to these court-made legal obstacles by passing two laws—the Wilson Act (1890) and the Webb-Kenyon Act (1913)—designed to give states more authority to control the flow of alcohol into their borders than the courts were willing to allow.

If national Prohibition proved anything, it was that the United States was too diverse a country to regulate anything as socially sensitive as alcohol on a national basis. In repealing national Prohibition in 1933, the Twenty-first Amendment incorporated the language of the Webb-Kenyon Act and empowered states to regulate interstate commerce in alcoholic beverages. Since then, primary regulatory oversight of activities like shipping and delivering alcohol has been left to the states. Even today, while the federal government plays a role in regulating alcohol shipping, restrictions and privileges primarily flow from state law. As such, policies regarding

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the shipping of beer or homebrew will turn substantially on state-by-state laws, and therefore can vary widely from place to place.

EARLY EFFORTS

When it comes to beer, the policies of private carriers (e.g., FedEx and UPS) were for many years unclear, and it was something of a roll of the dice as to whether a shipment of beer would be accepted. Homebrewers, in particular, faced serious challenges in providing beer for competitions, which often utilize a central location to collect and judge entries. When a competition is on a national scale, the difficulties of physically getting competition entries to the judging location for those living hundreds or even thousands of miles away can be insurmountable.

In 2006, in an attempt to address and minimize these obstacles, particularly for homebrewers in the context of judged competitions, the Brewers Association (parent organization of the American Homebrewers Association) began efforts to legalize the shipping of beer through the USPS. Although it was recognized at the time that, even if successful, federal authority to ship beer was not a complete answer (most states prohibit the direct shipment of beer from out-of-state brewers and federal authority would not supersede state law), the thinking was, similar to the federal legalization of homebrewing in the late 1970s, that once shipping of beer for competitions was federally legal, state legislatures would be more willing to consider similar measures.

So began a multi-year effort in which Brewers Association staff corresponded

and met with representatives of the USPS, the Department of Justice, members of the Congressional Small Brewers Caucuses, Congressional committee staff with jurisdiction over USPS, and individual Members of Congress, and drafted a variety of legislative amendments providing for the mailing of malt-beverage competition entries. Early approaches were focused on amending the postal statutes within the context of postal reform efforts that had been ongoing for many years and continue to this day. Unfortunately, the complexity of issues related to postal reform, particularly those concerning the future provision of pension and healthcare benefits for retirees, bogged down negotiations and legislative action.

As time went on, however, broader interest emerged to allow the mailing of alcohol, both as a direct-to-consumer play and as a source of revenue for the USPS. In 2012–13, multiple bills were introduced in Congress related to USPS commercial alcohol shipping, and it was at this point that the BA's efforts expanded to encompass commercial as well as homebrewed beer. A legislative summary of the BA's suggested draft legislation at the time of the 113th Congress (2013–2014) follows:

[The amended section would enable the USPS to ship distilled spirits, wine, and beer in accordance with the laws of the state to which the items are addressed and received. Shipments that the Postal Service would be permitted to transport [beer, including] transfers between licensed businesses,

shipments to consumers where authorized by state law, samples sent for judging at recognized home brewing and winemaking competitions, samples sent to private and government laboratories for tax classification, testing and analysis, and shipments for other lawful purposes. USPS would be required to issue regulations providing that distilled spirits, wine and beer is mailed directly to a person who is at least 21 years old and presenting a valid, government-issued form of identification at the time of delivery.

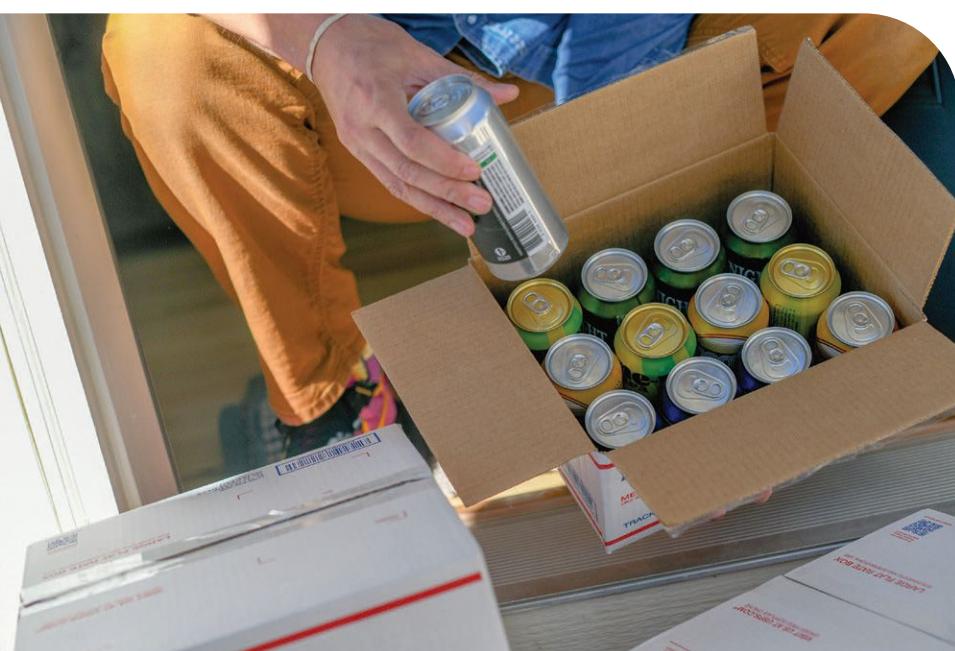
In April 2013, the USPS Shipping Equity Act (HR 1718) was first introduced in Congress by Representative Jackie Speier (D-Calif.) and has slowly gained traction and support in subsequent Congresses. As time passed, the demands for direct-to-consumer products grew and the legislation evolved.

USPS SHIPPING EQUITY ACT OF 2021

One of the unanticipated side effects of the COVID-19 pandemic was the shift in consumers' sentiment for how they purchase beer and other beverage alcohol products. There has been a nationwide increase in consumer demand for alcohol to go, alcohol delivery facilitated by third party provider (TPP) apps like Drizly, and direct shipping of alcohol from producers to consumers.

- 84% of self-identified “regular craft beer drinkers” say they want to be able to legally purchase beer via DTC shipping to their home.*
- 82% of participants surveyed said that they are in support of giving the United States Postal Service the ability to deliver alcohol to 21+ adults in compliance with applicable state and local laws.**

To meet this growing demand, state and federal governments have been reviewing and changing outdated laws pertaining to beverage alcohol sales. The USPS Shipping Equity Act of 2021 is one piece of legislation that would help both consumers and brewers. Though the legislation only extends shipping to USPS in states where it is already legal for private carriers to ship, it would increase both the number of breweries (and other alcohol producers) that can ship and expand the number of consumers that those businesses can ship to. The current USPS Shipping Equity Act was put together with several key goals in mind.



Empower Consumers to Access Product from Beverage Alcohol Producers

Allowing the postal service to ship alcohol would likely have the biggest impact on small producers that do not currently have relationships with wholesalers or many retailers. These sales would not replace existing sales within the three-tier system, but they would provide businesses that are outside of the system with another avenue to get their product to consumers. Wine is currently legal to ship in 46 states plus the District of Columbia, yet widespread shipping has not negatively affected wine wholesale or retail sales.

With more than 9,000 craft breweries operating in the U.S. in 2021, there is a craft brewery within 10 miles of 85 percent of adults aged 21 or older. Roughly 40 percent of those breweries are taprooms and tasting rooms that sell most of their product directly to consumers, not through traditional methods. They account for the majority of growth in the brewing industry and have a positive impact on the communities in which they are located.

The USPS is set up to ship to and from rural locations in ways that private carriers are not. The USPS Shipping Act would create competition and potentially lower shipping prices for producers and consumers.

Create Additional Income for the USPS

Economists predict that the USPS Shipping Equity Act, if passed, would create an additional \$180 million for the post office the first year it goes into effect. Labor unions that represent the USPS, including the American Postal Workers Union, have come out in support of the legislation.

Garner Bipartisan Support and Pass into Law

Any legislation that addresses the shipping of alcohol, both at the state and local levels, will likely see opposition from the wholesale tier and public health groups. The USPS Shipping Equity Act was crafted to address those concerns. Elected officials who crafted this legislation worked hard to ensure that the USPS Shipping Equity Act would complement state and local laws and not supersede state regulation. The legislation does not change federal excise tax collection, nor does it inhibit state or local authority in regulating beverage alcohol. It also provides strong safeguards such as identification checks to discourage underage consumption of alcohol by minors.

There are still opponents of the bill, but their opposition seems to be to all interstate shipping of beverage alcohol, an issue that should be addressed at the state level.

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Despite the opposition, the bill still has growing bipartisan support with 32 cosponsors in the House (the largest number to date) and a recently introduced companion bill in the Senate. The original sponsors of the legislation Reps Jackie Speier (D-Calif.), Dan Newhouse (R-Wash.), and Senator Jeff Merkley (D-Ore.) are strong advocates in support of the legislation.

PRACTICAL CONSIDERATIONS

Passage of this legislation has now become the primary focus of BA efforts to allow shipping of beer through the USPS. The BA has advocated for passage of the legislation and created a grassroots page (craftbeer.com/news/usps-shipping-equity-act) that can be used by both producers and consumers to contact their elected officials in support of the USPS Shipping Equity Act.

The BA hopes that passage of the USPS Shipping Equity Act will be one of many steps to allowing alcohol beverage producers to ship their product, a win for both consumers and producers.

Not surprisingly, trade associations representing wholesalers and traditional “brick-and-mortar” retailers oppose the USPS Shipping Equity Act. While such groups possess a clear self-interested motive in preventing brewers to sell beer directly to consumers, these groups frame their arguments in terms of alcohol policy and the need to protect the public against the evils of underage or excessive alcohol consumption. The BA does not believe these objections withstand closer scrutiny.

One common refrain of opponents is that the legislation would undermine state and local efforts to regulate alcohol. This objection, however, entirely ignores that the USPS Shipping Equity Act does not preempt or repeal any state or local laws. A state would remain free to prohibit or limit alcohol shipments. Under the Act, the USPS would only be authorized to ship into and within states where legal under state and local law. This objection, then, is premised on a misreading of the proposed statutory changes.

Some critics claim that the Act would interfere with state efforts to collect alcohol excise taxes, but the proposed legislation explicitly requires that all USPS shipments comply with state law. Furthermore, the bill would explicitly grant the USPS the authority to require shippers to submit information demonstrating the pre-payment of state excise taxes on shipments. More broadly, following a recent Supreme Court decision allowing states to collect sales taxes from out-of-state sellers, the notion

that states cannot collect taxes from out-of-state sellers is completely anachronistic.

A third argument is captured by the clever but misleading sound bite that “your mailman should not be your bartender.” No one, of course, expects US postal workers to act as bartenders, just as no one looks at a grocery store clerk who can sell you beer as a bartender. What makes this objection more incredible is that many of the same groups that oppose the USPS Shipping Equity Act, and interstate shipping by brewers in general, support the local retailers’ ability to sell to remote customers through services such as Uber and Door Dash, or via delivery by a store clerk. How these delivery methods are appreciably safer and more responsible than shipping via a US postal worker is never explained. Not coincidentally, restricting delivery to local retailers ensures that beer passes through and is marked up by established wholesaler and retailer businesses.

Moreover, as private carriers like FedEx and UPS already deliver wine in many states, as well as beer and liquor in the states where permitted, critics need to explain why US postal workers are uniquely unable to competently and safely transport and deliver alcohol. Indeed, from a regulatory standpoint, one would expect delivery via government employees to be at least as likely to comply with the law as delivery via private businesses. The premise that government can be trusted to handle alcohol beverages more responsibly than private businesses is the central premise of the “control” theory of alcohol regulation embraced by many U.S. states. And if the USPS makes mistakes, the Shipping Equity Act explicitly gives states, Indian tribes, and local authorities the ability to sue the USPS in federal court.

The BA recognizes that beer is not milk, chocolate, or some other non-intoxicating commodity. Of course, some regulatory oversight is required to prevent deliveries to minors. But private carriers have successfully delivered wine across the country for decades. There is no reason to think that the US Postal Service cannot accomplish the same thing.

* According to the Direct-to-Consumer Beer Shipping Report, commissioned by Sovos ShipCompliant and the Brewers Association.

** According to the Harris Poll commissioned by the Brewers Association.

Marc Sorini, Katie Marisic, and Pete Johnson are the Brewers Association’s general counsel, director of federal affairs, and state & regulatory affairs manager, respectively.



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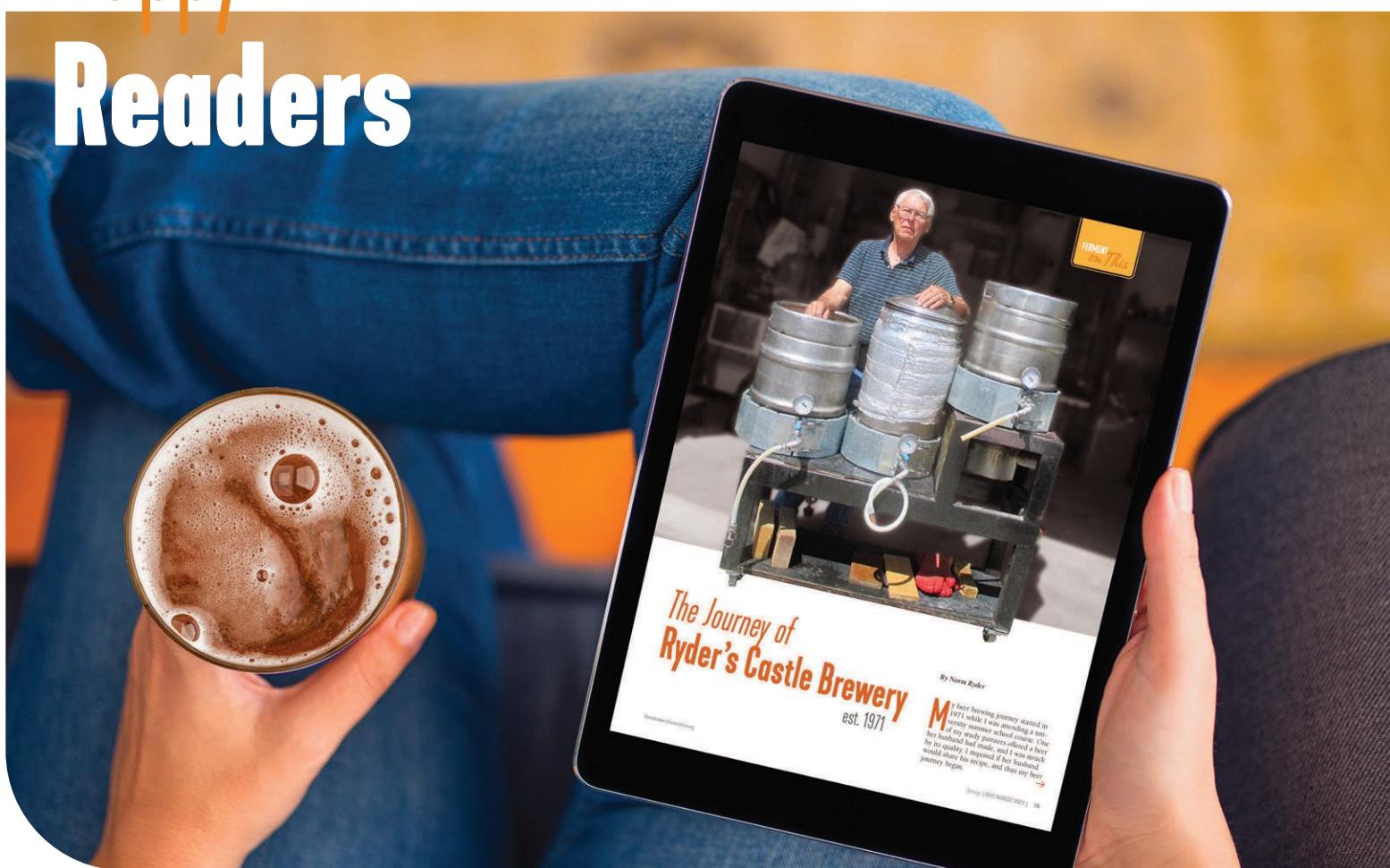
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Happy Readers



Dear Zymurgy,

I absolutely loved "Ferment On This: The Journey of Ryder's Castle Brewery" (Jul/Aug 2021). Never have I seen so much homebrew wisdom and knowledge packed into such a succinct telling. I related to so many of Norm's brewery and practice progressions and was eager to learn where I would be going next. Especially for a new homebrewer, sorting through advice on online forums (and eventually advice from your local homebrew store or club) is quite daunting. One would only need take a look at this for 80 percent of it!

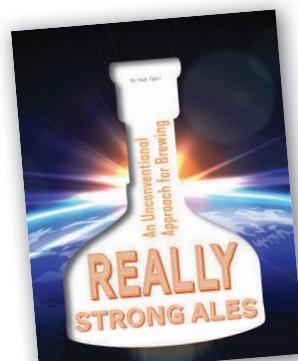
Thanks,
Drew Hodun, Brooklyn, N.Y.

Zymurgy editor-in-chief Dave Carpenter responds: Glad you enjoyed the read, Drew! Check out the gadgets feature in this issue of Zymurgy to read about two more of Norm's clever ideas.

Dear Zymurgy,

Last year I thoroughly enjoyed reading Andy Tipler's article on brewing really strong beers ("An Unconventional Approach for Brewing Really Strong Ales," Nov/Dec 2020). I was inspired to try it myself and employed some of his methods. I'm currently enjoying an 18% ABV Belgian-stout hybrid.

Best,
Scott N. Foster, Albany, N.Y.



DEAR ZYMURGY

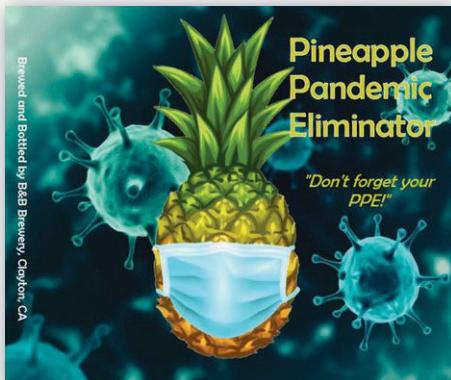
Send your Dear Zymurgy letters to zymurgy@brewersassociation.org. Letters may be edited for length and/or clarity.

YOUR HOMEBREW LABELS



This easy-drinking Belgian beer was inspired by low-gravity table-style beers. I wanted Deckhand to be a beer that you could enjoy after a long day of working on the water. I made this label with that idea in mind. The silhouetted, shadow look suggests that the day's work is just about finished.

Sean P. Wilson
McKinleyville, Calif.



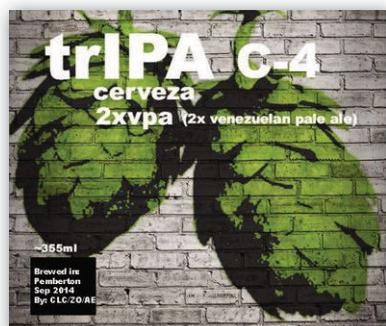
This label is for a pale ale I brewed in March 2020, which included six large pineapples' worth of puree in a 15-gallon (56.8 L) batch. PPE refers to both the beer (Pineapple Pandemic Eliminator) and the personal protective equipment that could help end of the spread of the disease. The label was designed in Microsoft Paint and was printed on sticker labels.

Jay Merani
Clayton, Calif.



