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Vol. 27 No. 6 November/December 2004 The Journal of the American Homebrewers Association

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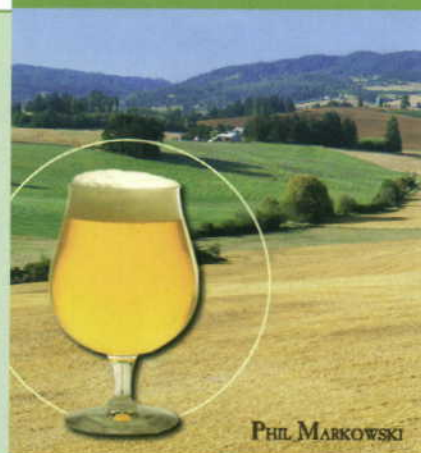
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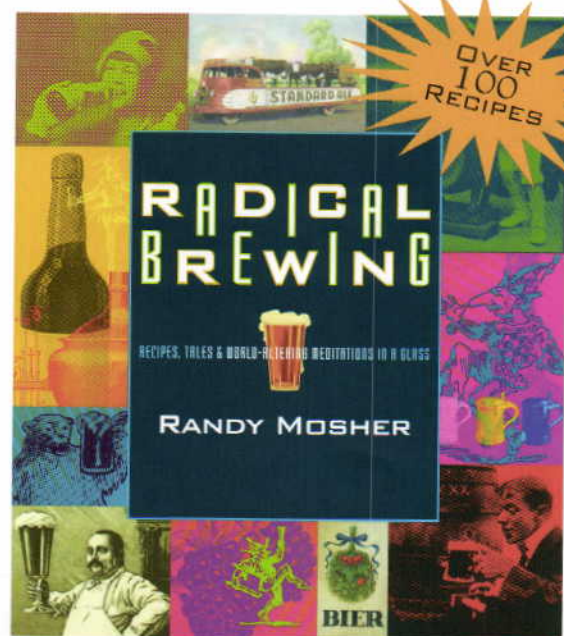
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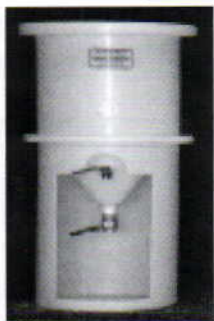
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THE FLAVOR OF HOPS

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Calling a beer "hoppy" is like calling a sunset "pretty"—it just doesn't do it justice. *Zymurgy* asks readers to participate in a national hop profiling experiment to help better define the flavor and aroma characteristics of hops.

By Jim Parker



BEER VENTURES: DÜSSELDORF ALTBIER

24

While most of Germany is awash in lager, the town of Düsseldorf sticks to its old ways, preferring its traditional Altbier. Take a tour of the city's five Altbier breweries, or brew your own at home.

By Abram Goldman-Armstrong



THE 'BEER TINKERERS'

28

What would happen to your beer if you changed just one variable, be it hops, yeast or water? That was the question a group of Iowa homebrewers set out to answer.

By Paul Ogg



GETTING BUGGY WITH CICADALE

34

Once every 17 years, Brood X cicadas emerge along the Eastern Seaboard. What can you do about this insect invasion? Why, make a beer, of course.

By Greg Kitsock

THE HALF-A-BUCKAPOUND BREWERY

38

Inspired by Randy Mosher's Buckapound Brewery but lacking the mechanical skills, one brewer creates his own system.

By Joseph Aistrup



PARDON OUR PRISON BREW

42

It wasn't illegal, but members of Quality Ale and Fermentation Fraternity (QUAFF) should be put in solitary for the unpotable potables they concocted for their Prison Brew Competition.

By Jim Parker



TRY THIS AT HOME: MALT VINEGAR

45

Be good to your mother—vinegar mother, that is—if you want to make your own tasty malt vinegar.

By Amahl Turczyn Schepbach

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BY PAUL GATZA

The Neo-Prohibitionist Landscape

The battle over your right to enjoy beer has moved to the front burner. Anti-alcohol forces have merged the successful lessons taught in the fight against the tobacco industry into an increasingly aggressive campaign aimed at demonizing brewers and purveyors of beer, wine and spirits, and scaring consumers from making a healthy beverage choice in a restaurant.

The Neo-Prohibitionists are extremely well funded and organized. Heading up this bunch is the Robert Wood Johnson Foundation. The Foundation doled out over \$46 million in grants to institutions such as the Center on Alcohol Marketing and Youth, the American Medical Association, Leadership to Keep Children Alcohol Free, the Center for Science in the Public Interest and dozens of universities. Columbia and Georgetown Universities pulled in over \$15 million between them last year in anti-alcohol grants. With that sort of funding, do you think these institutions are going to risk the revenue stream by coming out with balanced information?

Mothers Against Drunk Driving (MADD) has a \$45 million annual budget. MADD was founded by Candy Lightner in 1980. Lightner was driven out of the organization when the agenda morphed. Her view of MADD is quoted as, "It has become far more Neo-Prohibitionist than I ever wanted or envisioned. I didn't start MADD to deal with alcohol. I started MADD to deal with the issue of drunk driving." MADD continues its progress toward moving the legal BAC level for driving to zero. Nearly all states have adopted .08. A proposal in Utah earlier this year was to move the limit to .05 if one or more children are in the car. Six years ago, MADD added the plank of stopping underage drinking to its platform.

A doctor in Pennsylvania recently turned in medical records to a judge upon learning that his patient was a drinker. The patient came in to discuss what he thought was an



irregular heartbeat. The doctor felt that his admission of drinking a six-pack of beer a day made him a danger on the roadways, even though he had no knowledge of whether his patient drank at home or before driving. The state of Pennsylvania suspended the driver's license, without catching him in the act of driving under the influence for the past 23 years. So much for patient-doctor confidentiality. Do we really want a system where patients have to hide important medical information from doctors?

One recent billboard attempted to link alcohol to hard drugs by showing a syringe and needle projecting from each end of a beer bottle with the caption "It's Only Beer."

Current Neo-Prohibitionist Fronts of Attack

Robert Wood Johnson Foundation's Marin Institute and the Pacific Institute have their four "P's" in the anti-alcohol agenda:

Place: Less access and locations to purchase alcohol.

Promotion: No outdoor or even window advertising of alcoholic beverages and more restrictive labeling requirements and extensive limitations on where advertising can be placed. Reducing drink specials. Increasing counter-ads paid for by tax dollars or foundation dollars.

Product: No screw top wine bottles and no flavored malt beverages.

Price: Raise prices through more taxes with a goal of a 150-percent increase in beer prices.

Former football coach and current Nebraska Representative Tom Osborne has introduced a House resolution to end all alcohol advertising during collegiate sports broadcasts, even though 88 percent of those who watch college football and 87 percent of those that watch college basketball are 21 or older. The Beer Institute recently adopted a new voluntary standard for beer advertising,

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that it would only be shown during programs or at times when at least 70 percent of the viewing audience is over 21 based on the Nielsen Media Research ratings.

Back to tobacco. The tactic lawyers had the most success with in taking on the tobacco industry was the claim that their products are marketed to those underage, using Joe Camel as their poster mammal. This appears to be the most active front for Neo-Prohibitionists as well. There are currently lawsuits in 10 states mostly on the argument that alcohol is being marketed to youths.

Stats and Public Perception

The number of annual drunk driving fatalities dropped 31 percent from 1982 to 2003 and 3 percent from 2002 to 2003 (yet 63 percent of Americans believe that drunk driving has increased) even though the number of vehicle miles driven has skyrocketed over 20 years.

The percentage of college freshmen that report drinking alcohol on occasion or frequently dropped from 74 percent in 1982 to 46 percent in 2002. The percentage of high school seniors who report drinking

alcohol on occasion or frequently dropped from 70 percent in 1982 to 49 percent in 2002. Seventy-five percent of Americans believe it has increased.

Nineteen percent of Americans believe Prohibition should be reinstated, and 78 percent do not believe Prohibition should be reinstated.

In 2001 the U.S. government spent over \$2 billion in programs to reduce alcohol sales.

The Web site www.beerservesamerica.org details the enormous economic contribution of the beer industry to the United States. The beer industry pays \$27 billion in taxes. The industry employs 1,662,800 people and pays over \$47 billion in wages. The beer industry is responsible for creating over \$144 billion in economic impact.

Defense of the Beer Industry Against Anti-Alcohol Attacks

There is a growing sentiment among brewers, wholesalers and retailer organizations that the time has come to go on the offensive against anti-alcohol forces that are affecting the beer industry. A couple of years ago the sentiment was not to engage groups such as MADD in public debate because it drew more attention to the negative side of alcohol, and the belief that facts lose in the public debate to emotion.

The strategy to defend the beer industry against Neo-Prohibition attacks is led by the Beer Institute and the National Beer Wholesalers Association (NBWA). The Beer Institute is the lobbying arm of the major brewers, and the NBWA is an extremely powerful group with a well-funded political action committee. The Association of Brewers is in regular contact with these groups. The strategy developed by these organizations is to:

- Use common language to define the attackers—Neo-Prohibitionists.
- Monitor their activities and positively respond to attacks through national groups.
- Do not compromise with these groups, and do not get into arguments about numbers, as much of the research is biased and based on bogus assumptions.
- Positively promote the health benefits of moderate consumption of beer.
- Positively promote the beauty of beer and food.

- Focus on the economic impact of the beer industry.
- Maintain strong responsible drinking programs.
- Be involved with the local community.

The change in approach is based on statements and actions from anti-alcohol groups that show their true agenda to be one of a new Prohibition. Prohibition failed miserably years ago and led to increases in crime, contributed to a drag on the economy and made outlaws overnight of otherwise law-abiding citizens.

This issue should not be seen as something that may affect beer businesses in the future—it is here now. Brewpubs are selling less beer on average and have done so each of the past six years. As more states drop the legal drinking and driving limit to .08 to retain federal highway funds, fewer people are in brewpubs and restaurants because they are afraid to have one, two or three beers and risk being pulled over. These citizens are not afraid to have that second or third beer because they fear being alcohol impaired; they are passing up on that beer because they fear being arrested and going through the hassle of jail, court, class and license restrictions.

Even the National Highway Traffic Safety Administration has found that the real public safety problems with drinking and driving are with hard-core drinkers and repeat offenders. No laws are going to change those behaviors, yet responsible drinkers are the ones who make their dining decisions in fear.

Interestingly, none of the grants funded by the Robert Wood Johnson Foundation were related to health effects of alcohol on the human body. Dozens of university studies and public health surveys have found that moderate consumption of beer can reduce the risk of stroke, heart attack, osteoporosis in women, reduction of free radicals in the blood stream (a benefit not shared by wine), stress reduction and defense against certain cancers. Moderate drinkers are healthier than non-drinkers. These studies were not conclusion-oriented works funded by pressure groups; instead they are based on extensive research data.

Some people would be better served to relax, not worry and have a homebrew. The battle is underway, and we won't let them take your beer.

Paul Gatzka is director of the American Homebrewers Association.



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BY JIM PARKER

Time for Hoppy Hour

As I write this column here in my home base of Oregon, the hop harvest has just begun. Just an hour south of my office, in towns like Hubbard, St. Paul and Mt. Angel, the towering hop vines are packed with fragrant green cones. Who knows, some of them may make it into the beer you drink—or better yet, the beer you brew.

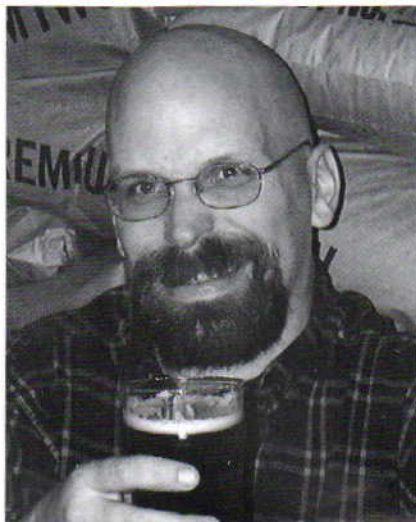
But how will you describe that beer when presenting it to friends? Just calling a beer “hoppy” doesn't do it justice when there are so many wonderful and amazing flavors and aromas that hops impart.

Finding a new vocabulary for describing hop flavor and aroma is the idea behind our cover story this issue. Following up on an idea first presented by Ray Daniels, I am asking for your help in starting a hop flavor and aroma survey. We will start this year with three hops generally described as “citrusy” and try to further pin down just which citrus fruits they evoke, as well as any other aroma and flavor characteristics they may have.

If this first test run is successful, we can make this an annual event and work our way through the rest of the hop catalogue. I lay out the plan on page 20.

Our panel of judging experts helps you calibrate your palates to hoppy beers by judging Victory Hop Devil and Rogue Brutal Bitter on page 49.

Conducting experiments like the hop profiling survey I propose is a great way to build club unity and learn more about beer and brewing. Paul Ogg and his fellow brewers in Iowa conducted another experiment to see how changing different variables affected their beer. He chronicles the lessons learned in their “beer tinkering” experiment in the Club Collaboration feature on Page 28.



But how will you describe that beer when presenting it to friends? Just calling a beer “hoppy” doesn't do it justice when there are so many wonderful and amazing flavors and aromas that hops impart.

Joseph Allstrup is definitely a tinkerer, and a thrifty one at that. After reading Randy Mosher's description of his Buckapound Brewery, Allstrup went one better and constructed his own half-buckapound brewery. Read all about it on page 38.

Speaking of experimentation, the fine folks at Quality Ale and Fermentation Fraternity (QUAFF) may have won more medals in the National Homebrew Competition than any other club, but with their

Prison Brew competition, these brewers proved they know how to put the “ew” in brew. It was my dubious “honor” to help judge that competition in Las Vegas. I tell my tale of woe on page 42.

On a much happier note, Abram Goldman-Armstrong had nothing but great beers when he trekked to Dusseldorf in search of the ultimate Alt. He kicks off a new recurring feature this month, “Beer Ventures,” with his story of the sights, sounds and most important, tastes of Dusseldorf. And for those who can't follow in his footsteps, he provides a recipe to make your own Alt. See page 24.

Greg Kitsock tells about a brewer who took advantage of the return of Brood X cicadas to brew CicadAle on page 34.

In “Try This at Home,” Amahl Turczyn Scheppach tells you how to care for your mother—vinegar mother, that is—on page 45.

In our Last Drop column on page 64, Kent Fletcher tells how he rose to the challenge of creating a slot machine that dispensed homebrew for Club Night at the National Homebrew Conference.

The next time you pick up *Zymurgy*, in January, it will look quite different than the magazine in your hands now. Many of you have already noticed the magazine getting more colorful and the paper seeming thicker and brighter. That is the result of a new printer that is producing a better quality magazine for even less money.

In addition to the new printer, we have been working for more than a year on a redesign of *Zymurgy*. Extreme makeovers seem to be all the rage these days, but our redesign isn't prompted by boredom. Our goal is to make the magazine not only better looking, but more relevant and useful.

Look for more and shorter features—because who has time to wade through long stories when it's time to brew? Look for more information on brewing techniques and tricks, gadgets to make your brew go easier and more stories about making beer and brewing part of your lifestyle.

We will introduce you to more of your fellow brewers and maybe share a joke or two you can tell at the next homebrew club meeting. And we will tell you where you can go to find out more information on the Web to supplement what you find in the magazine.

In the past few issues, we have given some sneak previews of some of the new features we are adding to the magazine. Try This At Home is a chance for you to share your expertise in making hand-crafted food and beverages. Beer Ventures, this issue focusing on Düsseldorf, is a chance for you to share your travels. In January, look for "You've Got To Drink This," a chance for you to share your favorite commercial beers, and "Mashing In With," featuring profiles of homebrewers. We've even talked Ray Daniels into dusting off his keyboard and contributing a new column.

I have always said that sitting down with a publication (whether newspaper or magazine) should be like sitting down for a chat with an old friend: you should always learn a little and laugh a little and come away glad you spent the time together.

As always, if there is any way we can make your time spent with *Zymurgy* more enjoyable or informational, drop me a line at jim@aob.org.

Jim Parker is editor-in-chief of *Zymurgy*. ☺



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OUR READERS

Judging vs. Drinking

Dear *Zymurgy*,

The "judging" of Sierra Nevada Pale Ale and Anchor Steam in the July/August issue by your panel of experts brought home to me again the problem with beer categories and style guidelines. Beer is real. Styles are abstractions. Such things are fine for contests, but hardly in my mind when I taste beer. I found it weird that these beers were not simply tasted but evaluated against an idealized version of themselves.

Good fortune allowed me to sample dozens of the so-called cask ales in England and Wales one summer. They were called by every name: ale, light ale, mild, gold, pale ale, premium, bitter, best bitter, special bitter or sometimes just given fanciful titles and the abv. The notion of style was not nearly as important as it seems here in the States. Nonetheless, the beer was consistently interesting and delicious, and the emphasis on freshness and quality (and pleasing the drinker) was obvious.

When I'm sitting in a brewpub, I want beer that is satisfying and memorable. I don't need to know that the beer is "supposed" to be an "authentic" Bavarian Hefe-Whatever or that it has the "right" OG and IBUs for a Whatever-PA. That is not why I am drinking it!

If I don't like that one, I'll try the next tap handle down. I'll keep going until I find a brew that makes me want to have another.

Cheers,
Mark C. O'Connor

Dear Mark,

Our "Commercial Calibration" is meant as a tool to help beer judges—and would-be beer judges—test their palates against recognized experts. There is a big difference between "drinking" a beer for enjoyment and "judging" in a competition, as you point out.

With "Commercial Calibration," we are hoping to spark interest in would-be judges to try their hand at evaluating beers against a given style and perhaps get involved in judging homebrew at their local level.

When it comes to drinking for enjoyment, I always use the "Wiggle Scale": If I take a drink and it makes me wiggle, I'm definitely having another. Starting in the January/February issue, look for "You've Got To Drink This," a place for readers to share their "wiggle beers." If you've had a commercial beer lately that you just have to tell the world about, send your description, in 150 words or less, to jim@aob.org.

—Ed.

Seeing Into the Future

Dear *Zymurgy*,

If I had a complaint with the organization, it would be that competitions are announced too late. I would like to see it at least six months ahead of time.

You are looking for something different? Try cheese making and wurst making. These are the things that keep me up at night.

Beer is actually quite simple, or eternally complicated, is it not?

Wok belly in California,
Cindy Grider

Dear Cindy,

As part of the redesign of *Zymurgy* we will be launching in January, we will be reorganizing how we present our calendar—separating competitions from events—and that should allow us to stretch out and list competitions that are further into the future. You can always check our online calendar at www.beertown.org/homebrewing/events.asp for future events. We have homebrew competitions listed through July 2005 on there now.

As for cheese making and sausage making, we already have writers working on those very subjects for our "Try This at Home" column. All of which is not going to help me shrink this wok belly. Stay tuned.

—Ed.

Send your letters to Dear *Zymurgy*, P.O. Box 1069, Gresham, OR 97030, fax 303-447-2825 or e-mail Jim@aob.org. Hey homebrewers! If you have a homebrew label that you would like to see in our magazine, send it to Kelli McPhail, Magazine Art Director, Association of Brewers, PO Box 1679, Boulder CO 80306 or e-mail it to Kelli@aob.org.

BEERFRIDGE-KUS

These beerfridge-kus were composed by future homebrewer Adrienne Prentice and submitted by her dad, Greg.

LIGHT and Dark barley

AleS SWEET malt hoppY bitter

my (eve) recipe

PALE was YOUR list

refreshing taste you enjoy

malt HOPS yeast HOME BREW

SWEET TUN hoppY FOOD

water is BAD and bitter to DRINK

BEER IS in my friends

A (fresh) recipe

We are boil ing Amber

SHW the style Dark



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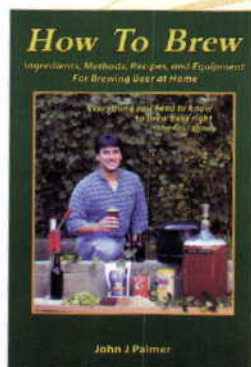


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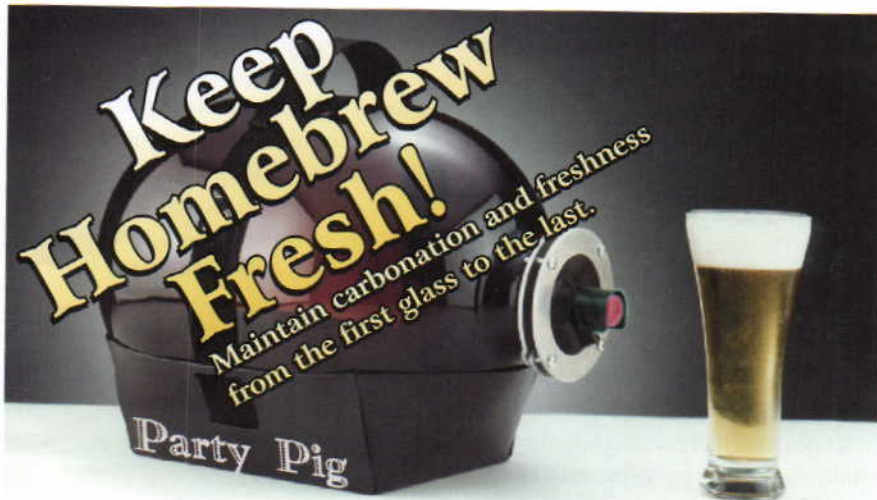
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BY GARY GLASS

Hawaiian Homebrewers Make Headlines

AHA Homebrewer of the Year "Rocket" Rod Romanak of Kailua-Kona, Hawaii, managed to pique the interest of *West Hawaii Today*, a local newspaper, with a press release describing his best-of-show win at the 2004 AHA National Homebrew Competition. The paper sent reporter Travis Loop to meet with the Kona Coast Barley Boys, Romanak's homebrew club, to see what Hawaiian homebrewing was all about.

