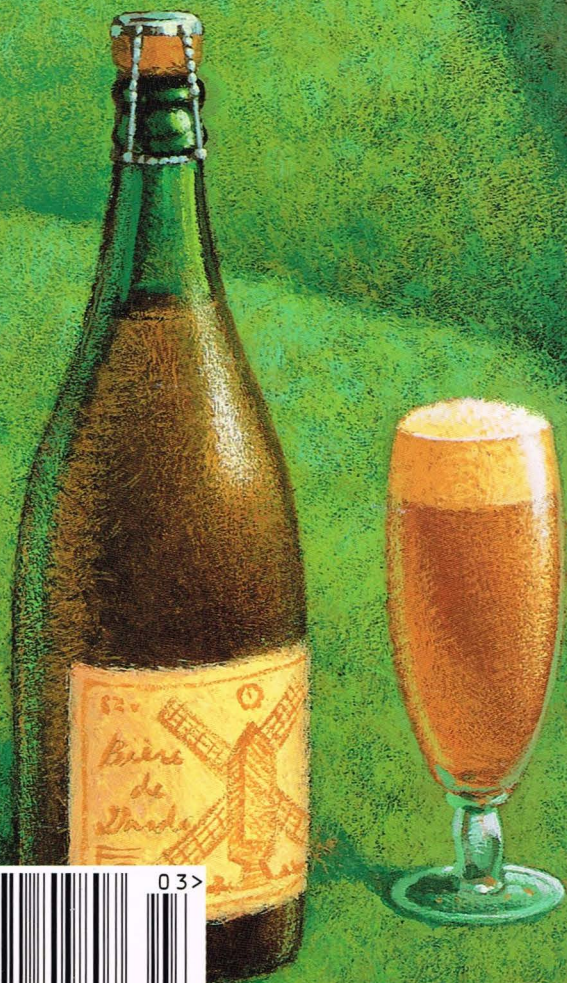


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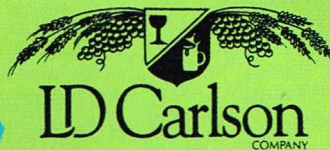
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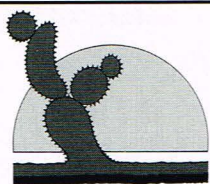
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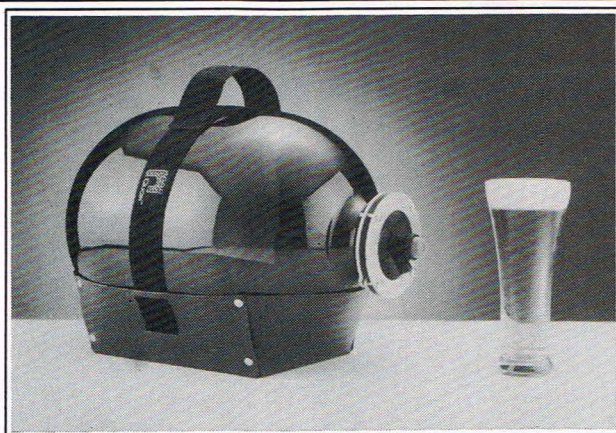
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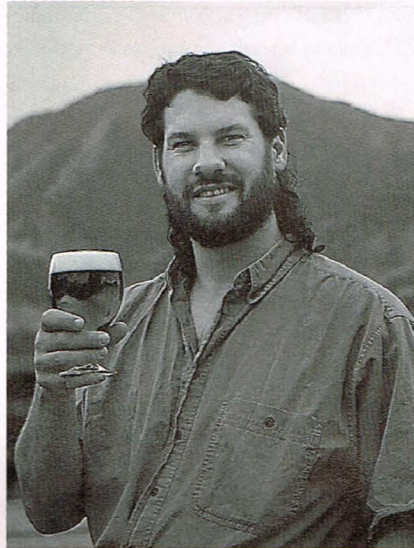
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BY PAUL GATZA

Rick Natter invited me and several others over to his breweriana basement for a card game awhile back. Rick's basement is a beer lover's dream. He has his best beer cans, including many conetops, and all sorts of lighted brewery signs, velvet artwork, trays, glassware and pre-prohibition pieces displayed among his homebrew fridges, dart board and card table. Rick is a member of both the American Homebrewers Association and the American Breweriana Association. I asked Rick what the ABA was up to in the coming months, and he replied, "We're setting up a booth at the GABF again, and we will be having our convention..."

Rick's use of the words "we're" and "we will" showed me the pride he takes in being a member of the ABA and shows that he is an active participant in running events under its banner. Many AHA members feel the same way about our association; other AHA members feel we are little more than *Zymurgy* magazine. One of my primary goals here at the AHA is facilitating the transformation of the AHA into more of a participatory, grassroots association, where members do more than send in their annual dues in exchange for information. Homebrew is a participatory hobby and a social lubricant. As a result AHA events are social functions promoting camaraderie through homebrewing. We all are the AHA, and the AHA is what we make it.

There are many ways that we can participate in, and even create, AHA-sponsored events. When you go to your local homebrew club meeting, you're receiving benefits of the clubs program. You are participating in the AHA when you enter, sort entries, steward or judge an AHA-sanctioned competition. You are helping chart the course of the AHA when you provide input to the staff and AHA Board of Advisors on the TalkBack forum on the beer-




town.org Website. Over 85 percent of AHA members are on the web, and the most recent and accurate AHA information is on the website. We're always soliciting ideas to make the AHA and beertown.org website more member-usable.

The largest participatory effort you can make for our association is by attending the AHA Conference. "BLUES, BREWS & BARBEQUE" is the title of the 1999 AHA Conference. The Conference will be at the Holiday Inn in Olathe, KS, from June 24 to 26. This conference has been planned and organized and will be run by AHA members connected to the AHA-registered clubs in the Kansas City area, led by the KC Biermeisters in coordination with the AHA staff. Updated conference and registration information is on our website and the conference website maintained by the KC Biermeisters (<http://kcbiermeisters.org/BBB99.htm>). As of this writing, the following speakers are confirmed: Steve Bradt, Ray Daniels, Charlie Papazian, Paul Farnsworth and David Houseman and Al Korzonas. The nighttime activities are an

opening reception, the Blues, Brews and Barbeque signature event at Pony Express Brewing and the Saturday night National Homebrew Competition awards banquet. The second round judging of the National Homebrew Competition will again be held during the conference. (If you missed the NHC Rules and Regs that accompanied the January/February *Zymurgy*, please write or e-mail us for an extra copy).

There is another change with the AHA that you may have noticed already. If you received this *Zymurgy* as part of your membership, there are candidate statements and a ballot included in the upcoming News and Notes. The AHA Board of Advisors amended its bylaws to require that all new positions on the Board to be elected by the general membership. Please read the candidate statements and return the ballot quickly, so that the newest Board member can join the Board at the AHA Conference.

Thanks for your participation.

Homebrewer and homebrew shop owner Paul Gatza is the director of the AHA. 

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Mark your calendars for the 1999 AHA National Homebrewers Conference
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Yeasty Business

Dear *Zymurgy*,

Thank you to you and your team from me and my team here at White Labs. We really appreciate all the press we received in your yeast edition (*Zymurgy*, Nov./Dec. 1998, Vol. 21, No. 4). I especially appreciate the unbiased and professional manner in which the articles were written.

As I mentioned on the telephone, there are a few minor discrepancies I would like to bring to your attention. The first looks as though it was a labeling error. On page VI of the Liquid Yeast Characteristics chart, WLP800 Pilsner Lager, WLP810 San Francisco Lager and WLP820 German Lager are White Labs Pure Brewers Yeast™ strains but are listed under another manufacturer's heading.

In the very thorough and insightful article "Getting Started with Liquid Yeast" the suggested retail price for a White Labs Pitchable Yeast vial was listed as \$4.00. Due to the high cell count and increased convenience, White Labs' suggested retail price range is actually \$6.50 to \$7.00.

I respect that every author has their own opinion, but I would like to make sure the reader did not mistake the following as White Labs' view. The areas I would like to address are pitching rate and perishability. In the article "Getting Started with Liquid Yeast" the author suggested using two vials of White Labs Pitchable Yeast™ per five-gallon batch. Although we would appreciate the extra sales, we recommend a brewer use only one vial in a five-gallon batch of beer and two vials for a 15-gallon batch of beer. The brewer will generally see a 5-15 hour lag time with most of the yeast strains when they are pitched within one month from the date on the vial. After 30 days, they may see a slightly longer lag time. There is nothing wrong with using two vials, but they are



designed to be used in five gallons, and that is how most people use them, with success.

In the same article the author's opinion was White Labs' yeast has a shelf life of two weeks. Our product claim is a four-month shelf life for our vials. In actuality, our quality control testing shows that there is a viability of 60-70% after six months. All yeast dies at the same rate whether it is in a bag or a vial, that is why we start with 2-10 times more cells than any other yeast manufacturer. As with any liquid yeast, it is best used within 30 days, but plenty of healthy, live cells will be around for four months. We recommend one vial for five gallons with yeast 1-30 days old, and one vial plus starter for yeast over one month. Yeast used without a starter after one month will work for up to four months, but will have a longer lag time.

Thank you again for featuring our products in *Zymurgy*. I also want to compliment Amahl Turczyn on his thoroughness and breadth of coverage from "Bread" to "For the Beginner" to "Capturing Your Favorites" capturing the yeast from the favorite brews. Al Korzonas did a great job explaining how

to keep our yeast happy and Dan Rabin's article, "Yeast is Yeast...or Is It?" was fun, informative and interesting. Congratulate your crew for me. If there is anything we can do to help, just ask.

Sincerely,
Christopher A. Mueller
Vice President, White Labs
cmueller@whitelabs.com

Thanks, Chris, for your comments. We have to say that the introduction to liquid yeast has launched quite a controversy. We've received comments ranging from "only crazy people pitch less than three vials/bags" to "only a crazy person pitches more than one vial/bag." Could this mean that only crazy people brew beer?—Ed.

In a Double-Blind Bind

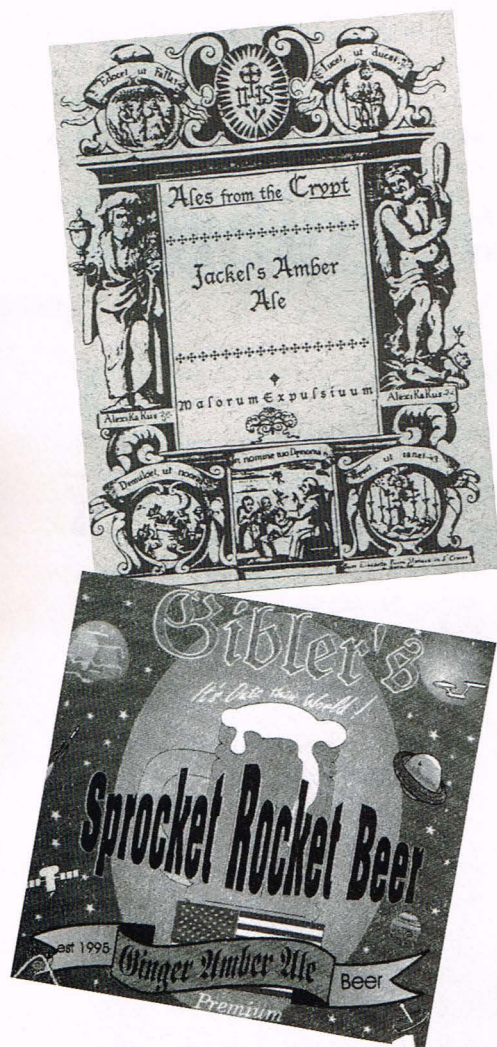
Dear *Zymurgy*,

I enjoyed Dan Rabin's "Yeast is Yeast" article in *Zymurgy*, Nov./Dec. 1998 (Vol. 21, No. 4). I've recently been considering changing my standard yeasts in hopes of making even better beer. Conducting all those tests must have been an enormous amount of work.

I don't want to sound like I'm quibbling or ungrateful for all the effort, but can you tell me about the "controls" that were included in the taste tests? Specifically, here's the information I'm hoping to get:

1. Did the taste testers have any idea which yeast was which at any time prior to the completion of all the tests? How were the samples labeled or otherwise identified to the testers? (In other words, was it a blind test?)

2. Did anyone else in the room at the time of the tasting, other than the testers, know which yeast was which? (In other words, was it a double blind test?)



3. Did the testers discuss their impressions with each other during the test?

Again, I don't want to sound like an anal-retentive type about this, but knowing about the controls in the testing will allow me to confidently interpret this testing.

Thanks.
Dennis Johnson
via e-mail

Thanks for the kind words, Dennis. This was, however, more of a subjective analysis of various yeasts rather than a more rigidly controlled test. As one of the tasters myself, I can say that the differences were rather more pronounced than subtle.—Ed.

The Convenience Factor

Dear Zymurgy,

I would like to thank the editors of *Zymurgy* for publishing a special issue

on yeast (The Magic of Yeast, *Zymurgy*, Nov./Dec. 1998, Vol. 21, No. 4). After reading Pierre Rajotte's excerpt on "Plating a Yeast Suspension," I've decided that paying \$4 for a new package of liquid yeast every time I brew is well worth the investment.

Also, I found Al Korzonas' article on the "12 Steps to Happier Yeast" very helpful, although I would have liked a step-by-step explanation of how one generates two liters of starter yeast out of a five ml package. Do

you have any suggestions of where I might find this process detailed?

Regards,
Timothy Ryan
Alexandria, VA
drinkstout@yahoo.com

We'll get Al to elaborate and have it in an upcoming issue, Timothy. We also agree that yeast is cheap at the price (\$4, \$5, heck, even \$6).—Ed



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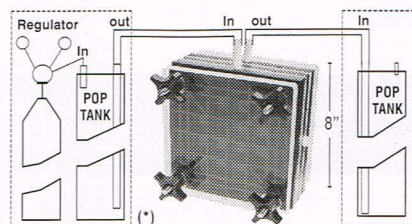
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Ale Evolution

Dear *Zymurgy*,

I have been brewing ales for quite a long time, my first batch was in 1974 in Coral Gables, FL while at school. It turned out very bad. My first batch was the only one in which I used the recipe recommended equal parts malt extract and sugar. After I graduated I continued to brew (all malt) until about 1980 and didn't brew again until 1993.

Two years ago I brewed my first batch of lager. It was excellent. It was a partial (steeped) grain batch that I moved to my

unheated garage after brewing. I used Wyeast Czech Pils yeast with no starter and just let it go. It took two weeks in the primary and five in the secondary. At the end you could see your hand clearly through the glass fermenter. It was the best tasting beer I have ever made.

What I am getting at is I think it would be really great if a special issue could be dedicated to lagers. There are many topics to cover, yeasts, malts, hops, different styles, types of setups homebrewers use to achieve the correct fermentation temperatures, tips and gadgets, etc.

I believe there is certainly enough valuable information to fill an issue and it (I think) would be the first special issue on lagers and lagering. I think it may help others in brewing that elusive Best Batch Ever.

Thanks a lot if you've read this far. PS...I am a diamond-studded platinum mug sponsor and totally enjoy belonging to this organization.

Thanks again.

Pete Swift

Manassas, VA

swifty@erols.com

Pete, that's a good idea for a special. We'll toss it into the hopper.—Ed

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Late-Breaking AHA News

The 1999 AHA Conference is set for June 24-26th in Olathe, Kansas, with the Holiday Inn Olathe (just outside Kansas City) as the host hotel. Room costs will be \$75 a night, for one or four occupancy.

This year's conference is being planned and run by AHA-registered club members from throughout Kansas City and neighboring areas in coordination with the AHA staff and Board of Advisors. Registration and other information will be available at beertown.org or the KC Bier Meisters web site (<http://kcbiermeisters.org>). The organizing committee's e-mail address is 99con@kcbiermeisters.org.

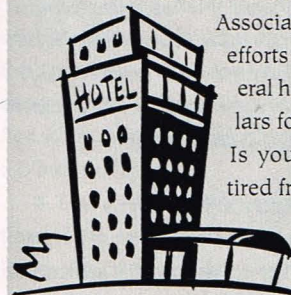
The AHA would also like to thank Bert Grant, pioneer of America's craft brewing industry, for the generous donation of all of the proceeds from the sale of his book *The Ale Master* during the 1998 Great American Beer Festival to the

American Homebrewers

Association. Bert's efforts raised several hundred dollars for the AHA.

Is your arm still tired from all that

signing,
Bert?



DAN RABIN

Bowling for Dinner

There's something comforting about a meal in a bowl. Perhaps we subconsciously reminisce back to our infancy when Mom shoveled mashed bananas from a tiny bowl into our eager mouths. More likely, a single-bowl meal means there are fewer dishes to wash, which is always a comforting thought.

Here are two beer-enhanced recipes, each of which makes a great meal-in-a-bowl. The first is a simple, yet hearty, soup. The second is a complex flavored stewlike curry. Despite their obvious differences, they share some common qualities. First, they are popular dishes that can both be made in countless variations and interpretations. Second, they're especially enjoyable when accompanied by a well-crafted beer. And finally, they're both comforting to the soul as well as the palate.

Beer Cheese Soup

The origins of beer cheese soup are obscure but, to me, it seems quintessentially Midwestern American. After all, beer and cheese are staples of America's Heartland, especially the northern states.

Beer cheese soup has as many varieties as there are dairy cows in a Wisconsin pasture. Some versions are thick, creamy and smooth. Others are thinner and brimming with vegetables such as carrots, celery or broccoli. Still other recipes call for sliced sausage and diced potatoes.

The recipe below is easy to make and creates a medium-thick version of this classic soup. The addition of mushrooms provides an earthy quality and some textural variety. It's essential that you use a good quality cheddar cheese (I like Tillamook cheese from Oregon). Don't use a hoppy beer for this recipe. Hop flavor gets concentrated when you cook and may produce a bitterness that's fine in beer but not so great in soup.

Some folks like to top off their beer cheese soup with a handful of popcorn, though I prefer a loaf of pumpernickel or other good dark bread alongside.

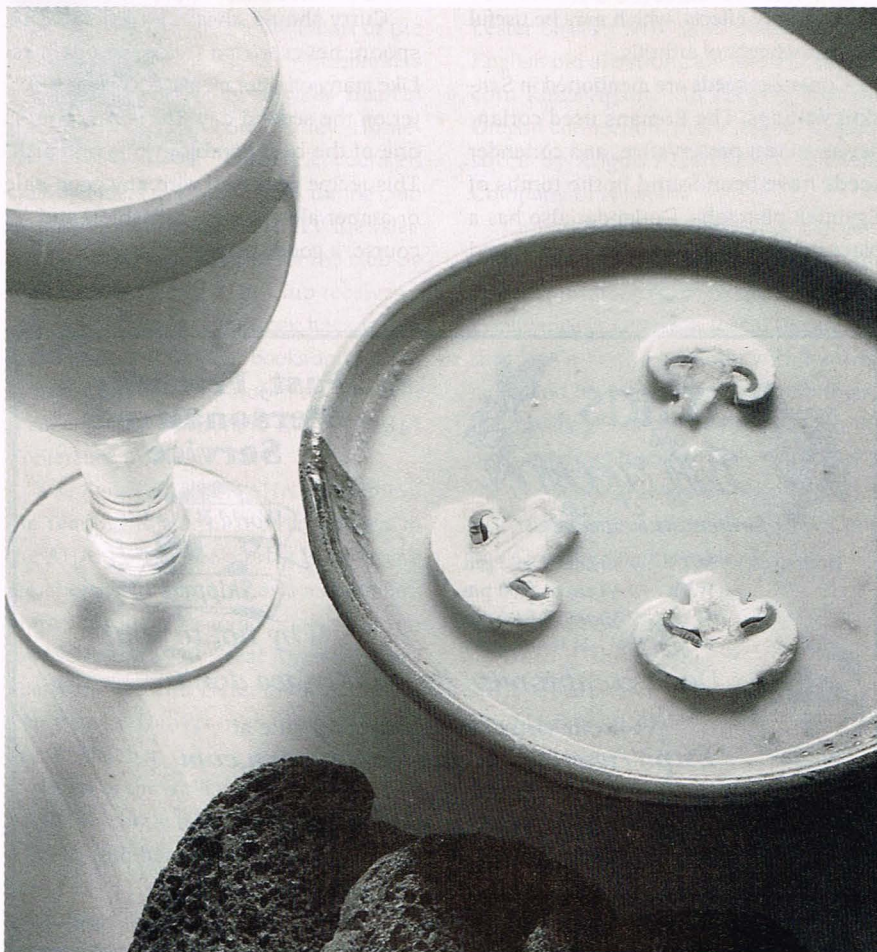
- 1 cup onion, chopped (237 mL)
- 8 oz mushrooms, sliced (227 g)
- 4 tbsp butter (59 mL)
- .3 cup flour (79 mL)
- 2 cup milk (473 mL)
- 3 cup broth, chicken or vegetable (710 mL)
- 12 oz beer (any lightly hopped pale or amber ale or lager should do

nicely) (355 mL)

- 2 cup sharp cheddar cheese, grated (473 mL)
- 1 tsp dry mustard (5 mL)
- 1 tsp salt (5 mL)

In a large pot, melt butter. Add onions and mushrooms and sauté until mushrooms are cooked through. Add flour and mix well.

Slowly add milk, stirring constantly to avoid lumps. Add broth, mustard and salt. Cook over medium heat for 10 minutes, stirring often.



Add cheese and mix until completely melted. Add beer and heat through.

Curry with a Coriander Kick

Coriander is a most versatile plant. A relative of the parsley family, *coriandrum sativum* is native to the Mediterranean and the Orient though it grows well in many locales. Its pungent leaves, called cilantro or Chinese parsley, are used as a garnish for highly seasoned dishes in many countries. Dried, ground coriander seeds have a sweet, lemony aroma and are used to flavor a wide variety of dishes from soups to desserts. One of coriander's most popular uses is in curries.

In addition to its culinary uses, coriander is reputed to be a remedy for a number of medical ailments. A tea made from coriander can aid digestion, and is said to provide relief for colicky babies. When coriander is applied to cuts and scrapes, it can help stave off infection. Recent studies suggest that coriander may have anti-inflammatory effects, which may be useful in the treatment of arthritis.

Coriander seeds are mentioned in Sanskrit writings. The Romans used coriander as a meat preservative, and coriander seeds have been found in the tombs of Egyptian pharaohs. Coriander also has a place in the brewing world, where it's used

to flavor wit beer, a traditional Belgian spiced ale that has experienced a resurgence in popularity in recent years.

The following recipe is for a hearty, stew-like curry with some Southeast Asian influences. This tasty one-pot meal gets an added boost of coriander both in spice form, and, more subtly, from wit beer that is used in the liquid base. It's easy to make, and can be modified in countless variations.

When gathering your ingredients, use fresh spices for the best flavor. Spices can often be purchased in bulk at natural and specialty food stores. Curry powder, a complex blend of many different spices, usually is available in hot or mild varieties. I prefer hot, but if you have timid palates to feed, use mild. You can add hot pepper flakes later to turn up the heat. Thai curry paste can be used instead of curry powder. Curry paste comes in red, green and other varieties. Each variety has a unique flavor, and all produce good results. Fish sauce, available in Asian food markets, adds a salty flavor. If you can't find it, use salt to taste.

Curry should always be eaten with a spoon, never with a fork or chopsticks. Like many one-pot meals, curry tastes better on the second day. Curry and beer is one of the best combinations on earth. This recipe goes well with any good pale or amber ale or lager, weissbier, and, of course, a good spicy wit.

Curry Wit Shrimp and Eggplant

- 1 small eggplant, peeled and cubed
- 1 tbsp garlic, minced (14.8 mL)
- 1 small sweet red pepper, chopped
- 1 small onion, chopped
- 4 tbsp cooking oil (19.7 mL)
- 1 tbsp curry powder (14.8 mL)
- 1 tbsp coriander (14.8 mL)
- .25 cup fish sauce (7 mL)
- 1 12-oz bottle wit beer (355 mL)
- 1 14-oz can coconut milk (414 mL)
- 1 small can (5.5 oz) pineapple chunks (156 g)
- 1 tbsp cornstarch (14.8 mL)
- .5 lb raw shrimp, shelled (.23 kg)

In a large nonstick pan, heat two tablespoons of oil. Add eggplant and sauté until tender, 10-15 minutes. Remove from pan and set aside. Heat remaining two tablespoons of oil, add garlic, red pepper and onion. Cook over medium heat until tender, about 10 minutes.

While vegetables cook, drain juice from pineapple into a small bowl and mix in cornstarch. Set aside.

Add curry powder and coriander to cooked vegetables. Stir in beer, fish sauce and coconut milk. Raise heat and bring to a boil. Add pineapple juice/cornstarch mixture and boil gently for about a minute, stirring constantly.

Reduce heat and add shrimp and eggplant. Cook until shrimp are cooked through. Stir in pineapple chunks and serve with rice and/or good crusty bread.

Serve with any of the following condiments: cilantro, hot pepper flakes, fresh lime wedges, chopped peanuts, chopped hard-boiled eggs, chutney.

Variations:

- For a less-rich, less-sweet version, use broth in place of some or all of the coconut milk.
- Use cooked chicken or other meat in place of shrimp.
- For a meatless version, use firm tofu or tempeh in place of shrimp.
- Add your favorite cooked vegetables such as peas, potatoes, yams, water chestnuts, carrots, etc.

Dan Rabin is a regular contributor to *Zymurgy*.