This is the label for the first IPA I brewed. IPA and all its variations are my favorite beer styles. The label reminds me of vintage VHS cassettes, of which I still have plenty. As a music fan, most of these cassettes have concerts and videos from MTV.

I probably felt a bit nostalgic when I brewed this beer, so I thought that making a "vintage" label would capture that feeling. Maluca is Venezuelan slang for something that does not taste particularly good, but this beer was delicious and I wanted to play a bit with the wording.



This label is from the first double IPA I brewed in 2014. It is inspired by graffiti art. The hops were done with a stencil on a brick wall, the typical kind of graffiti you might find on the street.

When I brewed this beer, I was really into graffiti and studying this type of urban art. When I visited Venezuela in 2013, I spent hours and hours taking pictures of graffiti. This label is a remembrance of that trip.

The word "triIPA" is a Venezuelan slang that refers to something that you liked a lot, something that is cool. This is what I feel about graffiti, homebrewing, music, and beer.

Carlos Clemente
Bethesda, Md.



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!

YOUR HOMEBREW EXPERIENCE

Homebrewing is all about sharing, and we get hoppy when *Zymurgy* readers share their homebrewing and fermentation experiences with us. We'd love to show the AHA community what *your* experience looks like. From 1-gallon batches on the stovetop to 20-gallon brew days on your custom sculpture, we all have fun with family, friends and pets while we make and enjoy our favorite beverage. Show us your brewing/fermentation day, who you brew with, the ingredients you include, what special processes you use, and how you enjoy the final product of beer and beyond.

Upload photos of your homebrew-related fun at
HomebrewersAssociation.org/your-homebrew-experience



This is Porter. He's not a lot of help, but he looks good doing it.
—Russ Swier, Ripon, Calif.



Left and above:
Fresh hop brew day using 100 percent Mecca Grade Lamonta malt and homegrown hops.

— Nathan McClain, Brewers of the Gorge (B.O.G.),
White Salmon, Wash.



— Bob Tittle, Aurora City Brew Club, Aurora, Colo.



Felicta Brew Co., 12 years homebrewing and four years AHA members.

— Chris Skalka & Jerahmee, Escondido, Calif.



SHARE YOUR BEST HOMEBREWING SHOTS!

Homebrewing is all about fun and sharing. We would love to show others in the community what your homebrewing/fermentation experiences looks like. Upload photos of your homebrew related fun at HomebrewersAssociation.org/your-homebrew-experience and you may see it in the pages of *Zymurgy*!

SCAN ME



YOUR HOMEBREW EXPERIENCE



Brew assistant Dutch watches over the operations during the mash of Curl My Toes milk stout, the annual Thanksgiving beer.
—Doug Anderson, Loveland, Colo.



The assistant brewer ensuring we get all that fantastic cream ale wort into the fermenter. Four years homebrewing and four years an AHA member.
—Matt Akers, Lynnwood, Wash.



NumaBug, a representative of No Tails Ale, is helping me crack the grain for our Irish red ale, Red Rover. Thirteen years homebrewing and three years an AHA member.
—Kenneth Glass, Central Arkansas Fermenters, Cabot, Ark.



Enjoying a homemade English oatmeal stout on the balcony. Seven years homebrewing and four years an AHA member.
—Jørgen Olsen, Oslo, Norway

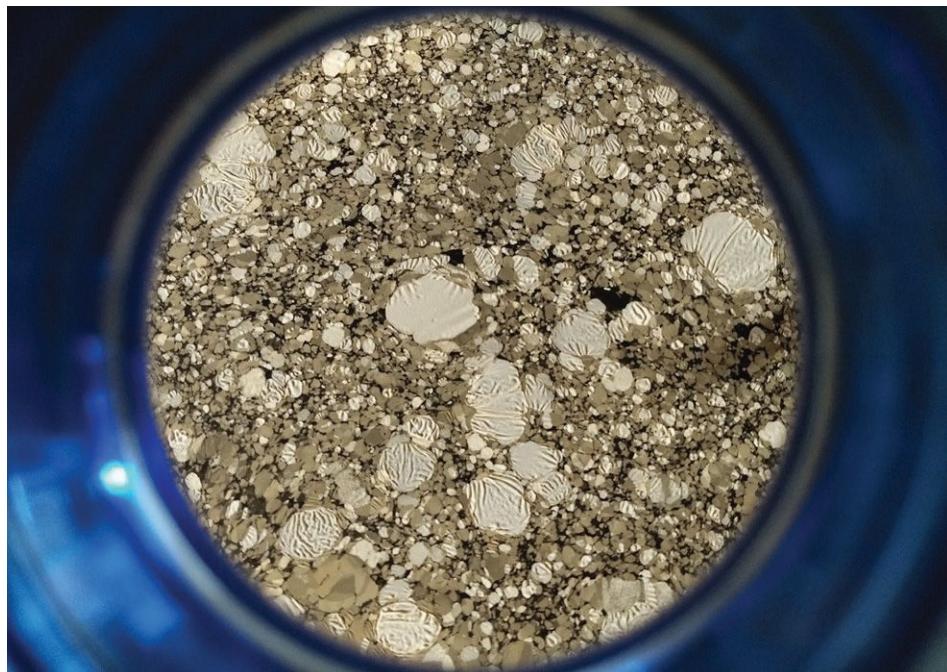


My “flying” homebrewery outside my home with one of my best assistants, Chica. Five years homebrewing and four years an AHA member.
—Carlo Sesia, Associazione Birraria Cuneese, Caraglio (Cuneo), Italy

YOUR HOMEBREW EXPERIENCE



Brew dog Delta watching over Daddy's London Porter and waiting for crispy spent-grain treats!
—Robert Hedge and Delta, Roanoke, Va.



My Zoom background of the pellicle on a souring beer taken through the neck of a carboy. Nobody has a clue what it is, and it gives me a chance to talk about homebrewing with students and colleagues (I teach biology and environmental science at Northeastern Illinois University in Chicago). I've been homebrewing nine years and an AHA member for eight and a half.
—John Kasmer, Mundelein, Ill.



★★★★★ **BOTTLE FROM THE TAP**

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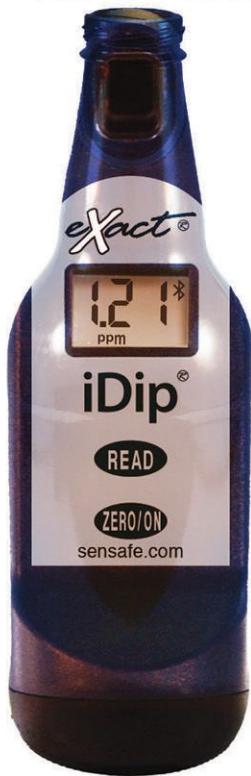
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Quark

By Dave Carpenter

Quark is among the most popular cultured dairy products one encounters in Germany and much of Eastern Europe, but it's rather uncommon in the United States. When one does find it here, quark usually costs more than it really should, probably because demand just isn't that high.

To the uninitiated, quark can be a little hard to pin down. With respect to ingredients and process, it's a type of soft fresh cheese that relies on lactic cultures for acidification, though modern production

facilities often include rennet. Culinarily speaking, though, German-style quark is more similar to sour cream or yogurt than it is to a cheese, much as a tomato, botanically a fruit, is treated as a vegetable in the kitchen. While German quark leans creamy, Russian and Polish quark can be considerably drier and a bit grainy.

Commonly recommended substitutions for quark include cottage cheese, sour cream, Greek yogurt, fromage blanc, or some combination thereof. None of these quite hits the mark, but, fortunately, quark happens to be one of the easiest fermented products you can make at home. With just a day or two of advance planning, there's no need to go searching for alternatives. →



HOW TO MAKE QUARK

Quark is built on soured milk. Traditionally, fat-free or low-fat varieties are preferred, but whole milk works just as well. My preference is to begin with a low-fat buttermilk that contains live, active cultures. Then production is just a matter of keeping the buttermilk warm while the included microbes work their magic.

I've had great success with Kalona Supernatural Buttermilk, which, according to the manufacturer, contains *Lactobacillus acidophilus*, *L. bifidus*, *Lactococcus lactis*, and *Leuconostoc mesenteroides*. It's important to use a buttermilk that has been inoculated after pasteurization. Such information isn't

always advertised, so you may need to ask the dairy about their methods.

If you can't find buttermilk with live cultures, or if you'd prefer to explore how different cultures affect the finished product, you can obtain mesophilic direct-set cultures from a number of sources, including homebrew shops that offer cheesemaking supplies. Working with such cultures is straightforward, but you'll want to adjust the process outlined here for the recommended temperature range for your particular microbes.

The hardest part of making quark is maintaining a steady temperature for 8 or more hours. The first time I tried it, I used a preheated convection oven with the interior light left on. It worked OK, but the resultant quark had a grainier, firmer texture than I wanted.

I've since discovered that an electric multi-cooker such as the ever-popular Instant Pot works much better (is there anything these devices can't do?). A slow cooker is also a good option, though you might want to add a temperature controller and probe to maintain the recommended culturing environment.

My process is simple. Pour as much buttermilk as you like into an electric multi-cooker and close the lid. Turn the appliance on and switch it to yogurt mode. Set the temperature to 100°F (38°C) and set the timer for 12 hours. Then walk away. I'll often do this in the evening so it acidifies and curdles overnight.

When the culturing time is up, line a fine-mesh sieve with cheesecloth and rest it in a generously sized bowl. Then, using a large spoon, carefully scoop the solid

curds out of the pot and into the cheese-cloth-lined sieve. You can use a slotted spoon if you wish, but it doesn't matter all that much.

Once you've removed all of the curds, place your bowl-and-strainer stack in the kitchen sink and leave it to drain for about 30 minutes. Periodically lift the sieve out of the bowl to check how much whey has drained off, and either save the whey for another use—it's an excellent alternative (or supplement) to milk or cream in mashed potatoes—or discard it. When the drainage rate has slowed to barely a trickle, gently pull the edges of the cheesecloth over the curds, not too tight, just to cover. Place the whole thing in the fridge.

Allow your quark to continue draining in the refrigerator for at least 8 hours, or overnight. When the curds have drained as much as they will (or as much as you like), open the cheesecloth back up and scoop the resulting quark into a mason jar or other storage container. The fresh quark will stay good in the fridge for at least a week, often much longer, but it's unlikely that you'll ever have a chance to test its longevity.

WHAT TO DO WITH QUARK

If you begin with skimmed milk, you'll end up with a fat-free product called *Magerquark*. This can be fine on its own, but I prefer it with a bit of cream stirred in, which yields a smoother, silkier *Sahnequark*. Alternatively, you can start with a semi-skimmed buttermilk so that the finished quark has a bit of fat to begin with. As is usually the case, the higher the fat, the richer the texture and flavor.



Cultured buttermilk goes into the Instant Pot. Set it to 100°F (38°C), cover, and leave it alone for 12 hours.



Place curds in a cheesecloth-lined sieve and rest in a bowl to drain.



Drained quark curds after an overnight in the fridge.

An excellent source of protein and calcium, there's a reason some Germans say, *Quark macht stark* ("Quark makes you strong"). Quark works well as a stand-in for cream cheese on toast or bagels, either plain or mixed with a bit of honey. Or blend in salt, pepper, and herbs to make *Kräuterquark*, the Northern European answer to tzatziki.

Quark is a must if you enjoy German-style cheesecakes (*Käsekuchen*), which are built on a firm foundation of the stuff. Many a sweet German snack involves a generous quark filling, including the *Quarktasche*, which envelops lightly sweetened quark in puff pastry.

In Lusatia, a region straddling modern-day Germany and Poland, a common

dish consists, simply, of boiled, peeled potatoes served with quark and linseed (flax) oil. For an inexpensive and filling, albeit monochrome, weeknight meal, one can do much worse. Or do as the Poles do and mix quark with (whey infused?) mashed potato for a meatless pierogi filling.

If you've avoided making a classic German cheesecake because you couldn't find quark, you no longer have an excuse. And if quark is new to you, do give it a try. I think you'll find that it soon becomes a new fermented favorite in your own kitchen.

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

Sahnequark—quark enriched with cream—is an ideal vehicle for any number of sweet toppings..



Potatoes with Herbed Quark and Linseed Oil

(*Pellkartoffeln mit Kräuterquark und Leinöl*)

Serves 4

INGREDIENTS

- 8 medium potatoes
- 2 cups (500 mL) quark
- Cream, to taste
- Minced garlic, to taste
- Minced fresh herbs, to taste (e.g. dill, parsley, chives)
- Salt and pepper, to taste
- Lemon juice or apple cider vinegar, if desired
- Linseed (flax) oil

PROCESS

Cook potatoes in salted boiling water until fork tender. Allow to cool while you prepare the herbed quark.

Blend enough cream into quark to yield desired texture, soft but not runny. Mix in garlic, fresh herbs, salt, and pepper to taste. Sample the quark and adjust seasoning as you wish. A splash of lemon juice or apple cider vinegar boosts acidity.

Peel potatoes and serve two per person. Divide quark evenly among the four servings. Drizzle linseed oil over the top of both potatoes and quark as desired. Pair with a snappy German-style Pils.



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EASY RECIPE CONVERSION

By Dave Carpenter

To paraphrase a maxim that's been attributed to just about everyone from Lao Tzu to Ron Swanson, give someone a fish and you feed them for a day. Teach someone to fish and they'll thank you for the fishing pole but remind you that they brew with malt extract. Or something like that. I'm terrible at recalling quotes.

The Sept/Oct and Nov/Dec 2021 issues of *Zymurgy* boasted a plethora of recipes, almost all of them all-grain. The extract and partial-mash brewers among us might have felt somewhat left out, and as one who brews from extract about a quarter of the time, I can relate.

Not to worry! You can easily convert (almost) any all-grain recipe to an extract or partial-mash formulation with very little math. Armed with that knowledge, you're not limited to recipes that are labeled as extract or partial-mash. Instead, you gain the power to adapt recipes to suit your own approach. ➔

I'm not going to explain how to methodically convert recipes one ingredient at a time. John Palmer has already done an enviable job of that in *How To Brew*. If you don't yet own a copy, go ahead and get one. You're going to eventually and you'll use it forever, if not as a reference then as an overqualified doorstop (the fourth edition runs to nearly 600 pages).

Instead, I'm going to outline a quick-and-dirty method for building an extract or partial-mash recipe that gets close to the all-grain original. Is it exact? No. Is it good enough? Well, that's up to you to decide. At the very least it's a starting point. The steps are straightforward:

1. Copy what you can.
2. Mash any grains that require it.
3. Make up the difference with extract.
4. Adjust for boil size if needed.

1. COPY WHAT YOU CAN

First, do the easy bit, which is to directly copy over whatever you can from the all-grain recipe. Almost without exception, this includes everything that goes in after you start the boil: hops, spices, yeasts, other microbes, nutrients, fining agents, oak spirals, coffee, lobsters, whatever. Most of your work lies in transforming the grain bill, so that's where we'll focus.

Caramel/crystal malts and roasted malts get transcribed directly from an all-grain recipe to your extract or partial-mash version without adjustment. The starches in such malts have already been converted to

sugars in the malt house, and they need only be soaked in hot water to liberate some sugars and pull flavor and color. Yes, they technically will yield less sugar through steeping than they would in a mash, but this is of little consequence. We'll make up for it with extract.

Acidulated malt is only there to adjust mash pH in all-grain recipes, and it doesn't add any character (if it does, you're using it wrong). You don't need acidulated malt in an extract or partial-mash recipe.

Any brewing sugars—table sugar, corn sugar, candi sugar, honey, etc.—can go directly into the kettle, fermenter, bottle, keg, or wherever the all-grain recipe says to use them.

2.

MASH ANY GRAINS THAT REQUIRE IT

Next, take a look at the grain bill for the original recipe and figure out which grains require mashing, if any. You'll need to go partial mash if any do.

Every all-grain recipe is built on a foundation of base malts, usually just one or two, which is what you'll replace with extract. These are easily recognized because they comprise most of the grist. Pale malt (often unromantically called two-row), Maris Otter, Pilsner malt, wheat malt, and Munich malt are the most common and have extract equivalents or good approximations. Once you've identified the base malts, examine the rest of the grist.

Look for any grains that will send you down the road to a partial mash. These include certain base malts with no readily



EXAMPLE: EXTRACT

As an easy example of converting an all-grain recipe to extract with steeping grains, consider New Realm Brewing Co.'s Hoplandia IPA in the Nov/Dec 2021 issue of *Zymurgy*. The recipe has a simple malt bill for 5 gal. (18.9 L) of 1.065 wort:

12.2 lb. (5.53 kg) US pale malt
8.1 oz. (229 g) Simpsons Caramalt
4.3 oz. (124 g) Weyermann Acidulated malt

We know that acidulated malt is only needed to adjust mash pH in an all-grain recipe, so we can ditch that. We'll carry over the Caramalt directly as a steeping grain and replace the pale malt with pale liquid malt extract.

If we neglect the gravity contribution of the Caramalt, which is the way to go if you want to keep things easy, then all we're really after here are 65 gravity points from malt extract to get an OG of 1.065.

We said we'd use liquid malt extract, which offers 35 points per pound per gallon (ppg), so we can calculate how much we need by multiplying the batch volume by the desired number of gravity points and then dividing by the gravity potential of liquid malt extract:

$$5 \text{ gal.} \times 65 \text{ points} \div 35 \text{ ppg} = 9.3 \text{ lb.}$$

Thus, the grain bill for our extract version of this recipe is

9.3 lb. (4.22 kg) pale liquid malt extract
8.1 oz. (229 g) Simpsons Caramalt

Steep the Caramalt in hot water, usually around 155°F (68°C) for half an hour or, alternatively, just drop it in cold water in your boil kettle and gradually heat the kettle until it hits that temperature. Then remove the grain, dissolve in the extract, top up with water to your desired boil volume, and treat it as an all-grain recipe.

Wasn't that easy?



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EXAMPLE: PARTIAL MASH

For a straightforward example of converting an all-grain recipe to a partial-mash formulation, let's take a look at Allagash Brewing Co.'s River Trip in the Nov/Dec 2021 issue of *Zymurgy*. Here's the malt bill for 5 gal. (18.9 L) of 1.040 wort:

6.5 lb. (2.95 kg) pale malt
1 lb. (454 g) Munich malt, 10°L
1 lb. (454 g) flaked oats

Flaked oats have to be mashed and Munich malt extract isn't always available, so we'll do a partial mash. There are two base malts: pale malt and 10°L Munich. Most Munich malts can self-convert, but there may not be enough diastatic power to convert the oats as well. So, let's include some pale malt, which has more diastatic power, to help with starch conversion. Thus, our mash will consist of 1 lb. (454 g) each of pale malt, Munich 10°L malt, and flaked oats. How much gravity is that?