The Barley Boys happily introduced Loop to the world of homebrew with Pilseners, stouts, porters and IPAs.

The club certainly knows how to make porter, having taken two of the three medals awarded in the porter category at the 2004 NHC (Romanak won the gold medal and Mike Dahler took the bronze). Romanak's robust porter netted him the Homebrewer of the Year crown.

Romanak's award-winning porter also caught the attention of the folks at Kona Brewing Co., which is planning to brew a special batch of the beer to offer at their pubs in Kailua-Kona and Oahu.

ALES Ale Brewed at Bushwakker

Speaking of NHC-winning beers being professionally brewed, Ale and Lager Enthusiasts (ALES) member Kelly Deis joined Bushwakker Brewpub brewer David Rudge to brew up a batch of his award-winning Deisbrau Rauchbier. Deis's smoked beer won best-of-show in the Canadian qualifying competition for the AHA National Homebrew Competition. The commercial version of his beer went on tap at Bushwakker on September 18. If you happen to find yourself in Regina, stop by—maybe they'll still have some left.

Both the ALES club and the Bushwakker Brewpub are based in Regina, Saskatchewan.

Comrades in Brew

Anyone who attended the awards banquet at the 2003 National Homebrewers Conference in Chicago knows who Pete Devaris is. Devaris was the sole representative of the Great Northern Brewers of

Anchorage, Alaska at the banquet. Devaris was up on stage 10 times to accept medals on behalf of Great Northern Brewers members, including three of his own.

Tom Kelly of the Quality Ales and Fermentation Fraternity of San Diego noticed.

2004-2005 Club-Only Competition Standings after 1 of 6 Competitions

Rank	Points	Club
1	12	Homebrewing Order of Pagosa Springs
2	8	Oriental Region Brewing Society
3	4	Space Coast Association for the Advancement of Zymurgy

2004-2005 AHA Club-Only Competitions Sponsored by Coopers Brew Products

See www.beertown.org/homebrewing/schedule.html for complete schedule



Month	Style or Name	Cat. #*	Host
October	Smoke-Flavored Beer	22	Mountain Ale & Lager Tasters
November	IPA	14	James River Brewers
January	Irish Red Ale	9D	MUGZ
Mar/Apr	Sour Beers	17	New York City Homebrewers Guild
May	Extract Beers	1-23	Hogtown Brewers

*See new 2004 BJCP Style Guidelines at www.bjcp.org



American IPA

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

- 1 can Coopers India Pale Ale
- 4.0 lb (1.81 kg) Coopers Light Dry Malt Extract
- 1.0 oz. (28 g) Chinook, 13.0% alpha acid (60 min)
- 0.5 oz. (14 g) Cascade 5.75% alpha acid (20 min)
- 0.5 oz. (14 g) Cascade 5.75% alpha acid (15 min)
- 0.5 oz. (14 g) Cascade 5.75% alpha acid (10 min)
- 0.5 oz. (14 g) Cascade 5.75% alpha acid (5 min)
- 0.5 oz. (14 g) Cascade 5.75% alpha acid (0 min)
- 1.0 oz. (28 g) Centennial 10.5% alpha acid (dry hop) Wyeast 1056 American Ale Yeast or White Labs WLP001 California Ale Yeast
- 0.75 C (180 ml measure) corn sugar for bottling

- Original specific gravity: 1.062
- Final specific gravity: 1.012
- IBU: 53.2
- ABV: 6.6%

Bring 2 gallons of water to a boil, remove from heat and stir in extract. Bring back to a boil and add Chinook hops. Boil 40 minutes then add 0.5 oz Cascade every five minutes until a total boil time of 60 minutes is reached. Pour into fermenter with enough cold water to make 5 gallons. When temperature is below 68° F, pitch yeast and aerate well. Ferment at 68° F for two weeks or until fermentation is complete. Rack the beer to secondary with dry hops. After one week, prime with corn sugar and bottle.

This was the first of six competitions in the August to May 2004-2005 cycle, with points going toward the Homebrew Club of the Year trophy. Points are awarded on a 12-8-4 basis for first, second and third place in the club-only competitions. First, second and third places in the first and second rounds of the AHA National Homebrew Competition earn points on a 6-4-2 basis.

Of 43 entries, the winners were:

First Place

John Eustis of Pagosa Springs, Colo., representing the Homebrewing Order of Pagosa Springs with a Bavarian Hefeweizen.

Second Place

Gregory Bergquist of New Bern, N.C., representing the Oriental Region Brewing Society with a Weizenbock.

Third Place

Patrick Payne of Palm Bay, Fla., representing the Space Coast Association for the Advancement of Zymurgy with a Weizenbock.

Congratulations to all of the winners, and thanks to all of the club representative brewers who entered!

He was planning a camping trip to Denali National Park in Alaska with some friends. As the sole homebrewer in the group, Kelly rightfully took it upon himself to acquire beer for the trip. He and his wife Peggy introduced themselves to Devaris, figuring he'd be able to help them locate good beer for their trip.

The morning after Tom and Peggy arrived in Anchorage, they met Devaris at his house. To their surprise, Devaris had a 5-gallon keg and two 3-gallon kegs filled with beer from local breweries waiting for them. The happy campers "kept toasting the wonderful hospitality that Pete had shown," says Tom.

It's that kind of camaraderie among homebrewers that brings us together in clubs. It's why homebrewers keep coming back to the AHA National Homebrew Conference to see all the friends they've made at past conferences. It's why when a stranger tells you he or she is a homebrewer, more likely than not

they'll become an instant friend. To use the words of Bill Pfeiffer, "Man, I love this hobby."

Beertown Club Locator

Help us keep our online club locator up-to-date! Please check out your club's listing on www.beertown.org. Select Homebrew Clubs from the Locator drop down box on the right side of the beertown pages. Clubs are arranged alphabetically by city. If your club is not listed, use the online form to add it. You can also make corrections to listed clubs or delete clubs that no longer exist via the online form. Thanks for your help!

Wheat Beer Club-Only Competition

The AHA thanks Steve Cook, Drew Beechum and the Maltose Falcons of Woodland Hills, Calif. for hosting the Wheat Beer Club-Only Competition August 27, 2004. This competition covered Category 17, Wheat Beer, of the BJCP style guidelines.

IPA AHA Club-Only Competition

The November/December AHA Club-Only Competition is IPA, covering Category 14 of the new 2004 BJCP Style Guidelines. This competition is hosted by Stasi York and the James River Brewers of Richmond, Va. One entry of two bottles is accepted per AHA registered homebrew club. Entries require a \$5 check made out to AHA and an entry/recipe form and bottle ID forms. More information on the Club-Only Competitions and forms are available at www.beertown.org.

Shipping Address:

The WeekEnd Brewer
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Chester, VA 23831

Entries are due November 5, 2004. Judging will be held November 13, 2004. E-mail for questions or those interested in judging is stasiyork@hotmail.com.

Gary Glass is project coordinator for the Association of Brewers.

OCTOBER

23 Queen of Beer Women's Homebrew Competition. Placerville, CA. **BJCP SCP.** Sponsored by Hangtown Association of Zymurgy Enthusiasts (HAZE). Open to all non-commercial, homebrewed beer and meads produced by persons of female gender. All 28 of the new 2004 BJCP style categories open for entry. All beer entries will be accepted at the Wine Smith in Placerville, CA. Entry Deadline: 10/1-10/16. Fee: \$6. Contact: Steve Seeley, Phone: 530-676-2237, E-mail: QOB@HAZEclub.org Web: www.hazeclub.org/QOB/QOB.html

30 Spooky Brew Review 2004. Bolingbrook, IL. **AHA/BJCP SCP.** Competition will judge against the 2004 BJCP style guidelines and will include two additional categories: Spooky Brew and Smashed Pumpkin. Details and entry forms will be posted to the Chicago Beer Society Web site. Contact: Joe Preiser, Phone: 630-285-7688, E-mail: joe@chibeer.org Web: www.chibeer.org

NOVEMBER

6 9th Annual Knickerbocker Battle of the Brews. Albany, NY. **AHA/BJCP SCP.** Sponsored by Saratoga ThoroughBrews. Participating event for NYS Homebrewer of the Year. One winner's entry will be brewed by George DePiro at the C.H. Evans Brewing Co. Entry Deadline: 10/22-10/29. Fee: \$6. Contact: Reed Antis, Phone: 518-793-9654, E-mail: reedmary@capital.net Web: www.moonbrew.com/kbotb/

6 AHA Teach a Friend to Homebrew Day. An international event to introduce people to the homebrewing hobby and establish relationships with local homebrew supply shops. Each year on the first Saturday in November, homebrewers around the world are encouraged to invite non-brewing and brewing friends and family to celebrate Teach a Friend to Homebrew Day and brew a batch of beer together. Contact: Gary Glass, Phone: 888-4-CAN-BREW, 303-447-0816 x 121, Fax: 303-447-2825, E-mail: gary@aab.org Web: www.beertown.org/events/teach/index.html

6 THIRSTY 2004 Homebrew Classic. Iowa City, IA. **AHA/BJCP SCP.** Sponsored by THIRSTY and Millstream Brewing Company. Judging and awards ceremony at Millstream Brewing in Amana, Iowa. Contact: Susan Walsh, Phone: 319-337-5742, E-mail: susan-walsh@uiowa.edu Web: http://home.mchsi.com/~thirsty

6 2004 Oktobersbest Zinzinnati Competition. Cincinnati, OH. **AHA/BJCP SCP.** Competition is open to all styles except mead, cider, sake, etc. (style categories 24, 25, 26, 27 and 28). Awards presented for first, second and third place in each flight. Special awards for BOS and for Best Judged Beer in Categories 3 and 4! Fee: \$6 for 1st, \$4 for each additional. Contact: David Rice, Phone: 513-821-9106, E-mail: david_rice@cinfin.com Web: www.maltinfusers.org

6 Foam On The Range "New Guidelines!" Denver, CO. **AHA/BJCP SCP.** Sponsoring club: Foam On The Range. This competition will be using the new BJCP beer style guidelines. We will have prizes, Best of Show prizes, and Best of New Styles prizes. Two bottles per entry with one entry form per entry and one label rubber-banded on each bottle. Entry Deadline: 10/26-11/3. Fee: \$5. Contact: Tom Gardner, Phone: 303-863-0209, E-mail: tomgardner@cs.com Web: www.foamontherange.org

14 FOSSILS Homebrew Porter Competition. New Albany, IN. **BJCP SCP.** Contact: Ed Tash, Phone: 812-945-8122, E-mail: tashfam@aol.com Web: www.fossils.org/

20 Land of the Muddy Waters Homebrew Competition. Bettendorf, IA. **AHA/BJCP SCP.** Sponsored by MUGZ. One of the final competitions for the Midwest Homebrewer of the Year. Accepting all beers, ciders and mead. Fee: \$7. Contact: Steve Slach, Phone: 563-332-3068, E-mail: lotmw@mugz.org Web: www.mugz.org

AMERICAN HOMEBREWERS ASSOCIATION • KUDOS • SANCTIONED COMPETITION PROGRAM • BEST OF SHOW •

• NOVEMBER 2003 •
Orchid Isle Holiday Bash Homebrew Competition, 53 entries—Diki Short, Chad Middlesworth, Earl Nakashima and Brian Watanabe of Hilo, HI

• APRIL 2004 •
12th annual Dominion Cup, 104 entries—Steven Davis of Yorktown, VA

• MAY 2004 •
B.E.E.R. Brew Competition, 158 entries—Ray Lewis of Livonia, NY

• JUNE 2004 •
Spirit of Free Beer, 333 entries—Andy Anderson of Alexandria, VA

• JULY 2004 •
2004 E.T. Barnette Homebrew Competition, 51 entries—Ed Vandegrift of Lee's Summit, MO
Ohio State Fair Homebrew Competition, 145 entries—Darren and Jenny Collins of Mt. Vernon, OH
2004 Mt. Brewer Open, 141 entries—Bernie Kessel of Weaverville, NC
5th annual Mammoth Brewing Co. Homebrew Competition, 66 entries—Jon Peterson of Poway, CA

• AUGUST 2004 •
New York State Homebrewer of the Year, 5 competitions, 1,100 entries—Manny Holl of Poughkeepsie, NY
MCAF 6th annual Homebrew Competition, 47 entries—Howard Bruneau

AHA SCP = American Homebrewers Association Sanctioned Competition Program. BJCP = Beer Judge Certification Program. The Calendar of Events is updated weekly and is available from the Association of Brewers: info@aab.org or www.beertown.org on the web. To list events, send information to **Zymurgy** Calendar of Events. To be listed in the January/February Issue (Vol. 28, No. 1), information must be received by November 1, 2004. Competition organizers wishing to apply for AHA Sanctioning must do so at least two months prior to the event. Contact Kate Porter at kate@aab.org; (303) 447-0816 ext. 123; FAX (303) 447-2825; PO Box 1679, Boulder, CO 80306-1679.

DECEMBER

4 6th Annual Palmetto State Brewers Open. Columbia, SC. **AHA/BJCP SCP.** Sponsored by Palmetto State Brewers, Inc. Final event for 2004 of the Carolinas Brewer of the Year competition circuit. Though part of a regional circuit, this event is intended to be a national competition. All 1999 BJCP categories will be judged including meads and ciders. Ribbons and prizes will be awarded to winners. Cash prizes for BOS in beer, meads and ciders. Fee: \$6. Contact: Gerald Jowers, Phone: 803-798-7914, E-mail: sumter1802@yahoo.com Web: www.sagecat.com/psb.htm

JANUARY 2005

7 Big Beers, Belgians & Barley-wines Homebrew Competition Judging. Eagle, CO. **AHA/BJCP SCP.** Join us for a getaway weekend, complete with a world-class beer festival at a world-class ski resort! Big Beers showcases a top-notch homebrew competition, followed by an amazing collection of commercially produced brews at the public tasting on Saturday, January 8. Fee: \$5. Contact: Laura Lodge, Phone: 970-949-0600, Fax: 970-476-6976, E-mail: BigBeersFestival@hotmail.com Web: www.BigBeersFestival.com

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27-29 Upper Mississippi Mash-Out. Minneapolis-St. Paul, MN. **AHA/BJCP SCP.** Sponsoring Club: Minnesota Homebrewers Association. Join in the fun of one of the Midwest's largest homebrew competitions. Judging and reception at the Holiday Inn Metrodome near the Town Hall brewpub. Awards show at Summit Brewery. Special entry category: eis beer or mead. Entry Deadline: 1/03-1/15/05. Contact: Steve Fletty, Phone: 612-625-1048, E-mail: fletty@umn.edu, Web: <http://mnbrewers.com/mashout>

FEBRUARY

27 Washoe Zephyr Zymurgists Homebrew Competition. Reno, NV. **AHA/BJCP SCP.** An excellent warm-up for the AHA National Homebrew Competition and other events. The 2004 BJCP style guidelines will be used for entries and judging. Fee: \$6 first/\$4 additional. Contact: John C. Tull, Phone: 775-329-2537, Fax: 775-329-8124. E-mail: jctull@gmail.com Web: <http://washoe-ezz.net/>

MARCH

6 2005 St. Patrick's Cascadia Cup. Redmond, WA. **AHA/BJCP SCP.** The 9th annual Cascadia Cup is the largest homebrew competition in Washington state, and largest industry sponsored competition in the Pacific Northwest! BOS winners get brewed at Waimea Brewing in Kirkland. Fee: \$6. Contact: Alan Hord, Phone: 425-707-8062, E-mail: CCOrganizer@CascadeBrewersGuild.Org Web: <http://CascadeBrewersGuild.Org>

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Cooling with Heat Sinks

Dear Professor,

I have been considering buying a conical fermenter to simplify and improve my homebrewing process. I checked out one offered by Beer, Beer and More Beer. Could you give me an independent and objective evaluation of the "Externally Cooled & Heated Conical?" The catalogue number is CON630. The Web site is www.more-beer.com/.

I am very curious about how the cooling system works. I don't understand the answer they gave me. I want to know the actual physics involved. If I could understand how it works, I would be more inclined to purchase one. My main question is, how can you use 85° F air to cool a liquid down to, say, 68° F? I'm sold on purchasing the system if I could just understand how the cooling process works.

I enjoy reading your column.

Thanks again,
Jeff Meyer, AHA member
Walla Walla, Wash.

Well Jeff,

You're half in luck. I can't give you an independent and objective evaluation myself, because I have never used something like this. But here is the reply I received from Colin Kaminski, product designer.

"The principle of the Peltier process cools them. The chips themselves are called Thermal Electric Devices. They are a semiconductor. Peltier discovered what is now called the Peltier Effect in 1834. When a current is passed across a semiconductor junction heat is moved from one side to the other. TECs (Thermal Electric Coolers) use doped bismuth telluride and many junctions to pump large amounts of heat. Heat is removed from the beer and pumped through

the chip and sunk (extracted out) to the air with a large heat sink. Because there is very little power available in TECs the assembly and insulation is critical. The devices have long lifetimes but are sensitive to humidity so the chips themselves are carefully sealed from condensation."

Jeff, the explanation is a bit geeky, but you asked for it. Let me know how the first brews turn out.

*Sinking out,
The Professor, Hb.D.*

Which Barley Wine is Fine?

Dear Professor,

I am new to the barley wine game and...yikes! I'm confounded. Reading through several recipes, I have concluded that I have no idea which would be the best to try brewing first. I make a mean

house porter and I love German brews (especially Weizen, which I have read that the Professor is not fond of!)

So, Heaven Waits, Snow Angels Fest, Colonel Coffin, Gnarly Roots Lambic... any advice or personal favorite you'd recommend first?

"I would gladly kill everyone in this room for a drop of sweet, sweet beer!"

—Homer Simpson

Metal Larzz
The Internet

Dear Metal,

Sounds like you might be into something heavy, Metal? I'd recommend a hybrid version called Heaven Waits for Snow Angels Barley Fest. Also sounds like you are not an extreme hophead, so I'd bypass the Colonel Coffin recipe. Gnarly Roots Lambic style barley wine is a very unusual barley wine fermented with a combination of ale yeasts and Brettanomyces cultures, giving the beer a "wild" character. It's terrific, but I'd shoot for that after you already have a stash of traditionally fermented barley wine/fest.

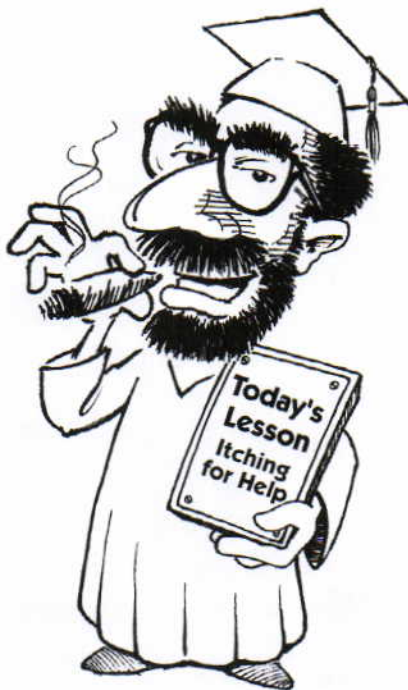
The hybrid that I mention is lower in overall hop character and at the same time enjoys a festive and elevated toasted malt character. If you really like barley wines with more caramel character, try boiling for a minimum of two to three hours. You'll get some nice wort caramelization flavors that you can't get with the addition of crystal or caramel malts.

*It is the season to have jolly,
The Professor, Hb.D.*

What's Underfoot?


Dear Professor,

The wife (She Who Must Be Obeyed)



and I are having a house built in the near future and plan to have a walk-out basement set up for a brewing area. Since I will have the opportunity to design from scratch the area in which I will brew I thought I'd try to plan and get it right.

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While I would like to say that money is no object that would be far from the truth. I am currently set up to do 5-gallon all-grain batches in my driveway and garage but look forward to having an area in the basement for brewing.

Some questions I have thought about (but please feel free to address other issues) are: What types of floor drains should I install? The floor of the basement will be concrete. What kind of finish should be applied to the floor? While the answers to these questions will not improve attenuation or hop utilization, they might make brewing easier.

Thanks,
Rick Sullivan

Hiya Rick,

Your situation sounds absolutely terrific. Above all, actually below all, the type of drain you must have needs to be at the lowest point in the basement floor. Now I say this seriously, because I've seen drains that don't work, simply because they were elevated. Sounds stupid, but people are known to do those kinds of things. With regard to your floor coating, if you can deal with the application, some types of sealing epoxy floors offer a non porous finish that's easy to clean and long lasting. Make sure you can vacate the house for a day or two while the epoxy fumes dissipate.

Tile is another option, but they can crack and are slippery.

Sounds like you are on the way to some fine brewing.

*Floored,
The Professor, Hb.D.*

Curious about Hops

Dear Professor,

Could you explain how first wort hopping (FWH) is supposed to deliver hop flavor and/or aroma to the finished beer, when it would seem that the subsequent boil in the kettle would drive off these components? I've tried FWH in Pilseners and IPAs and the brews came out superb, but since I didn't substitute FWH for flavor hops (they were in addition to flavor and aroma hops), I'm not really sure if it works as purported.

In addition, does adding hops to hot sparge water before the boil result in more/less/same IBUs than after hot break (I've heard all of the above)? Being a beer geek, I just need to know if and how it works! Also, since I just made the Hop Juice Double IPA recipe from May/June *Zymurgy*, any further comments on benefits of mash hopping compared to FWH would be appreciated. In fact, how about a thorough *Zymurgy* treatise on pros and cons of all methods of hop flavor and aroma additions (mash hops, first wort, hop back, hop additions during and after kettle boil, dry hop and any others)?