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"If It's Not Scottish" Club-Only Competition Winners

Thanks to Roger Clark and the Derby Brew Club for holding the final 1998 Club-Only Competition. Here are the winners out of 31 club entries:

First

John Monroe
Chester, VA
Weekend Brewers
AHA Category 8c—
Scottish Style Export
"John's Scotch Ale"

Second

Jim Navecky
Raleigh, NC
CARBOY (Cary-Apex-Raleigh
Brewers Of Yore)
AHA Category 10b—
Strong Scotch Ale
"Scotch Ale #2"

Third

Troy Bommelaere
Studio City, CA
Pacific Gravity
AHA Category 10b—
Strong Scotch Ale
"Troy's Kilt Lifting
Scotch Ale"



Oregon Clubs Make Waves

Three Oregon clubs have been in the spotlight for their outstanding participation in AHA-sponsored events and a unique collaboration with a commercial brewer that brought the club to the floor of the GABF.

Heart of the Valley Homebrewers



The AHA's Club-Get-A-Member campaign that ran from July 1997 through June 1998 was most successfully pushed by the Heart of the Valley Homebrewers of Corvallis. Heart of the Valley Homebrewers encouraged club members to join the AHA during club meetings and through the HOTV Brewsletter. The campaign was run for the club by Treasurer Lee Smith. The club receives a complete library of *Zymurgy* back issues and Brewers Publications books and a mash system. In addition, club members will receive a 20% discount to the 1999 AHA Conference in Olathe, KS.

Lee Smith also won AHA Recruiter of the Year by bringing in 33 new members to the AHA. Part of Lee's prize is a lifetime membership to the AHA and a commemorative plaque. The grand prize was a trip for two to the 1998 Great American Beer Festival. Lee and Helen Smith enjoyed four days in Denver in the largest GABF ever in October.

Heart of the Valley Homebrewers also helped celebrate homebrewing by staffing a booth with homebrew provided by club members at the 1998 Better Brewing Homebrew Festival and Expo in Portland in July 1998.

Capitol Brewers

The Capitol Brewers of Salem, OR, won Homebrew Club of the Year honors. This award goes to the club that scores the most points in the six AHA Club-Only Competitions from July through June and the first and second rounds of the AHA National Homebrew Competition. The Capitol Brewers mark the second year in a row that the traveling club trophy was won by a club with under 50 members. The previous winner was the Derby Brew Club in Kansas. The race for the trophy was neck and neck with the Chicago Beer Society. The outcome was decided by Lester Lewis's NHC gold-medal-winning English old ale/strong ale named "Barley-corn Rides Again." In keeping with the Oregon connection, that category is sponsored by Rogue Ales/Oregon Brewing Company of Newport.

Capitol Brewer Doug Faynor has generously donated his effort in brewing the commemorative beer for the 1999 AHA Conference in Olathe, Kansas. We are told that it is a lambic already with healthy aging and blending. Doug will be bringing the traveling club trophy to bestow on the next winning club. Currently the leader is the Weekend Brewers of Virginia, which has placed in two of the Club-Only Competitions already this cycle.

Oregon Brew Crew

During the 1998 AHA Conference in Portland, Noel Blake of the Brew Crew turned me on to the Collaborator Milk Stout in Mr. Younger's fine pub "The Rose and Raindrop." Noel explained to me that the Collaborator was a joint effort of the Oregon Brew Crew and Widmer Brothers Brewing to benefit



charity. I was quite surprised to be roaming the Pacific Northwest aisle of the GABF this past October to see the Oregon Brew Crew have a booth with the Collaborator Milk Stout on tap right next to the Widmer booth. It was great to see a homebrew recipe so prominently positioned at such a large event.

The Brew Crew forms the main volunteer core staff for the annual Oregon Brewers Festival and the club receives money for it. This event has hundreds of breweries and estimates of attendees approach

100,000, so the Festival is thankful to be able to rely on the roughly 150-member club. The Brew Crew was also instrumental as volunteers for the NHC and AHA Conference, with a special

mention to Noel Blake,

Ken Johnson, Steve Woolard and the late Bob McCracken.



McCracken

Best Club Newsletter Competitions

Thanks to all the clubs that entered. Newsletters were judged based on appearance and content. Congratulations to the following winners.

•1st place

The Brewer's League Journal, Greater Everett Brewers League, Marysville, WA.

•2nd place

Homebrew Review, The Herndon Wort Hogs, Reston, VA.

•3rd place

Bier Notes, Kansas City Bier Meisters, Lenexa, KS.



1999 Club-Only Competition Schedule

February—You're Special to me, AHA category #23

March—Why Don't We Do It in the Robe, AHA category #2

May—Bockanalia, AHA category #12

August—It's a Mead Mead Mead Mead World, AHA categories #25, 26, 27

October—Porter! AHA category #9

December—Winter Warmer, AHA category #10

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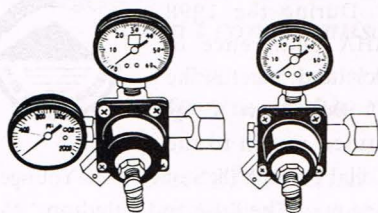
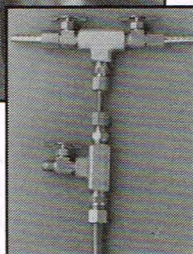
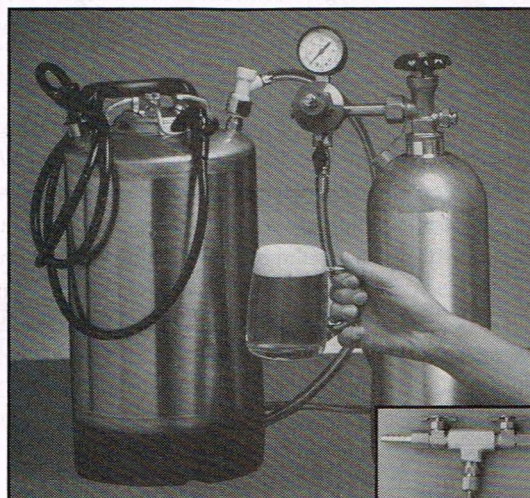
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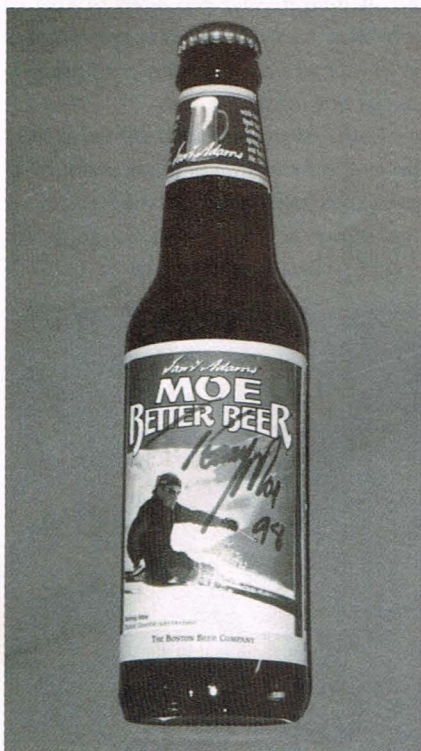


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MICHAEL BANE

Mo' Better Beer



Those of us who have spent any time on the slopes know the value of a good *apres-ski* beer. For 1994 Olympic downhill champion Tommy Moe, it's even better—he can now snuggle up to his own special brew.

Dubbed Mo' Better Beer, the Kölsch-styled ale is a collaboration between Moe and Jim Koch, president and brewmaster of the Boston Beer Company. And never let it be said that the Sam Adams founder doesn't know how to throw a party!

Koch and Moe passed near AHA World Headquarters on a nationwide swing, bearing invitations to an exclusive lunch with the two. The menu included things like "Braised Lobster Medallions with Black quinoa and Herb Chili Oil" and "French Laced Pumpkin Roulade," each course served with a different Sam Adams brew.

There were five stunning courses, and, because it was a lunch and everyone had to go back to the Real World, there was, sadly, a lot of undrunk Sam Adams.

Tommy Moe himself was hardly what one might expect from a famous athlete. Instead, he seemed to be having a great time, fielding questions and swapping snow stories. His relationship with Boston Beer came about because, in his own words, "I really like Sam Adams."

What does he think of his own Mo' Better Beer?

"Cool," he said.

Beer Wars

Once again, African countries are at war. This time, however, the battlegrounds are the bars of Kenya. At stake is which beer will rule the *apres-safari* world. Kenya is the home of Tusker beer, started in 1922 by two English brothers. The ironic name came when one of the brothers was killed by an elephant; the tusks still hang in their corporate headquarters.

Tusker is now under assault by Castle beer, brewed in nearby South Africa. The giant South African Breweries, the world's 10th largest brewers, would like to make their brand the African standard. But Tusker (partially owned by Guinness) is matching them pint for pint. In fact, Tusker is taking the patriotic route. Their new slogan is: "My country; my beer."

There is a certain irony in the fact that on this war-torn continent the beer has always gotten through—not always the case with food, unfortunately. Even now, Tusker flows in rebel-held cities in the Congo.

The big winner in the war appears to be Kenyan beer drinkers, who are seeing the price of a pint drop. Right now, a bottle of Tusker costs \$.90 US, a big deal in a country where the average annual income is \$271.

Bronze Bash

No, we're not talking about a party at the television high school hideaway frequented by Buffy and her vampire-slaying pals. Instead, researchers at the University of Barcelona in Spain have brewed a batch of what they think is the oldest beer in Europe.

Archaeologists scraped the residue from the bottom of a broken Bronze Age clay jar found at the site of a dig in Spain's north-east Catalonia region. The scientists studied the 3,500 year-old scrapings and put together a homebrew recipe. According to reports, the beer was dark, thick and slightly flat, with particles floating around. The beer came in with an alcohol content they claim in the 30% range—clearly, after a tough day of slaying mammoths or Visigoths or whatever, Bronze Age man wanted to kick back. If you're thinking of your own *apres-mammoth* party, the AHA should have Bronze Age Blast style guidelines within a few months.

An Example For Us All

The AHA recognizes one person each year who has made outstanding contributions to the homebrewing community. The AHA Board of Advisors nominates and votes for a candidate to receive this prestigious award, which is presented at National Homebrewers Conference. In the past, the award has gone to such luminaries as Fred Eckhardt, George Fix and Greg Noonan.

This year, Charles Olchowski received the AHA Recognition Award at the 1998 NHC in Portland, OR.

Olchowski is a long-time member of the AHA Board of Advisors and a veteran homebrewer.

"I'm humbled and honored by this award," Olchowski said. "Thank you, AHA." Congratulations, Charles!

Michael Bane is the editor of *Zymurgy* magazine.

Irking Your Gander

Dear Professor Surfeit,

I have been homebrewing for about a year now, and I have been wondering about the best way to filter my beer. No matter which way I position my kettle or my carboy, I still get a lot of brew particles in my bottles. I have heard that coffee filters work pretty well, but won't that remove some of the flavor and color from my beer? Also, I have been using a grain bag to keep my pellet hops in during my boils and I was wondering if the discoloration in the bag itself from the hops will contribute off-flavors in batches to come. Any advice you can give would be outstanding!

Thanks,
Jason Petros
Livermore, CA

Dear Jason,

There's no doubt about it. You have a problem with "brew particles" being transferred into your beers. You said so. I don't doubt that it's a problem for you. But I wonder why, just like you do, but in a different sort of way. If you're brewing cleanly, have a good yeast and have reasonably good water you should be able to siphon visibly clear beer into your bottles. I'm assuming you don't have contamination problems. Sounds like it could be "fluffy" yeast: yeast that doesn't settle out too well. You could change to a more "compacting" flocculant yeast (consult your local homebrew shop). But really I suspect it's all in the wrist, sort of. Basically a technique adjustment. I've been brewing 28 years and don't ever have "brew particles" irking my gander. I'm able to get really clear beer when transferring from my secondary (or completely fermented primary) to bottling vessel. Here are some tricks that may help you get really clear beer.

1. Don't disturb or move your fermenter within one or two hours of siphon transfer.

2. Don't place a racking cane into any sediment. It is easily moved and will jostle the sediment, stirring up a cloud of "brew particles." 3. *Carefully lower the tube or siphon hose into the fermenter from the top down and guide it to the bottom as the level of beer is reduced (this is where glass is especially nice—you can see what's happening).* 4. *Toward the end tilt the carboy or fermenter*

so you get as much good, clear brew as possible. Withdraw your hose before sucking up any "brew particles." 5. *Your beer should be pretty darned clear, primed and ready to siphon into bottles.*

Coffee filters or any kind of gravity filter will not really do your beer any good at all. Coffee filters may impart a paper flavor and introduce a lot of oxygen, besides getting



frustratingly clogged up. Your hop bag method works for you, but I wouldn't bother, really. You can strain most of the hop stuff with a strainer on the way to the fermenter. And what little hop stuff that ends up in the fermenter will indeed sediment out. Take care not to disturb the sediment when racking/transferring.

Properly primed and siphoned homebrew is usually crystal clear within one to three weeks, except with some extraordinary beer styles.

*Don't girk your ander,
The Professor, Hb.D.*

Just a Simple Answer

Dear Professor Surfeit,

I have been carbonating my beer using gyle (Papazian's formula in *Joy of Home Brewing*) since my earliest days of extract brewing. When I began all-grain brewing nearly two years ago, and kegging one year ago, I merely adjusted Papazian's formula to suit my needs. I always got good and consistent carbonation. But now that is my main problem. Some beer styles need more CO₂, others less. Is there a gyling formula by which I can calculate the amount of gyle necessary to hit a specific volume of CO₂ (as per the style guidelines in Papazian's *Home Brewers Companion*)?

Michael Robertson
Mission, KS
michaelsr@johnco.cc.ks.us

Dear Michael,

Sounds like you're more of a perfectionist than I'd ever be. I hope my simple answer will help even though it doesn't provide the exact answers you're looking for. I'm sure there is a calculation that you might be able to depend on if you used a standard priming sugar like dextrose. Given a certain weight of a standard form of sugar in a given volume of wort (and don't forget the variable that air space may introduce) you should have exactly a certain weight of carbon dioxide produced, thus a calculable volume of predicted CO₂. But if you use malt gyle the question emerges, "Just how fermentable is that malt?"

My suggestion is that if you have developed a method that gives you standard and

predictable carbonation results, then "goose" the amount of priming sugar up or down by increments of 20 percent (by weight sugar to a given volume of beer being primed) to make notable changes in your carbonation level. On the way up, be sure to go easy, one goosed batch at a time so as not to blow any bottles. And if you are going to make some highly carbonated American light lagers or German Hefeweizens please do use healthy bottles with substantial glass.

*Loosing the goose,
The Professor, Hb.D.*

An Idea Worth Meading

Dear Professor Surfeit,

We are ready to bottle a batch of Prickly Pear Cactus Fruit Mead. The recipe calls for the mead to be "still." What would your recommendations be for carbonation if we want to make the mead sparkling? Is this possible or advisable with mead having such a high alcohol content (14.5%)?

Mead Maker in Minnesota

Dear MM in Minnesota,

There won't be any negative advisories from this neck of the cactus patch. Sounds like a pretty darn fantastic "Champagne" type nectar. But as you are imagining there are some obstacles to overcome. The most important one being that with such a high alcohol content your yeast may be stressed beyond the ability to ferment any additional sugars; after all, it's the logical reason this type of mead is sweet.

My advice would be to finish off the fermentation of the mead until it is clear and rack off into a new carboy. Then just before bottling rehydrate a dependable dry culture of Champagne-type yeast in warm sterile water. Add this rehydrated yeast and 3/4 cup of corn sugar (dextrose dissolved in a small amount of boiling water) to the finished mead and bottle in strong Champagne or beer bottles. If anything will work, this may. It may take months for it to carbonate. I choose corn sugar, because it is highly fermentable sugar. You've got nothing much to lose on this one, except a little bit of time. If it doesn't work, you'll still have fantastic

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mead with a tiny amount of sediment on the bottom of the bottle.

Wait a minute MM, I just thought of one other thing. This idea will be for your next batch of prickly pear mead. Rather than start with an original gravity above 1.130 or higher, formulate the recipe for an original gravity between 1.100 and 1.110. These meads are usually fully fermentable, often reaching an end gravity of 1.000 or below. You'll greatly increase your chances of success and yeast activity in bottle refermentation.

And if it works—boy oh boy!

*Hoping it's yours,
The Professor, Hb.D.*

No Limits to Questions

Dear Professor Surfeit,

I have quite a few questions, so please "beer" with me.

I am a certified Lupomaniac and want to know as much as possible about these little green nuggets. I have noticed that when I dry-hop a beer it tends to carbonate a lot quicker than a nondry-hopped beer. Why does it only take three to five days to carbonate as opposed to two to three weeks?

I want to use my lauter tun as a hop-back. How many flowers do I need to put in for this in terms of ounces per five gallons? I have a "Zappap" lauter tun, which you may be familiar with.

I recently got my results back from a local competition. Some of the judges' comments were "slightly acidic, sour." Could this be from so many alpha acids creating an acidic character, or do I just need to replace the bottling bucket?

I should also add to other judges stated "low hop aroma" in a beer that had two ounces of finishing hops. Is this a problem in my technique, or am I going to have to dry-hop every beer to achieve hop aroma? I know that a lot of aroma compounds are scrubbed out with CO₂ during fermentation. What do you think?

My last questions have nothing to do with hops, but malt. When using extract, is dry better? I have heard that syrup is the perfect Maillard reaction environment. Does maltodextrin have a flavor impact? Does a full-volume boil make all the difference?

I don't want to go over my question limit, so I'll stop there. I really appreciate your hearing me out and look forward to your answers.

Thank you, Professor, you can stop by my shop for homebrew anytime!

Shawn Andrews
Owner, Grape and Grain Unlimited
Springfield, IL

Dear Shawn,

Yep, you sure do got a handful of questions. Hope you haven't been stressin' out for lack of a timely response. Keep in mind that there is no limit to questions one might ask of this professor. Fact is, though, there may be a limit to the answers.

About dry-hopping and faster carbonation. I wouldn't have been able to give you any ideas, but you gave me a clue a bit later. The judges say the beer tastes a bit acidic. I'd only guess that the reality of the situation is that either your hops are "dirty" or the method by which you introduce them is subject to some cleaner methods. That acidity and sourness aren't likely coming from alpha acids—no sir. And if indeed you are introducing some bugs into your beer with dry-hopping then you've got wild yeast and/or bacteria that will instigate their own special fermentations. Maybe that's what's resulting in faster carbonation. That's my first assessment from afar.

How many ounces to use for late hop-backing in the lauter tun. I'll assume you like things hoppy. I'd suggest starting out with one to two ounces that you'll pour the boiling hot wort onto. Several craft breweries use this method to impart hop aroma and flavor. It does work.

So, the judges are relentless with your beers. What do you think? Is it hopped enough for you? If not I think your next step is hop backing (with the Zappap lauter tun) as you refer to in your letter. Oh and by the way, be sure that your Zappap lauter tun is sanitized and clean. That'll be difficult with the plastic nature and heavy use of this system. Personally, I wouldn't risk passing hot wort through the plastic lauter tun, through a plastic strainer and through a plastic hose. Too many areas and opportunities for bacterial critters to get washed into your beer. What to do instead? Well, you

could use one of these plastic systems but devote it solely to hop backing. Don't use it for mashing. This kind of method is better served with stainless and very cleanable systems. Whatever you choose, do sanitize to the max or you'll continue to have "acidic" brew.

Maillard reactions—and that ain't no duck—turn malt extract syrup dark with some flavor change. But with reasonably fresh syrup stored at room temperature you shouldn't have great problems with syrup. What's reasonably fresh? I'd expect to get malt that is no older than nine months from when it was packaged. But I would continue to use older malt syrup, with some suspicion as to expectations. I've brewed some mighty fine beers with two-year-old malt syrups. But for the more delicate beer styles fresher is better. Now with regard to dry malt extract—this is always my preference. Quality comes with a price. But my beer is worth spending 10 cents more on each bottle. Dry malt extract is stable in quality compared to syrups, but you must keep it dry and at reasonable temperatures. My fresh dried malt is every bit as good as my two-year-old dry malt extract (I buy in bulk from my local homebrew shop).

Maltodextrin in and of itself doesn't have flavor. But it adds to the mouthfeel and will alter your perception of bitterness and sweetness of what's already in the beer. Full volume boils make a difference, especially in how much hop flavor, bitterness and aroma you extract from your hops. A more concentrated boil of higher gravity worts will result in lowering your ability to utilize the hops you are boiling. Look into that book you are using for a chart on how much less hops you need to add to a full wort boil to achieve the same bitterness of a concentrated malt extract boil. You can get near the same results, but you've got to adjust your ingredients. With one exception, if the wort is too concentrated you are going to get more caramelization of the wort during the boil, especially if you are using electric heat. So be careful.

I guess I got all the answers,
The Professor, Hb.D.

Send your homebrewing questions to "Dear Professor", PO Box 1679, Boulder, CO 80306-1679; FAX (303) 447-2825 or professor@aob.org via e-mail.

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adjustments can be easily made during processing to deliver exactly the grist desired. For added convenience, the mill can also be powered by a 3/8-inch power drill (something to do with that Christmas present besides hang pictures!).

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A Chilling Announcement



We recently received this confessional from one of our readers turned tinkerer turned manufacturer: "Hello, My name is Ken Johnson. I'm a homebrewer. Like many of you, I also like to tinker. I have spent the last few years trying to come up with a really efficient and inexpensive wort chiller. They all leaked or were too slow. I finally came up with an idea that worked so well, my buddies in my brew club wanted to buy them. I showed the chiller to the guy at

the local homebrew shop, and he LOVED it! He asked me to make him a dozen. Before I knew it, I was in the chiller-building business. I have gotten the price down enough now that you can't afford to build one for yourself..."

In short, Johnson's Fearless counterflow chiller hooks up to your garden hose and can chill a five-gallon batch from boiling to below 80 degrees F (27 degrees C) in about 15 minutes (depending on your cooling water temperature, O.G. etc.). It only uses about 15 gallons of cooling water, less than an immersion chiller.

The Fearless features a one-piece 3/8-inch copper tube, 16 feet long. The outer hose is vinyl. "Hopefully," adds Johnson, "you will agree that the chiller is attractive." A counterflow heat exchanger uses a heat conductive surface area to transfer heat from one media to another separate media. The two media travel in opposite directions to maximize the disparity in temperature. In this case, hot wort flows inside a copper tube (the heat conductive surface) and cold water flows between the outside of the copper tube and the inside of the larger diameter vinyl hose. As the cold water flows through the hose it passes over the outer surface of the copper tube, drawing heat away from the wort as it passes through the inner surface of the tube.

Johnson himself is a longtime award-winning homebrewer, so he practices what he tinkers. Price for the Fearless Wort Chiller is \$59.95, available from homebrew shops everywhere. Johnson will sell direct, but he asked us to urge *Zymurgy* readers to buy from homebrew shops. For questions, e-mail him at fearlessent@pnnw.net, or snail mail:

Fearless Enterprises
PO Box 854
Boring, OR 97009



Water Conservation

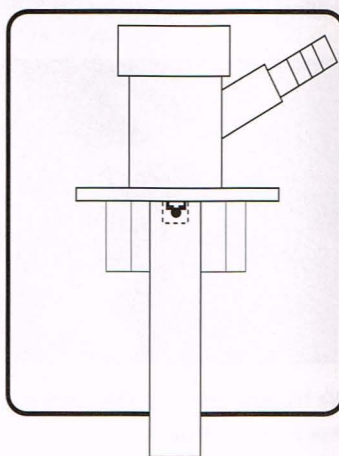
I consider myself one of the luckiest kinds of homebrewers around. I live in a rural area and have my own water supply, which is not likely to ever run dry because a spring-fed stream helps supply the ground water around the well. However, my previous home was not so fortunate and when we had a rainfall shortage and we placed excess demand on our well, it would run dry and have to recharge. As a result, I modified my brewing to use as little water as necessary.

The most dramatic savings of water can be found when chilling wort. I use a 50-foot piece of coiled 3/8-inch copper tubing to chill my wort. I run my tap water through the tubing, draining the heated water into the washing machine for the next load of wash, until the temperature of the wort drops below 80 degrees F (27 degrees C). At that point I switch to an ice-water supply from a bucket. By using a submersible pump—a 63-gallon-per-hour pump used to run pond fountains works great—I can recirculate the same two gallons of water through the tubing until the wort temperature drops to pitching levels. If the ice melts during this process, I just add some more ice to the water in the bucket.

I figure I save hundreds of gallons of water a year this way because getting those

last 10-20 degrees of heat out of the wort is what takes the most water, particularly when tap water is usually in the 55-60 degree F (13-16 degrees C) range. *John Hewett, Petersburg, PA*

Quick Fitting Cleanup



Here's a simple, quickly made gadget to clean your Cornelius keg fittings. Rather than taking your fittings apart for cleaning, or fiddling with screwdrivers and such to keep the spring valve open to rinse, here is a simple diagram for a quicker way.

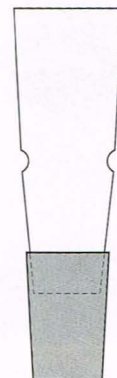
Aluminum rod is the easiest material to find for fabricating the jig to hold open the

keg fitting. Hardware stores usually have it in many sizes. Use a diameter that fits loosely into the end of the fitting. Simply drill a 1/4-inch hole about 3/4-inches into the face of one end of the rod. Next drill a 1/8-inch hole across the same end and fit in a small pin. This is what will hold the sprung keg pin open during cleaning. You can then flow disinfecting fluid through for cleaning.