You could refer to Table 18.5 in *How To Brew*, to see that pale malt, Munich malt, and flaked oats have gravity potentials of 37, 35, and 32 ppg, respectively. But in a partial-mash situation, you can almost always just assume 35 ppg and get close enough. With that in mind, let's calculate how much the partial mash will contribute to our 5 gal. batch, assuming 70% efficiency:

$$0.7 \times (3 \text{ lb.} \times 35 \text{ ppg}) \div 5 \text{ gal.} = 14.7 \approx 15$$

The target O.G. is 1.040, which means we need 40 – 15 = 25 points from malt extract. Let's use dry malt extract, which offers 45 ppg. We multiply the batch volume by the desired number of gravity points and divide by the gravity potential of dry malt extract:

$$5 \text{ gal.} \times 25 \text{ points} \div 45 \text{ ppg} = 2.8 \text{ lb.}$$

Thus, the grain bill for our partial-mash version of this recipe is

2.8 lb. (1.27 kg) pale dry malt extract
1 lb. (454 g) pale malt
1 lb. (454 g) Munich malt, 10°L
1 lb. (454 g) flaked oats

The Allagash recipe says to mash at 149°F (65°C) for an hour. We have 3 lb. (1.36 kg) of malt, so we'll use 3.75 qt. (3.5 L) of mash water (1.25 qt./lb. or 2.6 L/kg). When the mash is complete, sparge the grains with a bit of hot water, dissolve in your extract, top up to your boil volume, and off you go!

available extract equivalent, such as smoked malt, biscuit malt, and Vienna malt. All unmalted adjuncts, including flaked oats, maize, and rice, will require a partial mash if you want to remain faithful to the recipe.

If you don't find any must-mash grains, then you can aim for an extract formulation. If, however, you come across a malt or adjunct that's key to the beer's character (oats in a hazy IPA, for example), then you'll want to conduct a small mash and augment with extract.

3. MAKE UP THE DIFFERENCE WITH EXTRACT

Steeping grains and brewing sugars provide color and character. Now it's time to build up your fermentable sugars. Partial-mash brewers will need to consider the gravity contribution of the small mash. Extract brewers don't need to do that and can proceed directly to calculating extract.

If you've determined that you need to conduct a mash, then begin by adding up the total weight of grains that require mashing. A good rule of thumb is to use that same amount of base malt. So, if your recipe has a pound of flaked oats, use a pound of pale malt, Pilsner malt, or whatever the main base malt in the all-grain recipe happens to be. You'll mash this in a small vessel.

Usually you'd include all of the specialty grains in your partial mash, but this isn't my preference. Of course you can do that if you wish, but usually when you're partial mashing, it's because you don't

have the equipment or desire to conduct a full mash. Grain bills that are heavy on specialty malts can easily max out a small mash tun. So I prefer to keep the specialty grains separate and then steep them in the resulting wort as it's coming to a boil, right before I add the extract.

Even if the original all-grain recipe specifies a complex mash procedure, you needn't do anything more than a single-temperature infusion mash for the small grain bill you're working with. Just aim for 60 minutes at the mash temperature given in the recipe. If the recipe raises the mash through several temperatures, just go for an hour at 152°F (67°C). Use 1.25 quarts of mash water for every pound of grain (2.6 L/kg). When the mash time is up, rinse the grain with some hot water to dissolve sugars and then dissolve in your extract.

Speaking of which, commonly available malt extracts include Pilsner (sometimes called extra pale or extra light), pale (sometimes called light or gold), amber, dark, wheat, and Munich. You may have to look around, but you can sometimes also find Maris Otter and rye malt extracts, though these have become less widely available in recent years than they once were.

The sugar concentration of malt extract is usually expressed in gravity points per pound per gallon (ppg), which indicates the specific gravity you can expect from dissolving 1 pound of malt extract in one gallon of water. Always go by the sugar concentration given by the manufacturer,



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if available. If no such information is provided, then a good rule of thumb is that 1 pound of dry malt extract yields 45 gravity points per gallon, and 1 pound of liquid malt extract yields 35 gravity points per gallon.

- 4. ADJUST FOR BOIL SIZE IF NEEDED**
- Although there's nothing inherent in extract and partial-mash brewing that implies anything smaller than a full-volume boil, the reality is that many of us like to boil less volume when working with malt extracts. Boiling a smaller amount instead of the whole thing can mean the difference between standing over a propane burner in the cold and staying warm at the kitchen stove. Just keep a couple of things in mind.

The higher gravity of concentrated wort affects hops utilization, meaning you may wish to increase kettle hops additions somewhat to achieve the desired bitterness. That said, I rarely do this and have yet to feel that it's a problem. So I usually don't.

Concentrated wort is also more prone to kettle darkening than its more diluted counterpart. Given that malt extract is inherently a bit darker to begin with, light-colored styles can turn out darker than desired. Consider adding half the extract at the start of the boil and the remainder when you kill the flame.

OTHER CONSIDERATIONS

The fermentability of malt extract is set when it leaves the malt house. You can't alter the sugar composition of the extract, but you can adjust for it if needed.

Were you to convert an all-grain double IPA recipe to an extract version, you might find the finished beer to be darker and sweeter than you'd hoped. The final gravity may also be a few points north of your expectation. All-grain brewers can tweak the mash, but you have options, too.

The easy solution is to replace some malt extract with a simple sugar. Corn sugar is readily available, but regular old table sugar works just as well, and it's even more readily available. Don't be afraid to swap in up to 20 percent or so of your malt extract with a simple sugar to boost attenuation in big beers like double IPA, barleywine, and imperial stout.

Adapting recipes to your approach doesn't have to be a big, hairy math problem. Try this easy method and see what you think. And remember, no matter how you make beer, you're a homebrewer.

Dave Carpenter is editor-in-chief of Zymurgy.

BREWING WITH CANNABIS

USING THC AND CBD IN BEER



BY KEITH VILLA, Ph.D.



Keith Villa, Ph.D., is brewmaster and co-founder of Colorado-based CERIA Brewing Company, a trailblazer in the rapidly growing market of non-alcoholic, cannabis-infused beers. After earning his Ph.D. in brewing from the University of Brussels in Belgium, Keith began his 32-year career as founder and head brewmaster at Blue Moon Brewing Company, an operating unit of MillerCoors. Since then, this beer doctor has gone on to brew several award-winning beers and continues to set new standards and push the boundaries of flavor, styles, and ingredients. Keith also is co-founder and head brewer of family business Donavon Brewing Company based in Arvada, Colorado.

- TECHNIQUES FOR BREWING WITH THC AND CBD
- TERPENOIDS & CANNABINOID EFFECTS
- REGULATORY COMPLIANCE
- CANNABIS BEER RECIPES
- METHODS FOR MAKING NON-ALCOHOLIC CRAFT BEER

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GADGETS



BY ZYMURGY READERS

Homebrewers enjoy a rich heritage of creative, thrifty, do-it-yourself solutions to life's beermaking problems. Although today's hobbyists enjoy unprecedented access to purpose-built brewing equipment, that DIY spirit remains very much a part of homebrewing culture. Zymurgy's annual Gadgets Issue is dedicated that spirit. Read on to discover how today's homebrewers continue to troubleshoot everyday dilemmas with innovative gadgets.

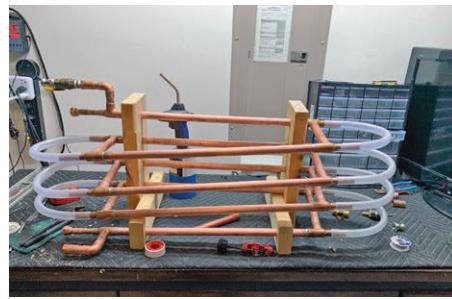


BREW IT

EASY-CLEAN COUNTERFLOW WORT CHILLER

I needed a faster way to chill my wort and saw a picture and description of a similar counterflow chiller. So, I built one myself. It works well and is easy to clean!

Nick Pizzo
Waxhaw, N.C.



KETTLE STIRRER

This is my brew kettle stirrer for maintaining a moving flow over the cooling coil. There is a rectangular paddle at the bottom of the vertical center shaft. I am still working out the best motor and gearbox arrangement to get enough flow, as this one is too slow.

Michael Vos
Taree, NSW, Australia



HYDROMETER JAR REPAIR

I dropped my glass hydrometer test tube jar and broke the base, so I designed and 3D-printed a part to fix it. A notch in the top allows the spout to fit through, and the bottom has an opening that matches the profile of the broken base. The tube is inserted and twisted to cover the broken part. The fit was perfect, but I noticed that base does not remain perpendicular to the tube at all times. I was annoyed at first that I had not added a sleeve to prevent this, but then I was pleased that it actually solves another problem.

The hydrometer tends to tilt a bit one way or the other so that it sticks to the glass. I always need to fuss around to get it to float freely. But now the base acts like a limited-range ball joint, and I can easily adjust the tube slightly on any surface so that the hydrometer floats freely and vertically.

Scott Hawkins
Portland Brewers Collective
Hillsboro, Ore.





LOW-SEDIMENT HOP SPIDER

When I decided to brew 1-gallon batches to try out new recipes, I realized that my hop spider was too large for my new 3-gallon brew pot. The solution was to use a stainless-steel cold-brew coffee filter with a clamp-on spoon rest to hold it in place. A bonus is that the coffee filter has a finer mesh than a standard hop filter, so I get less pellet-hop residue in my wort. I was a bit concerned that this might reduce hop flavor, but that has not been the case. My latest batch even took second place in our homebrew club SMaSH beer contest this year.

John Ottarson

Pontiac Brewing Tribe
Lake Orion, Mich.



CLOSED-LOOP WATER-EFFICIENT CHILLER

Due to severe water restrictions at home last year, especially due to the drought and bush fires, I could not use tap water for my wort chiller. So, I created a closed system that reuses chilling water. It uses two heat exchanges, one water-based and the other air-based.

The chiller has a central water tank with three inlet/outlet pairs. Each outlet connects to a 50-liter-per-minute magnetic-drive pump. Two of those outlets connect to two off-the-shelf car radiators, seen at each end of the base frame in the pictures. Each radiator has two fans that pull air through the fins. The third outlet has a quarter swing valve in series to adjust the flow rate going to the wort chiller in the boiler pot; depending on the diameter of the coil, it may require a lower flow rate for efficiency. Water is pumped through the wort chiller in the boil kettle and then back to the tank, which cools the wort. At the same time, water is pumped to each of two radiators and back to the tank, which cools the working fluid.

I will upgrade the system sometime to 100-liter-per-minute pumps, add venturi nozzles behind the radiators, and force compressed air through to lower the temperature of the air that goes through the radiator fins. It does not take long (around ten minutes) to get the wort temperature down from boiling to around 50°C (122°F), but after that, it can be slow, depending on the ambient air temperature. Using venturi nozzles will get a much larger temperature difference.

I also plan to make a single-radiator version using a 6-liter radiator from a Toyota Hilux. That should be equivalent to the two radiators I am using at present. I am thinking of mounting the radiator/nozzle assembly horizontally above the main tank to minimize the footprint area, which is how commercial units mount their fans. I'll use a single 150-liter-per-minute pump and four fans. I already have the radiator sitting in a spare room.

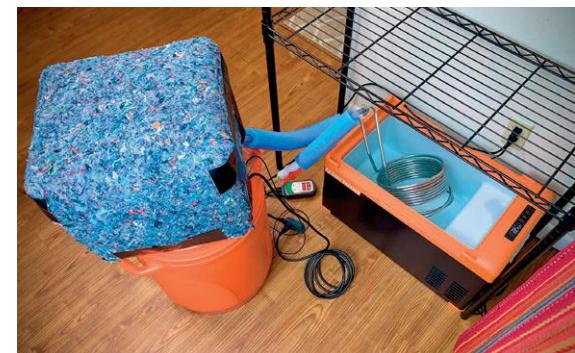
Michael Vos

Taree, NSW, Australia



DIY CHILLER

My current chiller system uses a portable chest freezer as a cooling source. For now, it holds 6 gallons of water, but I will soon mix in some glycol so the reservoir can be set to a lower temperature. The fermenter is a glass carboy sitting in a 10-gallon cooler that has a few gallons of water surrounding and insulating the carboy. This water-jackets the carboy.



A fountain pump underneath the carboy pumps water over to the stainless coil in the reservoir and back as a heat exchanger, controlled by an Inkbird controller. Soon I will replace the carboy with a stainless conical. The cube on top of the fermenter blocks light and provides insulation. I throw a sleeping bag over the whole thing for even more light protection and insulation.

Travis Taylor

St. Augustine, Fla.

FERMENT IT

DRY HOPPER AND HOP DUMPER

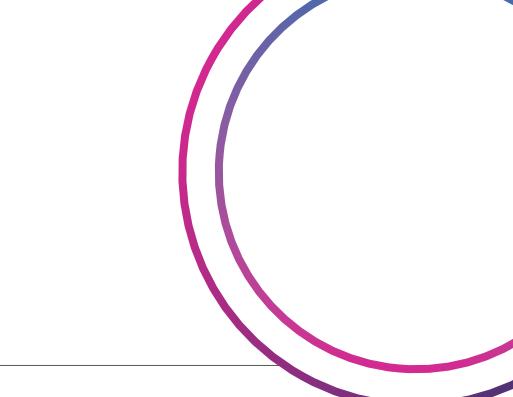
It only takes one failed hop-trub-dump from a pressurized tank to know you never want to experience that. Ever. Again. Now, with just a few accessories, most of which you already have, you won't need to. This is used on a fermenter that has a 2" tri-clamp dump port and 1.5" tri-clamp top port. The dry hopper has enough space to put in a CO₂ line while dry hopping to minimize oxygen pickup.

Equipment needs are minimal:

- 1 large empty pasta sauce container
- 2" to 1.5" tri-clamp reducer
- 2" and 1.5" tri-clamp gaskets and clamps
- Extra 2" tri-clamp gasket (optional)
- 1.5" diameter canning funnel

After consuming copious amounts of pasta and sauce, take the empty container and pop the middle out of the lid, leaving only the plastic cap. You may optionally glue a 2" gasket on top. Using the reducer, the container will fit over the 1.5" opening and all your trub can be collected in it. During dry hopping, flip the reducer and drop the canning funnel into the 2" end, which allows a larger target for the hops, and enough space for your CO₂ line to fit in, if desired.

Tim Wang
Carlsbad, Calif.



HOP FILTER SYSTEM

I want clear beer when I rack, even after dry hopping with loose hops. For easy sanitizing, I designed this fine stainless-steel mesh sleeve for my auto-siphon, and it works flawlessly.

You'll need to take some measurements. First, calculate the total area of mesh needed to wrap the auto-siphon. The formula for circumference is $\pi \times d$, or 3.14 times the diameter of the auto-siphon. Then add 3 times the width of the seam that you'll use to hold the cylinder's shape once it's wrapped—I suggest a 1/4" seam, so that means 3/4" width. Allow another 3/8" or so to ensure it slides easily over the auto-siphon.

In my case, the auto-siphon had a diameter of about 0.9", so I needed a stainless mesh width of $3.14 \times 0.9" + 3/4" + 3/8"$, which came out to about 4". That meant the stainless sleeve would be 1.25" in diameter. The length of my cylinder is 9"—actually 9.5", allowing for 1/4" folded in at each end for safety—but a shorter cylinder would work fine, too.

For the end cap, I stretched some stainless-steel mesh over a 1.25" diameter dowel. Be sure to create a lip, which you can later trim back with tin snips to 1/2"—use heavy gloves for this! Rivet the sleeve together with stainless-steel pop rivets after bending a safety edge on the top and bottom of the main body. If you are hesitant, just make a paper pattern and try it before you cut and shape your stainless-steel mesh.

If you purchase a paint strainer and know someone who sews, you can turn a large nylon paint strainer into two regular hop sacks for the kettle and an outer sleeve to act as a pre-filter. Talk about value for the money! I secure the nylon sleeve above the stainless-steel cover with butcher's twine, and that slides over the auto-siphon. All these additions are sprayed with sanitizer before each use. It sounds crazy but it works very well.

Norm Ryder Woodstock, ON, Canada



CARBON DIOXIDE HARVESTER

Closed transfers into a keg purged of atmospheric oxygen are a great way to minimize cold-side oxidation for delicate lagers and hop-forward IPAs, but the process can waste precious carbon dioxide. This isn't trivial during CO₂ shortages, if it's a pain to get your tank refilled, or if you just want to save a few pennies.

So, how might I purge kegs to avoid oxidation while conserving precious CO₂? Reuse CO₂ from empty kegs! When a keg in my keezer is drained of beer, it's full of CO₂ at serving pressure. Why not repurpose the gas? I connect a jumper between the gas ports of the empty keg and a clean keg filled with Star San (which I'll later fill with fresh, uncarbonated beer). Before doing this, I let the empty keg warm up so the gas can expand (yay, physics).

I put a picnic tap on the Star San-filled keg, hook up the gas, and let the empty keg push out the Star San. It works like a charm! The transfer takes around 10 minutes, but the whole keg gets drained, with a bit of residual CO₂ left over. No gas goes to waste, and I end up with a purged keg ready to fill with beer!

I have full details of my process at my blog:
andybrews.com/2020/04/05/conserving-CO2-while-purging-kegs

Andy Farke
Horse Thief Brewers Association
Claremont, Calif.





ULTIMATE FERMENTATION CHAMBER

This is the best \$150 I have spent as a homebrewer. I found this industrial incubator on a local auction site for a closing fish hatchery of all places.

The size of a stand-up freezer, this unit can accommodate eight carboys and hold the temperature between 14 and 122°F (-10 to 50°C) with 1°F (0.6°C) accuracy and a monthly electrical cost of \$50. I ended up running a ceramic reptile heater inside with a temperature controller to keep the energy cost more homebrew friendly.

Two PC fans keep the air circulating, and the chamber can comfortably hold the temperatures in the 65–72°F (18–22°C) degree range for ale fermentations.

Ryan Leer
Richfield, Minn.



COLD-CRASH BAG

A well-known issue with cold crashing unpressurized fermented beer is the suction of ambient air into your fermenter or, even worse, the liquid from your airlock.

To compensate for the pressure drop that develops in the fermenter during cooling, some have used balloons or arrays of mason jars filled with CO₂. Balloons are not perfectly airtight, though, and may be even sucked inside the fermenter. The mason jar approach may hinder the suction of, for example, disinfectant from the airlock, but it will not completely prevent air ingress.

If you are wondering about a cheap, simple, food-safe DIY hack from things you may already have at home, here is another possible solution. The bags that are used with a vacuum sealer, which you may already use for various homebrewing or barbecue-related tasks, are useful for creating an airtight, flexible bladder. Just make sure your bag has an appropriate thickness that will prevent the accidental pinching of holes.

The size of the bag depends on the headspace of your vessel. The first cold-crash bag I built was too small and completely deflated after cold crashing, so I switched to a

vacuum-bag roll to be able to make a larger bag. You'll have to determine the actual size of bag you need, but the bigger the better.

The other part of the system is a plastic spigot, such as those included with bottling bucket and some fermenters.

First, use the vacuum sealer to prepare a completely sealed bag with the plastic hexagonal nut inside. Then, use the threaded side of the spigot as a template to draw the circumference on the plastic bag with a marker. Carefully cut out the hole and insert the spigot with the rubber seal between the spigot and the smooth outside of the bag. Tighten the hex nut by hand.

The spigot I use has a 10-millimeter outlet, which fits perfectly in the hole of the carboy's rubber bung. You can fill the cold-crash bag with CO₂ from a CO₂ cylinder and exchange it with the airlock after primary, or even attach a three-way valve to fill the bag with natural CO₂ during fermentation and then switch off the airlock before cold crashing.

Andreas Taubmann
Mainz, Germany

LEGO TEMPERATURE CONTROLLER HOUSING

I decided to add a bit of style to my latest temperature-controller bid. The kids are grown and left me with a pile of LEGO pieces.

John Lindberg
Rocket City Brewers
Huntsville, Ala.



SERVE IT



CO₂ TANK CADDY

This is my CO₂ tank caddy. I've broken too many regulators over the years, so I wanted to build something more stable for moving around the homebrewery. I also added a small manifold so that I can run two lines at once. Cheers!

Ryan Carter
Irvine, Calif.