Best Regards,
Tom Nolan

Dear Tom,

Unfortunately there's no one out there that can give the authoritative explanation of how or even whether first wort hopping works. Because some experts can't figure out a logical or known scientific reason why it should work, they won't even accept that it does work. But there are tens of thousands of homebrewers and microbrewers who use this method and they swear by the Book of Beer that it does make a difference.

So any explanation up to this point is largely based on empirical observation and conjecture. My conjecture is that for some



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reason the flavor and aroma components of hops are stabilized when they go through a slow elevation in wort temperature. Why? I don't know.

I would also propose that the same is true that adding hops in the sparging stream would also contribute a "brighter" hop character. The same may be true for adding hops to the grain mash, which a lot of southern California microbrewers and homebrewers are doing with some magnificent results.

Hey Editor Jim, are you reading Tom's last suggestion? Or having a beer?

Empirically yours,
The Professor, Hb.D.

Homebrew is Stronger!

Dear Professor,

Have you ever had people drink your homebrew and tell you that they think it is "too strong" or that they feel it is getting them drunk too quickly?

Now I'm not talking about barley wine, Imperial IPA or any of that. I'm talking about regular American Pale Ale or even something like wheat beer, brewed to style, and no stronger than any commercial version. Usually between 4 and 5 percent alcohol.

If I had a dime for every time someone who drank my homebrew told me that—well, I'd probably have 3 or 4 dollars.

Anyway, it came up in conversation with one of my fellow brewers again today, and I know I've had this discussion many times before.

Maybe because homebrewers usually brew "all malt" beers without corn, rice or other adjuncts, people somehow perceive our homebrew as being stronger than normal?

Of course, I live in Pennsylvania, which I hear is one of the biggest markets for Coors Light. So if that's what people here are used to drinking, that may account for some of this, too.

Just curious if you've run into this, and how common this phenomenon is.

Bill Wible
Coatesville, Pa.

Bill, Bill, Bill,

If people are accustomed to drinking "light" American lager and now you have

them drinking golden or amber colored homebrews then they are going to think they are having something stronger. How many times have you heard someone say they don't drink Guinness stout because it is too strong? Guinness draft is about 3 percent alcohol and is almost always the lowest-in-alcohol beer anywhere on tap! Color influences people.

What about the buzz they say they are getting, you might ask. Many years ago our Association of Brewers office manager switched the coffee from regular to decaf. For one whole year all the die-hard caffeine freaks were unknowingly drinking decaf—and still quite satisfied with the buzz they thought they were getting.

Labels, color of a bottle, shape of a glass, serving temperature, color of the beer, aroma can all effectively convince a beer drinker they are drinking something stronger than they are accustomed to.

That's the short story,
The Professor, Hb.D

Gluten-y! The 8th Deadly Plague

Dear Professor,

A friend of mine has been having health problems for a while and just found out he has celiac disease (gluten intolerance). Needless to say, it kind of puts a damper on going out and enjoying a beer or two at

the local microbrewery. I thought I might be able to help by homebrewing a gluten-free beer for him to enjoy.

The problem is: how on earth do you make a gluten-free beer? I vaguely remember an article about this, but I couldn't find it in my back volumes of *Zymurgy*. I'm hoping to tap the wealth of knowledge out there for the correct ingredients to use, special procedures that may be required and any recipes to try. Any help would be greatly appreciated.

Sincerely,
Timothy Bok

Dear Timothy my man,

There's been a little buzz lately in the microbrewing world about brewing gluten free beer. In fact there are some Belgian and American microbreweries that are experimenting with these kinds of beers. What does that really mean? It means no barley, wheat, oats or rye. Hard to make a traditionally brewed beer that way. But creative brewers are getting around this by using added enzymes and brewing with such cereals as buckwheat, quinoa and rice. Essentially you will need to read up on how to convert starches to fermentable sugars using enzymes and experimenting with yeasts, time, temperature and process to determine what produces the best flavors.

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It is possible. Once you've figured it out, the process will become routine and you'll lovingly crank it out just like any other homebrew.

*Enjoying beer while I can,
The Professor, Hb.D.*

Beer and Mosquitoes

Dear Professor,

I am currently working at a small brewery in northwest Montana at Lang Creek in the remote upper Thompson River valley. This week while working in the fermentation room I realized I had seen no mosquitoes there in the several months I have been there. There are lots of gnats, some horseflies and the occasional swallow but no mosquitoes. It is my understanding that carbon dioxide is the primary long-range attractor for female mosquitoes and we release large quantities from the fermentation room. I know there are ample mosquitoes in the area because I am living in my camper while working there and I have not been to a spot lacking in them.

A further observation is that at a brewery open house last Sunday, where we served about 200 people as much beer as they wanted, I don't recall any mosquitoes. The party lasted well into prime mosquito time.

I have a scientific background and thus a hypothesis occurred to me. Could it be that beer in sufficient quantities is an effective mosquito repellent? I know from

personal experience that one to four beer drinkers don't have this effect but my two observations at the brewery, if confirmed by repeated observations, might suggest that there is a minimum number of beer drinkers where the mosquitoes are repelled. In short, is a solution to the both-er and health threat of mosquitoes to use more beer? If, for example, research shows that 10 beer drinkers were the minimum number protected by this effect it would seem foolish to venture into the woods with only eight.

I am writing you because I can think of nobody in a better position to help organize a grassroots effort by people who might be persuaded to go outdoors and drink beer together in groups. If the hypothesis proves to have merit the contributions to human welfare could be significant. If not, it might be fun trying anyway.

Of course this was observed in the setting of craft brewed beer and may not apply to standard mass-market light lager beers. This may explain why it has not been noticed to date. Presumably it would be applicable to homebrew as well.

Just itching for help in this quest,
Michael Hannon

Dear Michael,

Could it be that after you drink enough beers, you can't feel the mosquitoes? Just a

thought. But you may be onto something. I wonder if elevated hop levels are a mosquito repellent? Carbon dioxide may be an attractant, but I wonder what the effect of alcohol on the breath is? Maybe our body temperature changes? Maybe we are more relaxed and mosquitoes only like to bother bothered people?

*I think there is an Hb.D thesis here,
The Professor, Hb.D.*

On the Subject: Roasted Malt and Barley

There has been an interesting dialogue on the AOBForum, which is the equivalent of the homebrewers AHATechTalk, but for professional brewing members of the Association of Brewers. The question arose regarding the tendency for stuck, difficult or long runoffs/lauding of mashes that have roasted malts and roasted barley as an ingredient. Here's the original question, along with an interesting reply.

Dear Forum,

I am sure everyone at some time in their brewing career has experienced a painfully slow lauter due to the use of black malt in the malt bill. I have heard that the lautering of a brew using black malt can be improved by adding the milled-in black malt at the end of the mash program, just before mash off. Does anyone have experience with this method? Are there any drawbacks to adding the black malt this late in the mashing cycle? Any effects on the black malt character of the resulting brew? Any feedback is appreciated.

Jim Lonetti, brewer
Summit Brewing Company
St. Paul, Minn.

Dear Fellow Brewers,

Concerning the recent posting about black malt and lautering problems. It is somewhat common for brewers to add milled black malt to the lauter tun thus bypassing the mashing step. The purpose of this is to limit the development of astringency from the black malt while still getting the needed color extraction. As you know,

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black malt doesn't really contribute much to your extract. This astringency issue is also one of the reasons products like Weyermann Dehusked Carafa and "Black Malt Beer" like Sinamar were invented.

I am guessing, however, that your stuck mash is really a pH issue. Black malt is very acidic and it is not uncommon for the final wort pH of very dark worts (when brewed with soft or low alkalinity water) to drop below pH 5.00. When this happens lautering becomes difficult and the trub pile in the whirlpool is loose and easily falls apart during wort cooling. That is one reason why breweries in areas with alkaline water make superior black beers. In your case, I would suggest that when brewing black beers use untreated water (i.e. do not acidify your brewing water or add any calcium salts). A total alkalinity of 100 to 200 ppm should be no problem. Check your mash pH (after cooling the sample to room temperature)—it should be greater than 5.3 or 5.4. Your wort pH should be above 5.00 and preferably about 5.10. I'm guessing that this will help improve lautering and trub pile adhesion. Without seeing your process this would be my first course of action. Some brewers add alkaline salts like calcium or sodium bicarbonate to counteract black malt acidity but I do not recommend this—it's too easy to make a mistake. If you cannot correct your water as described above I would suggest looking into Sinamar or similar products for color development—or simply schedule brewers for overtime when making stouts.

Good luck,
Daniel Carey
New Glarus Brewing

To the Forum,

I was once trying to apply all science and logic to the problem of "dark beer" lautering. We brew a porter served on a nitro tap and lautering has been difficult for many years.

One idea I experimented with: Make a dark malt/barley extract. Guinness uses their "GFE" (Guinness Flavor Essence) to convert pale beers to stout and I became intrigued when Mueller was building some GFE tanks for a project in Central America. The Wey-

ermann Sinamar is another such product.

Although I had toyed with changing the mill gap for the dark grains we use in our porter I was never satisfied with the results as the lautering was still quite slow and difficult. I focused on fines that were trapped in the mash bed (we use a stirred mash with a separate lauter tun). I was convinced the fines became uniformly distributed in the mash bed and caused slow run-off. Darcy's law defines flow rate as:

$$\text{Flow} = (\text{Bed Permeability}) * (\text{Area}) * (\Delta P) / (\text{Viscosity}) * (\text{Bed Depth}).$$

Fines tend to decrease permeability and reduce wort flow from the bed given all other variables constant. The test was to produce a mash of dark grains only. This is very small (about 70 pounds for a 15-barrel batch) and very easy to lauter. The bed was sparged and the duration was based upon color (rather subjective, but it's a basis that can be duplicated). The spent grain from this mash was very pasty and looked like the type of stuff to impede liquid flow through a normal bed. I ran the wort back to the mash mixer and mashed in the pale malts on top of this wort. This was in my own theory to minimize fines in the mash bed during lautering.

The result was incredible. The bed behaved like our normal beers and did not end up with high differential pressures dur-

ing wort collection. The need for deep cutting was eliminated and wort clarity was drastically improved.

This method is not for everyone since it requires additional time in mashing. It does, however, make lautering more normal! It also is something that I can do with our equipment—our mill is fixed above our grist case and the grist case is connected to the mash mixer. This prevents me from trying to add the dark grain directly to the lauter tun after mash transfer.

Dan Carey makes a great point about water. In our brewery we use distilled water (because Mueller makes stills) and we tailor all water for what we brew. In our porter we add gypsum, calcium chloride and sodium bicarbonate to produce a Dublin-esque water.

I like sodium bicarbonate because it goes into solution in neutral pH water, unlike calcium carbonate.

We have used this method for the last year with total success. I thought this crazy perspective might be useful to the discussion.

Ashton Lewis
Paul Mueller/Springfield Brewing
Springfield, Mo.

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

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grapefruit?

orange?

Citrusy?

lemon?

The Great Hop
Experiment



"That's a nice, hoppy beer."

How many times have you heard, or even used, that tired phrase to describe a beer? What does it really mean?

When you say hoppy, do you mean bitter? Spicy? Citrusy? Floral? All of the above and many more adjectives could be used to describe a "hoppy" beer.

Describing a beer as "hoppy" is no more descriptive than calling a sunset "pretty."

And how is a brewer supposed to know which hops will give his beer the exact character he seeks?

Back in March, as he was vacating this editor's desk, Ray Daniels proposed a nationwide hop flavor and aroma profile poll. He wanted brewers from coast to coast to brew and evaluate single-hop beers, focusing on three similar hop varieties to arrive at a set of descriptors for the flavor and aroma qualities of those hops. The idea was to repeat the exercise each year, adding new varieties until we have a more precise list of descriptors for all the common hop varieties.

It was a great idea, but with Ray's busy schedule running the Craft Beer Marketing Program, he hasn't had time to follow up and make the great hop flavor profiling experiment happen. So now it's my turn. I want to have some results ready to present at the AHA National Homebrewers Conference next June in Baltimore and then in the July/August 2005 edition of *Zymurgy*.

So it's time to get brewing—and tasting.

When Ray first brought up the idea, he cited a dearth of professional research on hop flavor and aroma. But with some digging, I was able to come up with a study conducted in 1996 at Oregon State University.¹ In that study, a trained panel of evaluators used a technique called free-choice profiling to characterize the aromas of eight commercial and seven experimental hop varieties. They then used Generalized Procrustes Analysis to separate the samples into five distinct groups. Gas chromatography then



determined which hop oils corresponded with which aroma characteristics.

Now, if all that makes your eyes glaze over, don't feel alone. And don't turn the page. That's not what we have in mind here. (Of course, if that description whets your appetite, you can read the full paper online). But their study gave me an idea for how we should proceed.

The Plan in a Nutshell

We'll start with three of the hop varieties most often described as citrusy: Cascade, Centennial and Chinook. By the end of this experiment, I hope to have a list of descriptors allowing brewers to differentiate between these citrusy hops. What type of citrus? Is it orange? Lemon? Grapefruit? How intense is the citrus character? And are there other flavor and aroma characteristics each hop imparts?


Between now and March, I propose clubs get together and brew three single-hop beers, one each for Cascade, Centennial and Chinook. We'll use a standard recipe (see page 23) and a set of flavor and aroma standards similar to those used in the OSU study (see Table 1). Each participating club will gather to evaluate their beers as well as raw samples of each of the hop varieties against the set of standards.

For instance, does the beer have any aroma that corresponds with the aroma of the sample of fresh cut grass? Does the flavor correspond with the flavor of the orange slice?

Evaluators will also rate the intensity of each descriptor on a scale of 0 to 10, with 0 being none of the character, 5 being moderate and 10 being extreme.

I will ask one representative from each participating club to send me the raw data from their taste panels. I will crunch the numbers and compile the results, then present them at the AHA National Homebrewers Conference in Baltimore and again in the July/August 2005 *Zymurgy*.

by Jim Parker


Table 1: Standards For Hop Aroma/Flavor 


Aroma/Flavor	Standard	Aroma/Flavor	Standard
Apple (red)	Cubed fresh Jonathan apple	Musty	Cardboard soaked in water and left to sit several days
Apple (green)	Cubed fresh Granny Smith apple	Nutmeg	Ground nutmeg spice
Apricot	Cubed canned apricot	Orange	Cubed fresh orange
Banana	Cubed fresh banana	Orange peel	Sliced orange peel
Basil	Dried basil spice	Oregano	Dried whole oregano spice
Cinnamon	Ground cinnamon spice	Peach	Canned peaches
Clove	Ground clove spice	Piney	Dried pine needles
Dill	Dill weed spice	Prunes	Cubed prunes
Fishy	Tetrafin fish food flakes	Rancid	Rancid cooking oil
Fresh peas	Sliced fresh peas	Rose petal	Rose petals
Grapefruit	Cubed fresh red grapefruit	Rosemary	Dried rosemary spice
Grassy	Fresh cut lawn grass	Sweet honey	Commercial honey
Hay (dry)	Dried cut hay	Thyme	Dried thyme spice
Lemon	Cubed fresh lemon	Tobacco	Tobacco from one cigarette
Minty	Fresh mint leaves	Wet hay	Hay soaked in water
Mushrooms	Cubed white mushrooms		


Table 2: Evaluation sheet 


Aroma/Flavor	Intensity										
Apple (red)	0	1	2	3	4	5	6	7	8	9	10
Apple (green)	0	1	2	3	4	5	6	7	8	9	10
Apricot	0	1	2	3	4	5	6	7	8	9	10
Banana	0	1	2	3	4	5	6	7	8	9	10
Basil	0	1	2	3	4	5	6	7	8	9	10
Cinnamon	0	1	2	3	4	5	6	7	8	9	10
Clove	0	1	2	3	4	5	6	7	8	9	10
Dill	0	1	2	3	4	5	6	7	8	9	10
Fishy	0	1	2	3	4	5	6	7	8	9	10
Fresh peas	0	1	2	3	4	5	6	7	8	9	10
Grapefruit	0	1	2	3	4	5	6	7	8	9	10
Grass	0	1	2	3	4	5	6	7	8	9	10
Hay (dry)	0	1	2	3	4	5	6	7	8	9	10
Lemon	0	1	2	3	4	5	6	7	8	9	10
Minty	0	1	2	3	4	5	6	7	8	9	10
Mushrooms	0	1	2	3	4	5	6	7	8	9	10
Musty	0	1	2	3	4	5	6	7	8	9	10
Nutmeg	0	1	2	3	4	5	6	7	8	9	10
Orange	0	1	2	3	4	5	6	7	8	9	10
Orange peel	0	1	2	3	4	5	6	7	8	9	10
Oregano	0	1	2	3	4	5	6	7	8	9	10
Peach	0	1	2	3	4	5	6	7	8	9	10
Piney	0	1	2	3	4	5	6	7	8	9	10
Prunes	0	1	2	3	4	5	6	7	8	9	10
Rancid	0	1	2	3	4	5	6	7	8	9	10
Rose petal	0	1	2	3	4	5	6	7	8	9	10
Rosemary	0	1	2	3	4	5	6	7	8	9	10
Sweet honey	0	1	2	3	4	5	6	7	8	9	10
Thyme	0	1	2	3	4	5	6	7	8	9	10
Tobacco	0	1	2	3	4	5	6	7	8	9	10
Wet hay	0	1	2	3	4	5	6	7	8	9	10


The Procedure


The first step is to decide if you are in. Just drop me an e-mail at jim@aob.org or call me toll-free at the Oregon Brewers Guild at 800-440-2537. You can participate as a club or with your brewing buddies. 

Set a brew date. You can brew all-grain, partial mash or all extract—the malt component of this test beer takes a back seat to the hops. Just make sure each of the three batches is brewed the same. 

If you have a relationship with a local brewery, like my local Oregon Brew Crew has with Hair of the Dog Brewery, you could get them to supply you with the appropriate base wort. Or, if someone in your club has a monster mash tun, you can do a big mash and split it. What we are looking for is a neutral pale ale of about 12 degrees Plato (1.048). If you are mashing each batch individually, you can adjust so that each has the same volume and the same starting gravity. Make sure you use the same brewing water for all batches. 


My goal would be for each participating group to do a 5-gallon batch using each hop. That way you have plenty of beer for evaluating, but not a glut. 


Each batch should be boiled for the same amount of time, following the same hop schedule. I propose a half-ounce of hops for 60 minutes, a half-ounce at 30 minutes and a half-ounce at the end of the boil. We aren't looking for a hop monster here, just a nice showcase for each individual hop variety. 

Use a neutral, well attenuating yeast—either Wyeast 1056 or White Labs (WLP01). Make sure you pitch each beer with the same strain and the same amount of yeast. 

Ferment and finish each beer at the same temperature and then package each the same.

The Evaluation

If your club or group of brewing buddies is like most, any excuse to get together around a bunch of beer is a good one. Set a date for evaluation. Aside from plenty of glasses, lots of water and palate cleansers, the two things you will need are evaluation sheets (see Table 2) and your flavor and aroma standards. 

In the OSU study, panelists had to familiarize themselves with 50 aroma standards from anise and apples to violet and wet hay. I propose narrowing that list, since we have already narrowed our field to three hops. 

We'll tackle three more—perhaps some noble varieties—next year.

Assemble your panelists into groups of three or four, each group with a small sample of each of the standards.

Have each panelist sample each of the standards, sniffing and tasting as appropriate to familiarize themselves with the aroma and taste of each standard.

Once everyone feels comfortable with each of the standards, remove the samples so they can't taint anyone's perceptions.

Name That Hop Pale Ale

Recipe for 5 U.S. gal (19 L)
(Can be scaled up for monster mash)

All-Grain

- 9.5 lb (4.3 kg) two-row pale ale malt
- 0.5 oz (14g) hops (Cascade, Centennial or Chinook) 60 min
- 0.5 oz (14g) hops (Cascade, Centennial or Chinook) 30 min
- 0.5 oz (14g) hops (Cascade, Centennial or Chinook) 30 min
- 0.5 oz (14g) hops (Cascade, Centennial or Chinook) 15 min
- Wyeast 1056 American Ale Yeast or White Labs (WLP01)

- OG 1.048
- IBU: Will vary for each hop used

Mash grains in 14 quarts of water at 152° F (67° C) for one hour. Sparge and bring kettle volume up to 6 gallons. Hop each batch with a single variety of hop according to the above hop schedule. Chill and pitch yeast. Ferment, package and serve.

Partial mash

- 6.0 lb (2.72 kg) pale, unhoppled liquid malt extract
- 1.5 lb (.68 kg) two-row pale ale malt
- Same hopping as above

Steep grains in a grain bag in 5.5 gallons of 152° F (67° C) water. Add malt extract, bring to boil and hop as in all-grain recipe.

Extract version

- Use 7.0 lb (3.18 kg) malt extract
- Hop as in other recipes.

Now bring on the beers. Sample the beers, one at a time, in a blind tasting. You won't be judging the beers for technical merit (although any off-flavors will skew your results). For each beer, each panelist will circle each of the aroma and taste characteristics they perceive. Then they will rank each characteristic on the 0 to 10 scale.

Finally, bring each group a small sample (3 grams, 10 to 12 cones) of whole hops of each variety. Each sample should have been stored cold then brought out at the start of the evaluation day to warm to room temperature. Each sample should be stored in a clean glass jar with a tightly fitting lid. The jar should be covered with foil and numbered, so the panelists don't know which hop they are smelling.

Each panelist should open each jar in turn, taking three short sniffs. Then the panelists should fill out an evaluation sheet, circling and ranking each of the standards they detect.