Drill a 1/8-inch hole through the opposite end and attach a clip as shown in the diagram. Bend and fit it so when pushed over the fitting top it depresses the sprung pin and holds it open. *Paul Zocco, Andover, CT*

Big Beer... Big Hopper

Brewing big beers like barley wines or big Belgians means lots and lots of grain to crush. The hopper on my small Corona mill holds about one and a half pounds, causing me to refill it many times for one of these brews. When brewing 15 gallons at a time on my half-barrel system I need plenty of grain.



Rather than build a large hopper in my home workshop, I looked around for something already built that would suffice. A large conical road cone would hold 15 or 20 pounds of grain and could be adapted easily to fit the existing metal Corona hopper. You also could roll your own cone from a piece of thin polyethylene like used in trash cans. A trip to your local discount store will give you many idea possibilities.

If you choose the road cone, simply cut the small end of the cone to fit snugly into the Corona mill hopper. That's all—simple as pie.

My Corona mill is powered by a small, high-torque electric motor which is perma-

nently coupled, making my crushing system virtually automatic. I simply hang a five-gallon plastic bucket off the business end of the grinder to collect the crushed grains. *Paul Zocco, Andover, CT*

Keg to Bottles



Have you been agonizing over getting a kegging system? Maybe this will help you decide. For years I used a standard bottling bucket to fill my bottles. This worked well enough until the collar around the draincock developed the annoying habit of not staying tight and dripping beer whenever I would bottle.

Fortunately, I already had a kegging system—it's great for tailgate parties—and so I decided to put it to use. After my beer has finished fermenting, I rack it into a five-gallon keg with my primer. I then attach my CO₂ bottle to the line-in as normal and attach a tube to the line-out. At the end of the tubing is a standard bottle filler that works on pressure release to allow the beer to flow. I then start filling bottles, adjusting the CO₂ pressure so I get a nice smooth flow of beer. After all of the beer is bottled, and I mean all of the beer because the keg sucks up all of the fluid, I cap the bottles and wait the requisite week before drinking.

Cleanup of this system is a cinch. I put about 1/2 gallon of boiling water into the keg, close the keg, turn the CO₂ on to get pressure, swish the water around in the keg, then drain using the filler tube. I keep everything hooked up for cleanup so anything that gets exposed to beer will get exposed to boiling water. After giving the system two or three boiling baths, I run a cleaning agent like B-brite or iodophor through the system and it's done. *John Hewett, Petersburg, PA.*



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FEBRUARY

- 27** The Best of Brooklyn '99 Homebrew Competition, **AHA SCP**, Brooklyn, NY. Entries due 2/9/99 thru 2/20/99. (See entry packet for entry fee schedule). Contact Bob Weyersburg at (212)989-4545, e-mail: triage@mindspring, <http://members.aol.com/Malty-Dog/bob99.html>.

MARCH

- 5-6** 6th Annual America's Finest City Homebrew Competition, **AHA SCP**, San Diego, CA. Entries due 2/15/99 thru 2/26/99 with \$6 entry fee. Contact Greg Lorton at (760)943-8280 or (760)635-0528, e-mail: glorton@cts.com, <http://www.softbrew.com/afchbc>.

- 6** The Drunk Monk Challenge, **AHA SCP**, Downers Grove, IL. Sponsored by the Urban Knaves of Grain. Entries due 2/21/99 thru 2/28/99. Entry fee: \$5/1-4 entries, \$4/5 or more entries. Contact Shane Coombs at (630)393-7303 (h), email: SR.Coombs@synsysinc.com, <http://ourworld.compuserve.com/homepages/stmckenna/>

- 13** 4th Annual Hurricane Blowoff Homebrew Competition, **AHA SCP**, West Palm Beach, FL. Sponsored by The Palm Beach Draughtsmen. Entries due 3/6/99 with a \$6/entry fee. Contact Mel Thompson at (561) 471-2634, e-mail: Melwpb@aol.com, <http://www.maco.net/homebrew/pbd/>.

- 13** Heart of Dixie Brew-Off, **AHA SCP**, Birmingham, AL. Sponsored by Birmingham Brewmasters. Entries due 2/28/99 thru 3/6/99 with \$6 entry fee. Contact John Rhymes at (205) 941-3288 (h), (205)257-2594 (w), email: jwrhymes@mindspring.com, <http://www.bham.net/brew/brew-off-1999.html>.

- 13** Shamrock Open, **AHA SCP**, Raleigh, NC. Sponsored by Cary-Apex-Raleigh Brewer's of Yore (CARBOY). Entries due by 3/6/99 with \$6/1st entry and \$5/each additional entry. Contact Mike Wallace at (919)881-9918 (h), (919)515-3323 (w), email: mike_wallace@ncsu.edu, <http://ipass.net/~carboy/>.

AHA On The Road

From February 25th through March 5th, 1999, Charlie Papazian will be traveling to a few of the states in the Northeast visiting and speaking with homebrewers, homebrew clubs and homebrew shops. We encourage you to stop by, relax and share a homebrew with him. Below is his basic itinerary. For contacts for specific events and more details please visit the AHA's website, beertown.org or contact Mark Snyder at (303)447-0816, ext. 137.

- Feb. 25** Meet with homebrewers and homebrew club members. 7:30 pm Woodstock Brewing Co., Kingston, NY.
Feb. 26 Beers Internationals' Beer & Food Tasting Event at Sobodi's Gaslight Brewpub, Teaneck, NJ.
Feb. 27 Judging at The Malted Barley Appreciation Society's Best of Brooklyn '99 Homebrew Competition during the day. Then dinner and informal gathering at local beer place with NYC homebrew club members.
Mar. 1 Dinner event at Cafe Centro, Brooklyn with reception before for homebrewers who are unable to attend dinner.
Mar. 2 12 - 1:30 pm Trout Brook Brewery, Hartford, CT. Beer Dinner in evening with homebrewers at Mainstreet Cafe/Willimantic Brewery in Willimantic, CT
Mar. 3 7 - 9 pm Meeting with homebrewers at Plantation Club in Worcester, MA.
Mar. 4 Homebrewer & Beer Enthusiast Rendezvous at Portsmouth Brewery in Portsmouth, NH.
Mar. 5 Beer Dinner in Boston, MA.

- 20** 13th Annual Bluebonnet Brew-Off, **AHA SCP**, Irving, Texas. Entries due 2/26/99 thru 3/5/99 with \$6 entry fee. Contact Spence Mabry at (817) 249-4789 (h) or (817) 415-4126 (w), e-mail: smabry@flash.net, <http://www.flash.net/~smabry/blue.htm>.

- 20** NetWort IV, **AHA SCP**, Across the U.S.. Sponsored by the Virtual Village Homebrew Society. Entries due 3/6/99. Results will be posted live over the Internet. Contact Mark McAndrews by e-mail at NetwortIV@compuserve.com, <http://www.cmg.net/belgium/clubhub>.

- 21** 8th Annual New York City Spring Regional Homebrew Competition, **AHA SCP**, Staten Island, NY. Sponsored by the Homebrewers of Staten Island. Entries due 3/1/99 thru 3/18/99 with \$5 entry fee. Contact Ken Johnsen at (718)987-7202 (h), (718)667-4459 (w), email: kbjohns@peakaccess.net, <http://pbsbeer.com/hosi/hosicomp.html>.

- 21 - 27** Hudson Valley HomeBrewers' Ninth Annual Homebrew Competition, **AHA SCP**, Hyde Park, NY. Entries due 3/6/99 thru 3/20/99 with \$5 entry fee. Contact Glendowlyn F. Howard email: Lynhbrew@aol.com, <http://www.hbd.org/users/hvhb/>.

- 27** World Cup of Beer '99, **AHA SCP**, Berkeley, CA. Sponsored by Bay Area Mashers (BAM). Entries due by 3/13/99 with \$5 entry fee. Contact Bernie Rooney at (925)932-2235 (h), (510)849-0400 (w), email: oakbar1@aol.com, <http://www.bayareamashers.org>.

- 27** Why Don't We Do It In The Robe/Belgian Styles AHA Club Only Competition, **AHA SCP**, Dayton, OH. Sponsored by the AHA and hosted by Dayton Regional Amateur Fermentation Technologists (DRAFT). Entries due 3/22/99. AHA Category 2. Belgian- & French-Style Ales (No Lambics). Contact Brian Rezac at (303)447-0816, ext. 121, email: brian@aob.org, <http://beertown.org>.

APRIL

- 24** Brewers East End Revival (B.E.E.R.) Homebrew Competition, **AHA SCP**, Long Island, NY. Entries due by 4/14/99. Contact Chris Pranis at (516)878-2091 (h), Bluepoints@aol.com or mikebeer@aol.com.

- 26-May 8** Upstate New York Homebrewers Association's 21st Annual Competition & 10th Annual Empire State Open, **AHA SCP**, Rochester, NY. Entries due 3/10/99 thru 4/17/99. Contact Turk Thomas at (716)637-9441, e-mail: tbcolin@kodak.com, <http://ggw.org/unyha>.

MAY

- 14-16** 10th Annual Sunshine Challenge, **AHA SCP**, Orlando, FL. Sponsored by The Central Florida Homebrewers. Contact Steve Vallancourt, email: stevebrau@aol.com.

- 15** Green Bay Rackers 5th Annual Titledown Open Homebrew Competition, **AHA SCP**, Green Bay, WI. Entries due 5/10/99 with \$7.50 for 1st entry and \$5/each additional entry. Contact Mike Conard at (920)388-2728 or (920)388-3747 (fax), email: mconard@itcl.com, <http://www.rackers.org>.

- 15-16** Elizabethan Homebrew Competition, **AHA SCP**, San Bernardino, CA. Entries due 5/1/99 thru 5/4/99 with \$10 entry fee. Contact Laurie Poel at (909)880-6211

- 21-22** The 17th Annual Oregon Homebrew Festival, **AHA SCP**, Corvallis, OR. Entries due 5/19/99. Entry fee is \$5 ea/\$4 entries 4 and up. Contact Lys Buck at (541)928-3531, e-mail: yoone@ucs.orst.edu, <http://www.mtsw.com/hotv/fest.html>.

AHA SCP = American Homebrewers Association Sanctioned Competition Program

The Calendar of Events is updated weekly and is available from the Association of Brewers: info@aab.org or <http://beertown.org> on the web.

To list events, send information to **Zymurgy** Calendar of Events. To be listed in the May/June Issue (Vol. 22, No. 3), information must be received by Feb. 24, 1999. Competition organizers wishing to apply for AHA Sanctioning must do so at least two months prior to the event. Contact Brian Rezac at brian@aab.org; (303) 447-0816 ext. 121; FAX (303) 447-2825; PO Box 1679, Boulder, CO 80306-1679.

• KUDOS •

AHA SANCTIONED COMPETITION PROGRAM

• SEPTEMBER 1998 •

3rd Dayton Beerfest

Dayton, Ohio, 121 entries - Joe Harrington of Dayton, Ohio won best of show.

• OCTOBER 1998 •

Oktoberbest Zihzihati

Cincinnati, Ohio, 82 entries - Brian St. Clair of Cincinnati, Ohio won best of show.

3rd Annual Music City Brew-off

Nashville, Tenn., 181 entries - Tom Karnowski of Knoxville, Tenn. won best of show.

• NOVEMBER 1998 •

Green Mountain Homebrew Competition

Burlington, Vermont, 124 entries - Thomas J. O'Connor III, M.D. of Rockport, Maine won best of show.

• DECEMBER 1998 •

If It's Not Scottish... AHA Club-Only Competition

Derby, Kansas, 31 entries - John Monroe of Chester, Virginia won best of show.



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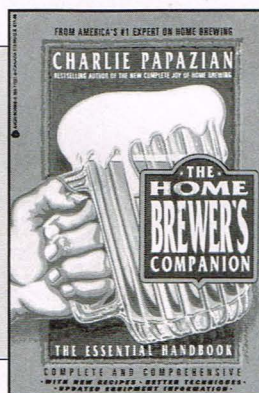
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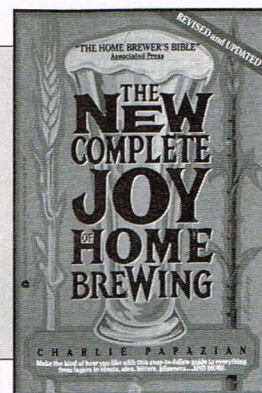
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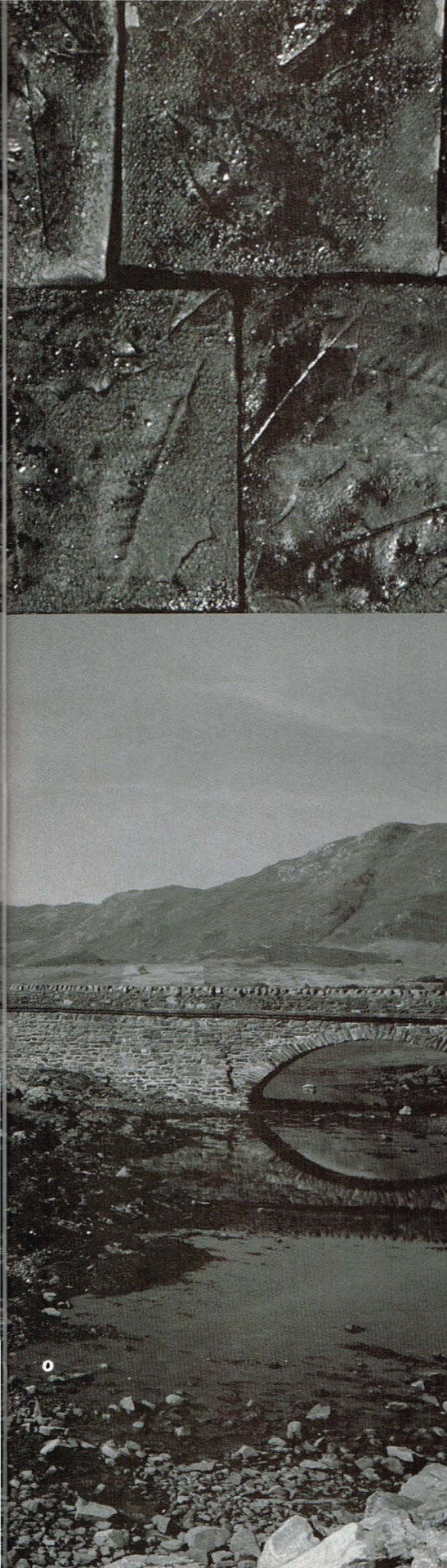
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THE SECRET
HISTORY
OF WOMEN
BREWERS





THE ROOTS OF WOMEN IN BREWING REACH ALL THE WAY BACK TO "BRAVEHEART'S" SCOTLAND, WHERE THEY ONCE RULED SUPREME.

Ellen Bessat of Aberdeen was not unlike most of the common women of 1468 Scotland. Poet William Dunbar called market women like Bessat noisy and raucous, as harsh and as insistent as the bitter, sodden climate.

Bessat cared for her family in the traditional ways: feeding her children from the breast, jostling for consideration at the market cross where most of the roughly 4,000 townspeople bought their staples and bringing home the necessities for making ale.

In addition to being a brewster, the word the Scottish town councils used to describe women brewers, Bessat was a criminal, albeit a petty fence of stolen goods and seller of secondhand shoes. But it is in her role as a brewer that she achieved her bit of Scottish immortality. For in the references to her transgressions as a brewer, dutifully recorded by the ever-industrious Aberdeen court and moldering for centuries in court sanctuaries, historians are just now reconstructing the social life of late medieval Scotland. Bessat, little considered at the time but for her capacity to pay her fines was, like her fellow brewsters, crucial to the fabric of the community.

So recent and arcane is the study of women and brewing during this period that

only two historians in the world, Elizabeth Ewan and Nicholas Mayhew, are known to have done research.

The conclusions of Ewan and Mayhew reinforce the conviction of modern homebrewers that beer, first and foremost, is food. So integral to Scottish communities was ale that town councils throughout the land devoted many of their laws to its regulation and sale. The research provides evidence that in the centuries prior to the rise of organized or guild commerce the role of women was more pronounced and more public. Even in its incipient stage, the findings suggest that women and not men are the true ancestors of today's homebrewers. Men seized control of commercial brewing by the end of the 16th century to an extent that, perhaps, explains why to this day there are so few women brewing for a living.

A LOST IDENTITY

Elizabeth Ewan discovered Ellen Bessat. Ewan is one of three professors of Scottish history at Guelph University in Ontario, which boasts the only Scottish Studies program in North America. Scottish social history, Ewan says, is decades behind the rest of the Western world. In only the last generation did Scottish schools sack the

BY MARK LISHRON

In Scotland, ales of modest strength are simply called "Scottish ales" and are further divided into 1.030-1.035 original gravity 60 shilling (written "60/-") Light ale; 1.035-1.040 70/- Heavy; 1.040-1.050 80/- Export and 1.050-1.085 90/-. The malty, extra-strength ales of the latter category, which have an original gravity of 1.072 or greater, are collectively referred to as "Scotch ales." Some early 140/- Scotch ales were brewed to strengths of 1.125 OG, but these days a shilling designation above 90/- is uncommon. The shilling was a unit of currency used in the late 1800s when Scottish ales were at their height of popularity, and the strength of an ale was given by its cost in shillings per barrel.

One might also hear a Scotch ale referred to as a "Wee Heavy." "Wee" means "small" in the Scottish dialect, but refers to the vessel from which the ale is consumed, usually a 1/3 liter mug or glass.

A third ale hailing from Scotland is also worthy of mention: heather ale. This was brewed by the Picts long before Scottish and Scotch ales; some speculate its origin at 2000 B.C. Since the hop was not native to Scotland, ancient brewers used the tips of heather flowers, which bloom in the Highlands from July to September, to flavor their ales, along with bog myrtle (myrica gale or sweet gale) for bitterness and to increase potency. Heather may also have been favored for a certain mold that grows on it that is said to have hallucinogenic side-effects, but this part of the legend may be more mythical (or wishful thinking) than factual.

DUINHE-WASSAL 80/- SCOTTISH ALE

Recipe for 5 U.S. gal (19 L)

- 6.5 lb pale malt (2.95 kg)
- 8 oz brown malt (227 g)
- 2 oz roasted barley (57 g)
- 1.75 oz Kent Golding pellet hops, 5% alpha acid (50 g) (60 min.)
- Scottish ale yeast

Brewing notes

Mash grain at 155 degrees F (68 degrees C) for 90 minutes. Running a larger volume of wort into the kettle and boiling longer will encourage caramelization, which is beneficial to the style. Ferment the ale no warmer than 64 degrees F (18 degrees C).

Extract recipe

Substitute six pounds of malt extract for pale and brown malts. Steep the crushed roasted barley as the brewing water heats.

- Original specific gravity: 1.045 (10.5 °P)
- Final specific gravity: 1.012 (3 °P)
- Boiling time: 90 min. or longer
- Pitch: 62 degrees F (17 degrees C)
- Fermentation: 62-64 degrees F (17-18 degrees C)

CLACHAN OF ABERFOIL SCOTCH ALE

Recipe for 5 U.S. gal (19 L)

- 14 lb two-row malt (6.35 kg)
- 1 lb brown malt (.45 kg)
- 3 oz roasted barley (85 g)
- 3 oz Kent Golding pellet hops, 5% alpha acid (85 g) (90 min.)
- Scottish ale yeast

Brewing notes

Mash grain at 155 degrees F (68 degrees C) for 90 minutes. Running a larger volume of wort into the kettle and boiling longer will encourage caramelization, which is beneficial to the style. Remember to pitch a very large starter (3 qts or 3.4 L) or volume of yeast slurry (1 pint or .35 L) to assure a healthy ferment. Ferment the ale no warmer than 64 degrees F (18 degrees C).

Extract recipe

Substitute 12 pounds pale malt extract for the pale and brown malts. Steep the crushed roasted barley as the brewing water heats.

- Original specific gravity: 1.084 (21.5 °P)

- Final specific gravity: 1.027 (7 °P)
- Boiling time: 90 min. or longer
- Pitch: 62 degrees F (17 degrees C)
- Fermentation: 62-64 degrees F (17-18 degrees C)

HAND PICT HEATHER ALE

Recipe for 5 U.S. gal (19 L)

- 6.5 lb pale malt (3 kg)
- 8 oz 17 °L crystal malt (.23 kg)
- 4 oz fresh heather flower tips (113 g)
- 1 oz Kent Golding pellet hops, 5% alpha acid (28 g) (60 min.)
- .25 oz bog myrtle (7 g) (15 min.)
- Scottish ale yeast

Brewing notes

The heather should be used as soon after picking as possible for the best flavor. Dried bog myrtle is available to retailers through F.H. Steinbart, and can be found at many homebrew supply stores. It can be omitted if necessary.

Mash grain at 155 degrees F (68 degrees C) for 90 minutes. Boil wort with hops, bog myrtle and 3 ounces of the heather flowers. Add the remaining flowers to steep after the boil, chill and ferment. You can achieve a more authentic version of the ale by adding another handful or two of heather flowers to the cooled wort and allowing the natural yeast on the flowers to initiate. This method will result in a tart, winy ale that is closer to what the Picts probably enjoyed.

Extract recipe

Substitute six pounds of malt extract for pale malt. Steep the crushed crystal malt as the brewing water heats.

- Original specific gravity: 1.045 (10.5 °P)
- Final specific gravity: 1.012 (3 °P)
- Boiling time: 60 min.
- Pitch: 62 degrees F (17 degrees C)
- Fermentation: 62-64 degrees F (17-18 degrees C)

Amahl Turczyn is a regular contributor to *Zymurgy*.



teaching of English history and replace it with indigenous studies. When American and French and English intellectuals embraced social history in the late 1960s, Scottish historians, still trying to catch up, focused on political history.

"To be honest, I think it was, quite understandably, a search for answers to questions of national identity," says Ewan, who is Canadian but whose parents are Scottish. "As confidence in the identity has grown, so the interest in other questions has widened."

It was in the work of Judith M. Bennett, director of graduate studies in history at the University of North Carolina, on women in medieval England that Ewan drew her inspiration. At roughly the same time, Nicholas Mayhew, a numismatics expert for the Ashmolean Museum at Oxford University in England, began looking at Scottish court records to answer questions of medieval commerce. Mayhew did his work in Aberdeen, today a city of 225,000 on the northeast coast; Ewan in Edinburgh, the modern capital and a metropolitan area of 650,000, 100 miles to the south. Translating court records from the Latin, which was used well into the 15th century throughout Scotland, Ewan and Mayhew introduced themselves to the world of brewers.

It was a world in which pestilence was as nagging an enemy as England herself. Communities that had formed for their mutual protection and social intercourse had not yet mastered public sanitation, unwittingly fouling the rivers and streams that provided water to drink. While records do not exist pinpointing the discovery, the boiling of water was universally understood as necessary in late medieval Scotland, according to Ewan. And while they might not have grasped the science involved, there was an explicit recognition of the preservative power of fermentation, she adds.

BREWERS AND BAKERS

"Brewing and baking were the two most important bases for staying alive," Ewan says. "Their importance is demonstrated in the number of laws and regulations created by Scottish towns for brewing and baking.

There are written statutes going back to the 1100s. Aberdeen's records start in 1398 and carry on to this day."

Ewan and Mayhew also deduced the good town burghers understood how important it was to the general welfare of the community to have an ample food supply. Baxters, or bakers, were encouraged to bake more than enough for their families and to sell the surplus at closely regulated prices. So, too, were brewsters encouraged to brew beyond the needs of their households.

In a paper written for the *Review of Scottish Culture* in 1996, Mayhew writes that an esteemed and coveted post in any Scottish town government was that of a *cunnar*, or taster of ale. The job had its obvious benefits. *Cunnars*—all men—served the essential role of going from brewster house to brewster house, tasting ales and assizing, or fixing a price based on the going price of grain and on the highly subjective basis of quality.

"Whatever the status of brewing, its importance in the life of the town is unquestionable," Mayhew wrote. "That the burghers of Aberdeen understood all this is well attested by the attention devoted to the trade by the burgh regulatory authorities. They lavished as much care on the control of the sale of ale as that of bread."

Because of the precariousness of drinking water, ale followed breast milk as the staple beverage from childhood until death. While the court records say nothing about the process of brewing, the development of modern commercial brewing in Scotland indicates medieval Scottish ale was nothing but malted grain, water and yeast. Hops are not native to Scotland and grow there grudgingly. According to McMaster, brewers well into the 17th Century resisted the importation of hops, relying for flavor and preservative power upon rowan—the berries of the mountain ash tree, spruce and a kind of myrtle found in the Scottish bogs. No records exist to determine how yeasts were kept or cultivated. Medieval ale was an imminently perishable product, to be drunk or sold within a few days, lest it go sour, or worse.

The records leave little doubt, however, that women somehow produced a drink good enough to be peddled. Inheritance records reveal wooden barrels, vats for malting and fermentation, measures and metal

stirring paddles being passed along with other family valuables.

"All women were expected to know how to brew," Ewan says. "The skills and often the equipment for brewing were expected to be offered if one was to be eligible for marriage. This was something one would learn from the time you were a little girl. This was among the duties expected of women of the time."