NAIL POLISH

I sometimes confuse which post is which on my ball-lock Corny kegs. I solved the problem by putting a bit of white nail polish next to the gas posts on all of my kegs. Now, even when they are in the back of the fridge, I can see where the gas line connects when I need to switch hoses around.

Gary Schwartz
*OkBrewers
Kelowna, BC, Canada*



COFFIN KEGERATOR

I built this kegerator for Halloween. I made the coffin-shaped box out of plywood and put a jockey box inside with a mini-CO₂ regulator that can also be used with nitro. It can fit a standard ball-lock homebrew keg, but it is also just big enough for a commercial sixtel. I recently upgraded to an Intertap faucet so I can adapt it for pouring stouts. I also made a small modification so I can use it for other occasions: a little shelf with a tablecloth to conceal the coffin's shape. For Halloween, I have a skull faucet handle, for other occasions an eight ball.

Aron Ruthe
Vienna, Va.



CLEAN IT AND ORGANIZE IT

BREW CART

When I decided to move to electric for mashing, I needed something strong and movable as a home for my mash tun and hot liquor tank. I looked around at carts, but none seemed to meet my needs. So I made my own. I used construction corner braces and some 2x4s for a strong frame and some extra-heavy-duty casters to take the load. I finished it off with a heavy-duty work surface and a lower shelf to hold my temperature controller and a counterflow chiller that does double duty as a HERMS heat exchanger. It rolls anywhere I need it in the garage and fits out of the way, with lots of storage, when I'm not brewing.

Jordan Crouse

Mountain View Mashers
Firestone, Colo.



MILLING CART

My milling cart is made from a nightstand I found. I made a new top that has a shelf for the cordless drill to sit on when in use. A dust cover sits on the hopper for storage. I replaced the side panels with pegboard, and the front panel is removable and secured with magnets. Inside sits a bucket for catching the milled grain. The bucket fits so snug when you slide it in that no dust is kicked up while you mill. The lid sits next to the bucket while in storage and then goes on the bucket of milled grains until needed for mashing. I clean the mill off with an air blower. A lower shelf inside holds the drill for storage.

Travis Taylor

St. Augustine, Fla.

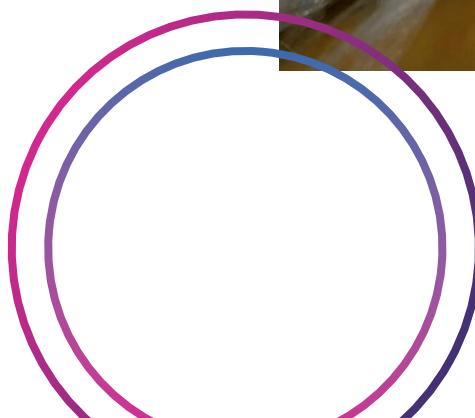


SMALL-PARTS WASHER

Cleaning small keg gaskets and poppet valves was a pain until I came up with a rinse container by drilling holes in the bottom of an empty Irish moss jar. Now I just load the small parts into the jar and give it a few jets of water from my hose. It also lowers the risk of losing an important piece down the drain.

Ryan Leer

Richfield, Minn.





POST & POPPET CLEANER

Poppet valves are hard to clean, and dirty ones that don't seal properly can cause gas leaks, foamy beer, and contamination. This easy addition to your keg-cleaning routine uses a simple plastic syringe. You can purchase twist-on tips, which I've modified for cleaning ball-lock posts and poppets.

First, sand down the flares on the sides of a tip so that it fits into a poppet valve. The tip has a blind hole in it—using a small drill bit as a sort of ruler, locate the bottom of this blind hole and mark that spot on the outside of the tip. Then drill a hole perpendicular to the hole. This allows sanitizer to spray sideways when you push down on the plunger. (A paper clip through the perpendicular hole in the image above makes it easier to see.)

Stick the syringe into the poppet valve and depress the plunger. The stream of sanitizer cleans and rinses the valve while flushing debris down the dip tube and sanitizing it. There is no splash-back, as the Star San does not go out the tip, just out the small holes you've drilled in the side. Always wet the rubber on your syringe plunger before drawing in the sanitizer solution. If it slips off, remove the rubber, dry, and apply food-safe silicone on the plastic end of the plunger and around the cavity of the rubber. Push them together, clean up the excess silicone, and let it cure.

I cannot imagine cleaning kegs without this system.

Norm Ryder

Woodstock, ON, Canada



DRYING RACK

I always struggled with room for all my equipment on brew day, specifically my stainless utensils. The solution? A portable clothes-drying rack and some S-hooks. It freed up a lot of space on my 6-foot table.

Keith Manchester

CRAFT Homebrew Club
Shelby Township, Mich.



HOME BREWING GADGETS 2023

Do these gadgets inspire you to create your own? Share them with your homebrewing community and submit to be featured in the 2023 Gadgets issue. Take photos of your process creating and using your custom gadget and send to Dave Carpenter at dave@brewersassociation.org. Cheers to homebrewed beers!



**LOST FRUIT BEERS
OF BELGIUM
AND THE
NETHERLANDS**



By Roel Mulder

A few months ago, I received an e-mail from Senne Eylenbosch, a young beer maker in the Zenne valley near Brussels. Recently, he had started blending his own beers, using lambics from several breweries in the region. As you may know, lambic is a unique, spontaneously fermented beer that is aged for one or more years in wooden barrels, during which time it acquires an exquisite, slightly tart, yet mellow taste.

Blends of differently aged lambics become gueuze, a bottle-conditioned beer dubbed “the Champagne of Belgium.” Faro, another lambic derivative, is lighter in alcohol, a tad darker, and usually sweetened with sugar or other agents. And then there are lambic blends with various fruits, including kriek, which is made from the eponymous sour cherries. Other fruit lambic blends include raspberries (*framboise*), blackcurrants (*cassis*), peaches, (*pêche*), strawberries (*fraise*), apricots, and even bananas.

As he explained in his email, Senne had started experimenting with lambic, adding quinces, or blending it with cider, selling his beers under the name Het Boerenhof (“The Farmyard”). But his main interest when it comes to blending is with sour cherries, especially with a variant that has become rather rare, but all the more sought after: the kriek of Schaarbeek. This cherry is supposed to be the variant with which kriek lambic was originally made. Senne’s question: is the Schaarbeek kriek a myth? Is it really the original kriek, or did other fruit beers precede it?

Naturally, I felt obliged to find an answer.





Cherry grower (Albert Quantin, 1893, collection Rijksmuseum)



Senne Eylenbosch

BLURRED LINES

Fruit beers probably have been with us for a long time, but actual evidence remains scarce. Archaeological finds suggest that in prehistoric Europe, beer made out of grains was often combined with additives such as fruits and honey. It seems logical that beers made with primitive malting and mashing techniques would benefit from additional sources of sugar. We tend to think of beer, wine, and mead as distinct beverages, but in those days, the lines may have been quite blurred.

The Romans specifically reported that Germanic and Celtic tribes had a drink made from barley, which suggests a more rigid boundary that excluded fruits. Charlemagne's *Capitulare de villis*, a document dating from ca. 800 CE that prescribes how the king's domains should be run, mentions separate people making either wine, beer, cider, or perry. From then on, sources remain mostly silent on the usage of fruit in beer, at least as far as the Low Countries (today's Belgium and the Netherlands) are concerned.

Not until the 17th century do sources mention fruit beer more often. A 1658 text published in Brussels mentions vari-

ous domestic and foreign beers including "Krieken-bier." In 1672, a French army captain was offered some "morelle-bier" in the town of Oudewater in Holland. In 1693, again in Brussels, Constantijn Huygens, Jr., secretary to Prince William III of Orange, then also king of England, reports drinking raspberry beer and "morelle-bier."

Some explanation on terminology is probably in order. In Dutch, the general word for "cherry" is *kers*, but when speaking of sour varieties, the word *kriek* is used, at least in Dutch-speaking Belgium. To the north, in the Netherlands, the word *morel* for sour cherry was more common. The French language, used in the southern part of Belgium, also distinguishes between sweet *cerises* and sour *griottes*.

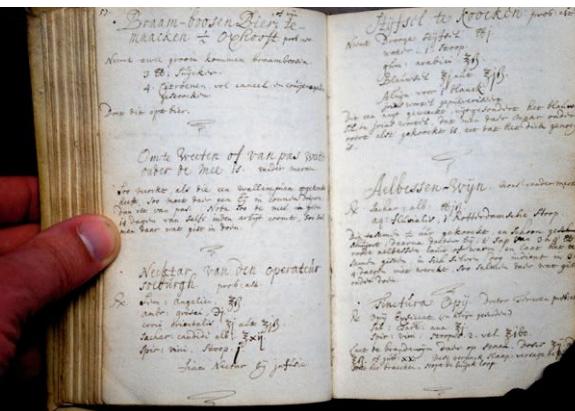
RASPBERRIES AND RED CURRANT

Few recipes survive for fruit beers in what is now Belgium but, luckily, some are available across the border in the Netherlands. A most interesting set of brewing, cooking, and medicinal recipes has been preserved from late 17th-century Dordrecht, a city

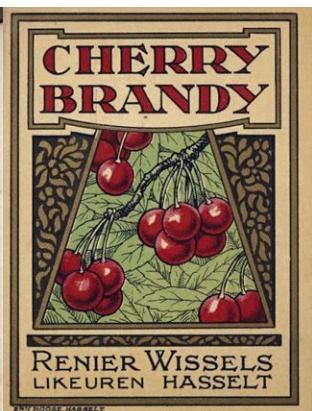
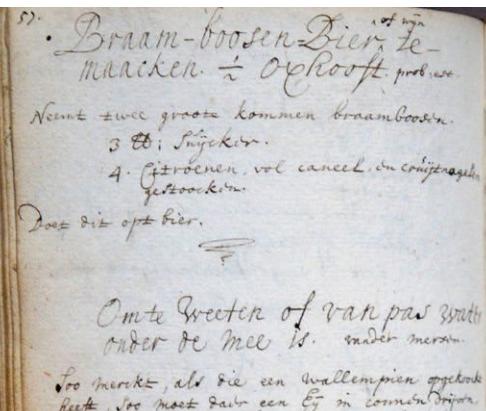
in South Holland. In the fruit department, these recipes do not limit themselves to beer. Written down around the year 1690 by one Melchior Mels, they include a raspberry beer, but also wine and brandy with red currants and cherries. Other recipes found in 18th-century private family archives include sour cherry wine, strawberry liqueur, and gooseberry wine.

When in 1745 Rotterdam brewer Wouter van Lis penned the first brewing manual in Dutch, he included a recipe for "Morelle-bier." He wrote, "Some crush the sour cherries with its stones and then add them to beer that has already fermented, others add them to the fermenting vessel and have it ferment along with the beer; and then there are those who add them to the brewing kettle and have them boil together with the beer for a short while, which is not recommended, as the acid in these fruit will affect the copper. This will cause some of the copper to end up in the beer, which one will notice in its taste."

Van Lis added that raspberry and red-currant beers were made in a similar way. In fact, the Dutch word for red currant, *aalbes*, literally means "ale berry," which hints at a



Melchior Mels ca. 1690 Braam-boosen-Bier and cherry brandy advertisement.



Photos © Getty/xmtiw [cherries], erfgooindzicht.be [cherry brandy], Getty/xmtiw [raspberries], courtesy of Roel Mulder

SURMOUNTING THE SCHaarBEEK SHORTAGE

By Zymurgy's editors

Even professional brewers in Belgium have a hard time sourcing elusive Schaarbeek cherries. What's an American homebrewer to do? We asked Ken Schramm, author of *The Compleat Meadmaker* and owner of Schramm's Mead, for recommendations.

"The Schaarbeek is the best cherry out there. I don't know of any grown anywhere that aren't spoken for," says Ken. "There are a few other morello types—Balaton is good but lacks the acidity of the original ... The Lutowka is grown in Poland and Turkey and would be a decent fill-in for Schaarbeek. There are also a few North Stars and English Morellos grown in the US that would be decent choices but could be pretty hard to find commercially, and most of them are from Michigan, so that's not going to help much. ... It was a bad year for tart cherries in Michigan this year."

"It was Michigan's second off-crop year in a row. [The year] 2020 was down about 60 percent from 2018, and 2021 was even worse, down about another 10 percent, so there's going to be a lot of pressure on the US-grown cherry market. Michigan grows the lion's share of the country's sour cherries, usually around 75 percent. Many growers could not afford the labor to harvest such a small crop because it's about the same whether your yield is 100 percent of potential or 30 percent. We use several tons a year, so this is something we track very closely. ... Combine climate change and a pandemic, and everything gets spendy and complicated."

"Probably the best recommendation I could make is to those in the northern tier of states where cherries can be grown. A solid move is to establish a relationship with a local cherry grower, share some beers, and ask them to call you when each year's crop is ready. It's a long-term commitment, but fruit [and fruit beers] are a long-term commitment, so jump in! It may mean driving an hour or two, but for a really good beer, it's worth it."

"That is exactly what the Belgians are doing. I had that kind of relationship with a local orchard when I was making fruit beers back in the 1990s, and it worked well. For a homebrewer, get in good and you might even get permission to pick some of the fruit that a commercial grower can't afford to harvest, and if you only need 20 or even 100 pounds, it may be there for the taking. A club can do this kind of thing, too. That's also the kind of activity that builds relationships for the brewing community."

Brew
This!

BRAAM-BOOSEN-BIER, CA. 1690

In the late 17th century, Melchior Mels wrote down a fascinating collection of recipes, including many for beer. Mels's father owned the Anker ("Anchor") brewery in Dordrecht, the Netherlands. Unfortunately, this recipe for raspberry beer does not specify which type of base beer should be used. In his manuscript, Mels describes many varieties, including Luiks beer, English beer, Mechelen beer, brown bitter, sweet, and white beer. Perhaps you could try it with his Luiks beer recipe (see "Lost Belgian Beers: Liège Saison," Zymurgy, Sept/Oct 2019).

Batch volume:

30.4 US gal. (115 liters, or half a Dutch historical hogshead)

Add two large bowls of raspberries. (I tried to calculate the size of a large bowl in the Rijksmuseum in Amsterdam, which was roughly 12.5 liters. Two of these bowls would be the equivalent of about 16 kilograms, or 35.3 lb. of raspberries.)

Add 3 pounds (1.36 kg) of sugar and four lemons into which cloves and cinnamon sticks have been inserted.



A VISIT TO THE FARM

Not only did Senne Eylenbosch ask me about kriek history, but he also invited me to visit him on the farm. Senne, 25 years old, grew up in the countryside near Brussels, in an old farmhouse where his dad milked cows and grew crops, while his mother sold her own cottage cheese. Nowadays, the cows are gone and there's a terrace where Senne and his brother sell drinks and homemade ice cream. But Senne is also a lover of nature and of beer.

In fact, the Eylenbosch family has been on this farm for five generations. In the late 19th century, they diversified their business by starting a brewery, where they produced the region's pride and joy: lambic and gueuze. Although the brewery closed

in the 1960s and the buildings have been converted into apartments, some brewer's blood is clearly still running through Senne's veins. For a few years he worked at the 3 Fonteinen brewery, which is only a stone's throw away. Now he has started for himself, blending lambics from 3 Fonteinen and other local brewers like De Troch and Lindemans, with sweet cherries, quince, and cider, but most importantly, with krieks of the Schaarbeek variety.

"Schaarbeek cherries are something of a local myth," Senne explains. "For a while, they were nowhere to be found, but now some brewers are using them again and making a lot of fuss about it. There are a few projects around re-establishing Schaarbeek kriek orchards, but I think they're doing it the wrong way: by grafting them upon the roots of other trees. That just doesn't give cherries with the full taste, like you'd get when you grow the trees from the actual seed. Or at least, that's what I think."



Brew
This!

RATAFIA DE CERISES

Various early 20th-century Belgian newspapers give recipes for a ratafia made with Schaarbeek cherries. Probably not by coincidence, they did so in the month of July, which is the cherry harvest season. “Our grandmothers used it as a home remedy against cramp or colic,” says one text, “but healthy people will probably enjoy it as well!”

Remove the stems, put the cherries in a bottle or a bowl with a stick of cinnamon and 125 grams (4.4 oz.) of candy sugar, and pour a liter (1 qt.) of brandy or rum over it. Keep in a dark and cool place. After two to three months, put the juice in bottles. Close well and keep resting, the longer the better. The remaining cherries can be soaked in alcohol and sugar again, though the result will not be as good as the first extract.

Some recipes also add vanilla or cloves.



Left to Right:
Boernerf Eylenbosch;
Bulletins d'arboriculture et floriculture (1885)

SUBURBAN CHERRIES

The Schaarbeek kriek is named after Schaarbeek, today a bustling suburb of Brussels and one of Belgium's most densely populated municipalities. Aside from the park, hardly any green spaces are to be found here: it's mainly early 20th-century houses, the odd industrial complex, and a large railway yard. But in the late 18th century, this was still a quaint village just outside Brussels's city gates. There were many gardens and orchards supplying the Brussels citizens with fresh foods.

A “Belgian tree grower’s and forester’s manual” from 1779 mentions

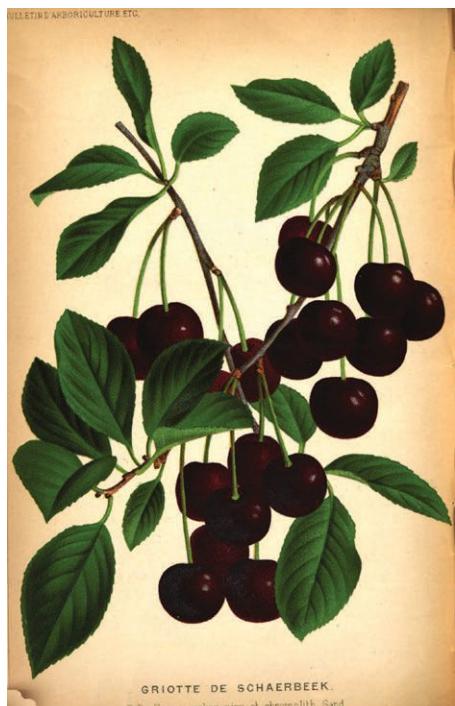
Schaarbeek’s many cherry trees. Its inhabitants would sell the cherries at markets and “to our brewers they sell, in great quantity, their black cherries which are sour.” This clearly is an early mention of what would eventually evolve into kriek lambic. Lambic did not exist yet (it was first mentioned in a 1794 text), but there already was faro, which was a similar product that may have been used for blending with Schaarbeek cherries.

Another farming manual from 1849 reports that “the juice of krieks and black sour cherries is often used to prepare kriek beer and faro,” while it could also be used

THE SCHAARBEEK KRIEK IS NOT DEAD, AND VARIOUS INITIATIVES AIM TO REVIVE ITS CULTIVATION.

to make a good wine or ratafia. Ratafia is a blend of fruit juice and brandy; there are quite a few 19th- and 20th-century recipes around for kriek ratafia, so it must have been popular as a homemade drink.

Yet, kriek beer remained a rather obscure product, and in 1885, it was reported that the Schaarbeek cherry variety was in serious decline. In Schaarbeek, then rapidly urbanizing, just a few deteriorating stubs were to be found. But a revival was on its way thanks to kriek beer. At the Paris World Fair in 1900, lorded over by the Eiffel Tower, a brewery from Overijse near Brussels was awarded a bronze medal for its kriek lambic. Suddenly, mentions of kriek lambic were to be found in all sorts of newspaper ads and articles.