That's it. Now you've earned a beer or two that you don't have to evaluate—just savor. Once you are finished filling out the sheets, you can reveal what each of the hops were. Maybe you'll be surprised. Maybe you won't.

Have your representative send me the results at Name that Hop, P.O. Box 1069, Gresham, OR 97030, and I will compile them and report back at the Conference.

So, ladies and gentlemen, start your kettles.
Jim Parker is editor-in-chief of Zymurgy. 🍷

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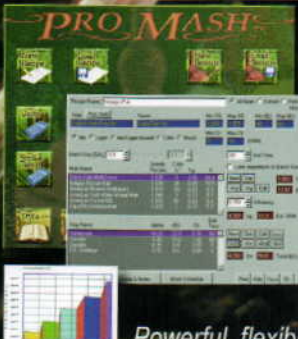
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Düsseldorf Alt Bier

By Abram Goldman-Armstrong



Düsseldorf is a city of dichotomies. Skyscrapers tower over Renaissance architecture. On the Rhein, pleasure craft and canoes skirt speeding barges full of freight. Multilane autobahns contrast with the virtually car-free cobbled streets of the Altstadt ("old town"). But the city is united by its celebrated native Altbier.

While the rest of Germany's population drinks almost nothing but lagers, Düsseldorfers have held on to their traditional ale. Literally "old beer," the name Altbier has nothing to do with the length of aging the beer undergoes as with English old ale, but instead refers to the top-fermentation with ale yeast or the old style of brewing used to produce it. After lager yeast was isolated in 1843, it became widely used throughout Germany, largely replacing ale yeast. The ale survivors were Altbier, Kölsch from neighboring Cologne and Bavarian wheat beers, which use a unique strain of ale yeast.



1



2



3



4



5



6

- 1) Altbier is served vom fasse at Zam Uerige.
- 2) Rolling out the barrel at Zam Uerige.
- 3) Filling the Alt cylinders at Zam Uerige.
- 4) Altbier is gravity fed from the barrel at Zam Uerige.
- 5) Zam Uerige
- 6) Kobes Brauhaus
- 7) Altstadt Bolkerstrasse



7

Düsseldorf proper is home to five Altbier breweries, and the surrounding area to twice that number. Elsewhere in Germany a number of breweries now produce Altbiers, but these are generally distantly if at all related to Düsseldorf Alts. Despite its literal meaning in German, little evidence exists of Alt's history. The Altbier breweries in Düsseldorf have been in existence since the 19th century, and have presumably been producing Alt throughout that time, though recipes were not often recorded. The Düsseldorf Alts are very close in style and exhibit a range of flavors from the dry bitter Schumacher Alt to the rounded toffee-milk chocolaty Schlüssel to the ripe yellow apple maltiness of Uerige.

Drinking Alt in Düsseldorf

Due to its importance as a riverport and western location, Düsseldorf was heavily bombed in World War II, as is evidenced in much of the city's modern architecture. Nonetheless, the reconstructed Altstadt, which turns into a pedestrian mall during the afternoon and evening, is a beer drinker's paradise with 500 pubs within easy walking distance. Most of the Alt breweries are situated in the Altstadt, where Italian pizza cafes and Irish pubs reside next to dance clubs. The streets are flooded with hip young people in the latest fashions from the Kö (shopping district) as well as older, more stiffly dressed locals. Café racer motorcycles and scooters are popular in Düsseldorf and take the place of some of the bicycle traffic in other German cities. At night, crowds pack the streets wandering from bar to bar, and the waterfront promenade that borders the Altstadt has an international flare with a number of swanky restaurants where a mariachi band is more likely to play a serenade than a polka band.

German waiters take their jobs very seriously, and take offense if you bypass them for the bar. Ordering beer from the bar is a huge gaffe in Düsseldorf's traditional establishments—even at Uerige's outside beer tents, waiters are there to serve you. Once you have established a tab with a waiter, he will mark the number of beers consumed around the edge of your coaster. Altbier is served exclusively in cylindrical 25 centiliter glasses with no taper, vom fass (from the barrel), gravity

fed from a barrel on the bar into which a brass spigot is driven. The beer pours with an inch or two of creamy white head, which settles as the beer is consumed. Waiters keep the cylinders of Alt coming until you indicate for them to stop. This can be done by placing your coaster atop your glass, or as the locals seem to prefer, covering the glass with your hand. The coaster is presented to the server, who tabulates the marks on its edge. Tipping in bars is not done on a percentage basis as in the States, and a 1 or 2 Euro tip is generally acceptable regardless of the tab.

Düsseldorf Brewpubs

Uerige

Located just off the waterfront promenade, Zum Uerige draws people to a huge biergarten that spills across Rheinstrasse. This brewery and beer hall was bombed to the ground in World War II and rebuilt beginning in 1945. Interesting architectural features, including large copper sculptures with an almost art-deco flair, adorn the exterior of the building. The brewery produces about 8,000 to 9,000 hectoliters (6,700 to 7,500 barrels) a year, most of which is sold on premises. As the limited menu will attest, its primary purpose is beer drinking.

The pub has variously decorated rooms, from the darker, smokier ones near the Bergerstrasse entrance, to the well-lit blond pine-paneled room overlooking the brewhouse, to the beer stations on the terraced bricks of Rheinstrasse. Waiters scurry to keep everyone supplied with fresh glasses of Alt. There is a short list of food, mostly pork, available in German, English and the local Düsseldorf dialect of German. The raw schweinfleisch is quite interesting and spicy. Schweinhaxe, a local roast pork specialty, can be ordered a day in advance, but Uerige is not the place for a full meal. Waiters often circulate with a selection of snacks on trays, or snacks may be ordered from the waiter who brings beer.

A visit to the toilets brings one beneath the copper mash tun, and the brewhouse is visible behind glass. Uerige Altbier has a fruity mineral aroma, with a malty, ripe yellow apple note to it, some flowery hops and a tawny amber color. The flavor has a mealy, malty character with soft hop tang.

Brauerei Schlüssel

Another Altstadt brewpub, "the Key" 45 Bolkerstrasse, was founded in its current incarnation in 1936, and produces an excellent example of the style. The schwemme, or public bar, dominates this pub, and tables line both sides of the street outside. A spicy hop aroma rises from the beer's pillowy white head and the rounded malt flavor with milk chocolate malt softness pairs with gentle hop flavor and bitterness in this malt-dominated tawny golden alt.

Im Fächshen

"The Fox," founded in 1848, is popular with a younger crowd that spills out into the street at night, with many drinkers standing around the few tables outside. Tangy hop aroma with a hint of yeastiness and caramel malt dominates the aroma and breadly malt. Earthy hop flavor and tart bitterness are balanced in favor of the hop flavor.

Schumacher

Located near the Oststrasse U-bahn (underground stop), Schumacher is in the Chinatown commercial district of Düsseldorf, and the neighborhood could have been taken from any North American city.

Despite its less than picturesque setting, the brewery offers an excellent taste of Düsseldorf, and is an easy walk from the Altstadt via the Königsallee shopping district. In the schwemme, locals stand at a rail around the bar and ingenious tables that look as if Charles Rene Macintosh designed them, with shelves underneath for coats and hats. As with all Düsseldorf brewpubs the beer is poured vom fass by a proficient barman. When the barrel gets low, the barman climbs through a small hatch into the basement and loads a new barrel onto a dumbwaiter that raises it to the countertop. Schumacher also sells its Alt to go in 1-liter swing-top bottles, for which a five-pack cloth carrier is available. Customers exchange the empty bottles for full ones at the front counter.

Schumacher's restaurant at the brewery as well as its Altstadt location boast hearty traditional German fare, such as schweinhaxe, which pairs well with its dry bitter version of Alt. Of all the Düsseldorf Alts, Schumacher has the most pronounced bitterness. A raspberry-ripe apple fruitiness and gentle

maltiness rise from the creamy tan head on this ruddy beer (almost the same hue as a rosé wine). There is a short burst of hop flavor balanced with a toffee note from the malt leading into long, dry hop bitterness.

Other Alts

Schlösser also produces an Alt in the city, with caramel and tangy Tettnang or Hersbrucker-like hops in the aroma and a full caramel flavor with a slight nip of bitterness. Frankenheim and Diebels are two large-scale Alt producers, and their products may be found around Germany and abroad. Diebels, the largest Altbier brewer, is now owned by Interbrew and has a glitzy restaurant at its production facility in Issum. The plant's total production (including Pilsener, light and pre-mix, a cola Alt blend, is 1.2 million hectoliters (1 million barrels) annually. The Alt it produces is lighter in mouthfeel than the Düsseldorf Alts, has a Grape Nuts cereal note to the caramelly aroma, a full ruddy amber color and a gentle Hallertauer hop flavor.

Brewing Altbier

Can't make it to Düsseldorf? Brewing Altbier is relatively simple. Most homebrewers tend to brew ales, so Alt is one of the easiest German beer styles to produce, though lagering for several weeks to achieve the classic smoothness is recommended.

German Pilsener malt should comprise the majority of the grist, with Munich malt making up 10 to 20 percent with just a touch of black malt for color. A simple infusion mash is fine for Alt production as the Pilsener malt should have no problems converting, and the emphasis is on a crisp beer, which need not have the intense depth of malty mouthfeel derived from decoction. A low mashing temperature is required to produce highly fermentable wort in order to get the classic dryness.

The initial fermentation occurs at normal ale temperatures around 65° F, but the secondary/lagering should be at 40 to 50° F for four to six weeks. For a truly traditional Alt, it should be primed and conditioned in a Corny keg and served via gravity feed. An easy way to achieve this is to invert the keg and attach a beverage line to the gas inside, and a beverage head to the dip tube side as a vent.

Alt (Alt-Grain)

Recipe for 10 U.S. gallons

- 21.0 lb (9.5 kg) Weyermann Organic Pilsener Malt
- 3.0 lb (1.36 kg) Weyermann Light Munich Malt
- 0.25 lb. (113 g) Weyermann Black Carafa II Malt
- 3.5 oz (99 g) Bavarian Spalt hops, 4.5% alpha acid, first wort hopping
- 1.5 oz (42.5 g) Perle hops, 7.5% alpha acid, 60 minutes
- 1.0 oz (28 g) Bavarian Spalt hops, 4.5% alpha acid, 30 minutes

- OG: 1.050
- FG: 1.009

Heat 8 gallons of water (including 2 of foundation water below false bottom) to 162° F (72° C). Dough in and stabilize at 148° F (64° C) for one hour, then sparge with 8 gallons of 170° F (77° C) water. Pitch starters of Wyeast 1007 German Ale yeast and ferment at 62 to 64° F (17 to 19° C) for one week, then transfer to lagering at 50° F (10° C) for four to six weeks.

Abram Goldman-Armstrong makes his home base in Portland, Ore., where he writes about beer for the *Celebrator Beer News* and *Northwest Brewing News*. He is a member of the Oregon Brew Crew.

What to See

The Waterfront

A stroll along the Rhein is a must for any visitor to Düsseldorf. Bustling barges are flanked by sailboats and canoes on the weekends, and the quays are packed with everyone from tourists to Rollerbladers to street musicians. The evening outdoor dining scene along the river is elegant.

The Kō

Düsseldorf is the fashion capital of Germany, and nowhere is this more evident than in the trendy designer clothing shops of the Königsallee. The latest from Paris and Milan as well as homegrown fashions are sold in opulent shops, which flank the canal built for decoration in the mid-1800s.

The Hofgarten

Germany's oldest public park, the Hofgarten sprawls around a lake where geese and swans splash about. Locals lounge on the grass or cycle through the trails.

The Stadtmuseum

An eclectic mix of art, archaeological artifacts and furniture is displayed in a casual manner in this rambling museum. A large collection of local painter Carl Lauterbach's work is one of the highlights. His eerie paintings of waggish 1920s gentlemen consorting with skeleton women are somewhat reminiscent of Mexican Day of the Dead art. There are also a number of modern art museums in town, including the famous Academy of Arts.

German waiters take their jobs very seriously, and take offense if you bypass them for the bar. Ordering from the bar is a huge gaffe in Düsseldorf's traditional establishments...

Where to Stay

Backpackers Düsseldorf

180 Furstenwall. Dorm beds from 20€, breakfast and sheets included. This hostel is located at the south end of the Altstadt. Check-in from 8 a.m. to 9 p.m.

Hotel Berial

Gartenstrasse 30, 40479 Düsseldorf. Phone: +49 (0)211 490049 0, www.hotel-berial.de

A quirky modern hotel, the Berial offers single rooms from 39€, and doubles from 69€ including VAT and breakfast buffet. Located just off the Hofgarten, it is about a 15-minute walk from the Altstadt and 20 minutes from Schumacher.

Steigenberger Parkhotel

Corneliusplatz 1, 40213 Düsseldorf. Five-star accommodation with single rooms from 232€ is just off the Hofgarten.

THE IOWA BEER TINKERERS

Have you ever wondered, while enjoying a homebrew, how different the beer would taste if you could change just one ingredient in the recipe? This kind of mind-set stokes the natural curiosity of many homebrewers. Some experienced homebrewers possess a vivid “taste for the imagined,” such that they can be induced to drool when asked about their next recipe. This is similar, I suppose, to the bliss felt by Pavlov’s dogs.

To hone this taste, many brewers tinker with a favorite recipe, returning again and again to brew the same beer with minor modifications. For an ideal comparison, a brewer should change only one ingredient at a time. Any difference in the beer can then be attributed to the substitution in the recipe.

Or can it?

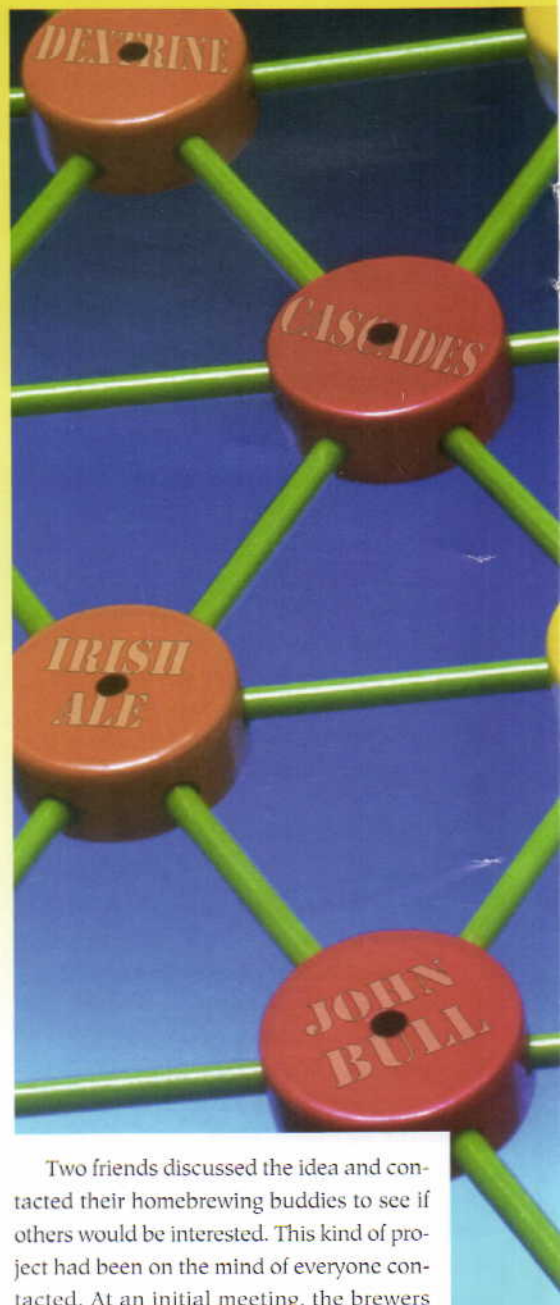
Unfortunately, natural variability exists in crops from year to year and from place to place. In fact, the amount of alpha acids found in hops harvested from a single plant can vary by several percentage points between two different years. This leads to a perplexing question: is the noticed change in a beer due to the controlled change in the recipe or a natural variation in the grain, hops or extract?

by Paul D. Ogg

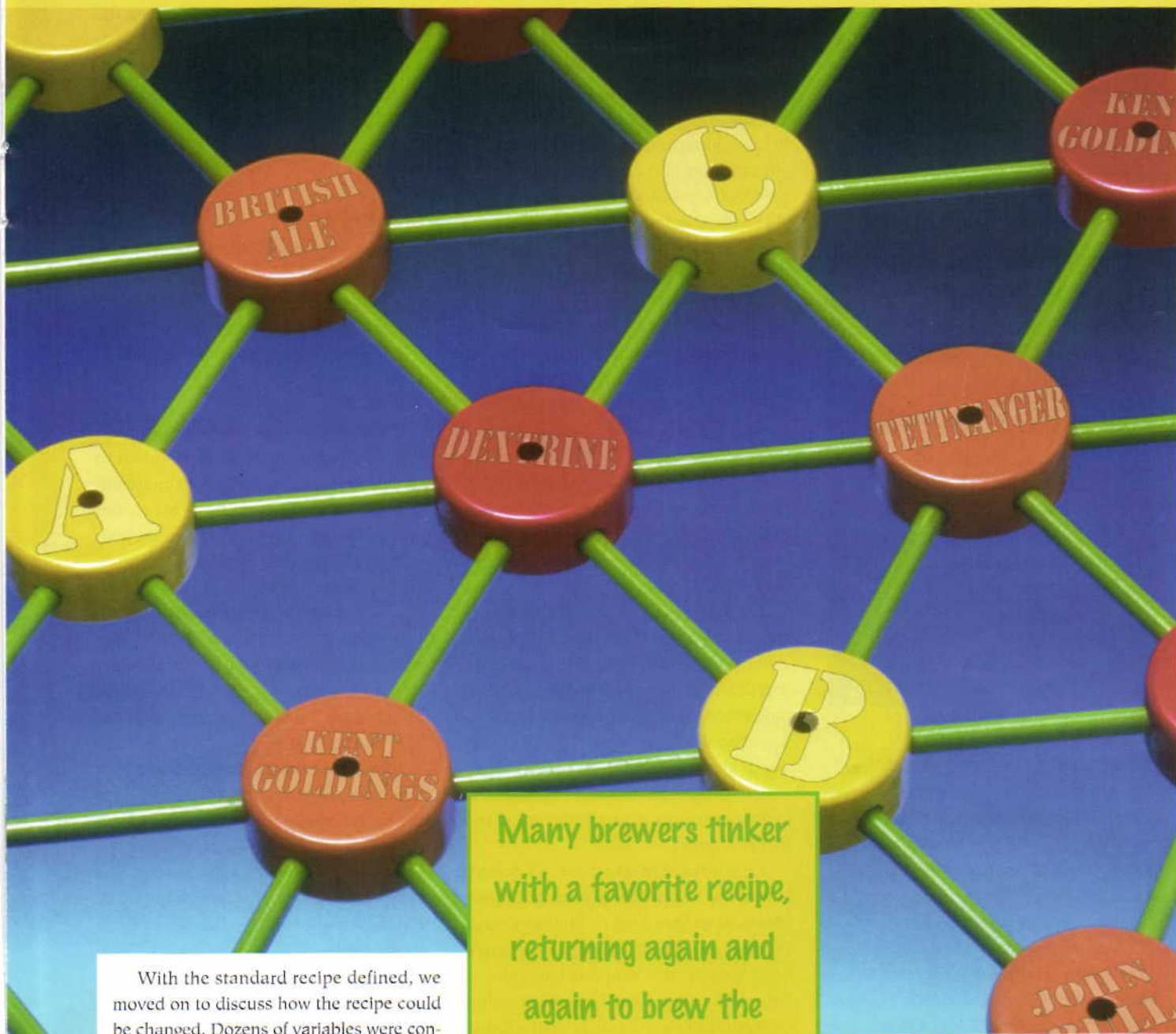
Another factor that confounds comparisons between “tinkered” beers is that taste comparisons are often made between two beers of different ages. Comparing a relatively green one-month youngster to a delectable four-month old-timer gives the aged beer a monster advantage. To get around this conundrum, some meticulous brewers keep detailed notes so they can compare a “beer in hand” to a “beer on paper.” More often, however, such notes are not available and a brewer will compare a beer in hand to a beer that resides in the cushy recesses of fond memories. With aging differences and natural variations in the ingredients working against a brewer, it’s important to take the lessons learned with a grain of salt (which, ideally, is found on a pretzel).

The Plan

One way to avoid these confounding influences is to brew 10 batches of beer, all in the same day, using ingredients that came from the same harvest. What a busy brew day that would be. Another way is for a group of brewers to cooperate. Each brewer could make one batch of beer and compare it to the nine other batches made by the other brewers. This is exactly the arrangement set up by a group of brewers in Iowa in late 2003.



Two friends discussed the idea and contacted their homebrewing buddies to see if others would be interested. This kind of project had been on the mind of everyone contacted. At an initial meeting, the brewers chose a style and formulated the standard recipe. Distinct beer styles characterized by a particular potent flavor (such as IPA or rauchbier) were excluded, because subtle flavor differences in the experimental beers might be hidden under the distinct style. On the other hand, recipes for nondescript beer were undesirable, because we were making 50 gallons of the stuff. The beer would need to be pleasant to consume in its own right. Finally, because all-grain and lagering were not an option for some brewers, we decided to brew a simple porter from extract and specialty grains (see Table 1).



With the standard recipe defined, we moved on to discuss how the recipe could be changed. Dozens of variables were considered and each brewer provided unique insights as to possible effects each variable could have on the final product (see Table 2). In the end, the list of interesting variables exceeded the number of brewers involved in the project. Different variables inspired different brewers and, because there was no duplication of interest, each brewer was able to test the variable he or she found most interesting (see Table 3). As a last order of business, a firm schedule of activities was agreed upon, a detailed protocol was outlined (see Supplement 1) and bulk supplies were ordered.