HARD BARGAINING WOMEN

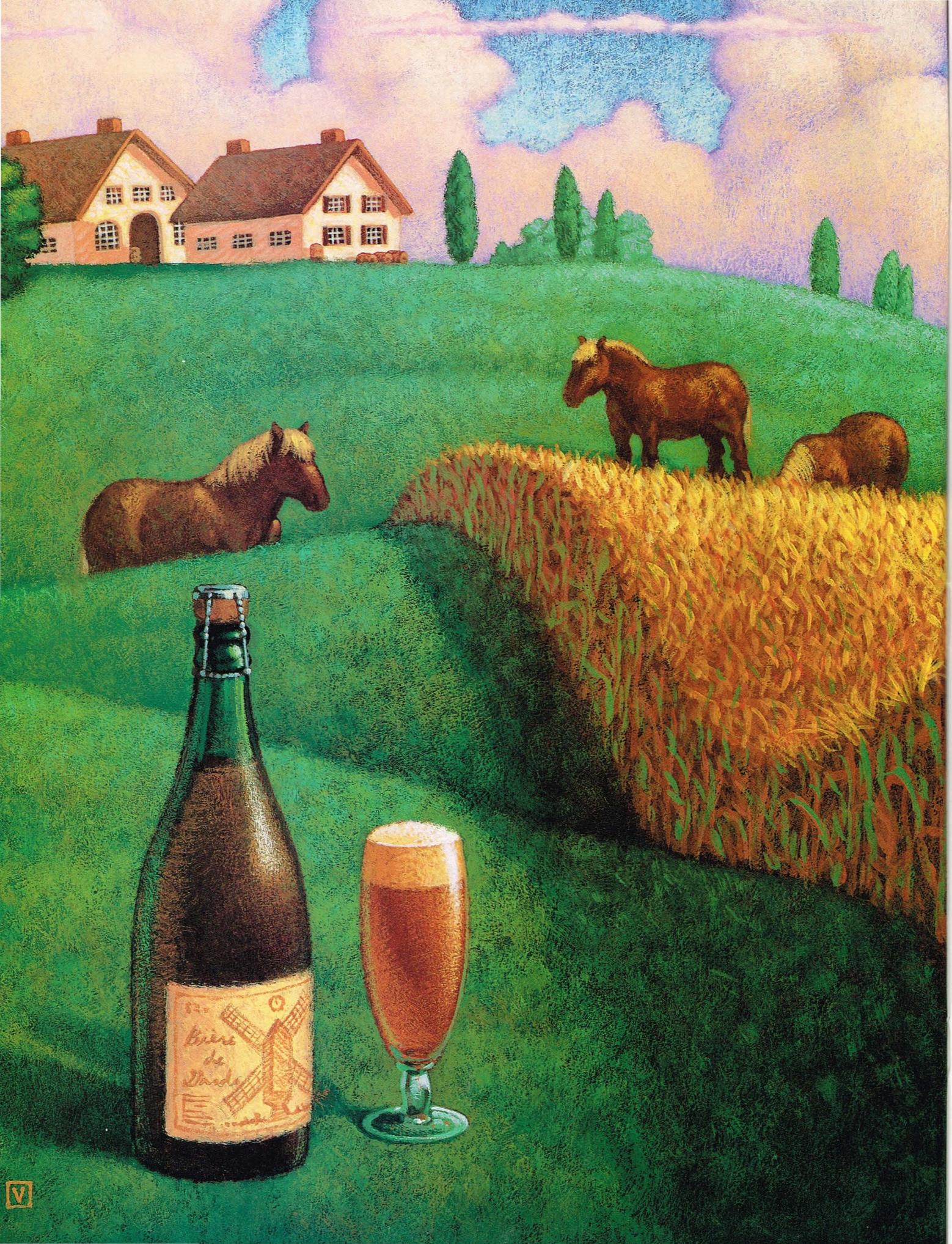
It is all the more startling, Ewan says, to realize that those duties naturally extended to the realm of commerce. The anecdotal observation of the poet Dunbar, reinforced by the written record, is that brewsters were, more often than not, tough cases. Mayhew and Ewan have speculated the breaking of regulations likely grew out of the driving of exceedingly hard bargains by these market women.

The records are replete with women like one Janet Howlk, who illegally circumvented the town market in Dundee to sell her barley from home at a higher price in 1521. Or the wife of Jonkyn Inch (who paid his wife's fine) brought up on charges of selling ale out of her home to only those she liked, rather than going to market. Ewan found one woman who had coated the bottom of a tankard with tar in order to short the customers who came to her door. Others simply added boiled water to their brew. In 1509, 150 women were amerced, or punished, in some way for their brewing crimes in Aberdeen and 110 punished a decade earlier in Edinburgh.

Most often, brewsters ran afoul contending with the *cunnar*. According to custom as well as law, brewsters who had completed their batches were expected to post an "ale stake," or long stick, outside the door of their home to alert the taster. After sampling the ale, the taster would post a price on a sign or on the door for customers.

"The *cunnar* was required to do his tasting in the street so as not to be bribed by the brewster," Ewan says. "Should he be allowed in, the brewster could addle him with too much ale or feed him as an enticement to raise the price." Still, brewsters often simply wrote out a new sign or replaced the chalking on the door with a tidier profit factored in after the *cunnar* had gone.

In an essay to be included in a book to be published, titled (*continued on page 54*)



BEER WITH A *French Flair*

My first experience of *bière de garde* was about eight years ago in California, where a local shop was selling *Septante Cinq* in heavy, corked 750-mL Champagne bottles. I admit I was more curious about the packaging than the beer—the French made great wines, but as far as I knew, the only thing from that country remotely resembling beer was *Kronenbourg*. This beer, however, was impressive—dark and rich, with a heady malt and caramel flavor barely balanced by a faint, background hop bitterness and dry alcohol. It wasn't quite the spicy, exotic ale of southern Belgium, but one could draw similarities between it and many of the stronger versions of *saison*.

In fact, many French farmhouse brewers apparently give their *bières de garde* the name *saison*, perhaps because it is better known to their beer-drinking neighbors to the north. This was a style with an accent on malt, and I was later to learn that the strength and color of *Septante Cinq* were also typical: most examples have a bitterness rating no higher than 30, quite low for their usual strength of 1.063–1.076 (16–19 °Plato), and while some are blond in color, the majority are a reddish-bronze to chestnut brown. As impressive as this first sam-

ple was, though, the more *bière de garde* I sampled, the more fond I became of this unique and often unrecognized style. I decided that in order to attempt to brew my own, further research was warranted.

Cellar and Spice

Apart from the full malt and alcoholic strength, I found there are a couple of other curious subtleties that distinguish *bière de garde*. The most apparent is the mysterious woody, cellarish character that pops up in so many commercial versions. It has received praise as giving the style a uniquely rustic personality, but many brewers and critics in the U.S. scorn it as a clear indication of unsanitary brewing practices. One brewer I know went so far as to remark that *bière de garde* “tastes like dirt.” I believe this is a rather harsh summation, especially since many of the artesian Belgian ales have the same corky, musty aroma and flavor.

Achieving this quality at the homebrewing level can be difficult. Of course, the practice of using corks at bottling will eventually contribute some of it, but I am convinced, after reculturing and brewing with some of the lager and ale yeasts used in these beers, that much of the mustiness is a regional

thing. The area immediately west and south of Brussels lends its own unique qualities to lambic beers, and so the area directly north and south of the French-Belgian border contributes an inimitable cellar character to the beers brewed there.

Some people have described it as “oaky,” but adding oak chips to your fermenter or secondary will not achieve the proper flavor. It is, instead, a resident mold or bacteria of the area, and unfortunately cannot be duplicated by any means other than fermenting the beer in northern France. Luckily, you can still make excellent *bière de garde* without it. I actually have tried adding water in which corks were boiled to get a similar flavor, but the experiment was for the most part unsuccessful—it was woody, but just not the same. Therefore, you should probably just be satisfied (as I have) with a cleaner, less authentic version.

Another characteristic is the subtle fruit and spice aromas of these ales, which emerge more as a result of fermentation than from actual ingredient additions. Ester and phenolic character are all pleasantly integrated with the malt, and include plum, apple, occasionally some Grand Marnier notes, nutmeg and vanilla.

BY AMAHLTURCZYN

The Roots of Bière de Garde

Bières de garde are literally "beers to keep," and therefore emerge from the same seasonal brewing traditions as Märzen and saison. All these styles were originally brewed in early spring, while the weather was still cold, and kept in caves or cellars for summer consumption. There is in fact a bière de Mars subcategory of bière de garde, which, like Märzen, was named for the month in which it was brewed. Brasserie de St. Sylvestre has revived this tradition and produces its own Bière de Mars for a limited time during the year.

As with saison, brewed in the neighboring Belgian province of Wallonia, farmers would use bière de garde for themselves and their families, as well as payment for field-workers and farmhands. At least two characteristics of this style were therefore necessary so that the beer would keep well: its strength, and the fact that the beer was stored on its yeast sediment. The strength of the beer seems to have been kept up by most modern brewers but, unfortunately, many have opted to filter and pasteurize it rather than leave it *sur lie*.

Another characteristic of bière de garde, which may or may not be traditional, is the use of lager yeast. Traditionally, top-fermenting ale yeast strains were used. However, it could be that with storage of the beer at very cold temperatures, warm-fermenting yeast strains were gradually selected out in favor of cold-working lager yeast. Some brewers have bridged that gap by fermenting their beers exclusively with lager yeasts, though at warmer temperatures to encourage the characteristic fruity esters. I personally feel that those few producers who use an ale strain make a much more interesting version of the style. When making these beers at home, whether you decide to use a clean ale yeast or a lager yeast at warmer temperatures, you should give the beer a long, very cold conditioning period—35 degrees F (2 degrees C) for one month will do the trick. This, too, will smooth out the malt flavors and clean up the beer a little. I have had good luck with California lager yeast strains fermented in the low 60-degrees-F (16-degrees-C) range, but better results using a good abbey or Trappist ale yeast. In order to discourage too much ester

TRY IT AT HOME

Here is a recipe that is designed based on some homebrewed bière de garde and the ingredients used by many of the commercial brewers of the style.

Mouton Sur

LA TABLE
BIÈRE DE GARDE

Ingredients for 5 U.S. gal (19 L)

- 6 lb pale malt (2.72 kg)
- 2 lb Vienna malt (.91 kg)
- 1 lb Belgian aromatic malt (.45 kg)
- 1 lb 75 °L CaraMunich (.45 kg)
- .5 lb Belgian Special B malt (.23 kg)
- .5 lb 80 °L crystal malt (.23 kg)
- 2 oz Tettnang hops, 4.1% alpha acid (57 g) (90 min.)
- 2 oz Hallertau hops, 3.5% alpha acid (57 g) (60 min.)
- California lager yeast, abbey-style ale yeast or bottle-cultured yeast
- .7 cup corn sugar (.32 kg) to prime or force carbonate

- Original specific gravity: 1.072 (18 °Plato)
- Final gravity: 1.015 (7.5 °Plato)
- Boiling time: 90 min.
- Primary fermentation: two weeks at 62 degrees F (17 degrees C)
- Secondary fermentation: four weeks at 32 degrees F (0 degrees C)

Mash grains at 157 degrees F (70 degrees C) for 90 minutes. A decoction mash may also be used.

Partial extract recipe

Substitute 6.5 lb (2.95 kg) light malt extract syrup for first three malts. Steep remaining grains in brewing water until 170 degrees F (77 degrees C) is reached, then remove. Add extract and boil with hops for 90 minutes.

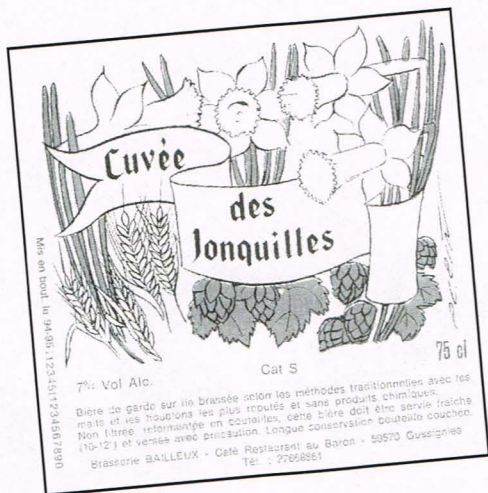
Bottle in heavy-gauge 750-mL Champagne bottles, then seal with a cork and wire cage. This beer will continue to improve for at least two years.

production from these strains, which would be out of character for a bière de garde, ferment near the lower end of their temperature range. This usually translates to around 62 degrees F (17 degrees C) for most commercially available Belgian strains. If you want to try getting a more authentic flavor, you can try reculturing yeast from a bottle of store-bought bière de garde. Unfortunately, most versions available in the U.S. have either been pasteurized or filtered, so chances are your bottle culture will not take. If you are lucky enough to find a bottle with some viable cells, by all means use the real thing. I have heard that the beers from La Choulette are culturable, though both cultures I tried failed to start.

Most brewers, with typical French patriotism, use mostly two-row (but sometimes six-row) French malts from the Champagne and Burgundy regions of the country. Belgian malt also is used. The quality of the malt is very important to the style, as hops play a secondary role in most examples of the style. Flemish hops, as well as noble German varieties like Hallertau and Tettnang are used, providing a soft, unobtrusive balance to the rich malt sweetness. To this end, when brewing bières de garde at home, you may wish to use a decoction mash. Restrained and early additions of low-alpha hops will give you the requisite malty profile. A few of the lighter colored examples may call for a little more hop flavor, but I would avoid any hop additions later than 30 minutes from the end of the boil; it just isn't true to style.

The French Connection

My quest for bière de garde continued during a trip to northern France in the small town of Lille, which is en route from Brussels to Paris. Lille not only has its own brasseries, or breweries, but also boasts the Café Jean, a fine venue in which to sample the local bière de garde. There is a wine and beer shop nearby called Rohart, which sells the local farmhouse brews at quite a reasonable price. In 1995 we were able to purchase such fine examples as the St. Sylvestre Bière de Mars, and Bailleux's Cuvée des Jonquilles and their Saison Saint Médard (which is really a bière de garde) for around 20 francs a bottle, or \$4 U.S. The



Cuvée des Jonquilles is one of the many farmhouse ales "captured" by author Turczyn.

shop's proprietor was the one who suggested the Cafe Jean down the street. As it was raining and we had become quite hungry lugging those oversized bottles around, we decided to stop there for "petite déjeuner." We soon found out that food was not served until seven p.m., so lunch would have to consist of beer and peanuts. The selection included Brasserie Ch'ti Ambrée, the widely available Jenlain from Duyck, a few selections from La Choulette, Brasserie Steinbeer and St. Sylvestre.

Ch'ti, which gets its name from the Picardy dialect expression "c'est toi," or "it suits you," comes in both *brun* and *blond* versions that both weigh in at 15 °Plato original gravity. The *brun* has a sherryish, dried-fruit character in with the malt, and the *blond* is surprisingly just as malty, with an appealing sweetness followed by an assertive, perhaps a bit coating, finish. Both are filtered bright, but not pasteurized.

The Jenlain was also filtered, with just a touch of the requisite mustiness, the typically full malt body, yet finishing dry and warming. It is a great introduction to the style and has all the right qualifications, but seems a bit tame after tasting some of the other versions. La Choulette was one of my favorites, as it possessed a hugely satisfying malt flavor and aroma, yet still managed to leave you with a slight dryness on the tongue. In the aroma, apart from all the

bready malt character, was a slight mustiness coupled with a faint aroma of plums, or perhaps Concord grapes. At a strength of 18 °Plato, there was also a good deal of warming in the finish, but it was not at all fummy or hot; quite a strong contender, in fact, for the best example of the style. Another offering from the same small farmhouse brewery (also called La Choulette) by the name of Bière Des Sans Culottes is lighter in both color and strength, but has an equally impressive balance of bready malt, fruit and cellarish mustiness. It is well worth seeking out. Brasserie Steinbeer makes a 7% alcohol bière de garde with the odd name of L'écume des Jours (ashes of the day). It had a distinctively Belgian aroma to it, not unlike that of an abbey-style ale, with a perfumy apricot aroma countered by a dank but pleasant mustiness. There was an unusual tartness in the malty finish that added to the already complex profile. Definitely one of the most unique versions of the style I've tasted, but quite satisfying. Finally, we sampled what was perhaps the best of the beers that night: we were lucky enough to obtain bottles of the Bière Nouvelle and the 3 Monts, both from Brasserie de St. Sylvestre. (Of course, after that many samples of such a strong style we were lucky just to be able to stand at the end of the evening.)

The Nouvelle was a dark chestnut brown with a white crest of foam that leapt from the glass in odd, jagged peaks. Paradoxically, it tasted of age: just under the dark, chewy caramel malt and sturdy alcoholic warmth (8% by volume) was an earthy, forest mustiness, like the roots of an ancient oak tree after rain. The 3 Monts was so different it could have easily been mistaken for the beer of a different brewery: much lighter in color, this bière de garde was definitely of the blond variety. The mustiness was far more restrained, as was the alcohol, and the beer finished with a tart dryness. One always knows one has had a great night of "research" when the tasting notes are completely unfamiliar the next morning, but because I was at least lucid enough to write legibly, I trust these descriptions are accurate.

Amahl Turczyn is a world traveler and regular contributor to Zymurgy.



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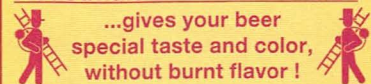
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The

A P P L E S

of



Eden

Mounds of fruit lie, seemingly forsaken, beneath forests of cultivated trees. No doubt the French farmers have some reason for this apparent neglect, but my American mind reels at the sight. Isn't it necessary for fruit to be utterly unblemished to have any value? That is, at least, what the television commercials all say.

During my previous trip to Normandy, springtime blossoms were almost overwhelming—this region boasts more than nine million apple and pear trees. If each of these plants had slightly more than a hundred flowers, and this seemed a conservative estimate, then a billion blossoms painted the land. The bouquet peaked near orchards, and in Normandy it's hard to get far from an orchard.

I've chosen to travel here a second time during late October, when Normandy celebrates its annual harvest festival. The towns of Vimoutiers and Beuvron en Auge form twin centers for the event. In Vimoutiers, individuals, families and small groups of friends wander through a carnival atmosphere, occasionally stopping to enjoy amusement park rides. This year, the festi-



In this Eden, it's the apples that have fallen.

val's central forum displays an Egyptian theme. A pyramid and a Sphinx, both made of apples, stand between tables covered with dozens of apple varieties.

With a number of well-preserved and renovated buildings dating to the 16th, 17th and 18th centuries, Beuvron has won the coveted award "Un des cents plus beaux villages de France" (one of the 100 most beautiful villages in France). Despite the popularity of this celebration, careful organization keeps crowds from overrunning this little town. A group of men and women in traditional dress dances in the village square. Nearby several men operate a large, wooden screw press and distribute cups of fresh, sweet cider to passersby. At stands lining both sides of the main street farmers sell sausages, fruits and vegetables, as well as the great Normandy drinks.

Though the climate and soils of this northerly region preclude the production of fine wines, the populace hasn't passed up the opportunity to make a host of compelling beverages—this is, after all, France. In addition to the world-renowned brandy Calvados, Normandy produces some of the

world's finest ciders, as well as an increasingly popular hybrid drink, Pommeau.

Wanting to visit several producers, I journey to the Domaine de la Fayette where my first sight is of proprietor Olivier Bonnefont washing equipment. He soon spies me and walks over as I stare quizzically at the apples lying thick on the floor of his orchard. Apparently reading my mind, he tells me that this is "the drop," the time when fruit pitches from the trees of its own weight. "We let nature decide when they are ready," he says.

So much for those mounds of "neglected" fruit.

After about 70% of the apples have proven their ripeness by falling, workers shake the trees to free other fruit, and the collection begins. They don't harvest a single apple directly from the trees.

Together with his wife, Astrid, Bonnefont tends a 42-acre farm with 37 acres of orchard. A true mom-and-pop operation, their hands-on enterprise requires an enormous amount of physical effort. Even as we

carry on a congenial conversation, Bonnefont continues to work.

He leads me into the orchard where a powerful scent of overripe fruit fills the air. It's late October; the harvest runs from late September through the end of November. Bonnefont seems unconcerned by the continued maturation of the fruit that lies exposed to the elements. He points out a tree graft about four feet off the ground. Looking around, I notice that all of his trees are grafted. These plants, he explains, are poor genetic breeders. When one gives high-quality fruit, it is best to clone it. Rootstock is chosen to give straight, strong trunks. The finest trees, he tells me, grow with their branches reaching up. These give the best produce. Those with their branches hanging down tend to have more wood and bear lower quality fruit.

At the Domaine de la Fayette, the 11,000 trees include 15 varieties. Throughout Normandy apples are generally classified as sweet, bitter, bittersweet or acid. Though many of the finest producers do

BY THOMAS J. WALSH

not use all of these categories, they do employ a blend to attain their preferred flavor profiles. In most cases not only are apples from more than one of these groups used, but also several different types from each category may be cultivated. The Bonnefontos do not grow any bittersweet varieties. Instead they use 30% bitter, 10-12% acid and the rest sweet apples. None of these are good for eating. Bonnefont feels that eating apples have too much water and too much acid to make a fine, well-balanced beverage.

Though his orchards contain seven-, eight- and 12-year-old trees, Bonnefont says the finest ciders come from trees that are at least eight years old, and the harvest continues to improve for many years after that.

A few bees buzz nearby, then drift off, and Bonnefont shakes his head and frowns. In 1996, he says, many of the local bees died and farmers had trouble with pollination. He's not sure why this happened, but it worries him. He fears that humans may have somehow caused this die-off.

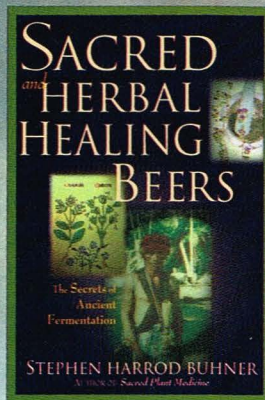


At the Manoir la Brière des Fontaines of Pierre Huet, a worker inspects apples before removing any that show signs of damage and possible bacterial infection.

One thing that Bonnefont is not worried about is the fallen fruit. He says that after the harvest they put the apples into boxes and store them in a protected area for an additional two to four weeks. This allows further maturation and flavor concentration. When the time comes for processing, he runs the apples through a shower, then along a conveyor belt from which damaged fruit is removed. He crushes the remaining high-quality produce and allows it to sit for two to 10 hours before the pressing. During this resting period, the pulp oxidizes, and tannins, which add structure and longevity, enter the juice from the skin, seeds and core. The pulp takes on a rich brown hue. After the press, Bonnefont gives the remaining solids to a neighboring farmer who feeds them to his cattle.

As we talk, Bonnefont continually picks up instruments—pipes, shovels, barrels—and washes them. "Washing is never a waste of time," he tells me. "I spend half of my time washing barrels and equipment. It's necessary to control bacteria."

Bonnefont's first fermentation runs until the yeast has consumed about 60-70% of the fruit's sugar. A slow fermentation for two



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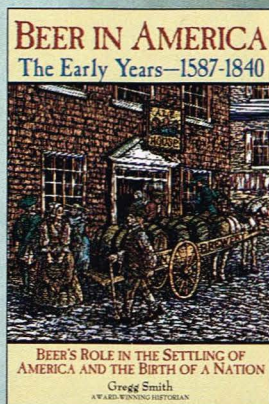
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DO IT YOURSELF

For details on the equipment needed to make cider, contact a good homebrew store. To make the cider, follow these simple steps.

- 1) Pour four and a half gallons of sweet cider into a five-gallon carboy.
- 2) If your apples and/or pears lack sufficient natural sugars, add as much as one cup of sugar for each gallon of liquid. (This will require some experimenting to find what suits your taste.)
- 3) If the fruit has, for some reason, lost its native yeast, add a vial of active yeast. Lay plastic wrap over the carboy's opening.
- 4) After the onset of fermentation, which can take several days to begin, remove the plastic wrap. Regularly clean the container—the fermentation process will expel solids and liquids. Continue to top off the carboy with sweet cider.
- 5) When the fermentation backs off (after about a month or more, depending on the yeast and external temperatures) place a water lock and a rubber stopper into the carboy's neck to eliminate further exposure to oxygen.

- 6) As the cider rests, solids will fall to the bottom of the container. After fermentation has ended, rack the cider into a clean container, seal and allow it to begin its aging process.
- 7) After about two months the cider can be bottled and is ready for tasting. Remember that a well-made cider can last for two years or more.

Note: If you want to make sparkling cider, consult with an experienced producer, who can advise you on the dangers of making beverages that will gain carbonation in the bottle. (Exploding bottles make an awful mess and can be dangerous.)

Remember that Normandy producers recommend against using eating apples because of their extremely high acidity and water content. A good varietal blend consists of about 30% bitter, 10% acid and 60% sweet apples (or pears). Bittersweet fruit can replace some of the sweet or bitter apples in this mix.



to three months at about about 50-59 degrees F (10-15 degrees C) retains the apple flavors. He then places the juice into bottles, where the second alcohol fermentation gives the carbonation.

In a practice reminiscent of changes in the fine wine industry, where filtration and even light fining of the finest wines have fallen out of favor, Bonnefont leaves any remaining solids in the bottle. Until recently consumers wanted perfectly clear beverages, which had been filtered to such an extent that flavors were lost. Today many of the most flavorful and complex wines and ciders are unfinned and unfiltered.