From an obscure product, kriek beer had become fashionable. A 1904 article reports that the price of Schaarbeek cherries had skyrocketed. They were now grown in the entire region around Brussels. Farmers selling them on the market in the nearby town of Halle found their product bought up by brokers hired by brewers from the capital. At the same time, the brewers also introduced framboise and even a lambic with grapes.



Photos © Getty/Coplid (cinnimon)

In 1907, an interesting article was published in the brewer's journal *Le petit journal du brasseur* (reproduced online at lambic.info). It describes kriek lambic as a top-range product, for which only the best lambics should be selected. Naturally, Schaarbeek cherries were to be used, carefully picked. Sometimes they were mixed with another variety, the *cerise du Nord* or "North cherries," which, however, gave a less agreeable and more sour result.

ALMOST LIKE A SOFT DRINK

Unfortunately, as time passed, the use of artificial colorants and sweeteners spread, especially after the Second World War. Schaarbeek cherries were deemed not commercially viable anymore, in part due to their small size. Brewers switched to cherries from elsewhere, most importantly from the province of Limburg, where over 75 percent of all Belgian cherries are grown. Today, cherries from countries like Poland or Serbia are also used, which arrive in Belgium frozen in refrigerated containers. The taste of many kriek lambics has flattened as they have become sweeter and more easily accessible, almost like a soft drink.

Yet, the Schaarbeek kriek is not dead, and various initiatives aim to revive its cultivation. Interestingly, Senne's assertion that grafting kriek trees is not ideal is confirmed by texts from 1885 and 1931, which assert that, unlike other varieties, the Schaarbeek cherry tree should be multiplied not by grafting but by growing from seed.

Brew
This!

KRIEKEN-LAMBIC, 1907

This recipe was published in an article in *Le petit journal du brasseur* by one Robert Jordens. The original text in French can be consulted online at lambic.info. The starting point is a clear lambic beer in barrels. To this, Schaarbeek cherries are added, well ripened and clean.

Sixteen to 20 kilograms are needed per hectoliter of lambic (1.3 to 1.6 lb./gal.), along with $\frac{1}{3}$ liter (14 cups) of syrup ("of serious provenance," the article says, whatever that may be). Also added are a few grams of cinnamon "to open up the aroma of the cherries."

The barrels are then left to ferment for about eight days. The barrels used in Brussels had a square bung hole through which the cherries could be added. In the middle of the square bung that closed off this hole was an opening of 1.5 to 2 centimeters (0.6–0.8 in.) through which the foam could escape.

After fermentation, the barrels were hermetically closed and left to rest for four to five months. Some brewers would roll the barrels through their cellars once a month to crush the fruit and to blend the juice even better with the beer.

In the end, the kriek lambic was put in Champagne bottles, sealed with a cork, and then left for another five or six months. The result would be a creamy, sparkling drink.



Strolling through the region, Senne has so far spotted Schaarbeek cherry trees in no fewer than 60 places. For his own Schaarbeek kriek lambic, he harvests his hand-picked cherries from three locations and sells his beer in 75-centiliter bottles. "In fact, I may have been a little generous with the cherries in this first batch," he says. "There's so much in it that it's almost like a cherry cider with some lambic thrown in." Still, the creamy, fruity result is wonderful, and you're certain never to forget what the real Schaarbeek cherry tastes like.

Roel Mulder is a Dutch historian writing about beer history. He has written a book about Dutch beer including historical recipes and is currently researching the origins of the many Belgian beer styles.



Reinhard Füller pulling a Zoigl at his Schafferhof Zoiglstube in Neuhaus.

ZOIGLBIER

Brewing Up a Living Tradition in Bavaria's Oberpfalz

By Franz D. Hofer

If you're a fan of German beer, chances are you've heard of Zoiglbier, even if you're not quite sure what this unique tradition of Bavaria's Oberpfalz region is all about.

On the surface, describing Zoigl is easy enough: a thirst-quenching, unfiltered lager brewed according to Germany's *Reinheitsgebot* (purity law). But Zoigl is less a kind of beer than a commitment to an age-old brewing tradition that has long since vanished across most of Bavaria. It starts with the communal brewhouse, a holdover from medieval times, and extends to the convivial living room atmosphere of the Zoiglstube (tavern). →



Zoigl brewers fire their kettles with wood at the crack of dawn, cool their wort in coolships exposed to the night air, and then haul the wort to the cellars under their Zoiglstube for fermentation, often in open vessels. After several weeks of lagering, they serve their beer unfiltered and straight from the cellar. The result: a Kellerbier par excellence.

The Zoiglstube is central to Zoigl culture. Authentic Zoigl is never bottled, and brewers serve their Zoigl for only a few days each month. You'll know the beer's flowing when you come across the Zoiglstern hanging above a tavern door, the six-pointed star that symbolizes all that Zoigl entails.

RATED "AUTHENTIC"

Not every brewer enjoys the good fortune of living in a town with historic brewing rights and a still-operational communal bre-

house. Spend any time in the Oberpfalz—often called Upper Palatinate in English—and you'll encounter beers sold on tap or in bottles as Zoigl but which do not carry the *Echter Zoigl vom Kommunbrauer* seal of authenticity. Just because a particular Zoigl beer or establishment doesn't bear the seal of authenticity, however, doesn't mean you shouldn't seek out them out.

But there's something special about drinking an authentic Zoigl in one of the five Oberpfalz towns with historic brewing rights. An authentic Zoigl will taste a little different each time. This has everything to do with the nature of Zoigl brewing, in particular the seasonal effects of cooling wort in a coolship, along with the vagaries of open fermentation. It's a bit like homebrewing. It's also where the *Reinheitsgebot* and the ethos of craft beer meet. The Zoigl tradition rejects

both the standardization represented by industrial-scale breweries and the homogenization of taste represented by international beers that taste the same everywhere.

ZOIGL THEN AND NOW

Zoigl traces its roots to the Middle Ages. In regions like Franconia and the Oberpfalz, brewing privileges were extended to all householders when their locale was raised to the status of a market town. As time passed and towns grew, only householders possessing brewing rights attached to their property and registered in the town cadastral could use the communal brewhouse after paying *Kesselgeld* (kettle money), a fee collected for the maintenance of the communal brewhouse. This ancient arrangement continues to this day.

The history of communal brewing has had a profound influence on when and where we drink Zoigl. Since there was only one brewhouse in town, citizens with brewing rights devised a schedule for brew days in accordance with the brewer's house number or via lottery. Intermittent brewing naturally meant that brewers could only serve their beer intermittently.

Families with brewing and serving rights converted their homes into small taverns whenever their beer was ready, setting up tables and chairs for thirsty locals in the living room or in the kitchen. To let the townsfolk know that beer was flowing, brewers hung a sign from the façades of their houses. The brewer's star eventually replaced other signs like brooms or spruce boughs to become the Oberpfalz's now-famous *Bierzeiger* (beer sign), or Zoigl. *Zeiger* comes from the verb *zeigen*, which means "to show or indicate." In its diminutive form, *Zeiger* becomes *Zeigel*, which, in the idiom of the Oberpfalz, becomes Zoigl.

Zoigl has enjoyed a renaissance of late, one connected with a broader cultural trend that valorizes artisanal food traditions and the taste of place. There's a certain historical irony here: the cultural trappings of a beer from a region that was too poor to modernize its industry during the 19th century is now considered intangible cultural heritage by the German UNESCO commission. Brewing methods and technologies once thought outmoded have gained a new cachet as a living tradition worth preserving. Zoigl today is no mere dusty display in a museum of ethnography, but rather an integral part of everyday life and local identity.



Lautering with a grain during brew day at the communal brewhouse in Windischeschenbach.

THE ZOIGLSTUBE

The centuries of tradition embodied in the tavern culture of the Oberpfalz's five Zoigl towns are just as important as the beer itself. Historically, Zoigl was served in the brewer's kitchen or living room. Today the Zoiglstube takes the place of the literal kitchen. The best ones make you feel like you're not quite in a conventional pub or restaurant. Solitary drinkers are rare as Yeti sightings. And you absolutely will make new friends.

Unlike Munich or Bamberg, you can't just show up in the Oberpfalz and expect to visit all the Zoiglstuben in a given town over the course of a weekend. Consult the Zoigl calendar (zoiglbier.de/zoigltermine), which lists openings for the entire year, and cross your fingers that the stars align so you can visit the ones you want. If that sounds like a mild hassle, take heart. Back in the day, you'd have to wander the streets and lanes of these towns with an eagle eye out for the Zoigl star indicating that you'd struck Zoigl gold.

Three Zoiglstuben

Kramer-Wolf, Falkenberg. Kramer-Wolf's Zoiglstube radiates rustic charm, its yellow walls bedecked with musical instruments that entertained peasants well into the night after a hard day's work. Kramer-Wolf's Zoigl is a hazy amber-orange brew combining spicy noble hops with toasty malt accented by honey and a hint of caramel. Though hearty, its light effervescence and peppery finish ensure that you'll order more than one.

Food here is hearty as well. The Schlachtschüssel, an ample dish of liverwurst, blood sausage, and juicy pork belly, is emblematic of the region. Many Zoigl brewers were (and are) also butchers, and so is Kramer-Wolf's proprietor, Herr Fischer—you can rest assured that the meat in your Schlachtschüssel has been freshly butchered. Accompanied by a veritable mountain of sauerkraut, this is one of the least Instagram-worthy meals you'll encounter, but is it ever divine.

Zum Posterer, Windischeschenbach.

Once a postal station, this Zoiglstube next to the St. Emmeram vicarage is now a cozy two-floored tavern with rustic furnishings and well-worn wooden floors. Joseph Zehrer, the person who opened the postal station, had been the tower watchman for the parish of St. Emmeram. One day he hit upon the idea of trading his fire horn for a postal horn and opened up the postal station in 1865 at his erstwhile watch station.

Zum Posterer's Zoigl is hazy deep amber with a firm bitterness balanced by a toasty maltiness—an excellent lubricant for impromptu drinking sessions with lively groups of hikers from a few towns north.

Schafferhof, Neuhaus. One Zoiglstube stands out as a kind of first among equals. This has as much to do with the stellar Zoigl as with the gregarious personality of its owner, Reinhard Fütterer, a chimney sweep with a penchant for collecting antique furniture. While out on a walk one sunny, snow-dusted January day, Reinhard and his wife Gabi had the idea to buy the Schafferhof. It was a crazy idea, Fütterer recalls.

The cluster of buildings that make up the Schafferhof was once a farm, but the stables hadn't echoed with the sound of cows or pigs since the 1960s. By the time



When you see the six-pointed star [Zoigl], you know you've struck Zoigl gold. Pictured here: Kramer-Wolf in Falkenberg



Home Is Where Your Zoigl Is

Zoiglbier-style lager

Most Zoigls aren't this aromatic, so you could safely skip the knockout hop addition if you'd like more prominent malt notes.

Batch volume: 5 US gal. (18.9 L)

Original gravity: 1.048 (12°P)

Final gravity: 1.011 (2.8°P)

Efficiency: 75%

Bitterness: 28 IBU

Color: 9 SRM (amber-orange)

Alcohol: 4.9% by volume

MALTS

7 lb. (3.18 kg) German Pilsner malt, 16°L

3 lb. (1.36 kg) dark Munich malt, 20°L

HOPS

1.0 oz. (28g) Hallertauer Mittelfrüh,
4.8% a.a. @ 60 min

0.75 oz. (21g) Hallertauer Mittelfrüh,
4.8% a.a. @ 20 min

0.25 oz. (7g) Hallertauer Mittelfrüh,
4.8% a.a. @ 0 min

ADDITIONAL ITEMS

yeast nutrient @ 10 min

YEAST

White Labs WLP835 German X Lager Yeast (make a large starter and aerate well after pitching)

WATER

Soften your water with your usual procedure or treat 10 gal. (37.9 L) reverse osmosis water with ½ tsp lactic acid, 1.1 g gypsum (CaSO_4), 1.1 g Epsom salt (MgSO_4), and 6.2 g calcium chloride (CaCl_2).

BREWING NOTES

A decoction mash is classic, but a step infusion mash will also get you where you want to go. Start with a 10-minute protein rest at 137°F (58°C). Bump up the temperature, either by adding heat or boiling water, for a 40-minute beta amylase/maltose rest at 147°F (64°C). Raise the temperature for a 20-minute alpha amylase/dextrin rest at 162°F (72°C). Check for starch conversion before mashing out for 10 minutes at 168–170°F (76–77°C).

Whichever mash technique you choose, sparge to collect 6.75 gallons of wort. Boil for 90 minutes, cool, pitch your yeast, and aerate well. Ferment at 48°F (9°C) until primary fermentation finished, then lager for 4 weeks around 32°F (0°C). Carbonate to 2.2–2.3 vol. (4.4–4.6 g/L) CO₂, and serve unfiltered.

Whatever you do, don't forget to hang a Zoigl above your door when the beer's ready.



Presssack, one of many kinds of head cheese available in the region's Zoiglstuben. At Schoilmichl in Neuhaus, the bar counter is more like a kitchen counter.

the Fütterers bought the Schafferhof in 1999, one of the roofs had collapsed and ground moisture had taken its toll. The site would need a bit of TLC. Fütterer set to work transforming the dilapidated buildings into the envy of Neuhaus, filling his Zoiglstube with the treasure trove of rustic furnishings he had amassed from shuttered Wirtshäuser (pubs) in the region.

"I had intended to open a Zoiglstube in my retirement," Fütterer recounts with a hearty laugh, "but I ended up getting started a few decades early."

Though he came to brewing later in life, Fütterer is meticulous about his approach to beer. There's an ancient Greek philosophical fragment that goes like this: "A fox knows many things, but a hedgehog knows one important thing." Thinkers who resemble foxes draw upon a wide variety of experiences to make sense of the world. Those who resemble hedgehogs view the world through the lens of a single idea. Fütterer is Zoigl's equivalent of the hedgehog. He's always tinkering, trying to

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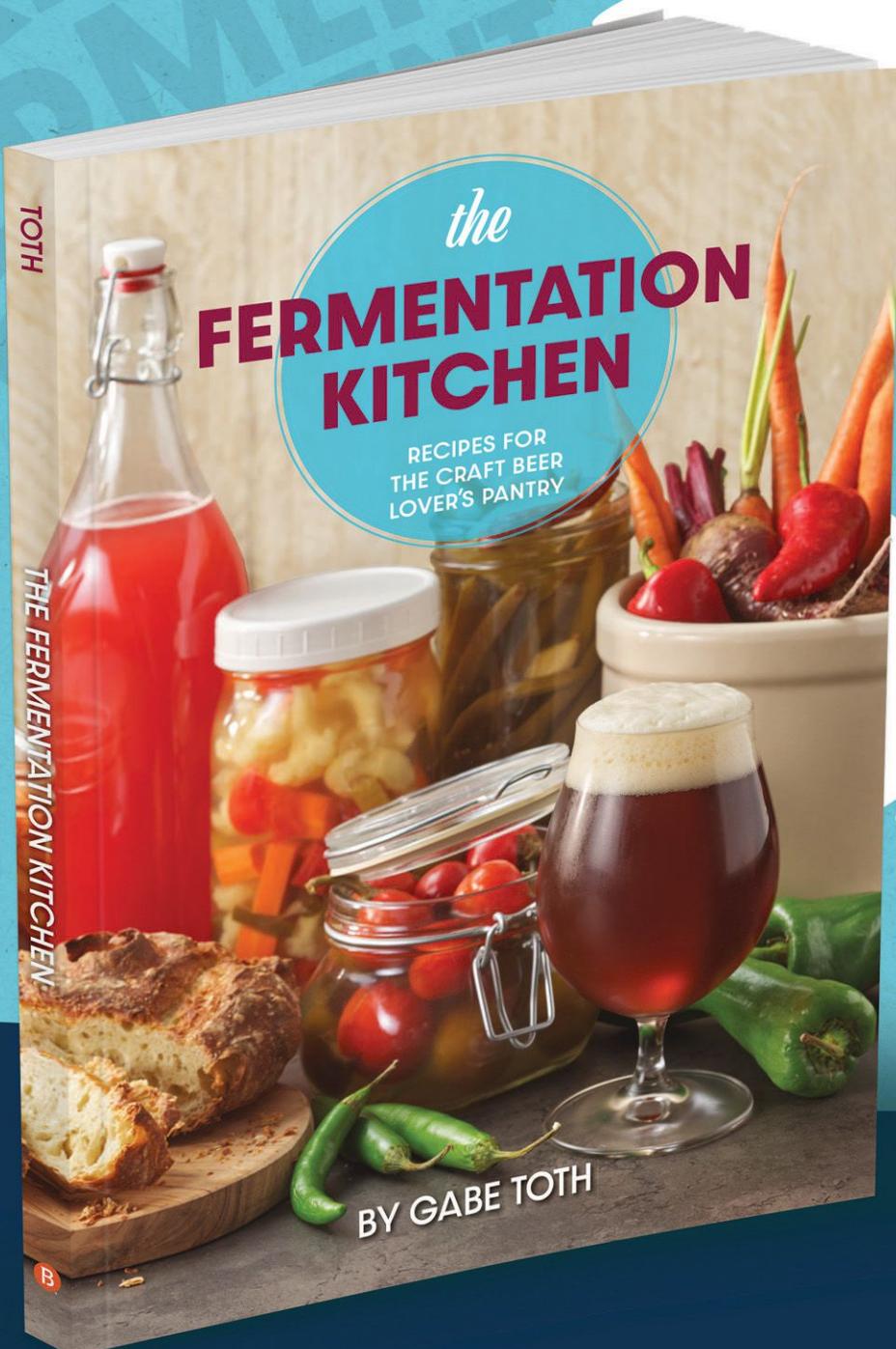
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capture the essence of a particular kind of hop aroma “floating just above the beer without overpowering it.”

“I’m still not totally satisfied with it,” Füllerer admits. But he’s game for trying anything that’ll get him where he wants to be. We talked about dry hopping, which Füllerer found “promising.” We talked about adding hops in the coolship—“I didn’t notice much of a difference.” And we even talked about North American hops, but he finds the assertiveness of these hops to be too much

of a departure from traditional Zoigl. “I have to tread carefully. Even if I make an excellent beer with one of these techniques, the regulars will get up in arms if the beer changes even slightly. So I need to do things gradually.”

So far, so good. Füllerer’s stellar amber-gold Zoigl is full-bodied and rich, with a clean malt background that leans in the direction of light toast and fresh country bread. But it’s the hops that really shine: subtle but distinctive, with notes of pepper and baking spice.

SENSORY ELEMENTS OF A HALBE OF ZOIGL

The Zoigl ballpark is somewhere between helles and Märzen, though typically not as richly malty as the latter, and not as high in alcohol. Many hew in the direction of quaffable, malty, hop-inflected beers, often firmly bittered.

Rich country bread and a light toastiness is a hallmark of most Zoigls, with a pleasant honeyed character predominating in the lighter versions. The interplay of malt and hops lends these beers a freshness reminiscent of Alpine meadows and freshly mown hay. Hops are subtle but present, showcasing the floral, pepper, and spice of German varieties. Many exhibit that beguiling “stone fruit and mineral” note associated with low levels of sulfur. Carbonation is almost always on the low end, creamy with the occasional peppery effervescence.