Many brewers tinker with a favorite recipe, returning again and again to brew the same beer with minor modifications.

On a cold November evening, we divvied up the grains, hop pellets and bulk extract and drew our brew water from the appropriate sources. Brew day was just a couple of days later and bottling day couldn't come soon enough. Busy holiday schedules kept us from meeting to compare the beers until mid-February. Upon tasting, we were pleased

to discover that the beer had aged quite well during the two months since bottling.

The Results

By itself, the beer tasted pleasant, but plain. While sweet, it would have benefited from additional malt and a stronger hop profile. The steeped chocolate malt provided an interesting nutty hint that saved the beer from being completely artless. For the purpose of the experiment, the beer completely fulfilled our designs. The flavor was simple enough on the palate that subtle flavor

differences would be detected, but was interesting enough for the brewers to desire to consume the beers. The color was a bit tamer than we would have liked. The beer was too light for a porter and would be better classified as a brown ale. Unless otherwise stated, the physical characteristics such as head and color of the beers were identical to the characteristics of Standard A.

Sweet Porter Recipe

3.3 lb (1.5 kg) Munton Dark Malt Extract
3.3 lb (1.5 kg) Munton Amber Malt Extract
0.5 lb (227 g) Chocolate Malt
2.0 oz (56 g) Fuggles hops, 4.4% alpha acid, 60 min
0.5 oz (14 g) Tettnanger hops, 4.0% alpha acid, 5 min
1 tsp. Irish Moss
White Labs Ready to Pitch Burton Ale Yeast
5 gal Iowa City well water
0.75 cup corn sugar (to prime)

- Desired OG: 1.045
- Actual OG: varied greatly, from 1.048 to 1.038

Standard A

The beer poured a one-finger head, which lapsed to a ring around the edges by the end of the glass. A few bubble streams raced to the surface and cloudiness was glaringly evident in the brown liquid. The scent was sweet with the flat grassy hop tone that can come with Fuggles.

Sweet malt predominated the palate to start. Darker grains then appeared in the form of mild hazelnut and a gentle grain bitter that quickly blended into a grassy hop finish. Once down the throat, the tongue quickly lost all memory of the beer, including the light to medium-light body.

All in all, it was a pleasant beer probably tasted during its prime. It was safe, not unique, the kind of beer used to turn a commercial beer drinker onto homebrew.

Variations

6.5-gallon ferment (instead of 5-gallon ferment): The recipe used to make this beer was identical to the recipe used to make Standard A. The beer was fermented in a 6.5-gallon carboy in order to retain the krausen

in the fermenter, whereas Standard A was fermented in a 5-gallon carboy and lost about a quart of krausen out of the blow-off tube.

When consumed alone, the 6.5-gallon fermented beer was a satisfactory homebrew. A bitter bite at the end of each sip left a memory of the beverage in a way that Standard A lacked. When compared side by side with Standard A, however, the bitter bite made the 6.5-gallon fermented beer distinctly less desirable. Delightful fruity flavors tasted in Standard A were overwhelmed by an astringency that conflicted with the sweet malt and disarmed any nuttiness that may have been present. The grassy hop finish took on a sharp edge that made some tasters wonder if dandelions had grown on their tongues.

Despite the weak finish to Standard A, the tasters unanimously preferred the delicate play of flavors found in Standard A over the bitter punch of the 6.5-gallon fermented beer.

Irish Ale Yeast WLP004 (instead of Burton Ale Yeast WLP023): The physical characteristics were identical to Standard A and the flavor was very similar. The sweet malt was a bit softer than Standard A, perhaps because of an interesting hint of silky cream like that found in an oatmeal stout. It wasn't clear if the beer had a heavier body or if the creamy taste tricked the mouth into that perception.

Cascades (instead of Fuggles): While the physical characteristics were identical to Standard A, the hops made the beer an entirely different experience. Most notably, this beer was too hoppy to be a porter. The West Coast hop profile changed this beer into an American Brown that was enjoyed by all the tasters. The citrus floral "C" hop profile worked well in the sweet malt, perhaps even standing strong because the gentle beer had been designed to allow subtle flavor differences to be detected.

Kent Goldings (instead of Fuggles): The physical characteristics were identical to Standard A, but the hop profile dramatically changed the character of the beer. While not bitter, there was a refreshing spiciness, a tangy, earthy flavor that worked quite well with the nutty flavor from the chocolate malt. Hop level was appropriate

for the sweetness of the beer. Perhaps the most pleasant of the beers tasted that evening.

John Bull (instead of Munton & Fison): Unfortunately, this brew became infected. It turned to sour vinegar in the primary.

Standard B

Standard B was identical to Standard A, except the water came from a different well (the same aquifer, but some 25 miles away). The two beers shared physical characteristics and were indistinguishable by taste.

Variations

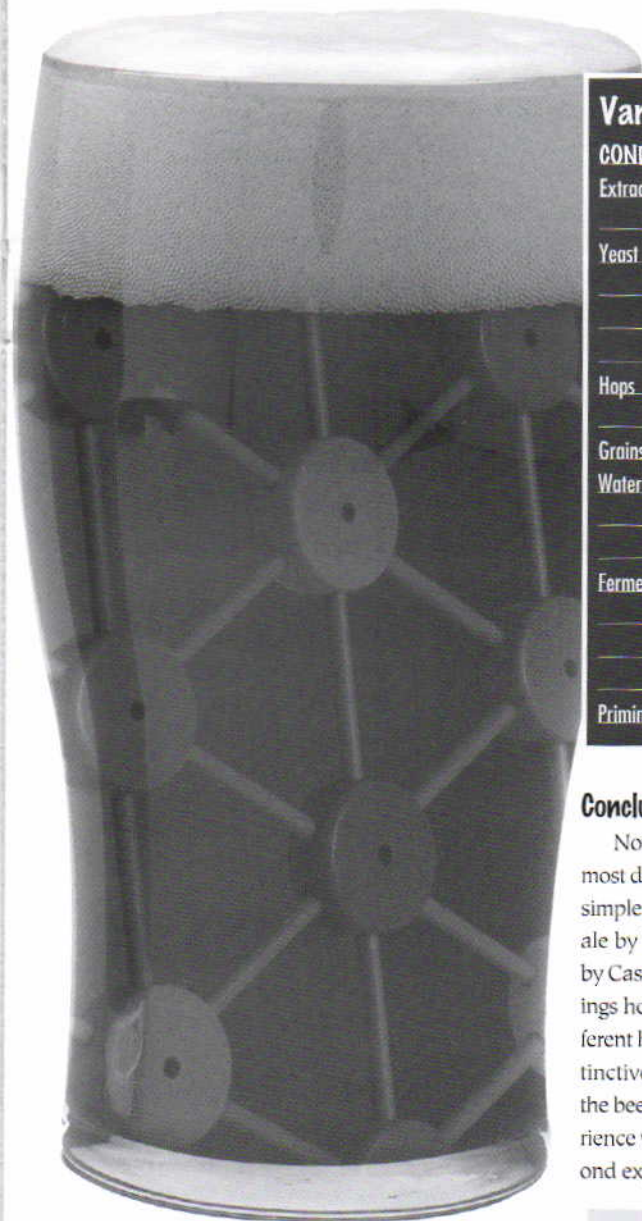
Tettnanger (instead of Fuggles): Physical characteristics were similar to Standard B, but the flavor was quite different. The Tettnanger hops bit earlier and were more pronounced and aromatic than the Fuggles used in Standard B. Hop level was appropriate to the intensity of other flavors and played well with the sweet malt. Additionally, the hop experience pushed the flavor of the beer beyond the swallow, whereas the flavor of Standard B ended abruptly when the beer left the mouth.

Plus Dextrine Malt: As dextrine malt had been suggested to affect the head of the beer, we were disappointed to see no difference in the size or retention of the head when compared to Standard B. The color was barely darker than Standard B, but the flavor of the two beers was indistinguishable.

Standard C

This recipe was identical to Standard A, except the water was obtained from a well located near the Mississippi River, some 50 miles away. The easily generated head was foamy and enormous, like a bubble bath in a beer glass. About half of the head subsided while the beer was consumed, and only because some of the foam stuck to our lips and tips of our noses.

This beer was lighter in color, lighter in body, had a gentler sweet-malt flavor, and was perhaps a bit hoppier. Upon discussion, we discovered that the brewer had diluted this beer in a way that none of the other brewers had. After racking to the



Variables Considered for the Experiment

CONDITION	VARIABLES	RATIONALE
Extract	Dry vs. Liquid	Is one form better than the other?
	Different brands	Is one supplier a better source than another?
Yeast	Pitchable Tube vs. Dry	Are \$5 tubes better than 50-cent packets?
	Starter vs. No Starter	"Started" ferments are said to improve flavor.
	Different brands	Is one supplier a better source than another?
	Different strains	Said to dramatically affect flavor.
Hops	Pellet vs. Whole Leaf	Does pellet compaction affect hop flavor?
	Different strains	Predicted to have the greatest effect on flavor.
Grains	Addition of Dextrine Malt	Said to improve head retention.
Water	City vs. Well	Water is said to dramatically affect flavor.
	Well X vs. Well Y	Water is said to dramatically affect flavor.
	Addition of gypsum	Water hardness is said to affect flavor.
Fermentation	Plastic vs. Glass	Plastic is said to be permeable to oxygen.
	5.0 vs. 6.5-gallon carboy	Bubbling out krausen is said to be beneficial.
	Different temperatures	Can flavorful esters/phenols be generated?
	Duration	Does time on the trub adversely affect flavor?
Priming	DME vs. Corn Sugar	DME is said to produce a smoother head.

Conclusion

Not surprisingly, the flavor of the beer was most dramatically influenced by the hops. Our simple porter was transformed into a German ale by Tettnanger hops, an American brown by Cascade hops and an English ale by Goldings hops. The brewers who chose to use different hops were interested in learning the distinctive qualities of the hops. By comparing the beer, each brewer obtained firsthand experience with the flavor of each hop used. A second experimental beer is being planned and,

in order to further expand our experience base, some brewers will vary the hops.

Size of the fermentation vessel, the variable we considered least likely to affect the flavor of the beer, was actually the second most influential factor. As the two beers were prepared by the same brewer and the two fermentation vessels sat side by side, there can be little doubting the results. Perhaps the urban legend of foul-tasting fusel alcohols being blown out with the krausen is true. We are now interested

secondary, the brewer had topped off the carboy with tap water. While this can't explain the differences in the head, this dilution may explain the lighter color, body and gentler sweetness. The increased perception of hops may simply be the result of other flavors having been diluted.

Variation

Wyeast British Ale Yeast (instead of Burton Ale Yeast): This beer was identical to Standard C in regards to physical characteristics and flavor, except for a hint of cream that persisted through the quaff. Like Standard C, this beer had also been diluted after racking to secondary.

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Variables Tested

NAME	WATER	VARIABLE
Standard A	A	The standard recipe using water source A.
6.5 Ferment	A	Fermentation run in a 6.5-gallon instead of a 5-gallon carboy.
Cascades	A	2 oz Cascades as boiling hops instead of 2 oz Fuggles.
K. Goldings	A	2 oz Kent Goldings as boiling hops instead of 2 oz Fuggles.
Irish Ale	A	Ferment with Irish Ale (WLP004) instead of Burton Ale Yeast (WLP023).
John Bull	A	Used John Bull extract instead of Munton's extract.
Standard B	B	The standard recipe using water source B.
Tettnanger	B	2 oz Tettnanger as boiling hops instead of 2 oz Fuggles.
Dextrine	B	2 cups CaraPils malt steeped with Chocolate malt.
Standard C	C	The standard recipe using water source C.
British Ale	C	Ferment with Wyeast 1098 instead of White Labs WLP023.

in comparing the quality of brew fermented in glass to brew fermented in plastic.

We were surprised that the different yeasts had barely detectable effects on the beers. This may be that the yeasts used in this experiment were chosen because they are all known to have relatively neutral effects on flavor. More notable differences may have been apparent if our choices of yeast had been bolder.

Perhaps most surprising was that the source of water had no effect on flavor despite having an enormous impact on head and head retention. How could the physical characteristics change so much without having a notable effect on taste? This question will be explored further in our next experimental brew session.

Interestingly, we found that dextrine malt did not affect head or head retention, contrary to numerous sources we consulted. It's possible that dextrine malt needs to be mashed in order to increase head retention.

Final Comments

For the experienced brewers, some of the changes in the recipe had predictable effects on the beers, a confirmation of their "taste for the imagined." For newer brewers, this experiment will play a pivotal role in their development of this taste. The unexpected results intrigued new and experienced brewers alike. Some brew lore was called into question. What other information, which we assume to be correct, is actually inaccurate? This fresh perspective has encouraged the experienced brewers out of brew ruts and to start thinking outside the box again.

Another rewarding aspect of the experiment was meeting and exchanging ideas with other homebrewers. Each person came to the initial meeting with a different background and a different level of brew experience. The exchange of ideas and opinions was wonderfully engaging and has sparked even more "beer-tinkering" thoughts in our restless minds. I can't wait for our next experiment.

Paul Ogg drank macro-swill until a friend finally submitted to his begging and taught him how to brew. His professional activities include laboratory instruction and research in cancer and virology. By the time this issue is at the press, Paul will have earned his Ph.D. in Molecular Biology from the University of Iowa. He's eager to begin his post-doctoral position at the University of Colorado, Boulder.

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Supplement 1: Brewing Procedure with Brewing Schedule

BREWING, FRIDAY, NOVEMBER 28, 2003

1. Sanitize a 5-gallon glass carboy and brew instruments with bleach water.
2. Boil 2 gallons of water, allow to cool and add to sanitized carboy.
3. Shake the White Labs yeast until the yeast pellet is fully re-suspended.
4. Heat 3.0 gallons of water until the water begins to steam.
5. Steep the cracked Chocolate Malt in a grain bag for 15 min. with the lid on the pot.
6. Remove the grains and allow the grains to drip into the pot for 1 min.
7. Add the two cans of Malt Extract to the pot and stir until the syrup is dissolved.
8. Return the pot to the heat.
9. When the wort begins to boil, add 2.0 ounces of Fuggles. Beware of boilovers!
10. Boil the wort for 45 minutes with the lid off the pot.
11. Add 1 teaspoon Irish Moss and boil the wort for 10 more minutes.
12. Turn off the heat, add 0.5 ounces of Tettnanger and put the lid on the pot.
13. Place the pot in a bathtub filled halfway with cool water.
14. After 30 minutes, whirlpool the wort with a sanitized spoon and replace the lid.
15. After 30 more minutes, rack the wort from the pot into the sanitized carboy.
16. In order to aerate the wort, splash the wort onto the bottom as you rack.
17. The purpose of racking is to leave behind as much trub as possible in the pot.
18. Add boiled water to the carboy up to the 5-gallon fill line.
19. Allow the brew in the carboy to cool to room temperature.
20. Shake the yeast, pitch and vigorously stir the brew in the carboy.
21. Take a sample for a specific gravity reading — don't return the sample to the carboy.
22. Attach the blow-off tube and place the free end into a bucket of water.

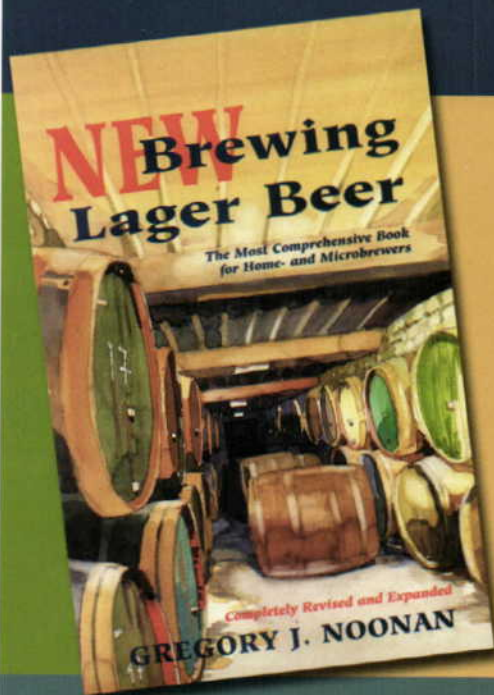
RACKING, FRIDAY, DECEMBER 5, 2003

23. Sanitize a 5-gallon glass carboy and racking instruments with bleach water.
24. Rack the brew into a sanitized 5-gallon glass carboy.
25. To prevent aerating the wort, do not splash the brew as you rack.
26. The purpose of racking is to leave as much trub as possible in the fermenter.
27. Take a sample for a specific gravity reading — don't return the sample to the carboy.
28. Place an airlock on the carboy.

BOTTLING, FRIDAY, DECEMBER 19, 2003

29. Sanitize 55 clean brown 12-ounce bottles and the bottling instruments.
30. Add 0.75 cups of corn sugar (boiled in 1 pint tap water) to a sanitized bottling bucket.
31. Rack the brew from the secondary into the bottling bucket.
32. To prevent aerating the wort, do not splash the brew as you rack.
33. The purpose of racking is to leave as much trub as possible in the secondary.
34. Avoiding aeration, stir the sugar into the brew in the bottling bucket.
35. Take a sample for a specific gravity reading — don't return the sample to the carboy.
36. Bottle. Place a sanitized bottle cap on a bottle after that bottle has been filled.
37. Keep in mind to fill each bottle so that only half of the bottleneck is airspace.
38. Wait 10 min., then firmly seal the bottle caps onto the bottles.
39. Place the bottles in containers that will prevent exposure to light.
40. Store the containers where fermentation and conditioning were performed.

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ABUZZZ

CICADA BEER

By Greg Kitsock

In the Washington, D.C. area, every 17th spring belongs to the cicadas.

We're not talking about your garden-variety annual cicadas whose chirruping can be heard on sultry July and August evenings. No, these cicadas belong to a species nicknamed Brood X. Most of their existence is spent underneath the earth, sucking the sap from tree roots. In the 17th year of their lives, they emerge in immense hordes—as many as a million insects per acre—and metamorphose into adults: inch-and-a-half long black bugs with red eyes and gold-laced veins in their wings.

For a few weeks in May and June, they engage in a frenzy of mating to propagate their species, buzzing annoyed pedestrians and littering the streets and sidewalks with their squashed carcasses. Their mating call—a high-pitched whine said to resemble the sound of phasers in the original "Star Trek" series—can drown out conversations. Then they disappear just as suddenly as they arrived, leaving behind their larvae to begin the cycle again.

A few folks draw inspiration from the insects. One musician composed a symphony in their honor. *The Washington Post*, in an article titled "Cicadas: The Other White Meat," described the joys of munching on cicadas sautéed in butter.

One Arlington, Va. homebrewer even brewed a bug beer.

Why Not?

Steve Marler grew up in Simi Valley, Calif. ("where Ronald Reagan is lying now"), and moved to the D.C. area in 1988, one year too late to witness the last cicada invasion. He works for the U.S. Department of Labor, helping former Communist bloc nations make the transition to a free-market economy. ("I go on four to six trips a year. They actually have a brewpub in Warsaw called Soma that's pretty good," he informs us.)

Marler has been homebrewing in his spare time for the last 11 years, and is currently a member of the D.C.-area club



Brewers United for Real Potables. He's no stranger to brewing weird beers—he once made a Worcestershire sauce ale — but has had more success in competitions with such traditional styles as double bocks.

Asked why he would choose cicadas as an adjunct, Marler answers that he got caught up in the excitement over the bugs and "I decided to mark the moment."

His first step was to fill a quart jar with cicadas, about 75 insects in all. (Catching the cicadas is no problem. They have no fear of humans, which they seem unable to distinguish from trees.) "I collected them right after they had molted, before their shells hardened ... I thought there would be less protein that way."

But how do you prepare the bugs for the brew? Marler contacted David Gordon George, author of the *Eat-a-Bug Cookbook*. He was not able to provide much insight but thought it was a great idea. Marler also sought help from local beer authority Bill Madden, brewmaster and co-owner of Founders Brewpub in Alexandria, Va. Madden told him to forget about it.

Indeed, if you discount honey beers and cask ales (which are customarily fined with isinglass, a derivative of the swim bladders of certain sturgeon), very few brewers have experimented with animal byproducts in their beer. Andy Tveekrem of Dogfish Head Craft Brewery, when he worked for Great Lakes Brewing in Cleveland, once whipped

Yeah, this is nothing...you shoulda been here back in the '87 tour, man! Now, those were the days!

Yeah, yeah...blah, blah, blah...



cicadaAle

Ingredients for 12 U.S. gallons

- 36.75 lb (16.67 kg) two-row pale malt
- 4.0 lb (1.8 kg) Munich malt (dark)
- 2.25 lb (1.02 kg) CaraMunich 40
- 0.75 oz (21 g) Centennial hops, 10.5% alpha acid, 60 min
- 0.75 oz (21 g) Northern Brewer hops, 9% alpha acid, 56 min
- 0.75 oz (21 g) Cascade hops, 5.75% alpha acid, 52 min
- 0.75 oz (21 g) Mt. Hood hops, 6.5% alpha acid, 48 min
- 0.75 oz (21 g) Centennial hops, 10.5% alpha acid, 46 min
- 0.75 oz (21 g) Northern Brewer hops, 9% alpha acid, 42 min
- 0.75 oz (21 g) Cascade hops, 5.75% alpha acid, 38 min
- 0.75 oz (21 g) Mt. Hood hops, 6.5% alpha acid, 34 min
- 0.75 oz (21 g) Centennial hops, 10.5% alpha acid, 30 min
- 0.75 oz (21 g) Northern Brewer hops, 9% alpha acid, 26 min
- 0.75 oz (21 g) Cascade hops, 5.75% alpha acid, 22 min
- 0.75 oz (21 g) Mt. Hood hops, 6.5% alpha acid, 18 min
- 0.75 oz (21 g) Centennial hops, 10.5% alpha acid, 14 min
- 0.75 oz (21 g) Northern Brewer hops, 9% alpha acid, 10 min
- 0.75 oz (21 g) Cascade hops, 5.75% alpha acid, 6 min
- 0.75 oz (21 g) Mt. Hood hops, 6.5% alpha acid, 2 min

- 1.00 oz. (21 g) Czech Saaz hops, 3.5% alpha acid 0 min

- 1 quart of cicadas (about 75 insects)

White Labs English ale yeast

- Actual original gravity: 1.081
- Actual final gravity: 1.026
- IBUs: 92.7
- Alcohol: 7.31% abv

• Dough in at 165° F (74° C). Saccharification rest temperature (at 90 minutes) 150° F (66° C). Mash out rest temperature, 165° F (74° C) (10 minutes). Sparge temperature, 170° F (77° C) (20 minutes).