Bonnefont harvests about 25 metric tons of fruit per hectare (11.2 tons per acre) and points out that some producers harvest 40 metric tons per hectare. He presses some 600 liters of juice per metric ton of fruit (about 577 quarts per ton)—about 60% juice by weight. Other producers get as much as 80 to 85%. Some industrial producers get 1,000 liters per metric ton of fruit by pressing, soaking the solids in water and then pressing again.

In addition to cider, the Bonnefont produce Calvados (distilled and aged hard cider) and Pommeau (Calvados and sweet cider blended to 17% alcohol). They alternate what they put into their barrels. Pommeau gives up sweetness and color components to the bar-

rels. Cider adds tannin. Calvados, because of its high alcohol content, takes it all.

Bonnefont leads me to his tasting room where the value of hard labor becomes clear through the scents and flavors of his products.

Each stands well on its own, but displays a structure, richness and complexity that would superbly complement food. They all possess a lush, apple ripeness with a hint of bitterness and bright acidity that balance the sweetness.



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CIDER TASTING NOTES AND FOOD SUGGESTIONS

The following are tasting notes of several of Normandy's finest ciders:

1996 Appellation Pays d'Auge Controlée, Cidre de Cambremer. Francois et Stéphane Grandval. Manoir de Grandouet, 14340 Grandouet, Tel: 02 31 63 08 73. Slightly cloudy (often a very good sign), looks unfiltered. Amber-gold robe with a slight pink hue. Fine sustained mousse (sparkle). Sweet-sour nose, distinct fresh apple scent, a bit woody, like fresh pencil shavings. Full bittersweet palate, bright acidity, very dry. Long refreshing finish with distinct bitter tones (like bitter almonds). Would be superb with apple pie and slightly sweet whipped cream. For an entrée, try roast duck with apples and cream.

1996 Appellation Pays d'Auge Controlée, Cidre de la Galotière. Jean-Luc Olivier et Pascal Choïnard. GAEC de la Galotière, Crouettes, 61120 Vimoutiers, Tel: 02 33 39 05 98. Slightly cloudy. Straw-yellow robe with an amber-rose blush. Fine mousse, though not as sustained as the '96 Cidre de Cambremer (above). Sweet nose of apples and cinnamon, reminiscent of warm apple pie. Softer than the Cambremer, rounder and less structured, though more voluptuous on the palate. Fine acid balance. Great picnic cider for drinking on its own. More rustic than the Cambremer. Slightly green flavors on the finish.

Of these two ciders, the Galotière is a bit easier to like at first, the Cambremer is subtler.

Poiré Bouché du Pays d'Auge (same producer, Galotière, as the second of the two ciders above). Nonvintage. Slightly cloudy, pale straw-gold. Nose quite different from the apple ciders above—pear, lemon and vanilla with a slight sweet-sour character. Less power and more finesse than the apple ciders. Rustic and woody, again like the scent of fresh shaved pencils. Finely structured with good acid freshness. Lemon-pear flavor carries through to the bittersweet finish in which the rusticity gives way to a refined elegance. This would superbly complement an entrée of Lapin (rabbit) au Cidre.

Poiré du Domfrontais. Domaine des Martellières. GAEC Le Clos Normand. Boisgontier Père et Fils, Recoltants. Tel: 02 33 38 30 95. Demisec. Fresh nose with bit of toast and lemon. Perfectly limpid, straw-gold robe. Bit of pear sweetness on palate with fine, fresh acidity. Soft, elegant finish. Again, a good picnic wine to be served on its own or with pears flambéed with Calvados of Domfront.

Because of their stylistic differences, ciders and poiré would best be served at different temperatures. The poiré shows best at Champagne temperatures (45 to 50 degrees F or 7 to 10 degrees C), while the ciders are best at temperatures appropriate to fine Beaujolais (54 to 58 degrees F or 12 to 14 degrees C).

France has produced hard cider (as distinguished from unfermented juice—sweet cider) for hundreds of years, though for much of that time the drink was reserved for the wealthy. Around the 16th century producers began adding water to their "apple

wine." Though this practice diluted the flavors, it lowered the price and made the beverage more widely available.

Modern instruments have, in many cases, replaced ancient tools, but the basic recipe for cider remains unchanged. After

the harvest, workers wash, then crush, the fruit using a variety of devices. Today many producers use mechanical drum crushers. More traditional methods include placing the fruit in a trough and beating it with wooden paddles. The crushing proceeds until the fruit has the consistency of applesauce. This pulpy mass, called pomace, rests and oxidizes for several hours. The finest Normandy ciders do not require the addition of tannin powder; high-quality fruit provides plenty of this essential ingredient.

To extract the juice, modern techniques employ the efficient hydraulic press, but many small operations still use the traditional screw press. To prepare this device, workers lay cloth in a bottomless wooden frame that measures about four feet on a side and six inches in height. The pomace is then pumped or shoveled onto the cloth. After filling the frame, workers then fold the cloth over the top of the crushed fruit and remove the frame, leaving behind a form called a "pillow." After placing a wooden sheet over this pillow, workers repeat the process



In Beuvron en Auge, "One of the 100 most beautiful villages in France," festival workers prepare a "cheese" of apple pomace for a traditional screw pressing.

until the stack, called the "cheese," reaches about a dozen layers.

People or stock turn the screw's lever arm to press out the juice. After a day or two fermentation begins. Normandy's finest producers generally allow the natural yeast that grows on the fruit's skin to perform the fermentation. As with much of the fine wine industry, the belief is that wild yeast gives the greatest complexity and finest flavors to the final beverage.

Toward the end of this primary fermentation the juice undergoes bacteria-mediated malolactic fermentation. While the fruit's natural acids give the beverage freshness and keep it from cloying, many of the finest cider varieties have too much acid to produce a well-balanced drink. This secondary fermentation lowers the total acidity as it turns harsh malic acid into smoother lactic acid. Temperature control is critical during this process because at temperatures above 70 degrees F (21 degrees C) malolactic bacteria cause unpleasant odors.

The cider is most often aged in large wooden barrels, generally made of oak from central France. These barrels are either foudres, which hold 100 hectoliters—nearly 15,000 bottles, or 53-hectoliter tonnes. The cider, with some residual natural sugar, is then put into bottles where the final fermentation takes place. Because this fermentation occurs in the bottle, carbon dioxide becomes trapped under pressure in the liquid and awaits its release when the consumer pops the cork.

The cider usually improves and mellows as it ages. The acid and tannin levels continue to drop as the primary fruit flavors become more pronounced. The cider gains

richness, and secondary aromas—the bouquet—develop as the nose gains a nutty characteristic and the liquid continues to darken. A well-made cider can last at least two years before starting to decline.

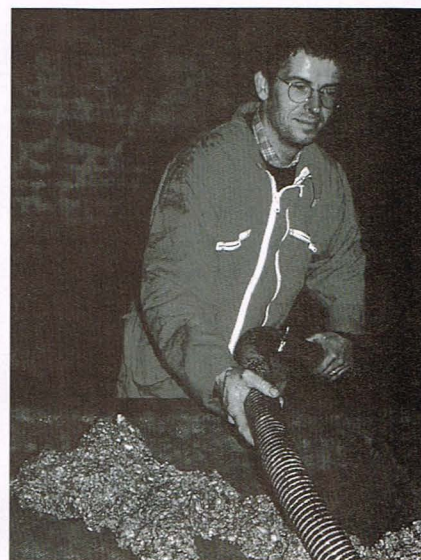
Pears and Ferme de la Galotière

My journey next takes me to the Ferme de la Galotière, where Monsieur Jean-Luc Olivier is busy crushing his pears. As we watch the pomace quickly darken after it leaves the crusher, he comments that pears are very difficult to work with. They are more delicate than apples and their period of optimum ripeness lasts for only a few days. Apples can hold their quality for several weeks.

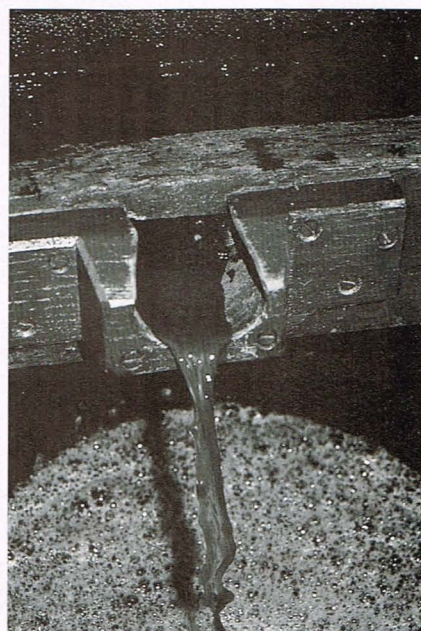
As with the Bonnefontes, Olivier harvests his fruit from the ground. All of his pear trees are grafted onto rootstock that provides a strong, straight, tall trunk. Pears can legally be added to many Normandy ciders as well as Calvados, and many producers take advantage of this to soften and brighten the weighty flavors of a pure apple product. Olivier uses 50 varieties of apple to make his Calvados and 20 to make his Cidre de Pays d'Auge, a very high-quality cider that must be made entirely from a limited number of apple varieties grown in a strictly regulated area.

Olivier also makes a fine all-pear cider, called Poiré, from five different pear types including sweet, bitter and acid varieties. A comparison of this Poiré to his Cidre de Pays d'Auge brings to mind the range of fine wine characteristics. While the full body and richness of his Cidre compare favorably to a robust red wine, the freshness and delicacy of his Poiré recall an elegant white.

An appreciation of the importance of Cidre de Pays d'Auge requires an understanding of some French history. Early this century, the country's wine industry was reeling from the devastation wrought by the *Phylloxera vastatrix* (continued on page 55)



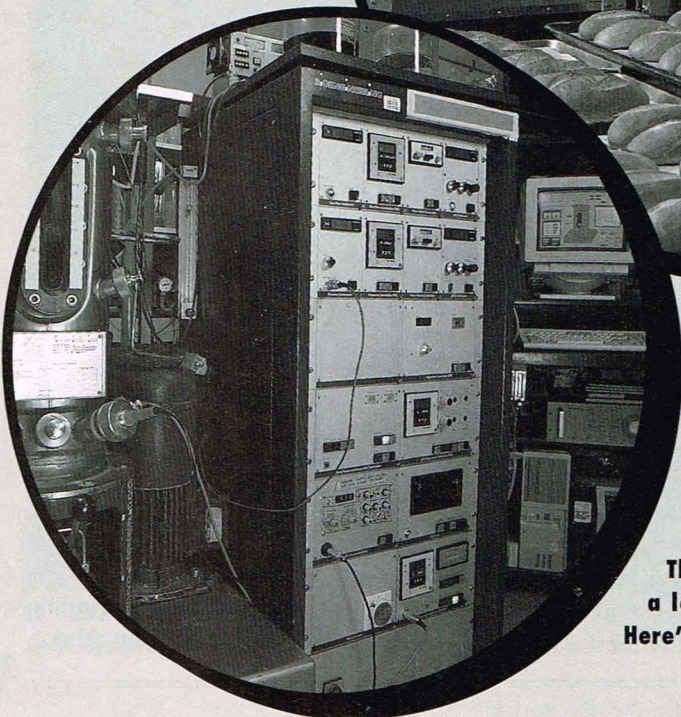
After the crush, the apple or pear pomace is shoveled or, in this case, pumped into a framed cloth. Before pressing, the edges of the cloth are wrapped over the pulp to create a form known as a "pillow".



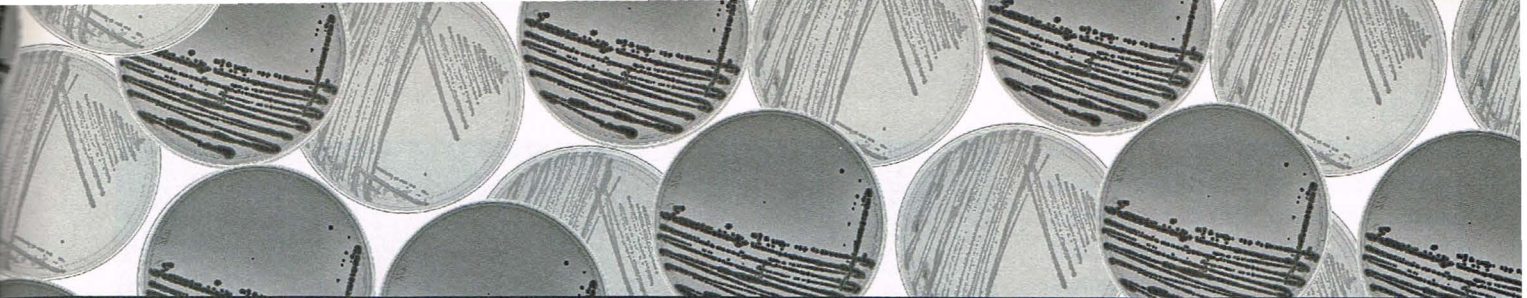
Fresh sweet cider pours from a screw press. Passersby at the harvest festival in Beuvron enjoyed a steady stream of this fine, refreshing drink.



The Inside



The preparation of dry yeast has come a long way since Egypt in 4000 B.C. Here's the inside of a yeast "factory."



Story on Dried Yeast

By George Clayton Cone, Dr. Thomas Tompkins & Dr. Tobias Fischborn

Yeast and fermentation have been part of daily life since long before 4000 B. C., when records show that Egyptians were drinking beer and eating leavened bread. Yeast was domesticated in the form of barm foam and passed on from century to century long before there was the slightest understanding as to what the mystical substance was. Wine, beer and bread became the principal food commodities for most nations in the Mediterranean region.

The preparation of yeast in dry form also dates back many centuries. Yeast was being dried successfully long before anyone had any idea what was being dried. Bakers back in Roman days had elevated positions akin to that of priest because of their ability to make this magical, mystical substance that turned dough into leavened bread. Along with this lofty position came an awesome responsibility.

Bread or Life

Bread was the basis of the diet, and the Roman army depended on a steady supply. Thus, if the baker lost the yeast culture, he often lost something more important to him—his life. With an incentive like this, it was not long before bakers found they could spread yeast-containing slurry on wheat or other grain hulls or gypsum blocks and place it in a sunny spot to dry. When needed, they mixed the dry material with a sweet liquid, and it would “come to life” again. Variations of this old Roman technique are used even in present times.

During the early 18th century, byproducts of the breweries, and later the distilleries, were used to ferment bread. Bakeries first grew up surrounding breweries so there would be a daily supply of this mysterious slurry that made the flour leaven so well.

The industrial revolution brought on a greater demand for commercial bread, because factory workers didn't have the time to bake their own. As the bakeries became larger, distilleries found an increased market for their byproducts. By the late 19th century, the demand for yeast for baking was much greater than the demand for the alcohol required to produce the yeast. There were about five parts of yeast for every 25 parts of alcohol. Necessity being the mother of invention, the “Vienna process” was developed, giving 14 parts of yeast and 30 parts of alcohol. Along came Louis Pasteur with his contribution, not only as to what was causing the fermentation, but the fundamental observation that the cell mass for a given amount of sugar was much greater when grown in the presence of air than without air, what came to be called the Pasteur effect.

The subsequent work of Pasteur and Emile Christian Hansen, who isolated the first single-cell pure culture, explained the role of yeast in fermentation and the importance of pure culture fermentation. By the close of the century, several firms were producing modest amounts of pure yeast from aerated grain mashes.

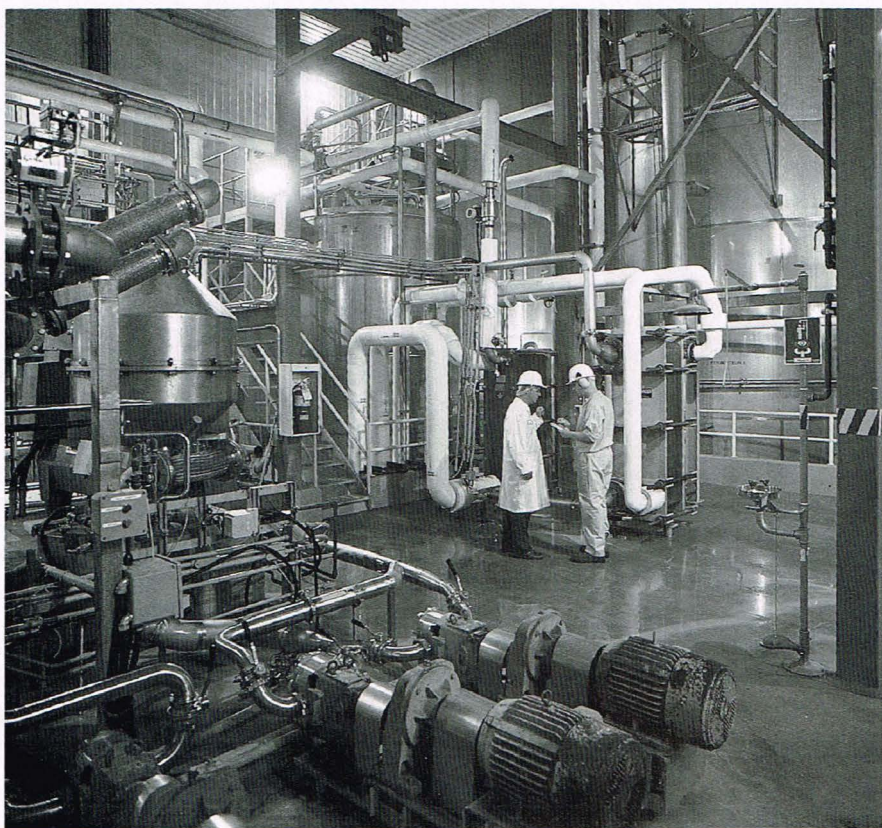
During World War I the availability and cost of grain became a problem. A scientist in Berlin developed a method for producing yeast from molasses fortified with ammonium salts and phosphates rather than from grain. Further research improved the yeast metabolism of sugar to cell matter, while avoiding alcohol production. This was accomplished through high aeration with gradual incremental feeding of diluted molasses and nutrients to the yeast as it grows. The industry today still employs this process, tailored to exploit the new strains being used.

Massive Production

The production of active dry yeast began on a massive scale during the early 1940s at the beginning of World War II. The U.S. government gave large grants to yeast companies to develop techniques to produce large volumes of yeast that could be shipped without refrigeration to the armed forces.

The initial drying machines were tumbling drums, followed by tunnels. Compressed yeast with about 70% moisture was extruded in spaghetti-like form onto a perforated steel belt and slowly passed through a tunnel containing several chambers. The temperature, humidity and airflow were carefully regulated in each chamber to evaporate and draw the moisture from within the yeast cell at a predetermined rate that would ensure maximum viability and activity. The yeast left the last chamber with a seven to nine percent moisture content. This process required three to five hours, sometimes longer.

Recent improvements have been made in drying technology and, consequently, there is a better understanding of the yeast during drying. Currently, most yeast is dried in a fluid bed drier. Compressed yeast is extruded in threads about the size of a 0.5-mm pencil lead onto a perforated plate in a single chamber. The yeast is airlifted with carefully controlled flow, temperature and dehumidified air, allowing it to dry to four



Hard to believe that this is a plant for manufacturing dried yeast.

percent moisture in about one-half hour. Some techniques allow the drying to take place in 10 minutes. This rapid controlled drying captures almost all of the viability and activity of the original yeast.

The yeast from the drier is quickly cooled and packaged in an inert atmos-

phere of nitrogen, carbon dioxide or under vacuum to give long-term stability. At 40 degrees F (4 degrees C), it will retain 96% of its activity after one year. At 68 degrees F (20 degrees C), it will retain 80% of its original activity during the same period.

Yeast strains for the brewing industry are selected by brewing institutes or breweries. These strains usually have a long history of performing and producing for the brew master exactly what it required for the equipment and style of beer. The culture is submitted to the yeast manufacturer to be produced on an industrial scale. The research laboratory will study its growth patterns and requirements and produce small amounts in a dry form. The brewing institute or brewery will compare its performance against the original slant of yeast brought up in the traditional manner. If the performance of the dry yeast is equal to or better than the liquid yeast, plant-scale production will begin.

The Birth of Lager Yeast

In the past, most of the yeast strains produced on the industrial scale were

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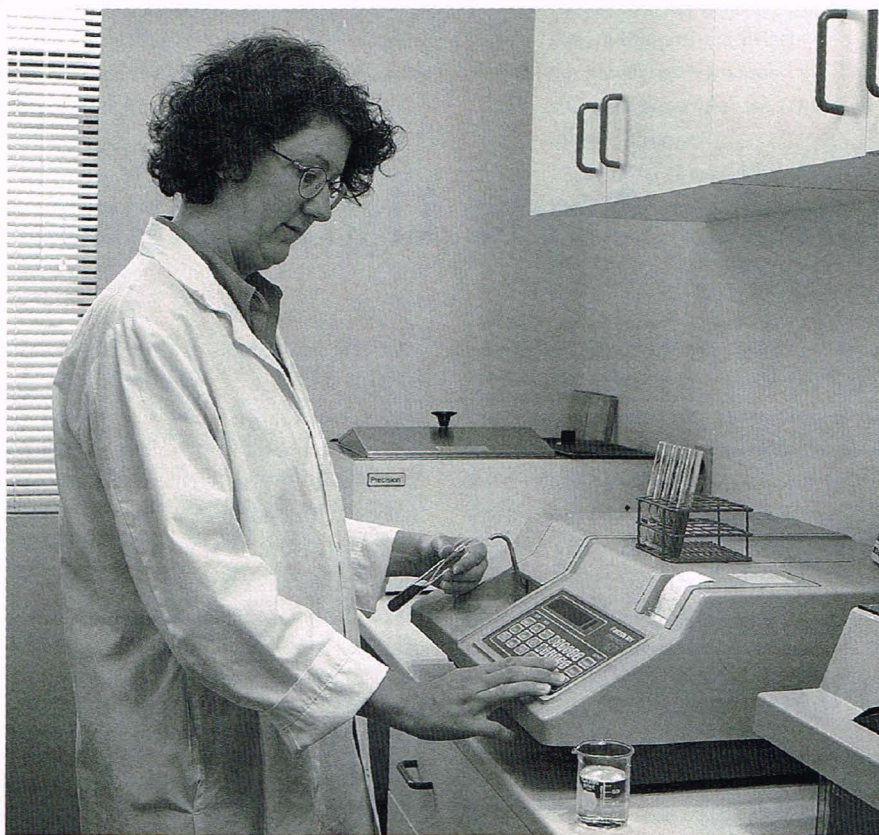
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Quality control of the dried yeast begins in the test-tube stage.

top-fermenting ale yeast. These yeasts ferment well over a temperature range of 15-20 degrees C (59-68 degrees F), and in production they grow similar to bakers yeast and retain good fermentation performance after drying. Today it is possible to produce, on the industrial scale, bottom-fermenting lager yeast by using specially developed growth recipes and drying procedures. The lager yeasts ferment at lower temperatures (7-12 degrees C or 44-53 degrees F) and produce a true continental European lager-style beer like Pilsener. Prior to this innovation, lager-style beer was made with highly flocculent ale yeast strains. Since the yeast strains contribute to the flavor and aroma of the beer, the switch to a true lager yeast should provide more of the flavor and aroma traditionally associated with a lager beer.

Molecular biological techniques, which are similar to those used in forensic science, are used to map the DNA of the yeast and provide a fingerprint for rapid identification. The most commonly employed techniques are restriction fragment length polymor-

phism (RFLP), polymerase chain reaction (PCR), and pulse field gel electrophoresis (PFGE). The successive employment of each of these three techniques increases certainty of the identification.

Pattern recognition of the DNA fingerprint is performed by a computer equipped with a scanning device. The pattern is compared to hundreds of stored patterns to

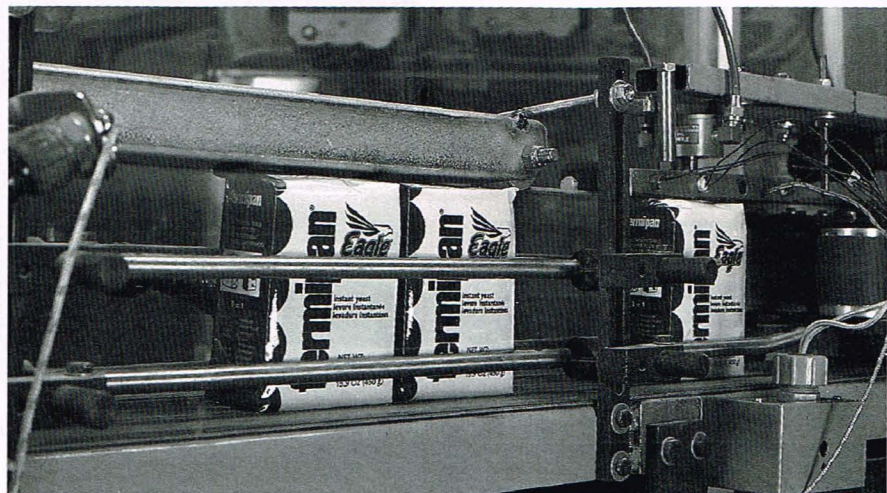
rapidly determine matching profiles and identifications. This pattern is saved for future reference to be certain that no contamination of the original strain occurs and that any mutations do not go unnoticed and later alter the fermentation characteristics. The culture is then streaked onto numerous special nutrient agar slants, allowed to grow at 86 degrees F (30 degrees C) for 24-36 hours, placed under sterile oil and refrigerated at 39 degrees F (4 degrees C) until used. Numerous slants are made to eliminate the need to inoculate from a single slant more than one time, thus minimizing the chance of introducing infection at this early stage.