Diacetyl is not uncommon, but it isn’t as widespread as folks with only a passing acquaintance with the Oberpfalz would have you believe. Zoigl once had a reputation for poor quality, especially right after the Second World War. Even today, you’re not going to get anywhere near industrial consistency when you’re stoking your mash



An advertisement for Oast House Oils. On the left, large black text on a red background reads "OAST HOUSE OILS". Below it, white text on a black background reads "PURE EXTRACTED BREWING AROMA". In the center, there's a stylized illustration of a hop cone and a bottle of oil. The bottle is labeled "FUSION ELDORADO" and "ml.com". To the right, the website "OASTHOUSEOILS.COM" is displayed. At the bottom right is a QR code.

tuns and kettles with a wood fire, to say nothing of coolships and open fermentation. In almost all cases where diacetyl is present, it exhibits a light "country butter" or butterscotch note that adds character. Don't fear the diacetyl!

BREWING ZOIGLBIER

To brew an authentic Zoiglbier, all you need is a wood-fired communal brewery, a coolship, and a cellar beneath your own Zoiglstube, preferably where you can open-ferment your beer. Even if you don't happen to have these three things, you can still brew a reasonable approximation. The ingredients are simple enough: Pilsner malt, Munich malt, and German hops.

Reinhard Füllerer, whose beer is on the lighter side, uses a 9-to-1 ratio of Pils to Munich. Other brewers use more Munich to achieve that toasty note occasionally accompanied by caramel. You could even sprinkle in a handful of CaraMunich or Carahell.

Fütterer uses Perle or Hallertau Tradition for bittering. Spalt and Hersbrucker are common flavor and aroma hops in the region. Fütterer does his last addition at knockout, which isn't common, but it gives his beers a nice liveliness and a fine hop aroma.

Zoigl brewers get their yeast from conventional breweries in the region. In practice, you can use any lager yeast that attenuates in the 70 to 77 percent range. Go with your favourite Bavarian lager yeast, Oktoberfest yeast, or even Bohemian lager yeast.

A decoction mash is *de rigueur* for Zoiglbier. Fütterer performs a double decoction, as do many other brewers. Conduct your decoction to balance body with fermentability. If you don't want to decoct, a step mash works just fine. A modified Hochkurz mash (higher temperatures, shorter time period) with a short 10-minute protein rest will get you sufficient maltiness and good foam retention to boot. Aim for a 40-minute beta amylase rest in the 142–147°F (61–64°C) range, followed by a 20-minute alpha amylase rest in the 158–162°F (70–72°C) range.

Boil times are, in general, longer than your typical 90-minute run, with some exceeding two hours to develop melanoidin. When it comes to coolships, Zoigl brewers are at the mercy of a kind of controlled fate. Cooling the wort on a cold winter night results in the cleanest beers. During summer, brewers do what they can to schedule brew days when the weather is cooler, something that climate change is making increasingly difficult.

Zoigl brewers ferment their beer in the lager sweet spot of 46–48°F (8–9°C). Some, but not all, use open fermenters during primary, which lasts from 10 to 18 days. Lagering times range from 4 to 12 weeks. The shorter duration is more common, but there's no fixed rule. Fütterer tries to push his beers to 8 weeks. Spunding is ideal, but if you don't have the wherewithal to do this, bottle conditioning also helps produce a softer, rounder carbonation than forced carbonation. Serve unfiltered and unpasteurized.

The author would like to thank Mac Butcher, Hans Franz, Reinhard Fütterer, Ferdinand Schraml, and David Thompson for their generosity in helping prepare this article.

Franz D. Hofer experienced a beer conversion during his first study year abroad in Germany, where he learned that there was more to life than Labatt's. From that moment he began honing his appreciation of beer, stoking his passion all the more after becoming a homebrewer in grad school. Franz is a cultural historian, beer judge, and author of the Tempest in a Tankard blog (tempestitatankard.com). When not brewing, teaching, or writing, Franz enjoys hiking and cycling—preferably when there's beer involved along the way.



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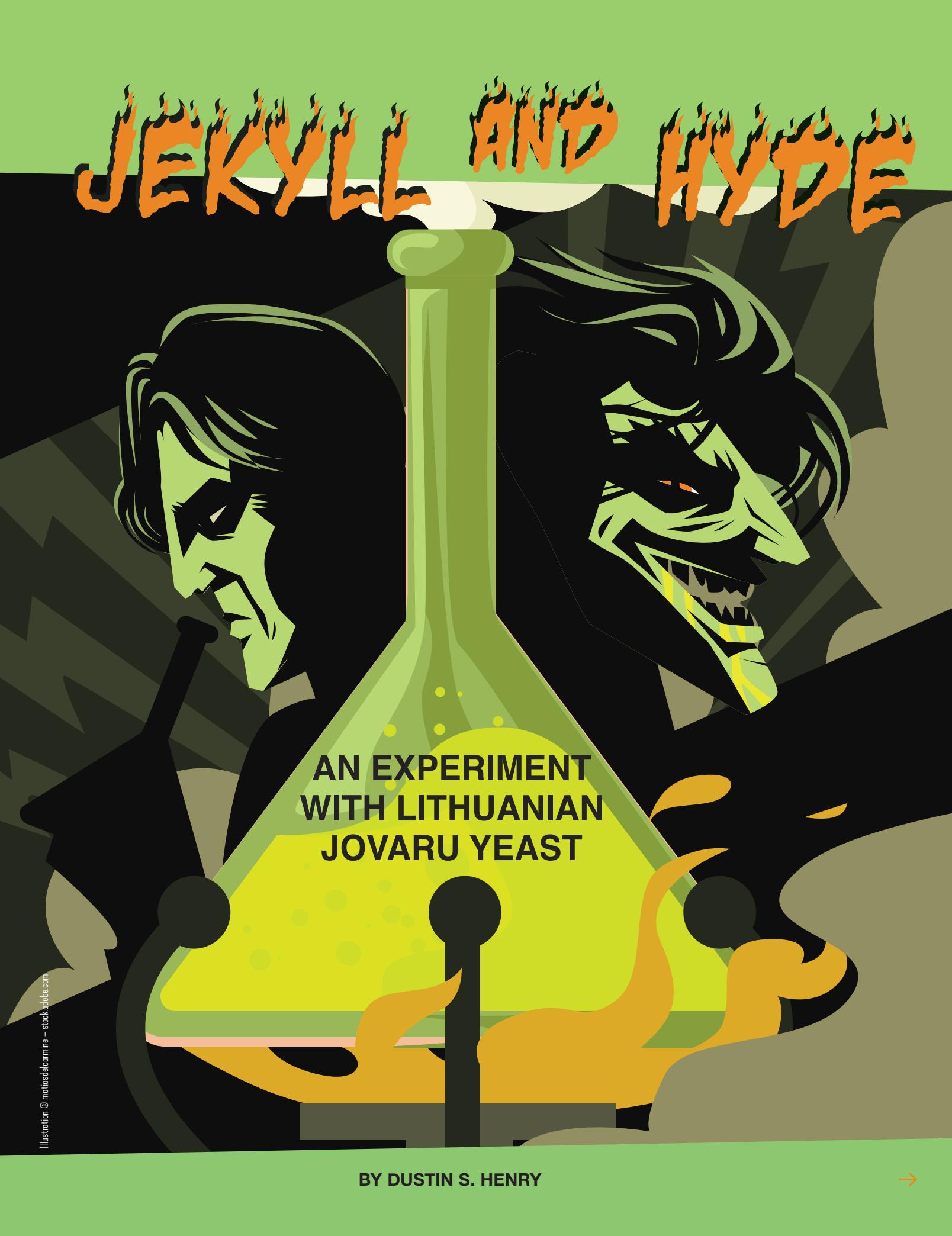
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JOVARU YEAST



rewing great beer is a dance between malt, hops, and yeast. When I create a recipe, I always try to picture (or mentally taste) the final product in my head. Too few hops, too much grain, or too flavorful a yeast can negatively affect the beer. Conversely, all of these can be positive if that is what you're working toward.

But what happens when you come across a new yeast strain you have not used or tasted before? What happens when you come across, say, a relatively new yeast to Western brewing straight out of a Lithuanian farmhouse? What happens when the stated fermentation temperature range is absurdly high and it claims to impart myriad interesting flavors? Well, my inner beer adventurer comes out to explore.

The yeast in question is Omega's Jovaru yeast, a Lithuanian strain that is noted for its Belgian characteristics. I could have brewed a beer with it, but I decided to do a split batch with it to see what it was capable of. What I found was interesting, and the results were not entirely what I anticipated.

THE EXPERIMENT

Omega Yeast's OYL-033 Jovaru Lithuanian Farmhouse yeast is "one of the oldest Lithuanian farmhouse ale yeast strains." (Omega Yeast, 2018, p. 1) This unique strain provides citrusy esters with restrained phenols, and consumers may experience a soft mouthfeel with lemon pith and black pepper. (Omega Yeast, 2018, p. 4)



Jekyll in the fermenter.

Per Omega Yeast, OYL-033 is considered best for Belgian ales, has medium to low flocculation, attenuates at 80 to 85 percent, has an alcohol tolerance of 10 percent by volume, and ferments best between 70°F and 95°F (21–35°C). (Omega Yeast, OYL-033 Jovaru® Lithuania Farmhouse, n.d.) Although Jovaru was not sourced from Norway, it shares many similarities with kveik strains. (Omega Yeast, 2021 Strain Catalog, 2021)

I decided to experiment with this relatively new yeast by comparing two beers fermented at dramatically different temperatures. I brewed a 5-gallon (18.9-liter) split batch with a single malt and a single hop. The recipe accompanies this article.

I pitched and fermented half the batch, which I called Jekyll, at 75°F (24°C). The other half of the batch, named Hyde, was pitched at 100°F (38°C), but the temperature fluctuated—Hyde dropped to 82°F (28°F) the first night, after which point I provided a heat source to maintain the temperature above 90°F (32°C). It got as high as 103°F (39°C) at one point, but it ultimately settled at approximately 95°F (35°C).

Hyde reached its final gravity of 1.005 (1.3°P) about 28 hours after pitching. I then cold crashed it, added gelatin finings, and kept it cold for two more days before putting it on tap.

I kept Jekyll at room temperature, and it maintained approximately 75°F (24°C). After four days, heavy flocculation occurred, and fermentation appeared complete. I also cold crashed Jekyll and added gelatin finings. The final gravity reading was also 1.005 (1.3°P). The yeast attenuated 89 percent (apparent) in both cases, exceeding the manufacturer's expectations.

RESULTS

Two colleagues and I evaluated the beers. One judge was a BJCP certified beer judge who owns a Louisiana homebrew shop and, at the time of writing, was near to opening a brewery. The second evaluator had 10 years of experience as a homebrewer, won a multitude of awards, regularly assisted in judging beer in competitions, and was 2017 Bayou State Circuit Homebrewer of the Year. I had five years of homebrewing experience, had submitted entries to several competitions, and had one third-place medal at the time of writing.



Photos courtesy of Omega Yeast; Dustin S. Henry



Bottles of Jekyll and Hyde with glass of Hyde in background.

Hyde

Hyde, the warm-fermented sample, was considered “rough.” It was bitter and estery, with a strong floral, fruity (estery) aroma. The pungent hop flavor overwhelmed any flavor the Pilsner malt imparted, and it was very piney, which is typical for UK Target hops. The sharp, fruit-flavored esters, which leaned toward citrus (orange, specifically), clashed with the hops.

The mouthfeel was thin, but the beer was well carbonated. The white head exhibited good retention, while the body’s color was light straw.

Overall, we didn’t enjoy this beer. One judge noted that while this yeast can ferment in the 90s Fahrenheit (low to mid 30s Celsius), perhaps it should not. We felt Target hops were not the best choice for this yeast, as the strain did not interact well with them.

Jekyll

The second beer, which had fermented at approximately 75°F (24°C), was more enjoyable. We all described it as well-rounded compared to its warm-fermented twin. Jekyll was softer with respect to hops and esters. The hops fell into a range appropriate for an American pale ale, while the esters were more restrained, allowing the mild but enjoyable floral hop aroma to come forward. The Pilsner malt was now distinguishable in the background. This was still a hop-forward beer with robust bitterness, but it was not pungent. Jekyll’s appearance and mouthfeel were, however, identical to Hyde’s.

Hops

Research shows that hops’ reactions to different yeast strains varies widely. (Sharp, Steensels, & Shellhammer, 2017, p. 185) Yeasts produce enzymes that assist in the biotransformation of hop aroma compounds, which means the yeast further breaks down hops compounds after the boil to create more aroma and flavor. (Lallemand Brewing, 2020, p. 5)

More specifically, hops release linalyl glycoside, which is non-aromatic. This compound contains glucose, which is subsequently consumed by the yeast, but what remains is linalool, an aromatic terpene. This process is due to the yeast enzyme beta-glucosidase. (Lallemand Brewing, 2020, p. 6; Alguacil, 2020, p. 4)

Several studies have been published related to hydrolysis of glycosides by yeast; however, the studies are focused on different yeast strains, all conducted at temperatures beneficial to the yeast. (Sharp, Steensels, & Shellhammer, 2017, p. 185) I couldn’t readily identify a study that indicated fermentation temperature could affect the hydrolysis of glycosides or result in different flavors.

An argument could be made that the available glycosides in Jekyll and Hyde were consumed at different rates due to fermentation time, but the same amount would have been consumed regardless. For example, if two vehicles have one gallon of gas and one drives fast and the other drives slowly, they will both consume all of the available fuel, just at different rates. However, the final products, Jekyll and Hyde, indicate that perhaps the fermentation temperature can change the amount of hydrolyzed glycosides or, more simply stated, how yeast interacts with hop deposits in wort.

FUTURE STUDIES

Although we evaluated two beers, this is just one data point, and a number of variables could have affected the outcome. In future studies, any of these may be adjusted or kept constant, depending on the goal.

Yeast

The Omega Jovaru yeast was harvested from a previous brew. The harvested yeast was collected five days after pitching that batch, then refrigerated for 16 days before being pitched to Jekyll and Hyde. The yeast acted appropriately, began fermentation almost immediately, and showed no signs of fatigue. However, if the study were to be conducted a second time, fresh yeast might be used to reduce possible effects from mutations or contamination.

Grain

Pilsner malt was chosen for its easily distinguished dough-like flavor, which helped us determine how much the yeast and hops complemented or overshadowed the grain flavors.

Hops

Target hops both benefited and impaired the study. Their assertive character was too prevalent in the finished product, overwhelming the malt and yeast. On the other hand, the difference in hop flavor between the two beers was altogether unexpected.

JEKYLL

Batch volume: 5 US gal. (18.9 L) Original gravity: 1.048 (11.9°P) Final gravity: 1.005 (1.3°P) Bitterness: 70 IBU Alcohol: 5.7% by volume	MALTS 9.35 lb. (4.24 kg) Franco-Belges Pilsen Malt	HOPS 1 oz. (28 g) UK Target, 10.3% a.a. @ 60 min 2 oz. (57 g) UK Target, 10.3% a.a. @ 30 min	ADDITIONAL ITEMS 1 tablet Whirlfloc @ 20 min 1 tsp. (5 mL) yeast nutrient @ 20 min	WATER Prairieville, La. residential water adjusted with 3 g gypsum (CaSO_4)	YEAST Omega Yeast OYL-033 Jovaru Lithuanian Farmhouse yeast
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BREWING NOTES

Mash at 152° (67°C) for 60 min and then 170°F (77°C) for 10 min. Lauter and sparge to collect enough wort to yield 5 gal. (18.9 L) after the 60-minute boil. Boil 60 min., adding hops, Whirlfloc, and yeast nutrient as indicated. Chill wort to 75°F (24°C) and pitch yeast. Ferment at room temperature until final gravity is reached.

If the experiment were conducted again, hops with an alpha acid content of five to six percent might be more beneficial.

Fermentation

Fermentation temperature was the most important variable in the study. Because Jovaru is a farmhouse yeast, we allowed the yeast to ferment freely without strict temperature control. Hyde resulted in a harsh flavor, which may have been caused by stressed yeast the first evening. When I found the fermenter at approximately 82°F (28°C) from the original 95°F to 100°F (35–38°C), it's possible that the yeast was stressed and producing off flavors.

However, it's worth noting that our group of experienced judges did not detect *off flavors*, in the usual sense of the term, but rather *sharp* flavors from the yeast and hops. In future studies, it would be worth controlling fermentation temperatures to within 1°F (0.6°C) to reduce the effect of that variable.

BELGIAN AMBER COMPARISON

About a month after brewing Jekyll and Hyde, I used harvested yeast from Jekyll to ferment a Belgian-style amber ale. The grist consisted of 11 pounds (5 kg) of Briess

2-Row Brewers Malt and 2 pounds (907 g) of Briess Victory Malt for a 5-gallon (18.9 L) batch. The wort fermented at 67 to 70°F (19–21°C) and took six days to attenuate from a specific gravity of 1.057 to 1.010 (14°P to 2.6°P).

The finished beer was well rounded, with a fruity aroma, and the flavor was undoubtedly Belgian and reminiscent of a Trappist ale yeast. The orange character found in Jekyll and Hyde was still present, but it was considerably muted. In contrast, the retro-nasal aroma suggested orange blossom. The other judges did not note orange or citrus, but they did note esters and pepper. The beer possessed traits normally associated with the Belgian style that were not apparent when fermented at the higher temperatures used for Jekyll and Hyde.

CONCLUSION

A split batch fermented at high and low temperatures yielded two very different beers. The warm-fermented beer was drinkable but not entirely enjoyable. In that case, the yeast produced heavy esters, and the hops were far more pronounced than expected. *Rough* and *sharp* were the primary terms used to describe the end result.

The cool-fermented beer was more well-rounded and akin to a Belgian pale ale. This beer was enjoyable and required only an additional couple of days to ferment compared to the warm-fermented ale's 28 hours. A quick comparison shows that the fruit flavors continue to dissipate the lower the yeast ferments, but Belgian-like esters remain.

RESOURCES

1. Alguacil, M. (2020, April 22). *Interactions Between Yeast and Hops*. Retrieved 07 31, 2021, from Brew&Hub: <https://brewandhub.es/en/interaction-between-yeast-hops>
2. Lallemand Brewing. (2020, 10 28). *Increasing Flavor and Aroma with Hop Biotransformation*. (Lallemand Brewing) Retrieved 07 31, 2021, from Lallemand Brewing: <https://www.lallemandbrewing.com/en/united-states/aromazyme/>
3. Omega Yeast. (2018, September 27). *NEW STRAIN RELEASE: Jovaru™ Lithuanian Farmhouse*. Retrieved 07 31, 2021, from Omega Yeast: <https://omegayeast.com/news/new-strain-release-jovaru-lithuanian-farmhouse>
4. Omega Yeast. (2021). *2021 Strain Catalog*. Chicago, IL: Omega Yeast Labs, LLC. Retrieved July 31, 2021, from <https://omegayeast.com/uploads/downloads/2021-OY-Probrew-Strain-Poster.pdf>
5. Omega Yeast. (n.d.). *OYL-033 Jovaru® Lithuania Farmhouse*. Retrieved July 31, 2021, from Omega Yeast: <https://omegayeast.com/yeast/belgian-ales/jovaru-lithuanian-farmhouse>
6. Sharp, D. C., Steensels, J., & Shellhammer, T. H. (2017, March 29). The effect of hopping regime, cultivar and β -glucosidase activity on monoterpenes alcohol concentrations in wort and beer. *Journal of the Institute of Brewing*, 185–191. Retrieved from <https://doi.org/10.1002/jib.418>
7. (n.d.). Target, UK. BSG Craft Brewing Shakopee, MN: BSG Hops. Retrieved July 31, 2021, from https://bsgcraft.com/resources/Product_Sheets/Hops/UK%20Target.pdf

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Dustin Henry began homebrewing while still active duty as a staff sergeant in the US Air Force because it was cheaper than buying good beer. Six years, later Dustin continues to brew, has medaled in multiple homebrew competitions, and is completing an undergraduate certificate in brewing science and operations at St. Louis University.