• Boil for 90 minutes. Beginning at 60 minutes, hop according to the above regimen.

• Ferment at 65° F, both primary and secondary. Primary fermentation takes three weeks, secondary fermentation takes six to seven weeks.

Note: Steve Marler writes that after the beer had spent three weeks in the secondary he checked the gravity and found it too high, so he re-pitched some White Labs California ale yeast to drop the gravity.



up an "oyster stout-chunky style" by adding pureed bivalves to an imperial stout base. Boston Beer Co.'s Jim Koch dabbled with a 300-year-old recipe for "cock ale" by suspending several boiled chickens in the wort for a brown ale. And Kalamazoo Brewing Co. president Larry Bell added "Rocky Mountain oysters" (actually the testes of

bulls or other barnyard animals) to a stout he made for the 2003 AHA conference.

However, none of those beers were sold commercially, and all of those adjuncts are consumed by humans in the normal course of affairs.

But really ... an insect beer?

Bug Roast

Marler finally sought inspiration from



Steve Marler used 17 whole-hop additions to mark the cicadas' life cycle.

the *Post* article, which stated that American Indians used to catch cicadas and roast them over an open fire. So he smoked the bugs over applewood chips on his outdoor barbecue. He then added them to the mash, where they spent 60 minutes simmering.

Marler devised the recipe and brewing procedure to have as much significance as possible for cicada cognoscenti. He used 17 whole-hop additions to mark the cicadas' life cycle. He shot for an IBU count of 87 to commemorate the year 1987, when Brood X last appeared. He aimed for an original gravity of 21 Plato to denote the year 2021, when the cicadas will once again emerge to mate. (The measured OG came close, attaining a value of 19.6.)

By May 22, Marler had accumulated enough cicadas to brew 12 gallons of barleywine, which he called CicadAle. He bottled half of the batch in June and the other half in August after giving it an additional dry hopping.

The initial reaction was somewhat negative. "One of my wife's friends said, 'Don't ask me over for beer!'" recalls Marler. But as news spread, he became something of a beer celebrity. The *Post* printed a separate article on his homebrew. He was interviewed on a Denver radio station. "BeerAdvocate had 60 comments on my cicada beer," he noted.


Marler also found out that Dan Listermann, a homebrewer from Cincinnati, Ohio, had attempted a cicada beer. "I picked them in the morning as they emerged from their shells and were still white without wings," related Listermann,

a member of the Bloatarian Brewing League. "I blanched and froze them. When I got better than a pound, I toasted them until they were crisp. To go into the mash, I ground them in a corona mill. For mashing I did a very extended protein rest of two hours."

Listermann says the resulting brew (5 gallons of a pale ale) was "mostly boring." He added, "While there are odd flavors, they are very subtle. I think that I overprocessed [the cicadas]. I figure that I have 17 years to think about the next time."

Marler expects his barley wine to evolve in interesting ways over time. His original plan was to drink the cicada beer sparingly, savoring the last drops in 2021 when the cicadas return. He intended to enter it in one competition a year, but that may change as so many people have requested samples.


Greg Kitsock is editor of *American Brewer* and *Mid-Atlantic Brewing News* as well as a regular contributor to *Zymurgy*.



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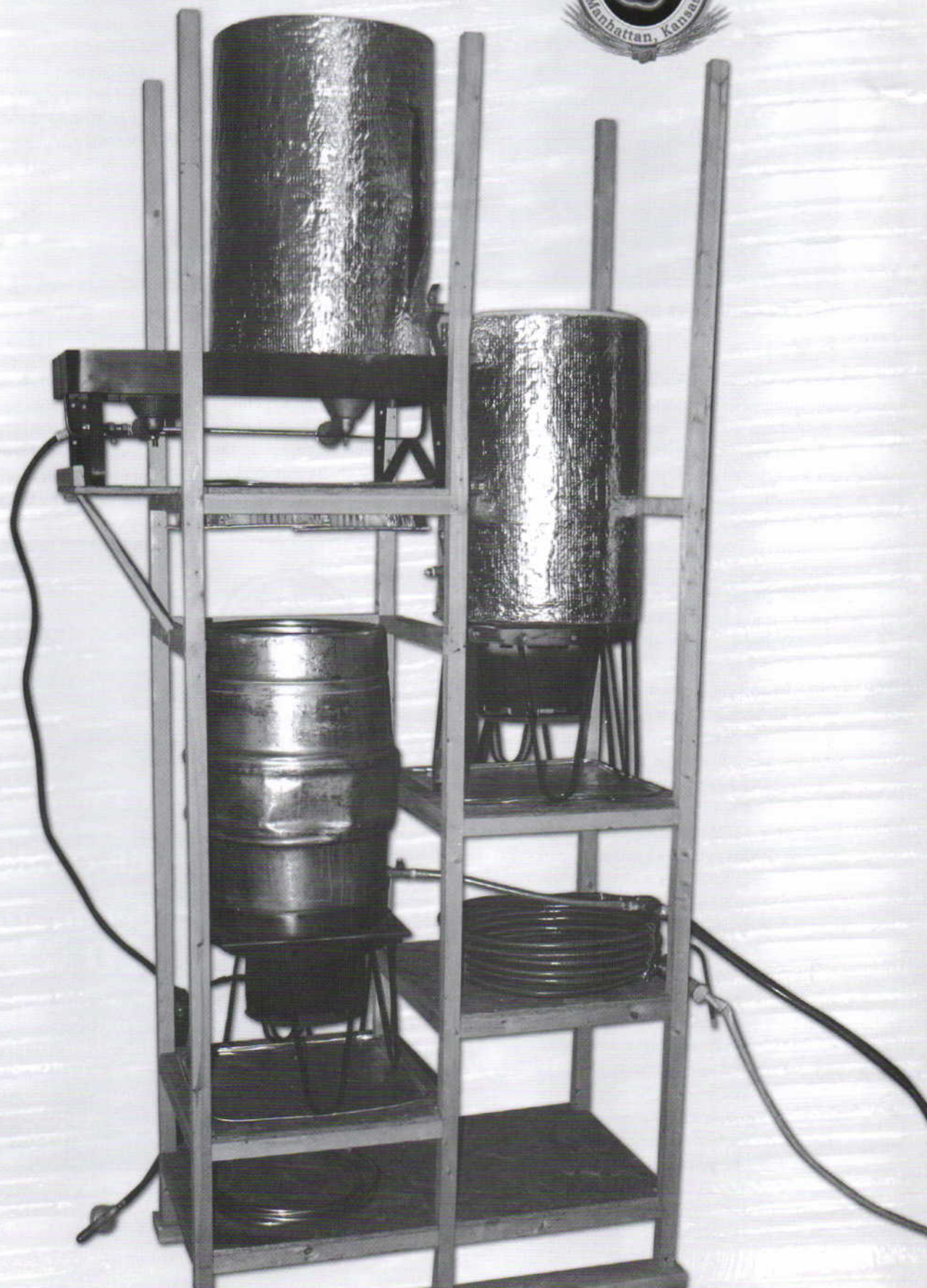
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THE HALF-A-BUGKAPOUND

BREWERY

BY JOSEPH A. AISTRUP

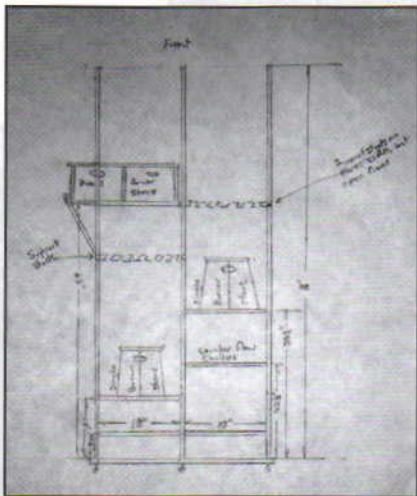


I started to build my brewhouse on a whim. My old 5-gallon brewing system had served me well for seven years. This system consisted of two 20-quart enamel canning pots, an 8.5-gallon enamel canning pot that was my boiler, a homemade 5-gallon plastic bucket lauter tun, a homemade immersion chiller and an outdoor propane dual burner stove.

In spring 2003, I read an article in *Zymurgy* about the Buckapound Brewery built by Randy Mosher. This brewery, constructed with scrapyards stainless steel and scrounged gadgets, was truly amazing but far beyond my do-it-yourself abilities. Nonetheless, the Buckapound Brewery showed me, a ne'er-do-well, wannabe microbrewer, that one can find a treasure trove of brewery hardware at the local scrapyards.

Initially, I was looking for Corny kegs. However, sitting in the middle of the scrapyards were five—count 'em, five—15.5-gallon stainless steel kegs. After thinking about it for a week (what took me so long?), I went back to the yard and bought the kegs. At 50 cents a pound, they cost a grand total of \$72. My wife was not happy, but I thought it was a stainless "steal." And so I started my Half-a-Buckapound Brewery.

My kegs sat in the backyard all spring while I searched the Web looking for plans. With plenty of sites detailing RIMS, DIMS and HERMS, my initial vision was much larger than my budget or my capacity to wire and program the integrated system con-



BREWERY BLUEPRINT

trollers. After much soul searching, I decided that a three-tier gravity system would be best. Little did I know that this would also challenge my do-it-yourself abilities.

The first step was to construct the brewery stack. Because I am not a metal worker and this is the Half-a-Buckapound Brewery, I decided to build the stack using 2-by-2 wood studs (I also live close to a fire department). I chose a two-column design where the hot liquor tank is on the top of the first column, the lauter tun sits in the middle of the second column and the boiler sits on the bottom level of the first column, directly below the hot liquor tank. Luckily, I'm not scared of heights and I don't mind ladders. The real bummer of



CONSTRUCTED STACK

this system is that I feel like a Sherpa on Everest lugging buckets o' water to the summit of the hot liquor tank. And when I get up there, I sometimes get a nosebleed. Luckily there is always a good homebrew awaiting my descent to base camp.

My next step was to take three of the kegs to my local welding shop. Using a plasma torch, they cut the tops and holes for the plumbing. Now came the fun part, plumbing the kegs. I know what Randy Mosher would do. He would weld stainless-steel full couplings into the sides of the kegs. But this is the Half-a-Buckapound brewery, so I did not take this approach. Instead, I decided to go weldless.

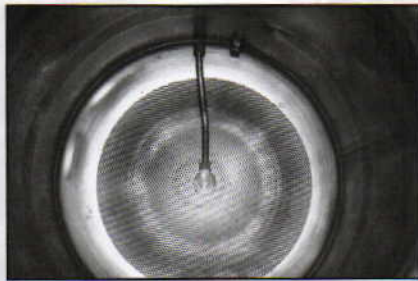
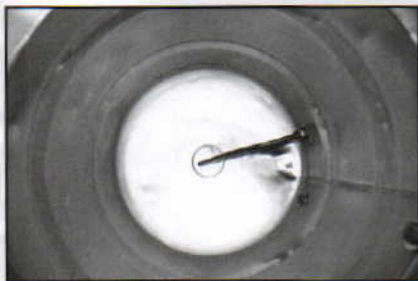
One of the things Randy did not tell you, but I will, is that buying is easier than making. This is an eternal truth, a religious canon, one of the fundamental laws of nature. Unfortunately, I'm not terribly bright, only semi-religious and have never been particularly good at obeying laws. After much time, effort and trips to the local scrapyards, hardware stores and the like, I figured out another eternal truth. If you can't find it locally, go online.

The tough parts to find in a medium-sized town like Manhattan, Kan. (the Little Apple) for a weldless connection for a 3/8-inch brass full port ball valve with 5/8-inch female pipe threads (FPT) are the 11/16-inch inside diameter (ID) copper or stainless steel washers and the 9/16-inch ID high temperature silicone O-rings. Randy, of



HOMEMADE SIGHT-GAUGES





PLUMBING FOR HOT LIQUOR, LAUTER-TUN AND BOILER

course, would fabricate his washers. I tried this too, but, lacking a quality drill press, ended up with a malformed washer. My second approach was much more successful. It seems that most domestic car oil drain plugs use 11/16-inch ID copper washers. The ID to OD thickness of these washers is a little thin, but it worked anyway.

The second problem was to find high temperature rubber or silicone O-rings. Although I could find the right size rubber O-ring at my local hardware stores, none of them could withstand temperatures greater than 150° F. After a quick online search, I found high temperature silicone O-rings (FDA approved). When buying these O-rings, make sure to specify the 9/16-inch ID O-rings (width 1/8-inch). It's a tight fit around the 5/8-inch OD male pipe threads, but I found that connections using these tight fitting O-rings do not leak, whereas 11/16-inch ID O-rings tend to leak. The one pitfall of buying online directly from a manufacturer is that you have to buy in bulk, and shipping charges can be rather high.

When using kegs, it's nice to know how much liquid is in them. This requires some

THE NICE THING ABOUT THIS DESIGN IS THAT YOU CAN EASILY ADD A HOPBACK, ADAPT IT TO ADD A PUMP, OR CREATE A DIMS, RIMS OR HERMS SYSTEM.

type of sight gauge. Of course, I know what Randy would do. He would find a cool new gadget to reconfigure into a sight gauge. Instead of going to the scrapyard, I went to the hardware store and also searched online. I think that even Randy would approve of my sight gauge contraption, revealed for the first time in these pages. I used 3/8-inch OD high temperature silicone (rated for over 500° F) tubing in combination with two "all tube" 3/8-inch elbows with inserts. This design has some advantages. Because the tubing is flexible, it bends to follow the molding of the stainless steel kegs. In my case, one of my kegs is a Coors keg, which has a larger outside diameter mid-section than either the bottom or the top. It also has no parts that break. Finally, it's easy to clean.

Randy's Buckapound Brewery included many gadgets and pumps to control, direct and move fluids. The Half-a-Bucka-

pound Brewery uses Newtonian laws of gravity to control, direct and move fluids. The plumbing inside the hot liquor tank, mash tun and boiler is very typical. I found that simplicity of design is essential. Thus, I used 3/8-inch ID copper tubing with compression fittings for ease of assembly and cleaning. I also bought a 12-inch stainless-steel false bottom online for the mash tun. It works like a charm. Randy would be proud.

Because my system is made of wood and the boiler is located directly below the fiberboard shelf holding the hot liquor tank, I decided that it might not be a good thing to have hot steam coming off the boiler, directly scorching the fiberboard. Thus, I decided to build a hood to deflect the steam. Now I know Randy would go to the scrapyard, find an interesting hunk of sheet metal and proceed to fabricate an intriguing hood. But this is the Half-a-Buckapound Brewery. And besides, Wal-Mart is closer than the scrapyard. I ended up buying two foil turkey-roasting pans, the large ones. Using scissors, I cut one side off of each pan. I carefully and adroitly placed one of the pans upside-down on the bottom side of the hot liquor tank shelf and tacked it into place using my trusty electric staple gun. I then carefully fit the cut-off end of the second pan over the cut-off end of the attached pan, effectively doubling the coverage of the foil pans. Finally, to route the steam away from the front



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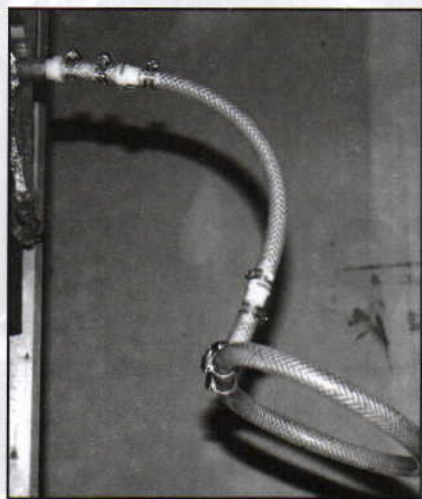
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side of the brewery stack, I bent the foil sides of the pans over the shelf support in the back, allowing the steam to escape out the backside of the stack.

Here are some other features of my Half-a-Buckapound Brewery that all you other ne'er-do-well, wannabe microbrewers might want to consider.

- I used hot water heater insulation wrap



SPARGING ARM

chiller using plans I got from the book *Brew Ware* (Lutzen and Stevens 1996, p. 119) with a few minor modifications.

The nice thing about this design is that you can easily add a hopback, adapt it to add a pump, or create a DIMS, RIMS or HERMS system. I do not have temperature gauges on this system yet, but they will be my next addition. If you decide to



INSULATION

(R-19) for the hot liquor tank and mash tun. It's thinner and easier to cut and tape than that old roll of pink house insulation. To minimize heat loss from the top of the keg, I cut round tops out of R-5 pink-ridged insulation foam board. The wrap and foam board make a very efficient insulation system. Over the course of 90 minutes, the amount of heat loss from the mash tun is about 2° F.

- Whenever possible, I have used 3/8-inch barbed quick disconnects. These things are a godsend. I purchased my male and female quick disconnects online. You'd be smart to get at least 10 each, because you never know when you're going to need them.
- The water in the Little Apple tends to be a little over-chlorinated. Some brewers buy in-line water filters and attach them to the brew stack. I bought a small refrigerator water filter and connected it to my utility sink faucet. This filter has two male quick disconnects that conveniently fit the female quick disconnects I bought.
- I decided to build a counter-flow wort

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COUNTER-FLOW WORT CHILLER

When Joe Aistrup isn't brewing, he's a political science professor at Kansas State University and a member of the Little Apple Brew Crew. He knows the answer to the age-old question "What do you do with a political science degree?" Drink lots of homebrew. ☺



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The Perils of Prison Brew

I've decided to go straight.

No more speeding. No jaywalking. I'm not even going to rip the tags off my mattresses anymore.

Why?

During the recent National Homebrew Conference in Las Vegas, I participated in the brewing world's version of "Scared Straight," the old TV show that took kids to meet the lifers in a New Jersey prison.

Yes, I judged in the Quality Ale and Fermentation Fraternity's (QUAFF) first—and one can only hope last—Prison Brew Competition.

The rules for this contest were simple: All beverages (to call any of them beers would be sacrilegious) entered had to be brewed using only ingredients that could be found in a prison or military kitchen. That meant flour, bread, fruit, nuts, sugars and juices were all fair game. No commercial hops or commercial yeast could be employed. And, finally, although at times I wondered if any of the "brewers" read this last one, nothing dangerous to drink could be used.

Jamil Zainasheff of QUAFF took time out from his duties as judge coordinator for

the final round of the National Homebrew Competition to assemble a panel of four guinea pigs, er, judges. Besides yours truly, the judges were Charlie Papazian (who needs no introduction here but nearly needed a stomach pump in Vegas), David Houseman (a Grand Master II BJCP judge) and Peter Zien (owner and brewer at AleSmith Brewing).

The beverages—a dirty dozen—arrived packaged in everything from beer bottles (including an AleSmith Grand Cru bottle) to a ... ahem... Ziploc baggie.



"Please spare me, Lord!" Charlie Papazian judging the Prison Brew competition.