The quality control of the yeast begins at the test-tube stage in the laboratory, and each subsequent stage is carefully controlled so the yeast performs exactly as the customer demands.

The commercial production of yeast is accomplished by aerobic fermentation, which is fermentation stimulated by the introduction of air. Aerobic fermentation results in more efficient yeast growth. In most other industrial fermentations, such as brewing, the fermentation is anaerobic without air, and it's the byproducts (alcohol, esters, higher alcohols and carbon dioxide) that are desirable instead of the yeast itself.

In the Beginning

To start the aerobic fermentation process, a small *(continued on page 58)*



Finally, the yeast is packaged, either in bulk for breweries or in smaller lots for homebrewers.

Oba! Dortmunder-Style Light Lager

I've sorted through the last three years of recipes from this column and it's almost time for a good old basic Irish-style stout. But I can't help but be reminded by my wife Sandra that "the best beer I've ever made" so far has been Oba!

I have to admit I'm relatively partial to this beer, indeed one of my best shots at a German-style lager, but what fascinates me is Sandra's fixation on Oba! "When are you going to make more?" You see I'm all out. Done. No more. Dry. What's strange to me is that I've made all manners of light lagers, Pilseners, German style and European style, some with all malt, others with a bit of corn or rice, all beautifully lagered and enjoyed down to the last drop. But there was something about Oba! that tickled her taste buds. Up until about a year and half ago, the only beer she knew was adjunct mass-produced light lager from Brazil. That's where she's from. Every other beer may just as well have been brewed on another planet.

Now she loves a variety of styles, but not all beers made to the style. IPAs, special bitter, double brown ales, some fruit beers and lambics, lighter Pilseners, and much more. But she's picky and very intriguing to figure out. I can only begin to guess that Sandra could like most types of beer, but there's a necessary balance that needs to be there. All styles of beer have a range of alcohol, color, mouthfeel, malt sweetness and hop bitterness, flavor and aroma. Strike the right chord of balance with just about any style and she's there ready for another glass.

She's not a fan of very hoppy, dry Pilseners, but if configured with a special balance of malt and hops it will be one she's after. Once after tasting a locally produced non-categorized ale called "Mr. Hoppy," she loved it "It smells like passion fruit," but it also had a malty note that surfaced through all the hop intensity creating a bal-

ance. Yet some very hoppy IPAs are not to her liking. What's the mystery? What's the key? Brown ales that are too sweet are shunned, but with a subliminal elevation of hop bitterness, not necessary perceived, but providing balance and she's there for another. Stouts are another style she's rather picky with. Assertive roasted malt and barley notes usually are a turn off, but tone them down with a balance of body and malt sweetness (not necessarily making it a sweet beer) and she's there ready to indulge.

American and English pale ales I'm still trying to figure out. She loves dozens of these microbrewed ales, while others of the exact same style (cleanly brewed) are

off-balance to her taste. There's no middle ground. It's either a yes I'll drink it or a no I won't ("you drink it"—and sometimes I will and sometimes I won't). She's made me aware of my own sensitivity to what balance means to me and you too.

So what kind of style is your favorite? Ask my wife. Ask me. It depends on the balance. The balance of all things we know and the luck of balancing the things we don't quite understand. As brewers who brew and pay attention to their taste buds, the reaction of others, the magic hand we all possess in creating one of God's gifts to man and woman—it's all about creating balance. Maybe that's what we mean when we assess



a beer's "drinkability," or "overall impression." We can't quite come up with a quantifiable measure so we surrender to our subjectivity. Rightly so. But I think there's something worthwhile in continuing my observations and trying to assess what we may begin to mean by "balance."

Oba! Dortmund-Style Lager is one of those beers I magically created that has this balance I speak of. Can I create it again? I kept great records and gave it another try last weekend. Can you create it? I don't know. But I'll share with you the same chance I'm giving myself. Here's the all-grain recipe and an alternative malt-extract recipe that'll get you close. Oba! is the balance of a special combination of hops added at certain intervals, along with mandatory cool fermentation and cold lagering. There is a maltiness, but it is not caramel nor crystal maltlike. There is body that subliminally achieves balance, but does not suggest assertive mouthfeel. Hop aroma is not really detectable, but without the hop aroma that is there, this beer would be another unbalanced beer. What you do not see, hear, feel, smell or taste doesn't mean it isn't there contributing to a symphonic balance—a whole beer, the sum of its parts.

For me Oba! is the epitome of the Dortmund style of German light lager. So let's cut the shuck and jive and get on with the recipe.

For 5.5 U.S. gal (21 L) All-Grain Recipe Malt

- 8 lb German Pilsener pale malt (grain) (2.7 kg)
- 2 lb Vienna malt (1.4 kg)
- .5 lb CaraPils malt (225 g)

Hops

- 1.5 oz French Strisselbract whole hops (42 g) (6 HBU/168 MBU) (boil 60 min. for contribution of 22 IBUs). (French Strisselbract is similar to a Hersbrucker Hallertauer hop in profile but somewhat more floral-sweet. Major aroma hop of the Alsace area.)
- .75 oz German Tradition whole hops (21 g) (5 HBU/141 MBU) (boil 30 min. for contribution of 10 IBUs).
- .66 oz German Hersbrucker Hallertauer whole hops (18 g) (3

HBU/84 MBU) (boil 10 min. for contribution of 2.2 IBUs).

- .25 tsp powdered Irish moss
- .75 cup corn sugar/glucose (180 mL)(priming)
- Lager yeast (I used Wyeast Bavarian 2206)

- Original gravity: 1.050-1.054 (12.5-13.5 °B)
- Final gravity: 1.014-1.018 (3.5-4.5 °B)

- IBUs: about 34
- Approximate color: 6 SRM (12 EBC)
- Alcohol: 4.8% by volume
- Apparent yeast attenuation: about 71%

A step infusion mash is employed to mash the grains. Add 11 quarts (10.5 L) of 143-degree-F (61.5-degree-C) water to the crushed grain, stir, stabilize and hold the temperature at 132 degrees F (53 degrees C) for 30

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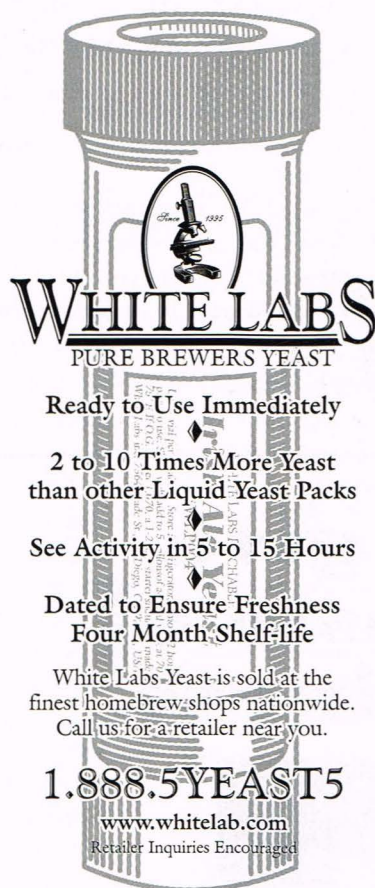
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minutes. Add five quarts (5 L) of boiling water and add heat to bring temperature up to 157 degrees F (69.5 degrees C) and hold for about 30 minutes. Then raise temperature to 167 degrees F (75 degrees C), laut and sparge with four gallons (15 L) of 170-degree-F (77-degrees-C) water. Collect about six gallons (23 L) of runoff and add the French Strisselbract hops and bring to a full and vigorous boil.

The total boil time will be 60 minutes or long enough to end up with 5.5 gallons (21 L) of wort. When 30 minutes remain add the German Tradition hops. When 10 minutes remain add the German Hersbrucker Hallertauer hops and Irish moss. After a total wort boil of at least 60 minutes (5.5 gal. should remain) turn off the heat. Now you must cool all of the wort. Use an immersion cold-water bath or heat-exchanging coils. Then strain and sparge into a sanitized fermenter.

Pitch a good dose of healthy active lager yeast and primary ferment at temperatures of about 55 degrees F (12.5 degrees C); make sure that nearly all of the fermentation is complete before lagering. Rack from the primary to the secondary. Your net yield

will be five gallons (19 L) to the secondary. Lager between 35 and 40 degrees F (2-4.5 degrees C) for no less than one month.

Prime with sugar and bottle when lagering is complete.

Here is an alternate recipe using malt extract and simpler procedures:

Malt

- 5.5 lb extra light dried malt extract (2.5 kg)
- 1 lb amber dried malt extract (0.45 kg)

Hops [note: more hops are used in this version due to more concentrated wort boil]

- 2 oz French Strisselbract whole hops (57 g)(8.2 HBU/230 MBU) (boil 60 min. for contribution of 24 IBUs). (French Strisselbract is similar to a Hersbrucker Hallertauer hop in profile but somewhat more floral-sweet. It is preferred by some breweries. Major aroma hop of the Alsace area.)
- .75 oz German Tradition whole hops (21 g)(5 HBU/141 MBU) (boil 30 min. for contribution of 8.2 IBUs).
- .66 oz German Hersbrucker Hallertauer whole hops (18 g)(3 HBU/84 MBU) (boil 10 min. for contribution of 1.8 IBUs).
- .25 tsp powdered Irish moss (1.2 mL)
- .75 cup corn sugar/glucose (180 mL) (priming)
- Lager yeast (I used Wyeast Bavarian 2206)

Add the malt extract and Strisselbract hops to three gallons of boiling water. The total boil time will be 60 minutes. When 30 minutes remain add the German Tradition hops. When 10 minutes remain add the Hallertauer hops and Irish moss. After a total wort boil of 60 minutes turn off the heat and cool the pot of wort in a cold-water bath for 20 minutes, then strain and sparge into a sanitized fermenter to which you've added two gallons (7.6 L) of water. It helps to prechill (33 degrees F or 1 degree C) the water added to the fermenter rather than simply adding tap water. Top off the volume to 5.5 gallons (21 L).

When the wort is below 60 degrees F (15.5 degrees C) pitch a good dose of healthy

HOMEBREW BITTERING UNITS (HBUs)

are a measure of the total amount of bitterness in a given volume of beer. Homebrew Bittering Units can easily be calculated by multiplying the percent of alpha acid in the hops by the number of ounces. For example, if 2 ounces of Northern Brewer hops (9 percent alpha acid) and 3 ounces of Cascade hops (5 percent alpha acid) were used in a 10-gallon batch, the total amount of bittering units would be 33: (2 x 9) + (3 x 5) = 18 + 15. Bittering units per gallon would be 3.3 in a 10-gallon batch or 6.6 in a five-gallon batch, so it is important to note volumes whenever expressing bittering units.

INTERNATIONAL BITTERNESS UNITS (IBUs)

are a measure of the bitterness of a beer in parts per million (ppm), or milligrams per liter (mg/L) of alpha acids. You can estimate the IBUs in your beer by using the following formula:

$$\text{IBU} = \frac{\text{ounces of hops} \times \% \text{ alpha acid of hop} \times \% \text{ utilization}}{\text{gallons of wort} \times 1.34}$$

Percent utilization varies because of wort gravity, boiling time, wort volume and other factors. Homebrewers get about 25 percent utilization for a full one-hour boil, about 15 percent for a 30-minute boil and about 5 percent for a 15-minute boil. As an example, 1 ounce of 6 percent alpha acid hops in five gallons of wort boiled for one hour would produce a beer with 22 IBUs:

$$\text{IBU} = \frac{1 \times 6 \times 25}{5 \times 1.34} = 22 \text{ IBUs.}$$

METRIC BITTERNESS UNITS (MBUs)

are equal to the number of grams of hops multiplied by the percent alpha acid.

active lager yeast and primary ferment at temperatures at about 55 degrees F (12.5 degrees C); make sure that nearly all of the fermentation is complete before lagering. Rack from the primary to the secondary. Your net yield will be five gallons (19 L) to the secondary. Lager between 35 and 40 degrees F (2-4.5 degrees C) for at least one month.

Prime with sugar and bottle when lagering is complete.

Oba! - pronounced Obahhhhhhhh!

World traveler Charlie Papazian is the founding president of the Association of Brewers and the author of numerous best-selling books on homebrewing. His most recent books are *Home Brewers Gold* (Avon, 1997), a collection of prize-winning recipes from the 1996 World Beer Cup Competition, and *The Best of Zymurgy* (Avon, 1998) a collection of the best articles and advice from 20 years of *Zymurgy*.

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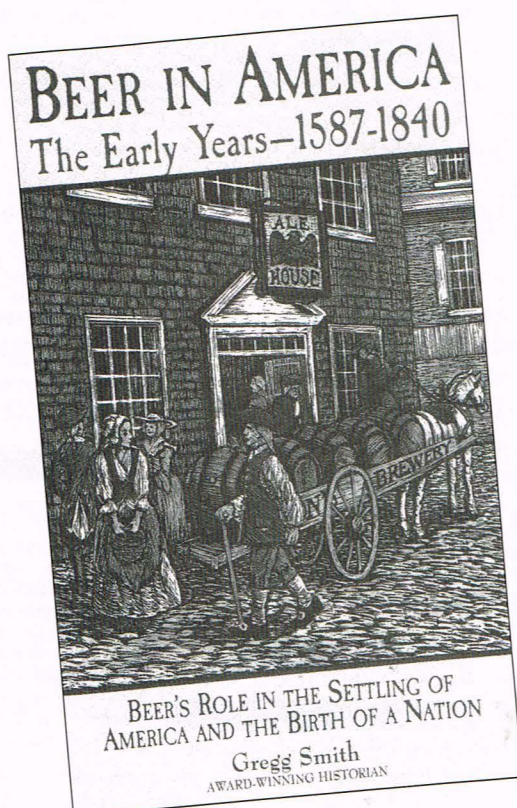
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THE INSIDE STORY OF

Colonial Homebrews

With the pesky chore of creating a nation well in hand, our ancestors needed a good brew...

By Gregg Smith



The Colonial Cocktail

Stepping from behind the bar, the tavern keeper walked over to the flickering hearth. Embers of the hardwood fire burned brightly, filling the room with warmth. Bending over, he picked up the jug he had placed on the brick floor close to the bed of coals. Inside the beer was just beginning to steam.

How many times had he done this since opening this inn? Hundreds? No, thousands. It was one of his most popular drinks. Customers never seemed to tire of ordering it, and he had a certain amount of pride in its preparation.

Placing the earthen jug near the fire was the first step. Then, while it heated, he returned to the bar to scoop his secret mixture into a large tankard. Actually, it wasn't that much of a secret. Tavern keepers all over the country made the same drink, but this was a personal variation. He thought back on preparing it earlier in the day. To the fresh eggs, beaten into a froth, he had added brown sugar and a touch of rum. Others varied the basic recipe by substituting gin; he stuck with the traditional base. His version was unique in what came next. Rather than nutmeg, he added cinnamon, blended with a little apple and pumpkin to create an appealing accent that cut through the richness of the eggs. It made the drink taste distinctly different from the way it did in other taverns, and that was what brought people back here instead.

From the jug the tavern keeper poured the steaming beer into the tankard, swirling it with a spoon to dissolve the mixture. Bending over again, he picked up a poker. Its other end had been thrust into the coals nearly a quarter of an hour ago, and when he pulled it from the fire it glowed bright red. Then he thrust it into the tankard. With a hiss it threw off a small cloud of steam, and boiled the mixed drink into a thick, rocky head. Caramelizing the sugars, it heated the beer further, and cast an aroma of sweet spice throughout the room.

As he approached his customers smiled in anticipation. Perhaps making the drink was a little time consuming, but a result like this made it all worthwhile.

Beyond the sweet and spicy taste, the drink appealed to people for more than the flavor and aroma. They considered it

healthy. For thousands of years both professional physicians and disciples of home cures had used beer as a base in their medicines. Of course drinking beer was unquestionably better than drinking water, which was considered vile. But over the years physicians had come to believe that warm beer was best of all. They thought warm liquids were easier to digest, and because beer was considered healthy, there was nothing better than beer-based mixed drinks.

Modern-day cocktails employ a wide range of ingredients, producing a spectrum of characteristics. Use of soda waters became common practice during Prohibition in the 1920s, when inferior bootleg spirits were abundant, but beer supplies, harder to conceal and transport, had dried up. The cocktail owes its existence to the practice of mixing drinks with a base of beer, and in colonial America the beer mixed drink was king. Often as not they were served warm.

Influenced by the recommendations of physicians and folklore, colonial beer drinkers were as likely to order a warmed, mixed beer as a tall, cold one. Pokers called "logger heads," large mixing jugs, and long-handled bar spoons were all common pieces of equipment found in the ale houses, inns, and taverns of early North America.

Names for the mixed beer drinks varied as much as the ingredients. Initially the word "hum" was used generically to describe any sort of heated ale and beer mixture. Typically sold in small measures, it was presented in what was known as a "hum-glass." Hum was sometimes used medicinally: "What a cold I have over my stomach; would I'd some hum." Eventually evolving into a beer laced with a spirit and then heated, hum was said to have been of considerable strength.

As time went by recipes utilizing other ingredients evolved. The earliest recorded beer cocktails included eggs. Egg recipes called for half the beer as a base. Once thoroughly mixed with the other ingredients, it was heated. Well blended, the remaining beer was added and the drink was served immediately.

Throughout colonial times the most frequently mentioned beer drink was "flip." Undoubtedly of British origin, it was in America that flip gained its stature as a first-

rate bar drink. While riding the circuit as a judge, John Adams reported that a person spending a day in the tavern would find it full of people drinking tankards of flip, carousing, and swearing. Though it was reportedly mixed throughout the colonial period, the earliest mention of flip is from 1690. In 1704 the *New England Almanac* described its standing among the popular drinks of the time:

*The days are short, the weather's cold,
By tavern fires tales are told.
Some ask for dram when first come in,
Others with flip and bounce begin.*

Recipes for flip, as for other foods and drinks, varied from town to town. Fortunately, a significant number of the recipes were printed. Despite the variations, all exhibited common roots. Generally the formulation called for "a great pewter mug or earthen pitcher filled two-thirds full of strong beer; sweetened with sugar, molasses, or dried pumpkin, according to individual taste or capabilities; and flavored with 'a dash'—about a gill—of New England rum. Into this mixture a red hot loggerhead, made of iron and heated in the fire, was thrust."

Another formulation began with four pounds of sugar mixed with four beaten eggs; to this was added one pint of cream. Chilled, it "aged" for two days. When people ordered a flip, a mug was filled two-thirds full with warmed beer, to which the egg, cream, and sugar mixture was added to taste. Finally, a hot loggerhead was thrust into the mix. It was topped with a half cup of rum.

Orders for flip appear in the journals of most of the Founding Fathers and frequently punctuate General Washington's expense account. Wherever a revolutionary fire burned, the tavern keeper kept a loggerhead heated and ready. A customary part of the taproom scene, it was an essential fireplace tool. James Lowell thought it important enough to praise in verse:

*Where dozed a fire of beechen logs that bred
Strange fancies in its embers golden-red,
And nursed the loggerhead, whose
hissing dip,
timed by wise instinct, creamed the bowl
of flip*

There were other slang names for both the tools and the drink. Some referred to the loggerhead as a hottle, while others called it a flip-dog. In the book *Cook's Oracle*, flip was listed as a "yard of flannel." Another source insisted that yard of flannel was similar in nature to flip, but distinctly different; although looking at the ingredient list of heated ale, brandy or rum, beer, brown sugar, ginger, lemon peel, and beaten whole eggs, it closely resembles flip.

Modifications of the flip theme appeared with recurring frequency. One used fresh rather than an aged egg-and-sugar mixture. When it was beaten into the mixture immediately before serving, it was considered different enough to earn the name "Belowstop." As the loggerhead hit the fresh egg mix, it had the same effect as with flip, foaming over the top of the mug to the delight of everyone except the person who had to clean up the mess. Flip remained such a fashion that it was regularly served in American bars well into the mid-1800s.

Though flip was certainly one of the most frequently ordered beer cocktails, it was by no means the only one. Thrifty New Englanders devised assorted methods of serving beer, including beer that had gone bad. "Whistle (or whip)-belly-vengeance" was one. Originating in Salem, Massachusetts, it started with a base of sour household beer, simmered in a kettle. The barkeep or housewife then added molasses to offset the tartness and crumbs of "ryneinjun" bread to thicken. It was served piping hot. Dean Swift mentioned it in his "Polite Conversations," when discrediting a local brew as an offensive imitation of beer:

*Hostess (offering ale to Sir John Linger): I
never taste malt-liquor, but they say ours is
well-hopp'd.*

*Sir John: Hopp'd why if it had hopp'd a little
further, it would have hopp'd into the river.*

Hostess: I was told ours was very strong.

*Sir John: Yes! strong of water. I believe the
brewer forgot the malt, or the river was too
near him. Faith! it is more whip-belly-
vengeance; he that drinks most has the
worst share.*

Reportedly as unappetizing as it sounds, this drink was a short-lived fad. Yet another

of the warm beer drinks, a "brown Betty," also used bread. It was made from ale, to which the barkeep added brandy, spices, and a piece of toast, then served it hot.

"Egg hot" was another generic name for all types of spiced beers mixed with eggs. Popular from the mid-1600s to the late-1700s, an egg hot was made from one pint of "good ale," to which three eggs, two ounces of sugar, nutmeg, and ginger were added. Another of the same type of drink was called "egg posset" and was made as follows:

Beat up well the yolks of eight eggs with refined sugar pulverized and a nutmeg grated; then extract the juice from the rind of a lemon by rubbing loaf sugar upon it, and put the sugar with a piece of cinnamon and a quart of strong home-brewed beer into a saucepan, place it on the fire, and when it boils take it off, then add a single glass of gin, or this may be left out, put the liquor into a spouted jug, and pour it gradually among the yolks of eggs, &c. All must be kept well stirred with a spoon while the liquor is being poured in. If it be not sweet enough add loaf sugar. In the university this beverage is frequently given to servants at Christmas and other high festivals.

Other favored drinks of the period included "calibogus" or "bogus," which consisted of rum and unsweetened beer, a colonial version of a shot and a beer, or boiler maker.

Yet another mixed beer drink was "mumm." Not related to the champagne, mumm was a flat (uncarbonated) ale made from fermented oat and wheat malt.

If all this didn't tickle a colonist's fancy, there were other beer-based drinks. One was "ebulum" (also known as ebulam), an ale-based drink prepared from juniper, ginger, elderberries, and assorted spices. It was produced as follows:

In a hogshead of the first and strongest wort was boiled one bushel of ripe elderberries. The wort was then strained and, when cold, worked [fermented] in a hogshead (not an open tun or tub.) Having lain in cask for about a year it was bottled. Some persons added an infusion of hops by way of preservative and some likewise hung a small bag of bruised spices in the vessel.

Another version, made from pale malt and white elderberries, was known as "white ebulum."

Also from the colonial dairy case came milk ale. Not a beer made from milk, it was another of the mixed drinks based on beer. It was made from one quart of ale combined with a pinch each of grated dried ginger and nutmeg. While it heated slowly, one large spoon of sugar was added. In a separate pan a quart of milk was heated to just below boiling and then blended with the ale mixture. It was served immediately after mixing.

Buttered ale reached the height of its popularity in the 1500s. Made in the days before hops were added to beer, it was reputed to have been a strong, unhopped beer to which they added sugar, spice, butter, and an egg yolk. No doubt it was a close relative of flip.

On occasion the names for some of the beer drinks were extremely misleading. Aleberry, dating from the 1600s, was a term used to describe a hopped ale, as opposed to the early "beer" that was unhopped. No berries were added to the beer. Beer was the base of all the previously listed concoctions.

Another of the many cups was a "grace cup." This was ceremonially featured at corporation dinners. Sounding remarkably like the standard beer cup, the greatest difference between it and others appears to have been the use and name. It was prepared as follows:

Extract the juice from the peeling of a lemon and cut the remainder into thin slices; put it into a jug or bowl, and pour on it three half pints of strong home-brewed beer and a [cup] of mountain wine: grate a nutmeg into it; sweeten it to your taste; stir it till the sugar is dissolved, and then add three or four slices of bread toasted brown. Let it stand two hours, and then strain off into the Grace Cup.

A "parting cup" was another beer-based drink made for a specific purpose. In this case it was served on occasions of parting. It was also known as a "stirrup cup" because it was offered as a person sat on horseback, preparing to depart. People parodied "parting cups" as a sign of friendship; it was a way of saying that parting was almost too much to bear.

*With those that drink before they dine —
With him that apes the grunting swine,
Who fills his page with low abuse,
And strives to act the gabbling goose
Turned out by fate to feed on grass —
"Boy, give me quick, the parting glass."*

*The man, whose friendship is sincere,
Who knows no guilt, and feels no fear: —
It would require a heart of brass
With him to take the parting glass.*

*With him, who quaffs his pot of ale;
Who holds to all an even scale;
Who hates a knave, in each disguise,
And fears him not—whate'er his size —
With him, well pleased my days to pass,
May heaven forbid the Parting Glass.*

—Philip Freneau (1752–1832)

To make a parting glass nowadays, begin by darkly browning or toasting two pieces of bread. Add them to a quart of mild ale mixed with two-thirds of a bottle of sherry. Grate in nutmeg, then sweeten the ale mixture with simple syrup (sugar and water mixed together). Immediately before serving, pour in one bottle of soda water.