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CRUSHING IT



AMATEUR CIDERMAKERS GO PRO

By Kristen Kuchar

It's a thought that crosses many homebrewers' and home cidermakers' minds at one point or another while sipping their creations—could I turn this hobby into a career? The answer, undoubtedly, depends greatly on what a cidermaker is willing to do.

Hard cider sales in the United States increased 11 percent in 2020 and totaled \$494.5 million, according to Information Resource Inc. (IRI),¹ and sales of regional cider brands grew 33 percent, according to the American Cider Association.² But that doesn't mean it's an easy road by any means. The professional cidermakers we talked with told us about seven-day, dawn-to-dusk work weeks and how dumping a batch is accompanied by wondering how you'll pay rent. But all have one thing in common: a deep passion and desire to share a love for their well-crafted cider. Here are their stories. →



JASON PHELPS
ANCIENT FIRE MEAD & CIDER
MANCHESTER, NEW HAMPSHIRE

Jason Phelps began homebrewing in 2003, right after cider season in New Hampshire. But when the 2004 apple season came around, he was ready to try his hand at making cider at home. He was already a cider drinker, so the idea of making some on his own was exciting.

"There are several apple farms in the town I live in, and while their varieties are largely suited for eating and cooking, I spent a couple years learning to make enjoyable ciders from them," Phelps says.

With the rise of brewery taprooms and drinking local, he saw the opportunity to open a place with a similar vibe but different beverages in 2018. Going commercial with his cider meant scaling up from buckets and carboys of 3 to 8 gallons to entire 250- to 300-gallon totes of cider. His spot in Manchester, New Hampshire, Ancient Fire Mead & Cider, now produces a variety of ciders and meads. Ancient Fire has built a small portfolio of ciders since opening.

"We definitely could have made more, but the twists and turns of our initial start-up didn't position us well for our first local cider season, and by 2020 the pandemic had set in and, because our cider production hadn't developed much by then, the reduced demand during the pandemic has kept our cider program small," he says.

The house cider is a semi-sweet cider made from a West Coast apple blend and sweetened with raspberry-blossom honey. "One of the greatest compliments that

we've gotten about this cider was from an English visitor that said it was a 'proper pint of cider' that was a perfect companion to friends and good conversation at the pub," he says. Station 7, a cider infused with cinnamon and habanero chiles, is Phelps's most popular product. A cider with mango and green tea has been well-received by customers as well, and he makes a cider with apples and honey from New Hampshire. Visitors can sample products in the taproom, and the cidery offers educational tours and ships to 37 states.

There have been plenty of challenges and learning experiences since opening, he says, including a tank of cider that went wild during the first couple days of fermentation.

Striving professional cidermakers should research what kinds of ciders sell well where they plan to operate, Phelps says. "For many patrons, their existing cider context will be your base to build on, and for some patrons you'll find that offering something they know keeps them happy; and happy customers help make good things happen," he says.

"Being a homebrewer comes without many of the limitations you'll have if you go pro," he adds. "The practicality of your business conditions will undoubtedly put limits on what you can do from time to time, something that might feel unwelcome in the face of great ideas that 'need' to be executed. Going pro is a choice, and it won't be the same."

**PROPER PINT
OF CIDER' THAT
WAS A PERFECT
COMPANION
TO FRIENDS
AND GOOD
CONVERSATION
AT THE PUB.**



**JARED SCOTT AND
ELIZABETH PHILBRICK**
ESOTERRA CIDER
DOLORES, COLORADO

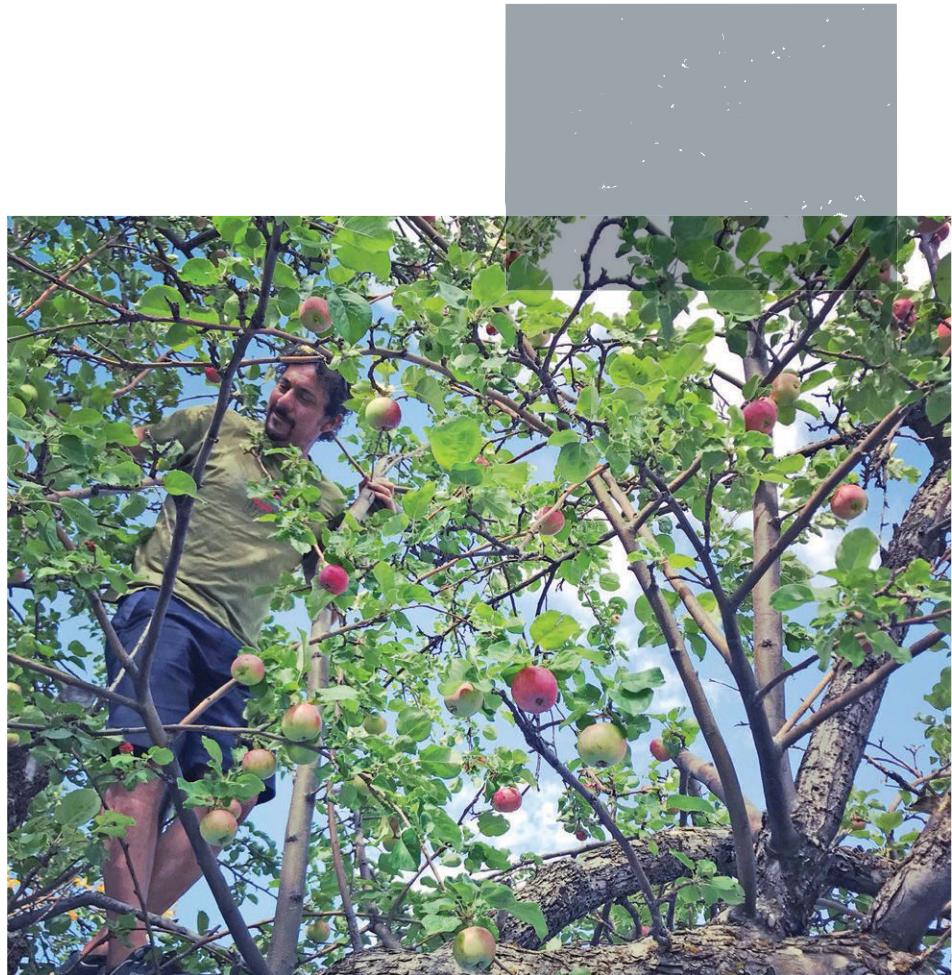
Elizabeth Philbrick and Jared Scott started dating during graduate school in Fort Collins, she working on her master's degree, he on a PhD. One evening, Elizabeth asked him to bring over a bottle of wine to share with the dinner she was cooking for them; in true Colorado fashion, he brought a bottle of his homebrew instead. But it wasn't beer he had made, but rather a "gorgeous Old World-style cider," as Elizabeth describes it. "Wow, that is not what I think of when I think of cider," she recalls thinking after tasting his homemade creation.

The couple began making cider together, initially inspired by beautiful apples that would have otherwise gone to waste. They'd invite their friends over to grind and press fruit in their backyard and drink their 1- to 5-gallon batches over a gigantic homemade meal prepared by Elizabeth.

When Jared proposed the idea of starting their own cidery, she responded, "Let me see your business plan." If they were going to give up their day jobs, she pointed out, they needed to know if this was actually going to work. The two enrolled in a rigorous six-month business program with the Southwest Colorado Accelerator Program for Entrepreneurs to learn everything they could about running a business and making their cidery a success. The program poised pivotal

Photos courtesy of Jared Scott

**WOW, THAT IS NOT WHAT
I THINK OF WHEN I THINK
OF CIDER.**



questions—sure, your product may be good, but how do you get it to people and how do you sell it? Why does this product matter and where can you find funding?

Elizabeth says it can't just be a passion to take the huge leap of turning a hobby into a job. "You are putting everything on the line when you go professional," she says. Her advice is to write a legitimate business plan that defines what your product is, why is it different, who will buy it, and what your cost and profit margin will be.

"The last thing you need is 100 gallons of anything you don't know how to sell," she says. "If you are not fully obsessed

with it, don't even try. Because your competitors are obsessed."

Jared and Elizabeth's goal at EsoTerra Cider in Dolores, Colo., is to create wine-like, clean, crisp cider with no additives, the ciders they want to drink themselves. Apples come from more than 50 family orchards and backyard tree owners in Southwest Colorado, often from 130-year-old trees. "We're working with apples that aren't widely available," she says. "That's what makes it great."

This past year, their unique ciders took home two best-in-class awards at the prestigious annual Great Lakes International Cider and Perry Competition.



BEN FARBER AND CHELSEY ROSETTER

BENNY BOY BREWING

LOS ANGELES, CALIFORNIA

Ben Farber started making cider eight years ago out of curiosity, a love for apples, and not being crazy about most of the commercial examples available to him at the time. Farber has been a brewer for more than 10 years, including completing an apprenticeship at Brouwerij De Ranke in Belgium. Together with his wife Chelsey Rosetter, he plans to launch Benny Boy Brewing this winter, complete with on-site barrel aging and a beer garden with fire pits and pop-up food vendors.

"After that first year, I was hooked, and it became a seasonal tradition for Chelsey and I to drive up to Oak Glen and pick up fresh-pressed raw juice straight from the orchards," Farber says. "I've always been fascinated with fermentation, and cider seemed like a natural next step after getting into brewing."

Ben prefers bone-dry ciders, but they'll have a range of dry to semi-sweet options in the tasting room, along with seasoned fruit additions throughout the year. Base ciders are made from Newtown Pippin and Gravenstein apples, and they'll be blending with a percentage of specialty cider varieties as well.

Ben and Chelsey always wanted to produce both beer and cider. "We love the UK culture where beer and cider co-exist, and we want to bring that vibe to LA, where there still isn't a huge cider scene," Ben says.

But it wasn't until they found their Benny Boy property, what they call an urban backyard for all, that they knew that was possible. "As cider is a wine license, we had to have a clear delineation of pro-

duction spaces, and the property we found has two buildings on the site with outdoor space in between. It's the perfect home for our brewery, cider house, and beer garden," Chelsey says.

Not quite open yet, the biggest transition so far has been where to find excellent fruit on a commercial scale. "We had access to some cider apple varieties on a homebrew scale, but once we started sourcing juice on a larger scale, it was a whole new ball-game," Ben says.

Since they're an urban cidery located minutes away from downtown Los Angeles, they had to work hard to find an orchard that wasn't too far away and produced enough to contract for the volume needed throughout the year. "Apples are only harvested once a year, so we really have to plan ahead," Chelsey says. "Luckily we met Jake Mann from the Five Mile Orchard at CiderCon in Oakland a few years ago, and his third-generation family-run orchard was the perfect fit for us."

Ben says when it comes to going pro with cider, logistics are crucial, especially in an urban location. Chelsey adds that travel and networking have been two important facets of honing their vision. The duo have traveled to the UK and France to meet with cidermakers. "I highly recommend learning the history of your favorite styles and then visiting as many cideries as you can in person," Chelsey says. "Write to and meet with cidermakers you admire. You'd be surprised at how generous the community is and how much people are willing to share."



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PAULA CAMP CARRIAGE HOUSE CIDERS

BENTON HARBOR, MICHIGAN

Paula Camp's cidermaking journey began in the 1970s during her long-time career as a journalist. She was interviewing Jacques Pépin at his home over lunch when he unveiled his homemade cider. "I became a believer immediately," Camp says, of a cider she said was unlike anything she had tasted before.

With a new appreciation for this beverage, she started making cider herself at home in the 1980s. What started with 5 gallons of juice bought from a farm evolved into pressing apples herself for 15 and 20 gallons.

Just this year, she took her ciders to the professional level and now produces ciders that embrace the tannins and acid similar to those found in wine. Part of what inspired her to take her cidermaking to the next level was living in southwest Michigan and having access to such fabulous apples, she says. "We didn't see a lot of cidermakers taking advantage of the wonders around us," she adds.

The business currently operates at a small scale. The ciders are very much handcrafted, with every apple viewed two to three times during the cidermaking process. The cider made at Carriage House Ciders is time consuming and more expensive to produce, but worth it. Each cider is aged in oak barrels rather than in stainless-steel tanks. Contact with the barrel, sometimes up to three years, achieves a flavorful, complex, more interesting cider with a unique mouthfeel.

Camp describes her cider as dry and surprising, with many different flavors emerging alongside one another. Her small-

batch sparkling ciders honor centuries-old traditions and are made with just three ingredients: fresh-pressed apple juice, natural yeast, and a little bit of sugar for natural carbonation. An available cider club offers members the latest releases, two to four ciders every quarter.

During her journey to becoming a professional cidermaker, Camp completed a viticulture class at Lake Michigan College. That training improved her professionalism and, as she says, reduced the number of times she had to dump less-than-perfect cider down the drain. She recommends taking a course of study, if possible, to anyone considering taking the next step.

"I can't emphasize enough how much I've learned, especially about the chemistry of cider that is extraordinary in terms of making cider that is predictable—with bacteria growth and all the things that could ruin a cider," she says of her studies. She also recommends learning from other winemakers and cidermakers by taking an opportunity to work as an intern or employee. "Lots of cidermakers would love to have a paid intern who is interested ... as long as they're not going to open up next door."

For aspiring entrepreneurs, Camp adds that it's important to have reasonable expectations about one's business. She points out that there's often more expense than income when launching and that it could take years to become profitable. There's a

I'M HAPPY, AND

I'M DOING WHAT

I'M SUPPOSED TO

BE DOING.

lag time, too, from pressing an apple to seeing any money from a completed cider. "It could be as much as nine to twelve months before a cider I made today is on the market," she explains.

Camp encourages home cidermakers considering going pro to take their own approach and to create cider that tastes unique instead of making more of the same. "Be authentic, be unique," she says.

While she's not quite sure how her cider story ends, she is having the time of her life right now. "Only time will tell. I'm happy, and I'm doing what I'm supposed to be doing."



REV. NAT'S CIDERY & TAP ROOM



NAT WEST

REVEREND NAT'S HARD CIDER
PORTLAND, OREGON

It was gardening that introduced home cidermaking to Nat West. When a friend and neighbor had a large apple tree with plenty of apples to spare, he did everything he could to put them to good use. He made applesauce, dried them, cut and canned them, and even made juice. With still more apples to spare, he ventured into making hard cider.

"I was totally hooked," he says, as he enjoyed the process of using something that could have ended up going to waste. He approached cider without a preconceived notion, simply by making the cider he wanted to drink himself. West's cider-making grew year over year from 5 gallons to 15 gallons to 40 gallons and beyond. He decided to get his home's basement and garage licensed so he could launch to the next step. Fast forward to this year, Reverend Nat's Hard Cider moved into a 22,000-square-foot facility.

As a craft beer enthusiast, West experimented with beer yeast, hops, wild fermentations, and Belgian ale spices. In addition to his passion for cider, part of what sparked West's going pro was a desire for a career change. The first six months, he juggled both working an at-home job in IT as well as his cider venture, working nights and weekends. He notes his wife had a steady job and healthcare, which he feels is an important point.



Brew
This!



SACRILEGE SOUR CHERRY CIDER

Recipe courtesy of Nat West, Reverend Nat's Hard Cider

Others profess to produce a cherry cider, but none begin with 100% sour Granny Smith apples (eschewing all other apple varieties for their lack of sourness) unified with the superior Montmorency sour cherry (aka *Prunus cerasus*, a superior and vastly dissimilar cherry to *Prunus avium*, the bird cherry, the mere mazzard, so commonly used in cough syrup and children's sweet-snacks) and the exotic Morello sour cherry (hailing from my native country of Hungary), fermented with an English Ale yeast (procured from a fine brewery in Chiswick, London), rounded out with a spot of Bartlett pear juice (undeniably the world's greatest pear-flavored pear) and completed with a touch of spiciness (largely attributable to the ghost chili pepper, although married with a secret spice), precisely enough to make your vigor race and spirits embrace another gulp. This is a cherry cider like none you have ever tasted.

Batch volume: 5 US gal. (18.9 L)

Alcohol: 6% by volume

YEAST

Wyeast 1968 London ESB YEAST

JUICE

4 gal. (15.1 L) super-tart apple juice,
Granny Smith if possible

1 gal. (3.8 L) tart cherry juice

ADDITIONAL ITEMS

Fermaid K Super Kleer
10–15 cloves Dried chiles of your choice

CIDERMaking NOTES

Ferment the apple juice at 62–72°F (17–22°C). Don't let it climb above 72°F (22°C).

Add yeast nutrient—use Fermaid K, not plain old diammonium phosphate (DAP)—at 30–35% attenuation according to the dosage on the package, noting that the juice will go full dry, down to below 1.000 SG (0°P).

When fully dry, let the cider age in primary for 3 weeks. Chill, if possible, to help the yeast drop out of suspension. After 3 weeks, add Super Kleer according to the manufacturer's instructions to clarify, and then transfer off the Super Kleer to a secondary container.

Add 1 gal. (3.8 L) of tart/sour cherry juice. Do not use "dark/sweet" cherry juice. It may be hard to find this product, but I can usually get it at Whole Foods Market. It can be much pricier than sweet juice. Look for Montmorency and/or Morello varieties. These are tart pie cherries, which are largely inedible.

Prepare clove tea by adding 10–15 cloves to a small pot with 3 cups (710 mL) of water. Bring to a boil, then simmer for 1 hour. Strain out the cloves and cool the tea (adding ice is OK). Add a quarter cup of the tea to the cider to start, and then, using ESP, stop adding the tea just before you begin to actually taste the clove in the final blended cider.

Make a tincture by soaking a couple of dried chiles in vodka for 1–3 weeks. Ghost chiles are great, as are habaneros. The hotter, the better. Be careful with this tincture! Do not use fresh chiles, as they will give a vegetal flavor and aroma. Depending on the Scoville intensity of the liquor, add an amount that produces an ever-so-slight hint of heat. It's very easy to overdo it. Maybe get a friend to help taste it with you.

Keep the whole thing very cold after you add the cherry juice because the combination will want to re-ferment!



West says that, like starting any business, opening a cidery is challenging and requires more capital than many expect. He adds that the cider market isn't growing like it once was. He says it's important to understand what kind of customer you're aiming for and to get to know them well. West also emphasizes considering your market and recognizing that what sells well in one part of the country won't necessarily work in others.

Despite his growth, West still makes the first cider he ever sold, a hopped apricot cider. Sacrilege Sour Cherry is an off-dry cherry cider made with sour Granny Smith apples, Montmorency sour cherries, English ale yeast, and a bit of Bartlett pear juice. Abbey Spice, a limited release, is an off-dry cider made with thousands of pounds of raisins, cinnamon, nutmeg, and dark muscovado sugar sourced from Maritius, an island off the coast of

Madagascar. The cider is aged on toasted American oak for at least three months.

His unique and eclectic ciders have won a plethora of awards at the Great Lakes International Cider and Perry Competition, San Diego Beer Fest, and Tastings World Cider Championships. Sacrilege Sour Cherry was named one of the 30 best ciders in the world by *Food & Wine*.

RESOURCES

1. Jacobsen, Jessica. "2021 Beer Report: Local Level Lifts Hard Cider Market." *Beverage Industry*. Beverage Industry, March 10, 2021. <https://www.bevindustry.com/articles/93906-beer-report-local-level-lifts-hard-cider-market>.
2. Nielson-Stowell, Amelia. "7 Takeaways for Cideries in 2021." *The Fermentation Association*. The Fermentation Association, February 16, 2021. <https://fermentationassociation.org/7-takeaways-for-cideries-in-2021/>.