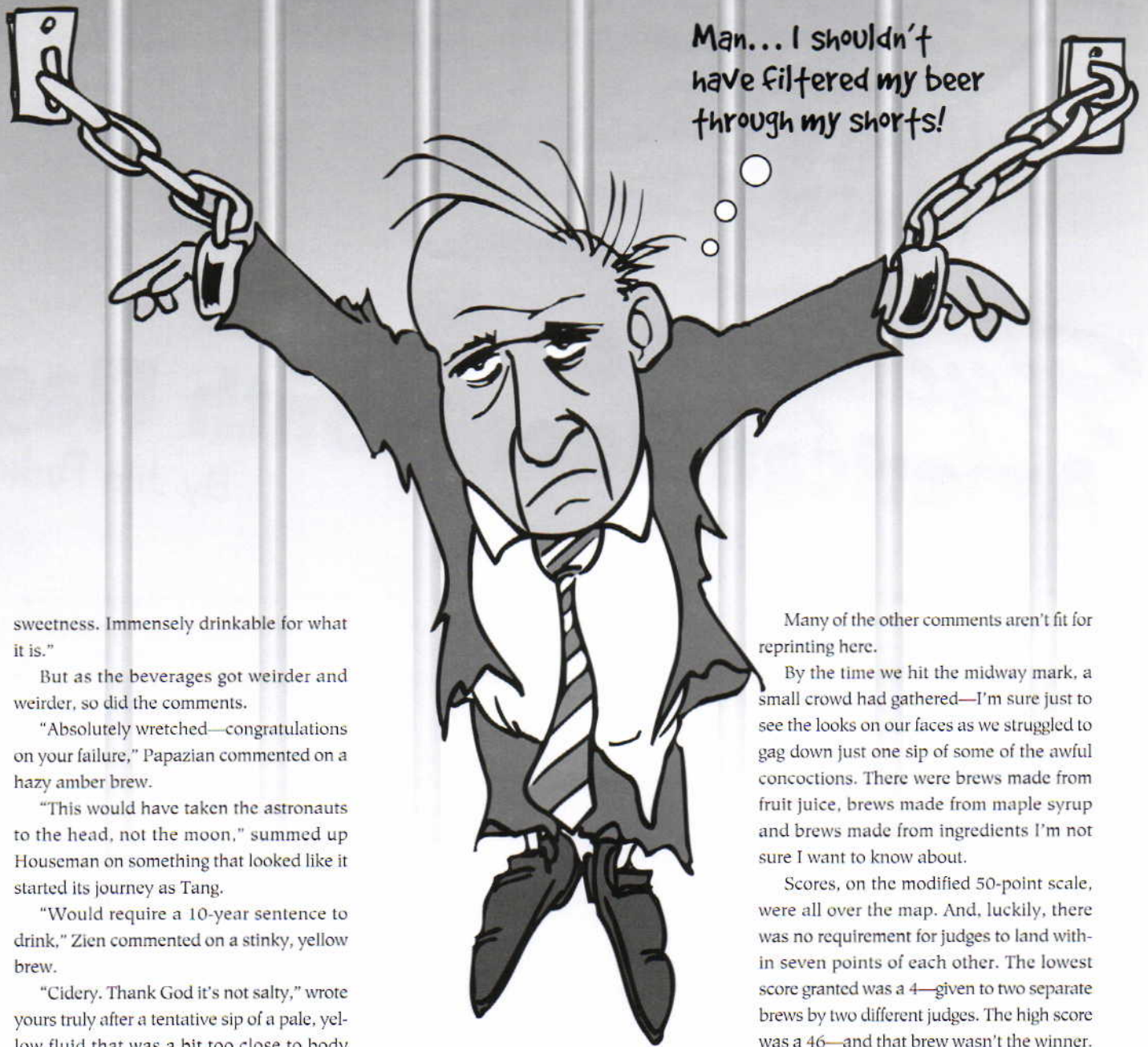
We were handed scoresheets with the rules and room for points and comments in five categories: appearance, aroma, taste, authenticity and—this was a real stretch with some of them—drinkability. Each category was worth a total of 10 points.

A score of 0-10 would earn the dubious distinction "Don't drop the soap." From 11-20, "Watch your back." From 21-30, "Who's your daddy?" From 31-40, "I'm your daddy." Any beer scoring above 40 earned the praise "The warden has a deal for you."

By the end, the judges were comparing notes on how long of a sentence they should give each brewer.

With what could only be described as grim determination, we set to the task. I am proud to report that each judge took at least one sip of each liquid set before him. But I have to admit, I have never seen the dump buckets emptied as often at any competition. At the start, we all tried, really tried, to judge these beverages fairly and accurately. Witness Papazian's comments under "authenticity" for one of the early brews: "Probably would pass...try to harvest some wild yeast for better attenuation."

Or Zien's assessment of another: "Unusual mix of high alcohol and cloying



Man... I shouldn't have filtered my beer through my shorts!

sweetness. Immensely drinkable for what it is."

But as the beverages got weirder and weirder, so did the comments.

"Absolutely wretched—congratulations on your failure," Papazian commented on a hazy amber brew.

"This would have taken the astronauts to the head, not the moon," summed up Houseman on something that looked like it started its journey as Tang.

"Would require a 10-year sentence to drink," Zien commented on a stinky, yellow brew.

"Cidery. Thank God it's not salty," wrote yours truly after a tentative sip of a pale, yellow fluid that was a bit too close to body temperature.

One clear, pale yellow fluid elicited these assessments:

From Houseman: "Strip search for the mouth."

From Zien: "This sucks enough to be authentic... Immensely undrinkable."

From Parker: "Words fail me. I need sandpaper for my tongue."

From Papazian: "Please spare me, Lord!"

by Jim Parker

Many of the other comments aren't fit for reprinting here.

By the time we hit the midway mark, a small crowd had gathered—I'm sure just to see the looks on our faces as we struggled to gag down just one sip of some of the awful concoctions. There were brews made from fruit juice, brews made from maple syrup and brews made from ingredients I'm not sure I want to know about.

Scores, on the modified 50-point scale, were all over the map. And, luckily, there was no requirement for judges to land within seven points of each other. The lowest score granted was a 4—given to two separate brews by two different judges. The high score was a 46—and that brew wasn't the winner.

When all the scores had been tabulated, the amber brew in the AleSmith bottle won the distinction "Least Offensive of Show." The concoction, fermented from maple syrup by Chad Stevens, will never win any medals at any other competition, but it did get him a great new refractometer from Beer, Beer and More Beer.

I trust he will use it for more noble means.

Jim Parker is editor-in-chief of Zymurgy. ☺



Flying the American Beer Month Flag

By Jim Parker

Shoppers in retail liquor stores in Colorado and Ohio got extra encouragement to “buy American” this past July as the American Beer Month promotion moved into the retail store arena.

In Colorado, Eddie Miller, who brokers several American beers through his Priority Brands business, got tired of seeing banners for Cinco de Mayo and St. Patrick’s Day.

“I thought if they could do that for Cinco de Mayo and sell a lot of tequila and Mexican beers, then we could certainly do it for American Beer Month,” said Miller.

As a member of the Association of Brewers board of directors, he knew where to go. The AOB is the driving force behind American Beer Month and had an assortment of banners and other display materials.

Miller took the banners to a number of stores in his area and the response was enthusiastic.

“It worked really well,” he says. “People put up displays with assorted American craft products. I saw Sierra Nevada displays, Mendocino, Rogue.”

In all, eight stores created American Beer Month displays—the first time American Beer Month has been promoted on the off-premises level.

“This is a great way for people to learn about American Beer Month,” Miller said. “Everybody enjoyed it. They all asked about American Beer Month and what it means.”

In Fairfield, Ohio, Jungle Jim’s International Market didn’t need any encouragement. The store proudly flew the American Beer Month banner and celebrated by focusing its monthly beer specials and tastings on American beers.

Jungle Jim’s is not a beer or liquor store, but rather a large upscale grocery that has its own monorail. The store underwent a 90,000 square foot expansion to its existing 170,000 square feet in 2003. The store’s beer department alone features more than 400 American craft beers from 66 breweries, and 800 imports.

Dave Schmerr, wine and beer director, rearranged the store’s displays to highlight domestic beers, particularly craft beer selections from Midwestern states.

His American Beer Month promotions were featured in the July 19 issue of *Supermarket News*, giving broader exposure to the celebration of American beer.

The off-premises promotion was just one of the many activities that took place

in July as American Beer Month celebrated its fifth year. Brewers from coast to coast brewed special beers, held events and even took to the airwaves to spread the word about the flavor and diversity of American craft beer.

The Association of Brewers beefed up its Web site with polls, beer education and giveaways.

“Consumer traffic on the Web site was up by more than 1,000 visits per day,” said Ray Daniels, director of Craft Beer Marketing for the AOB. “That’s nearly a 10-fold increase in traffic over last year.”

“American Beer Month continues to grow as we begin to see it have more impact outside of brewery retail outlets and other brewery-sponsored activities,” said Daniels. “Over the next year, we all need to work on getting distributors to think about ABM as an opportunity so that they will promote it with retailers. There’s no reason why every liquor store shouldn’t have an ABM banner on display during the month of July.”

If you have a local beer retailer you think needs an American Beer Month banner next year, contact Daniels at ray@aob.org.

Jim Parker is editor-in-chief of *Zymurgy*. ☞

BY AMAHL TURCZYN SCHEPPACH

A Mother of a Malt Vinegar

Vinegar, like beer and wine, is one of the most ancient and revered food products known to civilized humanity, mainly because of its ability to resist spoilage. Nothing harmful can grow in full-strength vinegar; this is because of its high acid content rather than alcohol.

Louis Pasteur was the first to discover, in 1857, that the conversion of wine to vinegar was caused by the presence of bacteria and oxygen, although it wasn't until 1878 that Danish botanist Emile Christian Hansen correctly explained the chemical process. In very basic terms, the alcohol created by yeast during fermentation is broken down by the bacteria *Acetobacter aceti* into acetaldehyde, and then into carbon dioxide and acetic acid, a.k.a. vinegar. (Interestingly, your liver follows a similar path when it oxidizes ethanol into hangover-inducing acetaldehyde, and then into CO₂ and vinegar, only it uses an enzyme called dehydrogenase.) These processes must take place in the presence of oxygen and don't happen nearly as quickly as fermentation, so would-be vinegar makers should prepare to wait three to six months for their vinegar to taste and smell like it should.

Medicinal Properties of Vinegar

Malt vinegar has been touted as a magical elixir capable of curing fever, dandruff, gout, arthritis, psychosis, halitosis and warts. While all this may or may not be proven, it is certain that like unfiltered, unpasteurized homebrew, vinegar made at home in the traditional manner is much better for you than that clear distilled white stuff you use to wash your windows. Naturally made vinegar has historically been recognized for its medicinal value, as far back as Hippocrates in 400 BCE. And while it may not cure blindness or paralysis, it certainly contains many of the same nutrients found in living, bottle-conditioned homebrew.



With the recent SARS outbreak in several Asian countries, vinegar's reputation as a folk medicine may have crossed over into the realm of the scientifically proven fact. In China, vinegar has long been touted as an anti-viral agent to combat diseases like pneumonia, but against the SARS virus, people in the livestock industry were blending 5 percent acetic acid with 3 percent hydrogen peroxide and using it as an antiseptic spray. The resulting peracetic acid was said to be quite effective, and is indeed used in many modern breweries for similar sanitizing purposes. So perhaps this humble and ancient remedy has some powerful jujū after all. And it tastes great on fish and chips.

Choosing the Best Beer for Malt Vinegar

Apple cider, wine and beer can all be used to make vinegar, but each can contain preservatives that inhibit the growth of acetic bacteria. In wine and cider, sulfites are often added for that very purpose, so using such a wine to make vinegar can often result in a sluggish conversion, or may kill off the bacteria altogether. One of beer's prime preservatives is hops, so as a rule, the more lightly hopped your ale is, the better vinegar it will make. The bitterness of hops doesn't lend itself particular-

ly well to a good malt vinegar either. Therefore, if you are somewhat unimpressed with a batch of Belgian Dubbel, a Scottish ale, a German Hefeweizen or even a sweet or foreign-style stout, you might consider "vinegarizing" it. Any traditional beer strength will make decent vinegar, but the stronger the alcohol, the higher acid content your vinegar will have.

Of course, if you are intent on producing malt vinegar right from the start, rather than converting a finished beer, you can do what commercial malt vinegar producers do and forego the usual step of boiling your wort. Like a distiller's wash, malt vinegar begins life as unhopped, nitrogen-rich, highly diastatic, strong (15 to 18 °Plato) wort that is lautered from the mash with all its starch enzymes intact. Don't worry about recirculating for clarification—in this case, cloudy wort is better. The wort is cooled to fermentation temperature, aerated, pitched with yeast and allowed to ferment. Its fermentation in some ways resembles that of sake in that starch enzymes continue to act on any remaining starches in the turbid wort, while the yeast simultaneously go about the business of converting those sugars into alcohol. The resulting "beer" is then ready for the next stage: acetification.

Where to Pick Up a Fresh Mother

Acetic bacteria form a slimy mass known as a "mother" during the conversion of alcohol to acetic acid. The layer usually forms on the surface, spreads out into a uniform layer then drops to the bottom while a new layer re-coats the surface. Dedicated vinegar makers keep mothers for years, much like bread makers keep sourdough cultures by feeding them periodically and taking a bit every time they want to make a fresh batch.

Finding someone with an active culture is the best way to go if you want to try your

hand at vinegar making, but, barring that, your best alternative for obtaining a culture is to buy one. Many homebrew shops carry pure culture vinegar mothers. Or, you can go to a health food store and pick up a bottle of natural, unpasteurized vinegar. Bragg apple cider vinegar is one popular brand that contains a living, active mother (how active of course depends on how long it's been sitting on the shelf) and can be used as a starter for vinegar production. Just make sure you shake it well—that brownish, unsightly layer of sediment on the bottom is what you want. A cup of vinegar per gallon of fermented beer should more than suffice to get the process rolling.

Making Vinegar

First and foremost, if you're a brewer wanting to make malt vinegar, use extreme caution keeping these two crafts well separated. *Acetobacter* is one of the brewer's biggest enemies, and while a batch of malt vinegar is great to have on hand, you don't want each subsequent batch of beer to end up the same way. If you can't completely sterilize, not just sanitize, each and every piece of equipment that comes in contact with your active vinegar, make sure it is never used for beer making—that means siphon hoses, wooden spoons, sample jars, fermenters, buckets, etc. You may want to consider taking a permanent marker and writing "vinegar" on everything that will be exposed, as a precaution. Also, if you can physically remove your vinegar operation to a part of the house away from the brewery, you'll be much better off.

You will need a wide container in which to store your vinegar while your mother is doing her thing, some good-sized pieces of cheesecloth and your vinegar culture. A glass carboy can be used, but you will need to maximize exposure to air, and that's not always easy in such a vessel.

Many vinegar producers and traditional makers of vinegar insist that an oak barrel used for "production" and/or aging will soften and mellow the vinegar, but barrels are expensive, and, once infected, are vinegar barrels for life. A cheaper alternative is a 5-gallon plastic bucket. Regardless of the type of vessel used, you will need to sanitize it, along with all other equipment. It may seem

odd to sanitize for vinegar making, but you want only acetic bacteria to grow in this beer.

If you are working with beer that was originally intended for consumption as beer, chances are it is carbonated. Your first task will be to remove as much of that carbonation as you can. If the beer is in bottles, uncap them and pour the beer into a bucket. Don't worry about yeast sediment—the bacteria won't mind. Remember to splash the beer around as much as possible. This is difficult for the homebrewer—we're told to keep air out of beer after it's fermented, but this is vinegar making and we're out to "spoil" this beer in short order, so just grit your teeth and do it.

When the foam has settled, pour the contents into another sanitized 5-gallon bucket (only one of these buckets will actually be exposed to the acetic bacteria) to incorporate as much oxygen as possible and reduce the CO₂. Repeat a few times. Then add the mother or vinegar dregs as above, and cover the bucket with a couple of layers of cheesecloth. Don't cover with a plastic bucket lid—this will not allow further exposure to air, which is important for the ensuing transformation into vinegar. Make sure to secure the cheesecloth with tape or a large rubber band to keep a certain vinegar-loving insect, the fruit fly (also known in some areas as the vinegar fly), from poking around in your brew.

Now you have two to six months to wait. A warm garage or cellar is a good spot to leave the bucket. Colder temperatures will slow the process. Take a sniff occasionally. Your nose should tell you when it smells right. You will probably detect the in-between stages and byproducts of the process as the alcohol is broken down: the green apple smell of acetaldehyde, the nail-polish smell of ethyl acetate. Be patient. If these off-odors persist, it may be beneficial to aerate again to guarantee full oxidation.


When the vinegar smells done, remove the cheesecloth and inspect it. Your mother may still be floating on top, or it may have sunk, leaving the liquid exposed. Remove and save the mother in a jar if you wish for your next batch. Adding a few tablespoons of well-aerated apple juice

every couple of months should keep her in good shape. Now taste a little of the vinegar. Most commercial malt vinegars are diluted to about 5 percent acidity. Yours will most likely be stronger than this, depending on the strength of the beer you began with, so it will most likely be quite an eye-opener. If everything checks out, you can now siphon it or decant it off the residue into bottles.

At this stage, just as with beer making, you no longer want to incorporate oxygen. A little splashing during bottling is OK, but the bacteria will continue to break down your vinegar if you keep adding oxygen and you'll end up with little more than carbon dioxide and water. So if you aren't keen on pasteurizing your vinegar at this point, restricting its oxygen supply by bottling carefully, with little headspace, is important. Bottled correctly, it should still last several years unrefrigerated.

Aging

Vinegar should mellow and improve for several months once bottled, but you can transfer it to another vessel instead and bulk age it if you want. Again, oak barrels have traditionally been used for this and will do a great job mellowing the sharpness, but oak chips can also be used. Or, you may decide to get fancy and bottle the vinegar with flavorings. Malt vinegar isn't as delicately flavored as wine varieties, but will still take on flavors from various herbs and spices. Fresh tarragon, dill, red chile and caraway seeds will all make interesting variations for the culinarily inclined. Bottles of homemade vinegar make great gifts, too. Now no one's nose will get out of joint when the judges' comments on that batch of "Toil and Trouble Dubbel" read, "Would taste great on a salad."

Amahl Turczyn Scheppach is a former associate editor of *Zymurgy*. 

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O'Brien's Pub
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Encinitas, Escondido, Huntington Beach,
Mission Valley, Mission Viejo, San Diego
(3), Santa Clarita, Vista
Rock Bottom Restaurants
Irvine, La Jolla, Long Beach,
San Jose, San Diego
Rogue Ales Public House
San Francisco
Russian River
Santa Rosa
Santa Barbara Brewing Co.
Santa Barbara
Stone Brewing Co.
San Marcos

CONNECTICUT

Hops Grillhouse and Brewery
Manchester, Newington, Waterbury
Willimantic Brewing Co.
Willimantic

DELAWARE

Iron Hill Brewery and Restaurant
Newark
Stewarts Brewing Co.
Bear

FLORIDA

Dunedin Brewery
Dunedin
Hops Grillhouse and Brewery
Boynton Beach, Bradenton, Brandon,
Clearwater, Coral Springs, Daytona Beach,
Ft. Lauderdale, Ft. Myers, Gainesville,
Jacksonville, Lakeland, Miami, Naples,
Ocala, Orange Park, Orlando (2 locations),
Palm Harbor, Pembroke Pines, Plantation,
Pompano Beach, Port Richey, Sanford,
St. Petersburg, Stuart, Tampa (3 locations),
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GEORGIA

Hops Grillhouse and Brewery
Douglasville, Duluth, Kennesaw (2)

HAWAII

Kona Brewing Co.
Kailua-Kona

ILLINOIS

Hops Grillhouse and Brewery
Aurora, Colorado Springs,
Denver, Golden, Littleton,
Lone Tree, North Glenn
Ironworks Brewery & Pub
Lakewood
Left Hand/Tabernash Brewing Co.
Longmont
Odell Brewing Co.
Fort Collins
Old Chicago
Aurora, Boulder, Broomfield, Colorado
Springs (3), Denver (3), Ft. Collins (2),
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Pumphouse Brewery & Restaurant
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Redfish Brewpub
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Boulder
Rock Bottom Restaurants
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Rockyard Brewing Co.
Castle Rock
Smugglers Brewpub & Grille
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Bettendorf
Raccoon River Brewing Co.
Des Moines
Rock Bottom Restaurants
Des Moines
Old Chicago
Lawrence, Lenexa, Overland Park, Wichita (3)
Denver

INDIANA

Hops Grillhouse and Brewery
Owings Mills
Rock Bottom Restaurants
Bethesda

MASSACHUSETTS

Rock Bottom Restaurants
Boston, Braintree
Watch City Brewing Co.
Waltham

MICHIGAN

Arbor Brewing Co.
Ann Arbor
Big Buck Brewery & Steak House
Ann Arbor
Hereford & Hops Steakhouse &
Brewpub
Bay City, Escanaba

MINNESOTA

Hops Grillhouse and Brewery
Eden Prairie, Maple Grove
Old Chicago
Apple Valley, Blaine, Duluth, Eagan, Eden
Prairie, Minneapolis (2), Minnetonka,
Plymouth, Roseville
Rock Bottom Restaurants
Minneapolis

MISSISSIPPI

Hops Grillhouse and Brewery
Jackson

MISSOURI

75th Street Brewery
Kansas City
McCoy's Public House
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Old Chicago
Columbia
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Lincoln (2), Omaha (4)
Thunderhead Brewing
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Las Vegas
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Albuquerque, Santa Fe
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Albuquerque
CH Evans Brewing Co. at the
Albany Pump Station
Albany
Ellicottville Brewing Co.
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Lake Placid Pub & Brewery
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Lake Placid Craft Brewing Co.
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Southampton Publick House
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Albany Pump Station
Albany
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Lake Placid
Lake Placid Craft Brewing Co.
Plattsburgh
Southampton Publick House
Southampton

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Albuquerque, Santa Fe
Il Vicino Brewing Co.
Albuquerque

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CH Evans Brewing Co. at the
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Lake Placid
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Pineville

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Strongsville
Hops Grillhouse and Brewery
Beavercreek, Maumee
Rock Bottom Restaurants
Cincinnati, Cleveland
Willoughby Brewing Co.
Willoughby

OREGON

BJ's Restaurant Bar & Brewery
Eugene, Portland (2)

Laurelwood Public House & Brewery
Portland

Old Chicago
Beaverton, Gresham, Portland (2)

Pelican Pub and Brewery
Pacific City

Rock Bottom Restaurants
Portland

Rogue Ales Brewery
(includes Brewer's on the Bay)
Newport (2), Portland

PENNSYLVANIA

Barley Creek Brewing Co.
Tannersville

Iron Hill Brewery and Restaurant
Media, North Whales, West Chester

Rock Bottom Restaurants

King of Prussia, Pittsburgh

Triumph Brewing Co.

New Hope

SOUTH CAROLINA

Hops Grillhouse and Brewery
Columbia (2), N. Charleston, Spartanburg

TENNESSEE

Boscors Brewing Co.
Memphis, Nashville

Hops Grillhouse and Brewery
Memphis

TEXAS

BJ's Restaurant & Brewery,
BJ's Restaurant & Brewhouse
Addison, Houston, Lewisville, Webster

UTAH

Bohemian Brewery & Grill
Salt Lake City

Moab Brewery
Moab

Squatter's Pub Brewery

Salt Lake City, Salt Lake Airport

Uta Brewing Co.