Though used in any matter of celebration or recognition, beer cups were most commonly presented as a form of folk or home cure. Throughout the ages beer has supplied the basis for medicinal cures. Translations of the remedies listed in the ancient Egyptian book of the dead identify over 100 recipes based on beer. Ben Johnson, in his *Alchemist*, written in the 1500s, noted the use of ale in medicine of the period: "Yes, faith, she dwells in Sea-coal lane, did cure me With sodden ale."

One cup, called Dr. Brown's ale, was made from an infusion of ale with various spices and "medicines." Invented by the court physician to King James, it incorporated everything he thought necessary to rid a patient of coughs and other ailments:

Take Senna and Polypedium, each four ounces, Sarseperilla two ounces, Agrimony and Maidenhair of each a small handful, scurvy grass a quarter of a peck, bruise them grossly in a stone mortar, put them into a thin canvass bag, and hang the bag in nine or ten gallons of ale; when it is well worked and when it is

three or four days old, it is ripe enough to be drawn off and bottled, or as you see fit.

Cups were often served as a summer drink, and were frequently spiced with mint, citrus, or other fruit. No set recipe existed, people concocted their own favorite blends. The Duchess of St. Albans was reported to have one she called "The Ale of Health and Strength," made from small beer in which she steeped herbs from her garden. Period writings offered advice as to its consumption:

*Three cups of this a prudent man may take;
The first of these for constitutions sake,
The second to the girl he loves the best,
The third and last to lull him to rest.*

Colonials observed Christmas, but with nothing like the festivities that began in the second half of the 1800s. To them the holiday was usually a quiet time at home. Still, they devised special seasonal drinks for the winter. "Jingle" was one of the traditional mixtures. Its recipe calls for ale, sweetened with sugar and flavored with nutmeg and apples. Reportedly it had a taste like that of another drink, named "lambswool." Popular in the 1700s, it was served at the beginning of November to celebrate the harvest of fruits and seeds. It was traditionally served through the remainder of the winter season as a form of strong drink:

*Doubt not, then said the King, my promist
secresye:*

*The King shall never know more on't for mee.
A cupp of lambswool they dranke unto him
then,
And to their bedds they past presentlie.*

Tavern owners and others prepared lambswool by warming a strong (old) ale while mixing in grated nutmeg, ginger, and sugar. Apples were then roasted until the skins burst and were added to the warm beer mixture before serving.

Finally, there was "purl." Fortified with gin and bitters, purl was often prepared in advance, and allowed to cellar and mature for up to a year. Some versions used spices, and variations added Roman wormwood, gentian root, calamus aromaticus, horse radish, dried orange peel, juniper berries,

Shortages of beer and the lack of hard currency encouraged continued homebrewing for most rural New Englanders, and it became a tradition that lasted well over three centuries.

and seeds soaked in the beer. When ready to serve it was heated, then cooled to a temperature at which a person could consume it in a single draught.

Colonial mixed drinks were created for a number of reasons. First, they served as a substitute for the fashionable but expensive wines of the day. They were also, as noted, valued as homemade medicines. Additionally, they may have been considered a way to "save" the often poorly made homebrewed beers of the era. Possessing only rudimentary equipment, and often forced to improvise ingredients and procedures, the beers were nothing like those consumed after the introduction of technology.

There is also circumstantial evidence supporting the theory that beer-based mixed drinks were designed as a way to save terrible beer. As brewing's raw materials, equipment, instruments, procedures, and science advanced in the 1800s, beer mixed drinks faded from popularity and all but disappeared. They did not outlast the period when the quantity of beer was greatest and its quality poorest.

A few of the beer mixed drinks have enjoyed a revival. Winter warmers and Christmas beers are a direct link back through time to the days of colonial drinking, and spicing, of beer.

Homebrewing: America's Beer Heritage

New settlements built brew houses soon after settling, and in a noncommercial effort of cooperation they made beer for the entire community. Later, as they were able to build proper houses, they continued brewing in their own kitchens. Making beer was as much a part of their households as cleaning and cooking.

Shortages of beer and the lack of hard currency encouraged continued homebrewing for most rural New Englanders, and it became a tradition that lasted well over

three centuries. However, the beer was somewhat different from today's. Households were often confounded by economic conditions that prevented buying raw materials (much as they blocked the purchase of commercially produced beer). By no means did resourceful Yankees abstain, they simply made adjustments and compromises. Robert Beverly, the early colonial historian, observed:

*Their small drink is either wine or water, beer.
... Their richer sort generally brew their small
beer with malt, which they have from Eng-
land, though barley grows there very well; but
for the convenience of malt-houses, the inhab-
itants take no care to sow it. The poorer sort
brew their beer with molasses and bran; with
Indian corn malted with drying in a stove:
with persimmons dried in a cake and baked;
with potatoes with the green stalks of Indian
corn cut small and bruised, with pompions,
with the Jerusalem artichoke which some peo-
ple plant purposely for that use, but this is the
least esteemed.*

Using corn to augment or replace malt in brewing was practiced as early as 1584. Englishman Thomas Hariot wrote of it in his "Narrative of the First English Plantation of Virginia," published in 1588. His description thoroughly detailed the manner in which corn was used to brew beer, and described its character.

Substitution for traditional ingredients was practiced by commercial and homebrewers alike. During the formative years in the New World malt was scarce, and the strange, native plant that became known as corn ably filled the void in brewing. Almost two centuries after Hariot's description of homebrew, on February 14, 1775, journalist London Carter wrote of corn's use in the *Virginia Gazette*:

*The stalks, green as they were, as soon as
pulled up, were carried to a convenient trough,
then chopped and (continued on page 60)*

Spring is a great season for brewing, especially in Germany. So as a tribute to that great brewing nation, four of these Winners Circle recipes from the 1998 National Homebrew Competition are German beer styles. A couple of these recipes can be brewed now for summer drinking, like Dean Fikar's Dusseldorf-style altbier or Scott Boeke's German-style weissbier.

With the other lagers, however, and Harrison Gibbs' Scottish-style heavy ale, you may want to brew them now and put them away for the hot months of summer, or to enjoy for autumn festivities. Only six months left 'til Oktoberfest!



Every gold-medal winning recipe from the AHA 1998 National Homebrew Competition was printed in the 1998 Nov/Dec Zymurgy (Vol. 21, No. 4) "Winners Circle."



Scottish Ale



AHA 1998 NATIONAL HOMEBREW COMPETITION BRONZE MEDAL

Harrison Gibbs, Los Angeles, CA

"Highlander Heavy"

Scottish-Style Heavy Ale

Ingredients for 5 U.S. gal (19 L)

- 8 lb pale malt (3.63 kg)
- 1.5 lb honey malt (.68 kg)
- 1.5 lb French amber malt (.68 kg)
- .5 lb Belgian aromatic malt (.23 kg)
- .5 lb Belgian biscuit malt (.23 kg)
- .5 lb CaraVienne malt (.23 kg)
- 4 oz British 37 °L crystal malt (.11 kg)
- 4 oz British 140 °L crystal malt (.11 kg)
- 1.5 oz peat-smoked malt (43 g)
- 1.1 oz U.K. Northdown pellet hops (6% alpha acid) (90 min.)
- .3 oz Kent Golding pellet hops (6.7% alpha acid) (30 min.)
- White Labs Edinburgh ale yeast
- .75 cup corn sugar (to prime)

- Original specific gravity: 1.056
- Final specific gravity: 1.018
- Boiling time: 90 min.
- Primary fermentation: 7 days at 68 degrees F (20 degrees C) in glass
- Secondary fermentation: 30 days at 65 degrees F (19 degrees C) in glass

Brewer's Specifics

Mash grains at 150 degrees F (66 degrees C) for two hours.

Judges' Comments

"Very nice malty, caramel flavors up front. This is a poundable beer. The recipe is obviously spot on."

German-Style



AHA 1998 NATIONAL HOMEBREW COMPETITION BRONZE MEDAL

Cory Buenning, Jackson, WY

"Red Beard Lager"

Märzen/Oktoberfest

Ingredients for 10 U.S. gal (37.8 L)

- 10 lb Belgian Pilsener malt (4.5 kg)
- 3 lb dark Munich malt (1.36 kg)
- 3 lb Munich malt (1.36 kg)
- 1 lb aromatic malt (.45 kg)
- 1 lb 75 °L crystal malt (.45 kg)
- 2 oz Tettnanger pellet hops, 4% alpha acid (56 g) (40 min.)
- 2 oz Tettnanger pellet hops, 4% alpha acid (56 g) (30 min.)
- 2 oz Tettnanger pellet hops, 4% alpha acid (56 g) (steep)
- Wyeast No. 2124 Bohemian lager yeast
- forced CO₂ to carbonate

- Original specific gravity: 1.064
- Final specific gravity: 1.016
- Boiling time: 120 min.
- Primary fermentation: 14 days at 48 degrees F (9 degrees C) in glass
- Secondary fermentation: 4 weeks at 36 degrees F (2 degrees C) in glass

Brewer's Specifics

Mash grain at 153 degrees F (67 degrees C) for one hour.

Judges' Comments

"A very nice beer—good balance."

"Clean maltiness, a hint of hop finish.

The finish may be a bit sweet (but don't sweat it!)"

German-Style Ale



AHA 1998 NATIONAL HOMEBREW COMPETITION
BRONZE MEDAL

Dean Fikar, Ft. Worth, TX

"Madeline's Altbier"

Düsseldorf-style altbier

Ingredients for 6.5 U.S. gal (24.6 L)

- 10 lb German Munich malt (4.5 kg)
- .5 lb German aromatic malt (.23 kg)
- .25 lb German wheat malt (.11 kg)
- 1 oz Tettnanger whole hops, 5.1% alpha acid (28 g) (first-wort hopped)
- 2 oz Perle whole hops, 7.6% alpha acid (57 g) (60 min.)
- Wyeast No. 1338 European ale yeast
- force carbonate in keg

- Original specific gravity: 1.050
- Final specific gravity: 1.014
- Boiling time: 90 min.
- Primary fermentation: 6 days at 60 degrees F (15 degrees C) in plastic
- Secondary fermentation: 8 days at 65 degrees F (18 degrees C) in stainless steel
- Tertiary fermentation: 3 months at 32 degrees F (0 degrees C) in stainless steel

Brewer's Specifics

Mash grains using a single double decoction mash schedule, with rests at 132 degrees F (56 degrees C) for 15 minutes, 148 degrees F (64 degrees C) for 60 minutes and 165 degrees F (74 degrees C) for 10 minutes.

Judges' Comments

"Very nice beer—great appearance. Malt is a little big in aroma and bitterness lingers."

"Slight fruitiness, malty, good hop bit-tering."

Brewer's Comments

Fikar suggests brewing altbiers cool—no more than 60 degrees F (15 degrees C)—and conditioning them very cold. He also thinks the thing that really made the difference with this particular recipe is the quality of the malt—he used all German grain for "Madeline's Altbier."

German-Style Wheat Beer



AHA 1998 NATIONAL HOMEBREW COMPETITION
BRONZE MEDAL

Scott Boeke, North Augusta, SC

"Weizen No. 3"

German-Style Weizen/Weissbier

Ingredients for 5 U.S. gal (19 L)

- 5 lb German Pilsener malt (2.27 kg)
- 5.5 lb German wheat malt (2.5 kg)
- .5 lb German CaraPils malt (.23 kg)
- .75 oz Perle whole hops, 6.7% alpha acid (21 g) (60 min.)
- Wyeast No. 3068 Weihenstephan wheat ale yeast
- 4.25 oz corn sugar (120 g) (to prime)

- Original specific gravity: 1.051
- Final specific gravity: 1.013
- Boiling time: 90 min.
- Primary fermentation: 7 days at 67 degrees F (21 degrees C) in glass
- Secondary fermentation: 9 days at 67 degrees F (21 degrees C) in glass

Brewer's Specifics

Mash grains using a single decoction mash schedule.

Judges' Comments

"Yummy beer, on the light side of the style. No defects, but more assertive flavors would improve complexity. I'll bet this beer will go quickly!"

"Well-made, clean taste, good balance. Needs a bit more fruitiness, but no big problem."

Brewer's Comments

Boeke says that the two most important things for brewing a successful weizen are to use a decoction mash, both to promote a good malt aroma and flavor and to give the beer its rich, golden color, and to ferment the beer right around 67 degrees F (20 degrees C). Too high a temperature will give you too much in the way of esters and phenolics.

German-Style Light Lager



AHA 1998 NATIONAL HOMEBREW COMPETITION
BRONZE MEDAL

Randy L. Norman, Madera, CA

Untitled

Munich-Style Helles

Ingredients for 10 U.S. gal (19 L)

- 20 lb German Pilsener malt (5.9 kg)
- 1.5 oz Hallertauer pellet hops, 5.5% alpha acid (43 g) (60 min.)
- 1 oz Saaz pellet hops, 3.4% alpha acid (28 g) (30 min.)
- .5 oz Hallertauer pellet hops, 5.5% alpha acid (28 g) (30 min.)
- 1.5 oz Tettnanger pellet hops, 4.7% alpha acid (43 g) (steep)
- Wyeast No. 2278 Czech Pils lager yeast
- forced CO₂ to carbonate

- Original specific gravity: 1.050
- Final specific gravity: unknown
- Boiling time: 60 min.
- Primary fermentation: 21 days at 49 degrees F (10 degrees C) in stainless steel
- Secondary fermentation: 14 days at 49 degrees F (10 degrees C) in stainless steel

Brewer's Specifics

Mash grains at 150 degrees F (66 degrees C) for 60 min.

Judges' Comments

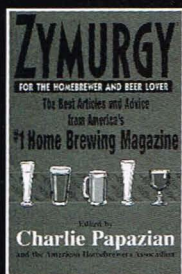
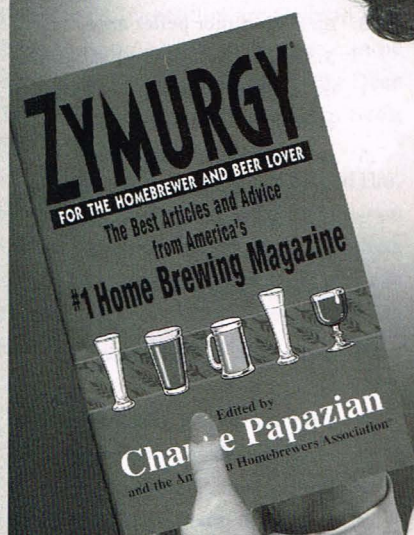
"Clean! Very good beer. Good job!"

"Malty, grainy flavor—high bitterness, hop flavor evident. Very nice helles. Well-made, good balance. Maybe just a bit big for style."

Brewer's Comments

Norman follows four guidelines in his brewing that he thinks are of the utmost importance: preparation, cleanliness, organization, and patience. This last one is particularly important with lagers, he says—they take a long time, and you really can't rush them. Recently, he has also Vienna/Märzen/Oktobertfest

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American-Style Lager



**AHA 1998 NATIONAL HOMEBREW COMPETITION
SILVER MEDAL**

Thomas Plunkard, Warren MI

"Big Daddy Lager"

American-Style

Premium Lager

Ingredients for 9.5 U.S. gal (37 L)

- 10 lb six-row malt (4.54 kg)
- 5 lb flaked maize (2.27 kg)
- 1 oz Perle whole hops, 6.7% alpha acid (28 g) (60 min.)
- St. Louis lager yeast
- forced CO₂ to carbonate

- Original specific gravity: 1.046
- Final specific gravity: 1.014
- Boiling time: 90 min.
- Primary fermentation: 14 days at 50 degrees F (10 degrees C) in glass
- Secondary fermentation: four months at 35 degrees F (2 degrees C) in glass

Brewer's Specifics

Mash grains at 148 degrees F (65 degrees C) for 75 minutes. Raise to 156 degrees F (69 degrees C) for 10 minutes, then to 165 degrees F (74 degrees C) for 10 minutes.

Judges' Comments

"Excellent drinking lager, my favorite—where can I get a case? Good job."

"Surprisingly complex and full for color. Well-balanced, yet not too sweet. Very clean, smooth, drinkable beer."

Brewer's Comments

"Brewing this kind of beer can be tricky. It's like naked brewing: every mistake will show. Keep the hops low, chlorine out and be extra careful on sanitation/sterilization. Thanks again to Jeff Renner, Yeast Culture Kit Co. and the Ann Arbor Brewers Guild."

Amahl Turczyn is a 1998 GABF Gold Medal-winning professional brewer and the former AHA Project Coordinator.

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Secret History (from page 25)

"Women in Scotland, 1100-1750" Ewan writes that of all the crimes for which brewers were punished, price changing was, by far, the most common. "Perhaps one of the reasons that brewing suited women was that it was difficult to supervise, making it easier to evade regulations," Ewan writes.

MEN SEIZE CONTROL

Brewing out of the home might have suited women, but by the early 16th century

Scottish society, like societies elsewhere in Europe, began its march toward industrialization. Ewan has uncovered records from the early 1500s recording the lease of land upon which were built the first of the large malting sheds. Because the money brewers had always used in ale transactions belonged legally to their husbands, it is men who used their assets to create these businesses.

As the population of towns like Edinburgh and Aberdeen grew and their economies became larger and more special-

ized, demand for ale outstripped the ability of brewsters to produce. There is absolutely no evidence to suggest that women stopped or even slowed brewing in their homes, Ewan says. However, by 1596, at the dawn of modern Scottish brewing history, commercial brewing had become an exclusively male province. In that year was formed the Edinburgh Society of Brewers, a guild of 19 partners, all of them men. Today, according to Charles McMaster, there are no women in commercial brewing in Scotland.

"We know that up until that time brewing was a domestic activity, done out of the home," McMaster says. "There hasn't been very much done on the period. Brewing has been a male occupation ever since."

THE LEGACY

Indeed, there are relatively few women in commercial brewing in the world. Teri Fahrendorf, one of the most successful, started out in Eugene, OR, as a homebrewer in the mid-1980s when there were few homebrewers, let alone women homebrewers. Fahrendorf now supervises nine brewers, all of them men, for five operations under the Steelhead Brewing Co. umbrella. She is encouraged by the growing number of women heading brewery operations around the country. Fahrendorf supposes the reason there aren't more women is that there are few role models. Fahrendorf has committed herself to being a good one.

"The Swedish bikini team is not a good role model for being a brewer," she says. "I can't tell you how many times I hear from women who tell me how important it is for me to be out there."

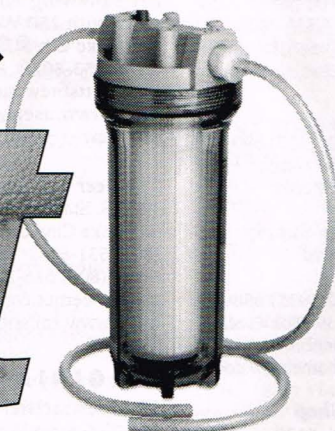
Fahrendorf, who became the first head brewer for Steelhead in 1991, was delighted to learn of the work of Ewan and Mayhew on a subject that has been all but ignored. History has provided new, old role models, she says.

In her first year with Steelhead, using the first commercial recipe she developed for them, Fahrendorf copped a gold medal at the Great American Beer Festival in Denver, CO. Of course it is only a coincidence, but her winner was a Scottish ale.

Newspaper reporter Mark Lisher won a gold medal from the Beer Writers Guild for one of his previous *Zymurgy* stories.

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Cider (from page 35)
epidemic. This burrowing louse, carried to Europe (and to much of the rest of the wine world) from the U. S., wreaked havoc upon the fine wine industry. Inferior grapevines native to the U.S. were somewhat immune to the ravages of this bug, but the *vitis vinifera* varieties, which account for the world's greatest wines, quickly succumbed.

Grafting to resistant rootstocks eventually saved the industry, but for decades the disaster left a legacy of another type of graft—the willful misleading of consumers. Prolific, low-quality grapes were frequently planted in areas where great wines had previously been produced. Many labels bore little or no connection to their bottle's contents. In 1905, the French government passed laws prohibiting this fraud, but it wasn't until 1935 that the current set of laws came largely into being. Today the Appellation d'Origine Contrôlée (AOC) designation ensures that beverages, which carry a place name, not only come from a clearly delineated region, but also are made from specific types of fruit. This fruit must be grown according to explicit methods and the beverage must be made according to strict specifications. Similar laws apply to AOC foods.

Though it has its faults, the AOC system has served to raise the overall quality

of beverages and foods and the AOC designation is coveted by areas that have not yet earned it.

In March 1996, at the Agricultural Show in Paris (Salon de l'Agriculture) the part of Normandy known as the Pays d'Auge earned an AOC title. This is the first region of Normandy to have its own appellation for cider. Though superb producers work outside this area, the Pays d'Auge is undoubtedly the source of many of Normandy's finest ciders.

As with his apples, Boisgontier uses only the native yeast to ferment his pear juice. Again, a pronounced bitterness com-

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plements and balances the sweetness of each of his drinks.

Traveling on to the Manoir la Brière des Fontaines of Pierre Huet, I find a small team of employees working hard to prepare some of the finest beverages made in the Pays d'Auge. Monsieur Huet has grafted some of his apple trees to a variety of rootstocks. Some of these rootstocks produce tall trees, while others yield small

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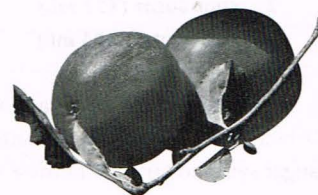
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CIDER RECIPES

*Just in case you don't want to try cider the traditional French way, we thought we'd ask last year's Cidermaker of the Year, **Gloria Franconi** (franconi@ulster.net) for some of her favorite cider recipes.*

Spy Cider

- 5 gallons fresh apple juice from Northern Spy apples (19 L)
- 2.5 teaspoons yeast nutrient (12.3 mL)
- 5 Campden tablets
- Red Star Premier Cuvee Wine Yeast
- Original specific gravity: 1.062
- Final specific gravity: .990

Add yeast nutrient, additional sugars, honey or fruit to cider. Crush Campden tablets and stir in. Allow to set for 24 hours, then make yeast starter with 1 cup warm water, .5 teaspoon yeast nutrient, .25 teaspoon citric acid, 2 tablespoons sugar and 1 package of yeast. Let starter sit while stirring the cider vigorously until all of the Campden is stirred out of solution. Add yeast starter to batch, allow to ferment in primary 7-10 days. Rack into glass carboy and allow to sit until done.

Rack off sediment if a lot builds up, remembering to top off the carboy with either water or reserved cider. When done, the cider will normally clear by itself. If it clouds up, again and starts working, it is going through malo-lactic fermentation that will help the acidity and give you a smoother finish. If you drink it before malo-lactic fermentation, don't panic...it's still good...it just would have been better if you had a little more patience before drinking it. Try making more next time so that you can enjoy it at it's best.

Sour Cherry Cider

- 5 gallons of spy cider (19 L)
- 5 pounds sour cherries (amount varies according to how cherry flavored you want it) (2.27 kg)
- 6 cups sugar (1419 mL)
- Original specific gravity: 1.068 (note gravity from cherries cannot be calculated)
- Final specific gravity: .995

Add cherries to cider with yeast nutrient and crushed Campden tablets. Proceed with basic recipe for spy cider with the exception that the cherries need to be stirred down (the cherries will be floating on top) twice a day for 3-4 days and then gently removed from the surface of the cider. Continue fermentation until done according to Spy Cider recipe.

- 2 cups sugar (473 mL)
- 2 cups water (473 mL)

Boil together the sugar and water to make a simple syrup. When Spy Cider is done, rack into a soda keg. Add enough of the sugar syrup to take the tartness off the cider, but not too much

to make the cider overly sweet. Force carbonate until correct amount of carbonation is achieved. Remember, the sugar syrup will eventually ferment out, making the cider dry again, and the process may have to be repeated if necessary.

Mulled Cider

- 5 gallons of Spy Cider done fermenting (19 L)
- 2 cups sugar (473 mL)
- 2 cups water (473 mL)
- Mulling Spices
- 1 cup water (237 mL)

Boil the sugar and water together to make a simple syrup. When Spy Cider is done, rack into a soda keg. Add enough of the sugar syrup to take the tartness off the cider, but not too much to make the cider overly sweet. Boil together the mulling spices and water to make a tea, then strain out the spices. Add enough to give the right amount of spice to the cider. Remember, you still want to taste apples, not just the spices. Everyone has a different taste in mind for their cider, so this is where you can make your cider as spicy and sweet as you want it. Remember, the sugar syrup will eventually ferment out, making the cider dry again, and the process may have to be repeated if necessary to sweeten it to your taste.

Cyser

- 5 gallons fresh squeezed cider (19 L)
- 10 pounds of clover honey (4.54 kg)
- 2.5 teaspoon yeast nutrient (12.3 mL)
- 5 Campden tablets
- Red Star Premier Cuvee Wine Yeast
- Original specific gravity: 1.108
- Final specific gravity: .998

Add yeast nutrient and honey to cider. Crush Campden tablets and stir in. Allow to set 24 hours and then make yeast starter with 1 cup warm water, .5 teaspoon yeast nutrient, .25 teaspoon citric acid, 2 tablespoons sugar and 1 package of yeast. Let starter sit while stirring the cider vigorously until all of the Campden is stirred out of solution. Add yeast starter to batch, allow to ferment in primary 7-10 days. Rack into glass carboy and allow to sit until done. Rack off sediment if a lot builds up remembering to top off the carboy with either water or reserved cider. When done, the cyser will normally clear by itself.