Kristen Kuchar has covered the food and beverage industries for the past 14 years. She has written for Brew Your Own, BeerAdvocate, CraftBeer.com, The Beer Connoisseur, DRAFT, All About Beer, VinePair, and many more.

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WORT HOG

Photo courtesy of Nat West

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.

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!)

BREWING WITH ZYMURGY

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

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

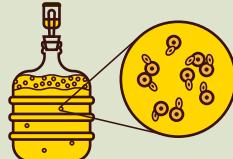
SMM – S-methyl methionine, precursor to dimethyl sulfide (DMS)

SRM – Standard Reference Method (beer color)

FERMENTING & CONDITIONING

Pitch yeast into chilled, 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

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Brewing in Memoriam



By Jared Spidel

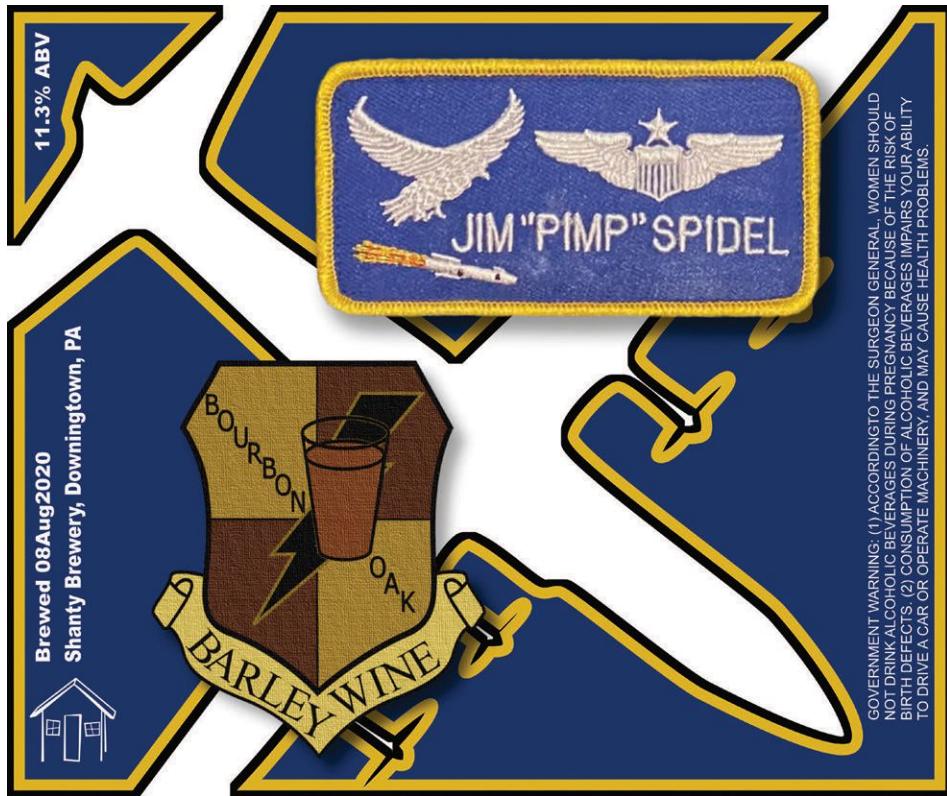
I love homebrewing. I love diving into recipe details, geeking out on equipment, connecting with a rich and timeless community of beer lovers, and understanding just what RDWHAHB means (see page 68). During the last 15 years, I've learned that brewing is more than just making beer. It's about connecting with fellow brewers and sharing the experience of beer with friends and family, celebrating birthday parties, weddings, holidays, and other special events. There's something special about showing up to a neighbor's picnic with a handful of bottles of fresh German Pils. And nothing beats the yearly tradition of brewing a strong beer with a couple of

buddies for the winter months. These joyous experiences are the essence of homebrewing. Otherwise, it's just beer.

Brewing can be meaningful for celebrations, but it also can be a therapeutic distraction during difficult times. When the future seems uncertain, normalcy helps us stay grounded and sort through chaos. No matter what's happening in the world around us, we can still escape into our brew space early on Saturday mornings. There's comfort in fretting over pH and starch conversion when the world around us is heavy. After the past couple of years, I'm sure many of us can appreciate the relief of the simple and the familiar.

On August 8, 2020, my youngest brother, Jim's, 31st birthday, I therapy-brewed a monster English-style barleywine for him. This was a "hide it in the back of the basement to enjoy for the next 20 years" kind of barleywine, and it had to be perfect. I had reformulated the recipe probably a hundred times in anticipation of the day, but after all was said and done, I honestly don't remember much of the brewing process except the familiar aromas of mashed grain and boiling hops and the monotone roar of the jet engine I call a propane burner. My mind was elsewhere.

Photos © Getty/VanderWolf/Imagex [C-130 Hercules]; courtesy of Jared Spidel



I brewed in memory of my “baby” brother on that day because we had lost him on May 18, 2020. Jim was serving in the United States Air Force (USAF), piloting MQ-9 Reapers at Creech Air Force Base, outside Las Vegas, Nev. As with too many remotely piloted aircraft (RPA) pilots, Jim found himself struggling with his work. He longed to be in the sky with his beloved C-130J again.

An Air Force Academy graduate and combat-experienced pilot, my brother, like many others in his C-130J squadron, was reassigned to flying RPAs without being trained to confront the specific psychological effects of these drone missions. This type of combat requires an upfront seat to the horrific aftermath of a missile strike, all displayed on a video screen. Along with the drudgery of surveillance and sleep deprivation of continually rotating shifts, flying drones takes a tremendous psychological toll on service members.

Jim watched as his co-pilots’ mental health deteriorated to the point where they attempted or succeeded in taking their own lives. He suffered silently with post-traumatic stress (PTS) and situational depression because seeking out mental healthcare from the USAF can come with career-ending consequences, as was the case for Jim’s best friend. Jim tried to suppress the signs of his deteriorating mental health with the hope of leaving the drone program and flying the C-130J within



the year, but before that chance came, Jim lost his battle with PTSD and depression at just 30 years of age.

In May 2020, my world shifted from lockdown Zoom meetings and homeschooling to flying to Jim’s home to begin working through the shock with my family. It was hard and unsettling to be there without him, but there was one moment of peace



Jim's Bourbon Oak Barleywine

Batch volume: 5.5 US gal. (20.8 L)

Original gravity: 1.119 (27.9°P)

Final gravity: 1.033 (8.3°P)

Color: 6 SRM

Bitterness: 58 IBU

Alcohol: 11.3% by volume

MALTS

26 lb. (11.8 kg) Rahr Pale Ale malt

3 lb. (1.36 kg) Rahr White Wheat malt

1 lb. (454 g) Briess Caramel Malt 10°L

HOPS

1 oz. (28 g) Sorachi Ace, 9.1% a.a.

@ 60 min

1 oz. (28 g) Sorachi Ace, 13.5% a.a.

@ 60 min

1 oz. (28 g) US Saaz, 8.5% a.a.

@ 60 min

YEAST

Muntons Dry Ale Yeast

ADDITIONAL INGREDIENTS

1 tablet Whirlfloc @ 15 min

1 medium-plus American white oak spiral infused with Jim Beam for three weeks

BREWING NOTES

Mash grains for one hour at 152°F (67°C) at pH 5.4 with a mash thickness of 1.4 qt./lb. (2.9 L/kg). Vorlauf and collect just the first runnings, about 7.25 gal. (27.4 L). Boil for 2 hours, then add hops and continue boil for an addition hour, for a total boil time of 3 hours. Add Whirlfloc with 15 minutes remaining in the boil.

Cool to 66°F (19°C), oxygenate, and pitch a healthy yeast starter of approximately 365 billion cells. After primary fermentation is complete, about 1 month, transfer to secondary fermenter and add bourbon-infused oak spiral plus a few ounces of the excess bourbon to taste. Condition for 4 months and then carbonate to 2 vol. (4 g/L) CO₂.

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“
Jim wasn’t a hardcore brewer, but he brewed 1-gallon brew-in-a-bag (BIAB) batches with friends to relax and escape the real world for a bit.

when I found two familiar friends tucked away in his refrigerator—hops and yeast. When I had seen Jim a few months earlier, he told me how he had picked up the ingredients to get back into homebrewing but couldn’t find the time to do it because of his demanding work schedule. Jim wasn’t a hardcore brewer, but he brewed 1-gallon brew-in-a-bag (BIAB) batches with friends to relax and escape the real world for a bit. As we sorted through his house, I found the few pounds of grain he had stashed away for a happier day. It was a gift, something familiar amidst the chaos.

The uncertainty of the following days and weeks turned to months of disbelieving grief. I tried to piece together the puzzle of what had really happened that fateful night, searching for answers to why someone with no previous history of mental illness was now gone. As I worked through the grieving process, talking with counselors, and

finding support with family and friends, I realized one thing I was seeking was a personal connection with my late brother.

There are four kids spanning 12 years in my family; I am the eldest and Jim the youngest. I was practically out of the house when Jim started elementary school, so I missed much of his childhood. I was immersed in grad school when he was in middle and high school, and I started my family while he was still in college. It’s funny that as different as we four siblings are, and despite growing up fairly independent of one another, we each have similar personalities. We all have a refined taste in very dark humor, satire, and sarcasm, but poop jokes are always funny as well. Although no one in our family of origin drank or smoked, in each of our separate travels, we discovered the beauty of bourbon and the soothing aromatics of pipe tobacco. The four of us

are all “doers”—we would rather do than watch. Taking up hobbies is our hobby, and exploring life is the adventure.

Because of these similarities, finding ways to remember Jim wasn’t a problem for me. I could connect with him when I was hiking, fishing, hunting, smoking his pipe, or wearing his jacket, but I wanted to find something deeper, a unique shared experience between him and me. After a few weeks, it hit me: brewing was the bond I was looking for. Though we never brewed together, we were always connected through homebrewing.

The year following a death is a year of firsts. I knew Jim’s first birthday without him was going to be tough, but as the day approached, I found comfort in our shared hobby. While it was a very hard day, brewing helped tether me. It kept me from retreating too deeply into dark places by giving me a purpose and allowing me to



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*yinz (pronoun): variant of you all; chiefly used in Western Pennsylvania.





stay focused on something tangible. That day, I celebrated him by making the beer he never got around to making.

In Jim's house, I found a pound of Rahr Pale Ale malt, 3 pounds of Rahr Red Wheat malt, 1 pound of Briess Caramel 10°L malt, an ounce each of Sorachi Ace and US Saaz, and a packet of Munton's dry ale yeast. I asked myself, *What in the world can I make with these ingredients?* I wanted his ingredients to be the focus and not just buried in a stout, but as-is, the malt bill was not going to work out so well. Plus, I didn't know the condition of the hops. While vacuum-sealed, they had been stored in the fridge for an unknown amount of time. What I did know was that I wanted to make something that I could savor for years to come and make it personal for Jim. I think it was the Munton's yeast that inspired me to make an English-style barleywine. Like me, Jim gravitated to big, malty beers, so this was a perfect fit.

I've been making a Christmas barleywine every year for about a decade, and I used the same techniques for this beer. I perform a partigyle mash to get the richest sugars in the first runnings with a long boil to develop deep caramel and dark fruity flavors. Still staying true to his ingredients, I added more Rahr Pale Ale malt to bump up the gravity. The hops in an English-style barleywine are there to balance sweetness, so Sorachi Ace and US Saaz worked for a bittering addition. I was a little short on hops, but I lucked out and grabbed the last ounce of Sorachi Ace at the homebrew shop just before brew day.

Since the tiny packet of Munton's ale yeast of unknown age and origin would be problematic in such a huge beer, I grew up a starter with a tiny amount of yeast and saved the rest of the packet to pitch alongside the starter.

To add a personal element to this beer, I decided to age it with oak and bourbon as a nod to Jim's love of bourbon. After I racked the beer to secondary, I added a medium-plus toasted American white oak spiral that had been soaked in bourbon for a few weeks, along with extra bourbon (maybe a few tablespoons). After four months of aging the beer at cellar temperature, I transferred it to a keg, force carbonated it, and bottled.

The label design was surprisingly therapeutic, too. I'm not one for art therapy, but capturing the spirit of my brother and his loss by designing a label in his honor helped me sort through a mountain of emotions. I outlined a picture of the C-130J that flew overhead at his memorial service, flown to Pennsylvania by a crew from Dyess Air Force Base where Jim had previously been stationed. I crafted the oaked barleywine patch based on his most recent squadron's patch. Finally, I included his name patch with his call sign, "PIMP," which subtly speaks volumes about who he was.

None of us could quite understand his seemingly strange call sign. While highly adventurous, Jim was introspective, practical, and humble—not the type of personality you might call a pimp. His closest friends didn't even know the origin

of this call sign until we were all sitting at my parents' dining room table after Jim's funeral. One of his buddies disclosed that PIMP was an acronym for "Poop In My Pants." Apparently, pilots simply can't take a break while flying a mission, so sometimes things happen... This described Jim perfectly—poop jokes are always funny, but his not telling everyone made this one even funnier.

May 18, 2021, was the anniversary of Jim's death. I cracked open the first bottle. The beautiful amber-copper beer poured crystal clear into the New Belgium goblet I had picked up at the brewery. I'd purchased it during a visit with Jim while he was attending the US Air Force Academy in Colorado Springs. The sweet smell of dark caramel, vanilla, and cherry, with a bit of oak and bourbon wafted from the glass. I savored every sip that connected me to Jim. I was reminded of the similarities and connection only brothers share. I could see his eyes light up as he tasted the complex oaky, malty sweetness with hints of bourbon, earth, and leather. So good. I remembered us sitting around the table at my parents a few Christmases ago playing games and enjoying a vertical tasting of a few of my annual barleywines. Yes, Jim would have loved this beer.

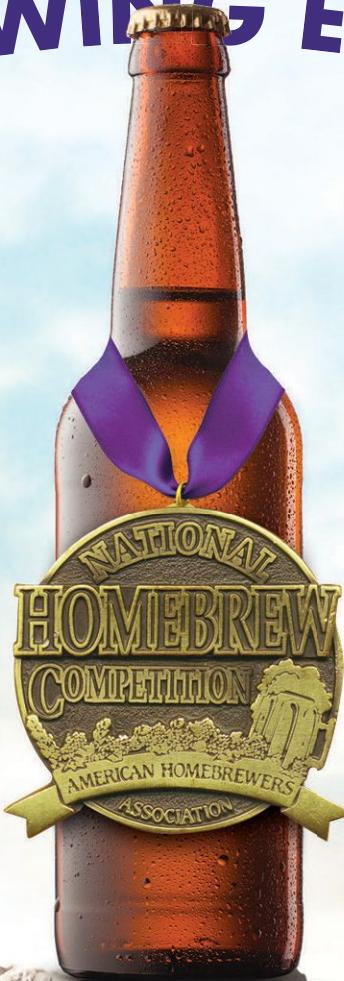
I will never have a chance to brew with my brother in life, but I will continue to brew with him after his death. Our shared love of brewing is a gift I will always treasure, and this barleywine will connect us long after the last bottle is empty.

Jared has been homebrewing for 15 years and perfecting his barleywines for the past decade. He has a proud family history of US military service ranging from the American Revolution through the War on Terror. More than 30,000 active-duty American service members and veterans have died by suicide since September 11, 2001. Be a voice for soldier mental health.



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The Upper Palmetto Zymurgy Society

In January 2016, two friends met to discuss a shared interest in homebrewing. The two wanted a club focused on homebrewing education and, after scribbling a few ideas on the back of a napkin, the Upper Palmetto Zymurgy Society (UPZS) began its fermentation. With a humble start of around 15 members, the club now numbers more than 80. The primary focus remains on homebrewing education, but recent efforts also emphasize giving back to the local community through charities.

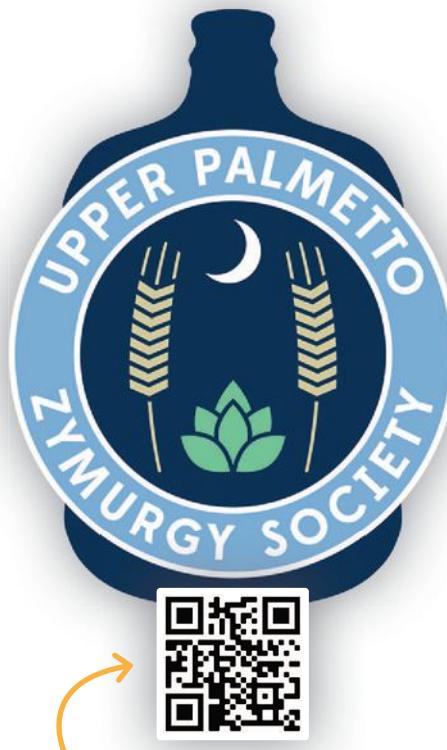
Homebrewing is truly a science. The process can be complicated and intense, but the results can offer a unique brew enjoyed by the brewer and possibly a few lucky friends and family members.

Mark Will, the club's vice president of finance, says, "It is possible to make beer as good (or better) as professional brewers, but at home. My beer is as good as any you can buy in the store." That's a bold statement, but UPZS club members would agree with Mark.

"We have had several members win medals in various competitions. What is amazing, however, is the number of members who are now brewing professionals," observes Sammy Reyes, founding president.

Some members of UPZS have had their best beers available at local breweries. Jeremy Bizon's award-winning Märzen is on tap at Lake Wylie Brewing Co., Paul Damm has had his Damm American Stout available at Armor Artis Brewery, and Debbie Weatherby Whitehead will have her India pale lager on tap at The Olde Mecklenburg Brewery in Charlotte, N.C.

At the professional level, UPZS club members have opened, are opening, or currently brew at breweries in the surrounding communities. Fort Mill, S.C., is home to 1873 Brewing, Model A Brewing Co., Lake Wylie Brewing Co., Little York Brewing Co., and Replay Brewing. In nearby Rock Hill, S.C., there are Rock Hill Brewing, Slow Play Brewing, and J Three Bier Works.



Scan to donate to the Alexa R. Good ALS Foundation for the first half of 2022.

The Upper Palmetto Zymurgy Society has enjoyed dramatic growth over the past five years. As the club has grown, so has the interest in supporting local charities. As club president Mark Whitehead says, "It's an opportunity to support local charity needs and be aware of others less fortunate. Also, it gives the club an important secondary value, not only being associated with beer and homebrewing."

Club members choose charities by voting on selections identified by the board of directors. In 2021, the Humane Society of York County was awarded \$1,150. At this time, Pilgrims' Inn of Rock Hill, a 501(c)(3) agency that assists those who are homeless or at risk of homelessness, is the club's targeted recipient. Donations include money, food, and equipment. With encouragement from club members, local breweries are participating in food collection.



The club plans to continue making local donations twice each year. As the club has grown and matured, the founding principle of brewing education has remained, but its mission has expanded to include helping meet needs in the local community. As the club continues to grow, its impact on charities will certainly grow, too. The fermentation continues....

To learn more about the Upper Palmetto Zymurgy Society, visit upzs.org. To donate to the club's chosen organization for the first half of 2022, the Alexa R. Good ALS Foundation, scan the QR code above.

Russell Hodge and his wife enjoy an active retired life in Rock Hill, S.C. Craft beer and homebrewing are among his various hobbies, which also include freelance writing.



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