Other suggestions for flavors to add to cider are brown sugar, molasses, cinnamon sticks, fresh fruits such as blueberries, raspberries, grapes or cranberries. Cider is meant to be enjoyed as an apple-based beverage, so please don't be tempted to overpower the apple flavor and aroma with too much additional items. Experiment within reason and enjoy your finished cider; just be careful because cider has a way of sneaking up on you when drinking it. A little is a lot more potent than you expect.



The apples of Eden: Dozens of varieties represent the wealth produced by the orchards of Normandy.

trees. A few farmers maintain that tall trees give the finest fruit, but Huet states emphatically that, provided one carefully selects the fruit from small trees, no difference can be tasted.

As with many of Normandy's finest ciders, the superb beverages of Huet are unavailable in the U.S. because they are not pasteurized, a process that he believes strips them of character. To taste these compelling drinks, one must travel to France.

Inside his barn freshly crushed apples flow into a bin of apples crushed two hours earlier. The new fruit appears very pale next to the deep amber-brown of the pomace that has had time to oxidize. Huet says that at least two hours of aeration are needed in October before pressing. Later in the season, as temperatures drop, a minimum of three hours is necessary. His apples' sugars start at 120 to 150 grams per liter, which gives 5-8% alcohol. As is the case at the Domaine de la Fayette, this farm grows no bittersweet varieties.

As we walk together under a low, steel-gray sky that starts to ooze a steady drizzle, Huet gives me tips for making cider at home. The fruit should be crushed when

cold and the pomace placed in wood and kept cool as it oxidizes. He recommends a fermentation temperature of about 46 degrees F (8 degrees C) for 5-6 months. This slow fermentation preserves the fresh fruit flavors. Yeast selection and ambient temperatures determine the fermentation temperature. Keep the fermenting juice in full containers, he says, to minimize exposure to air. After bottling, the cider should be stored at 10-12 degrees C (about 50 to 54 degrees F). Natural yeast and a cool room help produce the finest results.

I ask Huet about the number of demisec ciders that I have seen and tasted, many of which are superb. (The term demisec literally translates to "half dry," but the beverages are in fact slightly sweet.) In Champagne, though demisecs can be quite good, the best sparkling wines are bruts (dry). Huet explains that with sparkling wine, the sweetness of demisecs comes from refined sugar that was added to the bottle. With Cidre de Pays d'Auge no refined sugar can be added. All of the residual sugar comes from the fruit and if the fruit was of high quality, these sugars will have elegant flavors.

Before leaving Normandy, I stop into a tiny operation in the southerly Domfront region, an area renowned for its pears. Monsieur Boigontier greets me at his farm, Sept Forges. He says that 25 vari-

eties of pears are allowed in Domfront. He uses six for his Poiré.

Boigontier harvests his pears at about 120 grams of sugar per liter of juice. This gives his ciders about 6% alcohol. As with the other fine operations, he adds no yeast. He also makes a Pommeau-like blend of pure pear juice and pear brandy. This Poirissimo, made entirely from the sweet Deux Cloches variety, is more delicate than Pommeau, partly because of lower tannin levels.

In most of Normandy, Calvados is made by a single distillation, but Calvados de Pays d'Auge which, like the Cidre de Pays d'Auge, has its own AOC designation, requires two distillations. This generally results in a longer lived, finer and more complex brandy. Though he is well outside of the Pays d'Auge, Boigontier uses a double distillation to make a Calvados from a 50/50 blend of apple and pear juices. This refined drink may disappear, unfortunately, if the Domfront gains the AOC status for which it has applied. Regulations may require that, to bear the AOC designation, the region's Calvados must be made with a single distillation. The laws may also restrict the amount of pear that goes into the mix. Boigontier assures me, however, that he will continue to make the finest beverages that he can.

Thomas J. Walsh is a travel writer and beer fan who lives in Boulder, CO.



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Just as with homebrewing, the key to quality yeast is rigorous attention to sanitation procedures—our kitchens should be this clean!

Dried Yeast (from page 39)

inoculum of pure culture is transferred to a flask containing six liters of a sterile culture medium. For this and subsequent stages, the base medium is a sterilized cane and beet molasses treated and called "wort." In addition to the wort, the yeast is supplied with essential nutrients and microelements needed for optimum cell growth. Yeast is unique in that it can utilize ammonia as a sole source of nitrogen for protein production, with the aid of phosphoric acid.

The laboratory stage and the first stage in the plant are carried out aseptically with minimum aeration. It is essential in the early stages to build up a cell mass free of infection. Careful attention to sanitation is required to achieve this goal. The wort is sterilized at 290 degrees F (143 degrees C) for 20 seconds. All equipment—tanks, lines, pumps, heat exchangers, separators, presses, extruders, and drier—are chemically cleaned, chemically sanitized and steam sterilized before each use.

The essential element of economic yeast production is the production of cell mass without the production of alcohol. The first prerequisite is aeration of the wort; the second is the gradual addition of wort. It is vital to feed only as much wort as is required by the yeast cell. An excess of more than 0.05% at any time triggers the yeast to produce alcohol.

The growth that occurs from the initial flask to the third and sometimes fourth stage in the plant is known as the seed production stage. Each stage, once finished, is transferred to the next larger stage. With this technique, less than one gram of yeast will grow to many tons of seed yeast in less than 72 hours of fermentation time. At the end of the third or fourth stage, the wort is centrifuged and the yeast is concentrated and washed several times to separate the yeast from the spent wort. This step allows efficient storage and handling of the yeast in preparation for inoculating the last, or commercial, stage. The separated yeast, suspended in water, is held in refrigerated storage tanks at 39 degrees F (4 degrees C). Infection-free cell mass is the primary goal of the seed stages.

The Last Stage

It is during the final, commercial stage that careful attention is given to controlled growth rates and nutrients fed in order to produce a yeast with optimum protein, phosphate, glycogen, trehalose, lipid, vitamin and enzyme levels necessary to assist the yeast through the drying stage and provide the brew master with a yeast of optimum activity. At the end of this stage, the yeast is separated and washed several times and stored in refrigerated tanks (receivers) prior to drying.

The liquid yeast is dewatered to about 30% solids with a rotary vacuum filter. The cake or compressed yeast is extruded in spaghetti-like filaments onto a special fluid-bed airlift drier, where a controlled drying sequence yields a finished dry yeast with four to seven percent moisture. The yeast is cooled and stored immediately in an inert atmosphere until packaged in five-gram, 500-gram, one-kilogram, 10-kilogram and 20-kilogram nitrogen-filled or vacuum packages.

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caused by the variation in cell size of different strains of yeast. Approximately 85-90% of the cells retain their viability during the drying stage. Each live cell retains 100% of its activity when rehydrated in water at 105 degrees F (41 degrees C).

Utmost vigilance is given to each stage of fermentation. The laboratory is involved with microbiological, chemical, biochemical and fermentation analyses to ensure the production of uniform yeast with respect to composition, fermentation activity, viability, stability and purity of strain. The dried beer yeast is evaluated using all standard microbiological tests employed routinely in industrial breweries. There is strict adherence to specific tests for potential spoilage bacteria and yeast as recommended in the methodologies of the European Brewing Convention and American Society of Brewing Chemists. Molecular biological techniques have been developed to detect and identify even very low levels of spoilage organisms. The beer yeast is produced under aerobic conditions, thus the potential for contamination by beer spoilage organisms is reduced because these organisms generally require anaerobic conditions. In addition, the hops and the alcohol content of the beer will suppress the growth of many potential contaminants.

A yeast manufacturer knows that quality control does not end at the shipping dock. Utmost care must be given to keep the yeast cool from the time it leaves the plant until it is inoculated in the customer's wort. Yeast in dry form is relatively inactive, but not inert. It will be adversely affected if distributors and the customer handle it poorly. A little precaution regarding refrigeration of the finished product is warranted.

The increasing interest in homebrewing, microbrewing, and of consumers in the quality and the variety of beer styles has caused many yeast manufacturers to provide this market with better and wider choice of yeast strains. Greater stress is being placed on providing information regarding proper storage and rehydration practices. The yeast package should always be stored in a cool or cold place. The inventory should be rotated in such a way that the oldest yeast is used first.

One of the attractive features of using yeast in dry form is the ease in preparing the inoculum to add to the wort. Sprinkle the dry yeast slowly into 100-105-degrees-F (38-41-degrees-C) water while stirring slowly. Allow to stand 15-30 minutes. Adjust the temperature of the rehydrated yeast close to the temperature of the wort. Avoid subjecting the yeast to abrupt cold temperatures. Add the yeast to a wort containing lots of nutrients for the yeast and saturated with oxygen. Now sit back and wait for good things to happen!

George Clayton Cone is Technical Director for the American Yeast Co. Dr. Thomas Tompkins is in research and development for Lallemand, Inc., a member of the American Society of Brewing Chemists and a participant on a number of technical subcommittees to evaluate new methodologies for the detection of brewing yeast contamination. Dr. Tobias Fischborn, also with R&D at Lallemand, studied at the Technical University of Munich, Weihenstephan, in the Department of Brewing and Beverage Technology. He also maintains the culture collection at the Hefebank Weihenstephan.

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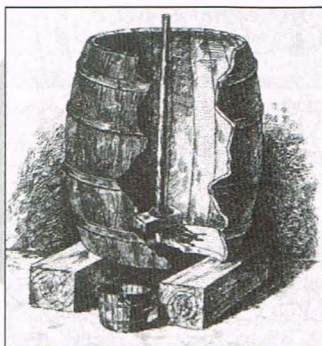


Beer in America (from page 47)

pounded so much, that, by boiling, all the juice could be extracted out of them; which juice every planter almost knows is of as saccharine a quality almost as any thing can be, and that any thing of a luxuriant corn stalk is very full of it . . . After . . . the stalks and all were put into a large copper, there lowered down in its sweetness with water, to an equality with common observations in malt wort, and then boiled, till the liquor in a glass is seen to break, as the brewers term it; after that it is strained, and boiled again with hops. The beer I drank had been made above twenty days, and bottled off about four days.

Articles like those by Carter were common, and often were supplemented by pamphlets. One of the same period described itself as "Every Man His Own Brewer, a practical treatise, explaining the art and mystery of brewing porter, ale, two-penny and table beer, intended to reduce the expense of families, by Samuel Child, brewer." Child outlined the process and provided recipes of his own formulation. Patterned after the popular beer styles of the day, his booklet focused on ales and featured instructions on making porter: "One quarter of malt, 8 lbs. hops, 9 lbs. treacle, 8 lbs. licorice root, 8 lbs. essentia bina, 8 lbs. color; capsicum, 1/2 oz.; Spanish Liquorice, 2 oz.; cocculus indicus, 1/4 oz.; ginger, 3 oz.; lime 4 oz., slacked; linseed, 1 oz.; cinnamon, 2 drachms."

Settlers in Connecticut began making beer shortly after their arrival, with homebrewing documented from the mid-1630s on. Without doubt it was common practice after 1634, when a party dispatched from the colony of Massachusetts settled in the area that became New Haven.



A primitive mash tun.

In Providence, Rhode Island, in the early 1700s, Major Thomas Fenner was well known for his homebrew. It is a classic example of substitution: "One ounce of SENTRY Suckery or Sulindine one handful Red Sage or Large 1/4 Pound Shells of Iron Bruised fine take 10 quarts of Water Steep it away to Seven and a quart of Molasses Wheat Brand Baked Hard. One quart of Malt one handful Sweet Balm Take it as Soone as it is worked."

A British writer in the 1730s described homebrew in the colony of Maryland. He explained that the people there grew very little malt, and so improvised: "The beer they brew is excellent, which they make in great Quantities, of Prsimmons, &c., of Molasses; for few of them are Come to malting their corn, of any kind, at which I was much surprized; [sic] as even the Indian Grain, as I have found experimentally, will produce an wholesome and generous Liquor."

Georgian settlers from Salzburg wrote letters back to Germany about the brewing conditions in that colony as it existed in 1751. Their pastor, Johann Martin Bolzius, described the practice of homebrewing: "A brewer is not needed for as yet too little barley is grown; and the inhabitants who have the ability cook a healthy beer for themselves out of syrup, Indian corn and hops, or the tops of the white water firs, which is very cheap. Strong barley comes from New York, at times also from England."

During the War for Independence homebrewing caught on again, and the attitudes formed during the war years prevailed for decades. Almost everyone seemed to have a way to make up the shortage of ingredients. Ben Franklin had his recipe for spruce beer, acquired while serving on the peace treaty commission in Paris. On his return, Franklin shared it with his fellow Americans:

For a Cask containing 80 bottles, take one Pot of Essence [of spruce] and 13 pounds of Molasses.—or the same amount of unrefined Loaf Sugar; mix them well together in 20 pints of hot Water: Stir together until they make a Foam, then pour it into the Cask you will then fill with Water: add a Pint of good Yeast, stir it well together and let it stand 2 or 3 Days to ferment, after which close the Cask,



Jeffery Amherst.

and after a few days it will be ready to be put into Bottles, that must be tightly corked. Leave them 10 or 12 Days in a cool Cellar, after which the Beer will be good to drink.

With no supply of hops, North Americans throughout the colonial period enjoyed and perfected spruce beers. It seemed everyone had their own special recipe. General Jeffrey Amherst, governor-general of British North America, produced a recipe in 1760:

Take 7 Pounds of good Spruce & boil it well till the bark peels off, then take the Spruce out & put three Gallons of Molasses to the Liquor & boil it again, scum it well as it boils, then take it out the kettle & put it into a cooler, boil the remained of the water sufficient for a Barrel of thirty Gallons, if the kettle is not large enough to boil it together, when milkwarm in the Cooler put a Pint of Yest [sic] into it and mix well. Then put in the Barrel and let it work for two or three days, keep filling it up as it works out. When done working, bung it up with a Tent Peg in the Barrel to give it vent every now and then. It may be used in two or three days after. If wanted to be bottled it should stand a fortnight in the Cask. It will keep a great while.

As colonials replaced hops with spruce, so too they found an alternative for malt. Members of the American Philosophical Society published a formula for pumpkin ale

in 1771: "The expressed Juice of the [pumpkin] is to be boiled in Copper . . . that there may be no Remains of the fibrous Part of the Pulp. After that Intention is answered let the Liquor be hopped cooled fermented & c. as Malt Beer."

Used only in desperation, pumpkin ale never attained great popularity. As opposed to modern pumpkin beer, in which the pumpkin only adds flavor, for colonials the pumpkin was a source of fermentable sugar. Pumpkin ale of the colonial era, as a result, was said to have a noticeable "tang" unless aged for a few years.

George Washington recorded another formula for a beer made with a sizable substitution of molasses while on duty with the British in the French and Indian War. His homebrewed small beer was easily reproduced, all the brewer needed to do was to

take a large Siffer full of Bran Hops to your taste—Boil these 3 hours hen strain out 30 Gallns into a cooler put in 3 Gallns molasses while the beer is scalding hot or rather draw the molasses into the cooler & strain the beer on it while boiling hot. Let this stand till it is little more than Blood warm then put in a quart of yeast if the weather is very cold cover it over with a blanket & let it work in the Cooler 24 hours then put it into the Cask—leave it the Bung open till it is almost don[e] Working—Bottle it that day [the next] Week [after] it was Brewed.

Washington was more than the first president, he was a beer lover of the first order. His interest in homebrew illustrates the degree to which homebrewing was instilled in every walk of life.

Joseph Clarke, general treasurer of the Rhode Island colony, described his own method of brewing in 1775:

You are first to have ready the following Implements, a mash Vat, to put your malt in; a Vessel under this to receive the Wort in; a Copper to boil it in; a Rudder to stir your malt with, and Vessels to cool your Liquor in.

First then fill your Copper with water, take then 6 Bushels of Malt and put into your mash Vat, leaving about a Peck to sprinkle over the Liquor when in, Let your water simmer, and be in the next degree of boiling but

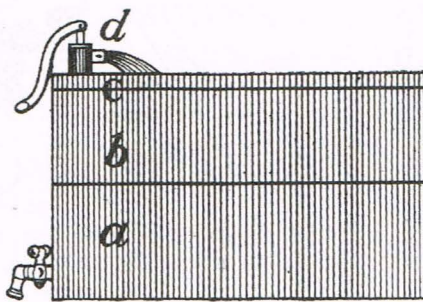
not boil; lay it on upon the Malt well ground, and when you have laid on such a quantity as you can draw off a Barrel sprinkle the remaining Peck of Malt over all covering it up with Cloths and draw off a pail full or two; and lay it on again to clear your tap hole.

This done the next Business is to boil a Copper of Water, to scald your other Vessels with; always taking care to have a Copper of Liquor hot to lay on, upon the malt when you draw off the first Wort, and this will be for small Beer.

The three hours now expired; let go (as the Term is) which is let the first wort run off, putting into Vessel which receives it a pound of Hops; when all drawn off lay on the hot Liquor for your small Beer, clean out your Copper and put the wort, Hops and all into the Copper and boil it for two hours; strain it then off thro: a Sieve into your Vessels to cool it; and put your small Beer into Copper and the same hops that come out of the first Beer and boil it an hour.

When both are almost cool add Yeast to them; to set it to work, breaking the head in every time it rises; till it works itself clear and tun it; Bung it up with Clay and keep it in your Cellar, in three months you may bottle the Strong Beer, the other in a weeks time will be fit to drink.

Along with providing advice on brewing recipes and techniques, publications described the materials and equipment that improved the quality of homebrew. At the start of the 1800s, I. E. Boardley published his "Essays and Notes on Husbandry and Rural Affairs." In the section on homebrewing Boardley explained the construction and operation of the "Tripartite" brewery. One



The Boardley family's brewing vessel.

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vessel, separated by false bottoms into three separate sections, made up an advanced homebrewing mash tun.

Tripartite systems were built 40 inches long and 20 inches wide. Two inches from the top sat the first false bottom, a crude version of a colander. Set nine inches below the first false bottom was a second, the equivalent of a screen at the bottom of a modern commercial mash tun, leaving a void of 13 inches at the bottom of the tun.

Homebrewers placed a layer of malt in the center section of the tun and mashed in. Connected to the lowest void space was a pipe that allowed either pumping back to the top section, or draining to a vessel, and the liquid was then poured over the top. Homebrewers using the system repeated the process until the sweet liquor ran clear from the bottom. They then drained it to a brew kettle, added hops, and continued brewing in conventional fashion. Interest in these articles and improved homebrewing equipment continued for years.

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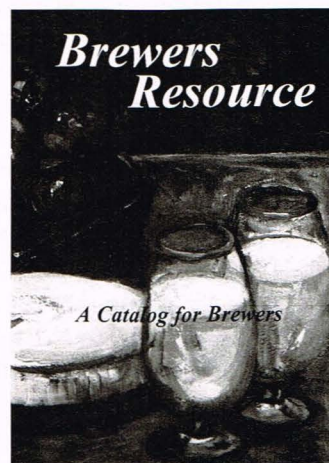
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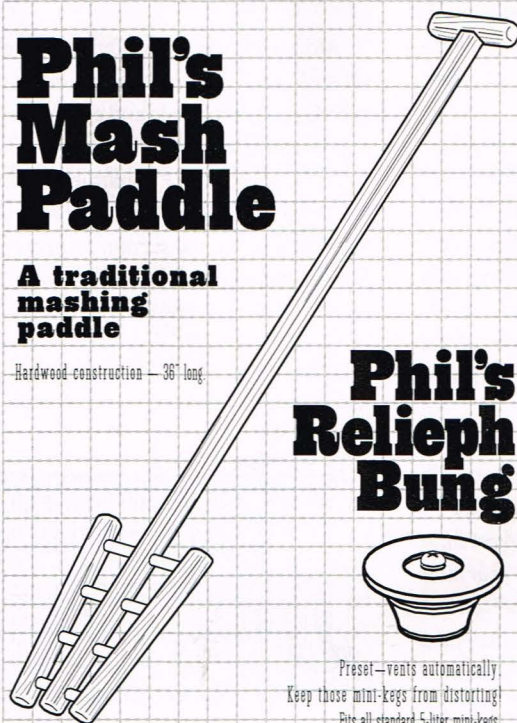


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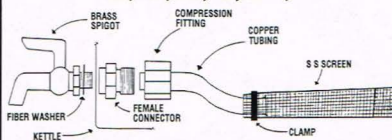
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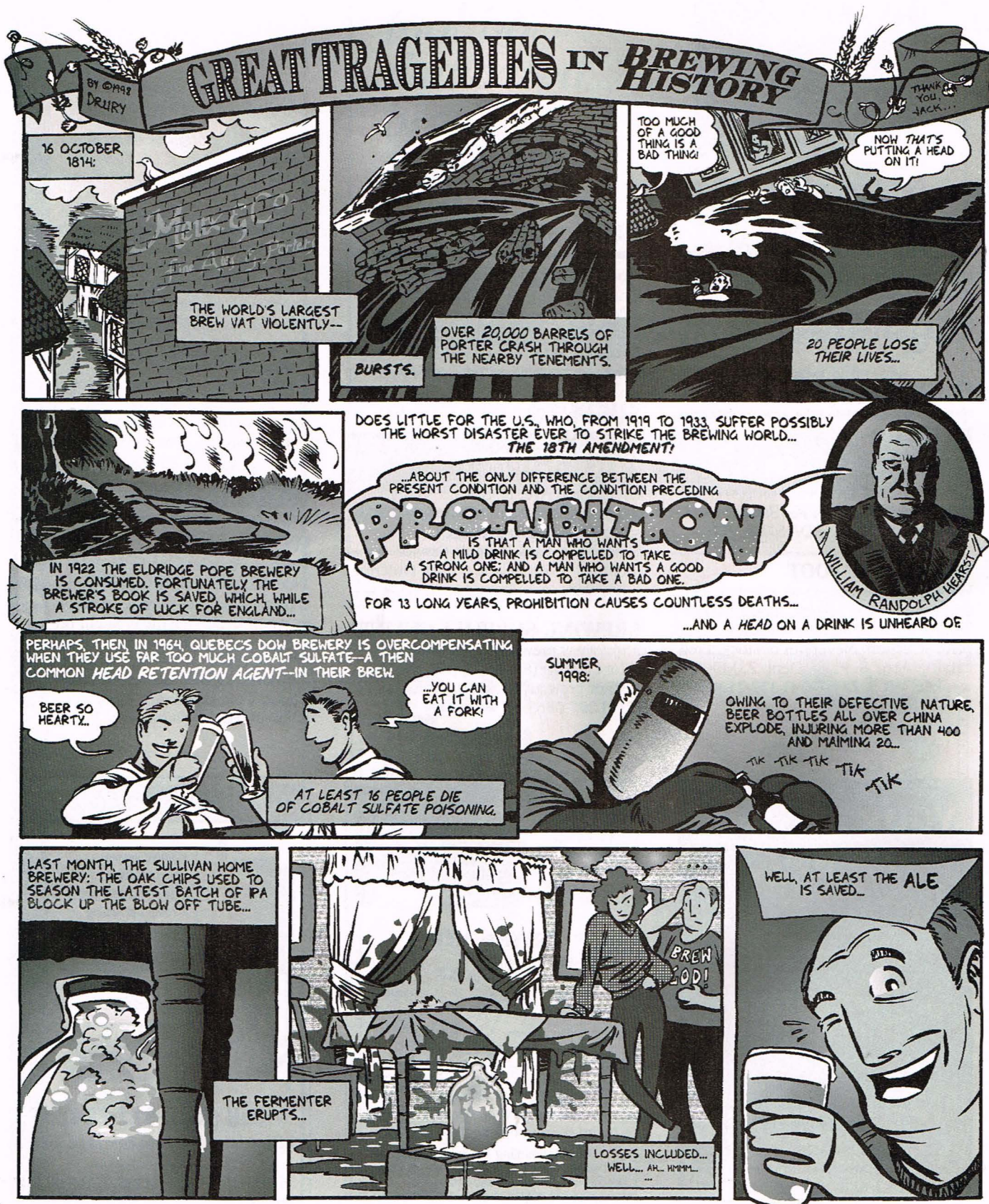
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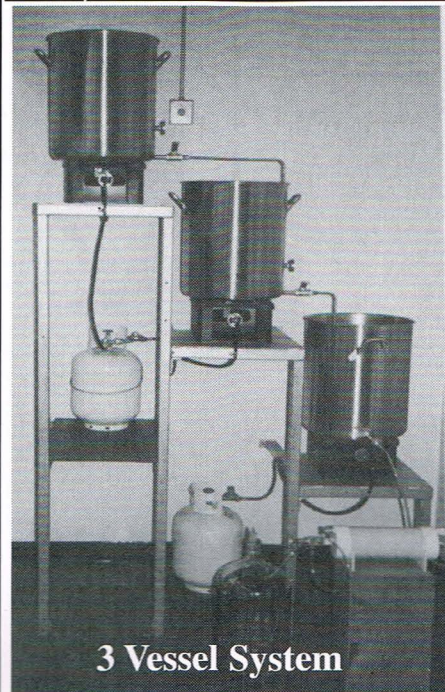
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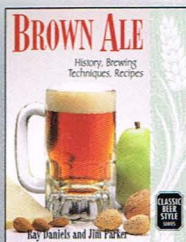


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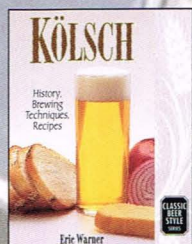


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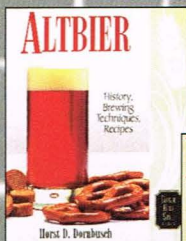
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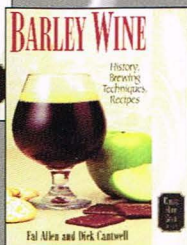
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