Salt Lake City

VIRGINIA

Hops Grillhouse and Brewery
Alexandria, Richmond (2)

Rock Bottom Restaurants

Arlington

Williamsburg Brewing Co.

Williamsburg

WASHINGTON**Rock Bottom Restaurants**

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Commercial Calibration

Editor's Note: One way beer judges check their palates is by using commercial "calibration" beers — classic versions of the style they represent. Zymurgy has assembled a panel of four judges who have attained at least the rank of Master in the Beer Judge Certification Program. Each issue they will score two widely available commercial beers (or meads or ciders) using the BJCP scoresheet. We invite you to download your own scoresheets at www.bjcp.org, pick up a bottle of each of the beverages and judge along with them in our Commercial Calibration.

This issue, in honor of our cover story on "The Flavor of Hops," our expert panel of judges evaluates two beers — one from each coast — that are noted for their hop flavor.

Victory Hop Devil Ale launched onto the scene in 1999, quickly gaining the attention of beer lovers and the beer press alike. This boldly assertive, American-style India pale ale is brewed by the Victory Brewing Company of Downingtown, Pa.

Malt Advocate Magazine awarded Hop Devil the 1999 "Domestic Beer of the Year."

In an interesting twist, Victory brews Hop Devil with German two-row malt, but uses American whole hops. It has an alcohol content of 6.7 percent by volume.

According to the BJCP style guidelines, an American India pale ale should have intense hop aroma highlighting American hop varieties. Malt aroma should stay in the background. Color should be medium gold to medium reddish copper.

Hop flavor should be medium to high and should reflect American hop varieties. Malt flavor should be low to medium. The mouthfeel should be smooth and medium-light to medium. The overall perception should be hoppy, bitter and moderately strong. For the full style description see the

BJCP Web site (www.bjcp.org).

Hop Devil is distributed in California, Illinois, Maryland, Massachusetts, Minnesota, New Jersey, New York, Ohio, Oregon, Pennsylvania, Virginia and Washington. It is available on draft and in 12-ounce bottles.

For more information on the Victory Brewery, visit www.victorybeer.com.



Rogue Brutal Bitter made its debut in 1996 as a special beer to celebrate the 20th anniversary of the famed Horse Brass Pub in Portland, Ore. The beer was so popular, Rogue brewer John Maier gave it a permanent position in Rogue's lineup.

Brutal Bitter is kind of a "square peg beer," not fitting neatly into one style category.

Maier calls it a "cross between a very extra special bitter and an India pale ale." It is brewed with English malts and hopped exclusively with American Crystal hops. With an alcohol content of 6.2 percent by volume and 59 IBUs, Brutal Bitter is at the extreme edge of the American pale ale style — but Rogue is known for extremes.

According to the BJCP style guidelines, American pale ales should have a moderate to strong hop aroma with low to moderate malt aromas. The color should be pale golden to deep amber.

A moderate to high hop flavor should dominate the flavor, often focusing on American hop varieties. The malt character should be low to moderately high with a clean malt character. The balance should be tilted toward late hop flavor and early hop bitterness. The body should be medium-light to medium. The overall impression should be refreshing and hoppy.

For the full description see www.bjcp.org.

Rogue beers are distributed in California, Colorado, Connecticut, Florida, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Massachusetts, Minnesota, Nevada, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Tennessee, Vermont and Virginia.

For more information about Rogue Ales, see www.rogue.com.



Category/subcategory: Victory Hop Devil Ale

Victory Brewing Company, Downingtown, Pa.
BJCP Category: 14B American India Pale Ale



Dave Houseman

Dave Houseman is competition director for the BJCP, a member of the BJCP Style Guide Committee and a Grand Master II judge. Brewing since 1991, Dave is a member of the AHA Board of Advisers. He lives in Chester Springs, Pa.

Bottle Inspection:

12-ounce bottle bought at the brewery. Low fill. Very clear. No sediment.

Aroma:

Citrus and floral hop aroma up front with noticeable roasted barley and caramel malt aromas. Alcohol is very noticeable as are fruity notes. Wonderful fresh, crisp, well-balanced aroma. (10/12)

Appearance:

Brilliantly clear with red-amber color. Thick, tight, long-lasting head. Great looking beer. (3/3)

Flavor:

Citrus and floral hop flavor stands out but strongly supported by crisp malt backbone exhibiting notes of roasted barley. Some sweet alcohol character. Moderate level of fruity esters reminiscent of blackberries. Dry finish with a touch of sweetness. Well balanced with high hop bitterness. (18/20)

Mouthfeel:

Medium body with slight astringent hop character and high hop bitterness in mouthfeel. (5/5)

Overall Impression:

An exemplar for the style. Great hop balance in aroma, flavor and bitterness with dry, malt finish allows one to enjoy a number of these, although at 6.7% abv that's not too many. Goes great with aged cheddar cheese. (9/10)

Total Score: (45/50)



Beth Zangari

Beth Zangari has been brewing and judging since 1992. She was instrumental in founding the Hangtown Association of Zymurgy Enthusiasts (HAZE). A Master level judge, she lives in Placerville, Calif. with her husband Craig and many cats.

Bottle Inspection:

Arrived via UPS. Refrigerated on arrival.

Aroma:

Grapefruit rind citrus hop backed by a caramel maltness; clean fermentation. Develops a distinct soapy quality as it sits. (9/12)

Appearance:

Amber with golden highlights, very clear to bright. Fine bubbles of foam, but the head dissipated quickly. (2/3)

Flavor:

Crispy, toasty malt character balanced with an assertive hop bitterness and flavor. There is an almost soapy, oily hop flavor (Fuggle or derivative?), then mineral quality emerges mid palate. Lingering hop bitterness. From the rich color, I expect a little more caramel malt, but the beer is balanced and enjoyable. (17/20)

Mouthfeel:

Medium full body with surprisingly soft carbonation. Hop bitterness and mineral quality leave a striped feeling to my tongue, making me thirsty for more. (5/5)

Overall Impression:

An enjoyable beer I would love to try on tap! It is balanced, clean and substantial. The soapy quality is somewhat distracting, but is not present when the beer is cooler. Could come from the shipping of the beer. The hop character strikes me as more English rather than American despite the citrus notes in the beginning. (7/10)

Total Score: (40/50)



Scott Bickham

Scott Bickham lives in Corning, N.Y. and has been brewing and judging since 1991. He is a Grand Master II judge, and has been either exam director or associate exam director of the BJCP since 1995.

Bottle Inspection:

Commercial bottle, shipped from Oregon.

Aroma:

Earthy, tobacco and faint citrus notes from hops—has more of a British character, but the American hops are usually more distinct in extremely fresh samples. There is some toastiness but malt is subdued. (8/12)

Appearance:

Burnished copper with ruby highlights. Head retention, beading and clarity are superb. (3/3)

Flavor:

Malt backbone throughout—begins with crystal and toasted notes up front and has enough dextrins to support hop bitterness and fermentation flavors. Alcohols and esters add complexity to the middle of the taste, and it finishes with an emphatic hop bitterness. The levels of these flavors are more typical of an IPA. (16/20)

Mouthfeel:

Bigger body and more alcoholic warmth than most American pale ales, but would be acceptable for an IPA. Residual sugars on the lips after the beer is swallowed, and hops leave a resinous coating on the back of the tongue. (3/5)

Overall Impression:

Very nice beer that dwells in the land between American pale ale and IPA. All of the expected components—malt, hops, alcohol and esters—of both styles come through well and are in balance. The mouthfeel and creaminess are outstanding. (8/10)

Total Score: (38/50)



Gordon Strong

Gordon Strong has been brewing since 1996 and has been part of the BJCP since 1997. He is chairman of the Style Guide Committee and principal author of most new style descriptions. He lives in Beavercreek, Ohio.

Aroma:

Malt and hops in equal amounts. Malt aroma seems rather strong and rich for an American IPA, and also has a rich, breadly quality. Piney/citrusy hops are significant. Light alcohol, perfume. Clean. No diacetyl. Lightly fruity. Could use more hops in the balance. (10/12)

Appearance:

Crystal clear. Reddish-copper color, rather dark for an IPA, suggesting darker character malts. Big off-white head persisted. (3/3)

Flavor:

High hop flavor—citrusy, piney, grassy. Rich malt—deeper flavors (breadly, toasty, biscuity). Lightly fruity with some alcohol. Hop flavor and medium-high hop bitterness last long into the finish. Fairly dry. Clean fermentation character. Very fresh-tasting. (16/20)

Mouthfeel:

Medium to medium-full body, a bit big for style. Moderate carbonation. Noticeable warmth. Light astringency given all the hops. (4/5)

Overall Impression:

Rather dark and malty for an IPA (particularly an American IPA). Very clean hops: they are strong and last into the finish, but without harshness and astringency often found in highly hopped beers. Hits the high end of the IPA style in several areas (color, malt, body). Interesting, if a bit atypical; approaching a stock ale in character. (8/10)

Total Score: (41/50)

Category/subcategory: Rogue Brutal Bitter

Rogue Ales, Newport, Ore.

BJCP Category: 10A American Pale Ale



Dave Houseman

Bottle Inspection:

22-ounce bottle shipped from the West Coast. Bottle conditioned with noticeable yeast sediment. Very hazy.

Aroma:

Citrus hop aroma with slight grapefruit notes. Citrus masks most other fruity esters save a bit of raspberry-like aroma. Faint bready, malt aroma. Some alcohol aroma as the beer warms. Light but pleasant. (10/12)

Appearance:

Thick, tight, chewy, long-lasting head. Light amber and very hazy — almost Wit-like in visual texture. (2/3)

Flavor:

Citrus hop flavor has a soft palate with moderately high hop bitterness that balances the soft malt finish. Dry finish from hops. Little fruity esters. A rough hop finish. Slight caramel malt with bready malt undertones. No faults but not bright and crisp. The dullness may be signs of age and oxidation. (16/20)

Mouthfeel:

Medium body with high carbonation leaving a prickly mouthfeel. Bitterness lingers in mouthfeel with some hop-tannin astringency. Slight alcohol warming. (4/5)

Overall Impression:

This is a beer fighting for an identity. Imperial Bitter (English IPA) as the label states, or an American Pale Ale exhibiting the citrus hop character of American Crystal hops? Very drinkable as either style but definitely more American than English. More homebrew-like than many craft beers. Cheeseburgers all the way come to mind when drinking this beer. (8/10)

Total Score: (40/50)

Beth Zawacki

Aroma:

Slightly sulfury, with evident alcohol. Some bready malt detected. No fruity esters. Not much hop aroma, either. (9/12)

Appearance:

Deep golden to amber with ever-so-slight haze and an off-white biscuity, persistent head. The last pour was hazy with yeast, obviously bottle conditioned. (3/3)

Flavor:

Citrusy Douglas fir and Ponderosa pine hop character dominates any malt character. Aggressively bitter, fitting of the name Brutal. A very restrained bready malt character, but no caramel character that would better balance the assertive hop character. (17/20)

Mouthfeel:

Medium body, carbonation somewhat subdued. Drying hop bitterness and alcoholic warmth lingers, almost astringent. (4/5)

Overall Impression:

This is a big beer befitting the Brutal Bitter brand. The fermentation characteristics strike me as more lager-like than ale-like. I am looking for more of a fresh hop aroma with a little less bitterness, and/or a richer caramel malt character that would provide better balance, and may be lacking due to handling during shipping. Big, brash and brutal example of an American IPA. I still like more hop aroma than bitterness, but it is "rip your lips off" good. (8/10).

Total Score: (41/50)

Scott Bickham

Aroma:

Hop character gives aroma of new-mown hay, fresh coriander seed and spruce. Caramel and toasted malt are evident. Ethanol is in the background, and low levels of higher alcohols and esters lend floral and fruity notes. The aroma components work well together. (9/12)

Appearance:

Amber color with a little haze. Head forms nicely, has tight beading and lasts well. (2/3)

Flavor:

Has a solid malt character up front and a roundness I usually associate with wheat malt. The hop bitterness is higher than most examples of this style, but is the highlight of this beer. The bitterness lasts for seconds after the beer is swallowed, but the impressive IBU level is not accompanied by excess astringency. Esters and alcohols are evident in the middle but are in balance. Northwest hops add spruce notes and a coriander-like citrus character. (17/20)

Mouthfeel:

Some astringency and alcoholic warmth — a little too assertive for an American pale ale, but welcome in an IPA. Hop resins coat the entire tongue after the beer is swallowed, but this is expected with such a high IBU level. (4/5)

Overall Impression:

Excellent beer that probably best fits into the IPA category with a combination of high hop bitterness, moderate malt and perceptible alcohol. The main selling point is an impressively long and clean hop bitterness in the finish. The hop flavor and aroma are an interesting variation on the standard Cascade hops. (8/10)

Total Score: (40/50)

Gordon Strong

Aroma:

Fairly light/subdued nose. Hops are soft, floral and have a lemony quality. Lightly sweet maltiness like graham crackers. Some perfumey, spicy alcohol and light fruitiness. Malt lacks richness. (8/12)

Appearance:

Huge off-white head. Moderate haze detracts from presentation. Deep gold to light amber color. (2/3)

Flavor:

Strong citrus/lemon hop flavor. Very high bitterness lasts into very long finish. Almost bone dry with low malt flavors, accentuating perception of bitterness. Just a touch of bready/toasty malt flavor suggesting English malts. Balance is decidedly bitter, overwhelming any malt/yeast flavors. Clean fermentation with very low esters. (13/20)

Mouthfeel:

Medium to medium-full body. Medium to medium-low carbonation. Some hop-derived astringency. Some alcohol warmth. (4/5)

Overall Impression:

Appropriately named, although "bitter" means the flavor not the English beer style. A decent beer that doesn't fit style categories too well (elements of American Pale, English Pale and English IPA are present). Seems like English malts used with American hops. Bitterness is extreme. Lacks malt to balance. Bracing, not for the faint-hearted, a bit difficult to drink. Rather one-dimensional in its dry bitterness, although clean. (7/10)

Total Score: (34/50)

BY JIM PARKER

Brew News from Smallest to Biggest

Locals have rallied behind Britain's smallest pub, which faces possible closure after it was refused permission to expand its seating area outside.



The Nutshell Pub in Bury St. Edmunds, Suffolk, is only 15 feet long and 7 feet wide, and

licensee Martin Bayliss unsuccessfully petitioned to put six tables with chairs outside to boost capacity.

A spokesman from District Council said, "The applicant originally wanted to put tables and chairs outside in an area which extended across another shop's frontage and, following an objection, we could not grant that application."

The *East Anglian Daily Times* in Bury St. Edmunds has launched a campaign to save the pub, asking readers to fill in a statement of support and return to the newspaper. News editor James Mortlock said, "Scores of people have sent the form back."

Bayliss has submitted his second application, for a smaller outside area, and was hopeful of a positive outcome when the council met in September.

Meanwhile, Smallest Brewery Reopens

The world's smallest brewery has reopened in a converted outhouse in rural Wales. Less than 5-feet square, Bragdy Gwynant brews ale for just one outlet—the Tynllidiart Arms next door.

Based in Capel Bangor, near Aberystwyth, the brewery has gone back into production after a two-year break. It produces just 9 imperial gallons (10.8 U.S. gallons) at a time, enough to fill a traditional firkin.

Margaret and Mark Phillips own the Tynllidiart Arms and the brewery. "The previous owner of the pub moved out two years ago and up until two weeks ago the pub was closed and the brewery was too," said Mark Phillips.

"We thought it would be nice to brew our own local beer and luckily we had a brewer living a few doors down who was able to help."

Margaret Phillips added, "We've tried to use as many local ingredients as we can in the beer and we use the same policy in our restaurant."

The brewery was listed in the Guinness World Records as the smallest brewery in the world before it closed. "But we'll be applying again in the next few weeks to become the smallest commercial brewery again," Margaret Phillips said.

Brewing Behemoth is Born

Belgium's Interbrew SA and Brazil's AmBev have completed their planned \$11.4 billion combination after shareholders of both companies approved the deal that creates the world's largest brewer by volume.

Interbrew shareholders unanimously approved the linkup of their family company with AmBev, whose full name is Companhia da Bebidas das Americas, creating a new company called InBev that will control about 14 percent of the global beer market.

AmBev said its shareholders also approved the union, but did not provide a vote breakdown on the margin of victory for the merger. It makes InBev the planet's largest beer producer and No. 2 by revenue behind U.S.-based Anheuser-Busch, which had sales of \$14.1 billion last year.

Briess Joins Organic Association

Briess Malt & Ingredients Company, a division of Briess Industries Inc., has



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joined the Organic Trade Association. All Briess manufacturing facilities have been certified to produce organic malts, malt extracts and other value-added grain ingredients since 1990. Certified organic base and specialty malts produced by Briess are used by homebrewers and microbreweries to brew many styles of organic specialty beers in response to growing consumer interest. Briess certified organic ingredients are also supplied to food and beverage manufacturers for the production of organic or natural energy and nutrition bars, baked goods, cereal, dairy products, pet foods and more.

Brad Rush, Briess' manager of Quality, Health, Safety and Environmental, oversees the company's organic program. Briess Malt & Ingredients Company is located in Chilton, Wis. It is a certified woman-owned business with roots dating back to 1876.

Beer Hall Home Search Narrows

Beer Hall of Fame founders have selected 12 American cities as finalists in their national search to find a permanent home.

"We have had a terrific response to our search. These 12 cities understand the historical and economic impact of being permanent host city to such a unique international destination. There is no other beer entertainment location like the Beer Hall of Fame anywhere in the world," stated Joe Gardenghi, chief operations officer of Leisure Technician, LLC, of Severna Park, Md. and one of the founders of the Beer Hall of Fame. "The competition is heating up!"

The following cities (in no specific order) have been selected to receive a Beer Hall of Fame Request For Proposal (RFP):

- Portland, Ore.
- Covington, Ky.
- Cincinnati, Ohio

- San Diego, Calif.
- Chicago Southland, Ill.
- Frankenmuth, Mich.
- Milwaukee, Wis.
- St. Louis, Mo.
- Baltimore, Md.
- San Antonio, Texas
- Decatur, Ala.
- Pittsburgh, Pa.

The Beer Hall of Fame will house beer themed restaurants, a collection of beer memorabilia, Beer Radio broadcasting studios, music and entertainment venues, an education center, an enormous selection of beer and the actual Beer Hall of Fame.

The host city will be announced in October.

For more information about the Beer Hall of Fame (www.BeerHallOfFame.com) or the U.S. Beer Drinking Team's international pub, restaurant and beer store loyalty program contact Joe Gardenghi at 410-744-4369 or Joe@BeerRadio.com.

Crop Circle Beer Debuts



A Long Island man decided the signs pointed to a need for beer brewed from barley grown in one of the English fields associated with the crop circle phenomenon that started in the 1970s.

Dudley Cates has partnered with Blue Point Brewing Co. in Patchogue, N.Y., to sell Crop Circle Beer, made with Crop Circle Optic pale malt from Warminster Maltings in Wiltshire, England.

"There's something very interesting and as yet unexplained going on in those fields," Cates said. "Crop circles carry an aura of mystery."

Cates has been trying to develop a commercial beer for four years, starting with a microbrewery in northern California and later at a Hartford brewpub.

Cates and Blue Point bought eight tons of Crop Circle Optic pale malt made from barley grown in the fields of Wiltshire farmer Tim Carson.

"I know it's really good stuff to make beer," said Bluford brewer Mark Burford, noting that he extracts more fermentable sugars and flavors from the Crop Circle malt than from the malts he usually uses. Burford is interested only in the beer, not

the myths. "I leave the magical end to him," Burford said.

Cates' beer is available only on draft at a handful of bars in the Hamptons, in Manhattan and at one Long Island beer retailer, Shoreline Beverage in Huntington, which sells it in gallon jugs to go.

Russian Tastes Turning to Beer

Russians have had a long and well-deserved reputation as hard drinkers. But today their tastes seem to be shifting from vodka to beer.

Not surprisingly, brewers and health professionals disagree on what this shift in taste means for the population's health, although politicians have become sufficiently concerned to propose a ban on beer commercials on television.

Russia's beer industry, which accounted for fewer than a dozen low-quality brews during Soviet times, is today the fastest-growing in the world. A key factor in its favor is that, unlike hard liquor and wine, beer is not considered an alcoholic beverage under Russian law, which means it is readily available in kiosks and fast-food stands for the same price as a soda.

"Beer is replacing hard liquor in people's consumption patterns," said Vyacheslav Mamontov, head of the Russian Brewers' Union.

Five years ago, 80 percent of the population's alcohol intake came from vodka and 12 percent from beer, Mamontov said. Today, 70 percent comes from vodka and 19 percent from beer.

Some 47 percent of respondents in a recent survey named beer as their drink of choice, while only 33 percent named vodka, according to the All-Russia Center for the Study of Public Opinion.

Vodka consumption remains at 10 liters per person, according to Renaissance Capital, while beer consumption increased 8 percent to reach 51 liters per person last year. Beer consumption in Germany and Britain is roughly 120 liters and 100 liters per person, respectively.

A survey by the Public Opinion Fund showed 55 percent of respondents under 35 said they believe that drinking beer every day is less harmful than drinking vodka every day.

Jim Parker is editor-in-chief of *Zymurgy*.

BY CHARLIE PAPANIAN

Preeminent Pilsener

"I'm not drinking beer, I'm trying to cut down my weight." Every time I hear this, my mind simply takes me to my seat in the airplane, reading the nutritional values of the juices, soft drinks and tiny packages of peanuts and chips. (When else do I have time to read nutritional values in that much detail?) So it was with much confidence I went to the U.S. government's Web site for beer and food comparisons, searching the USDA Nutrient Database for Standard Reference at www.nal.usda.gov/fnic/cgi-bin/nut_search.pl.

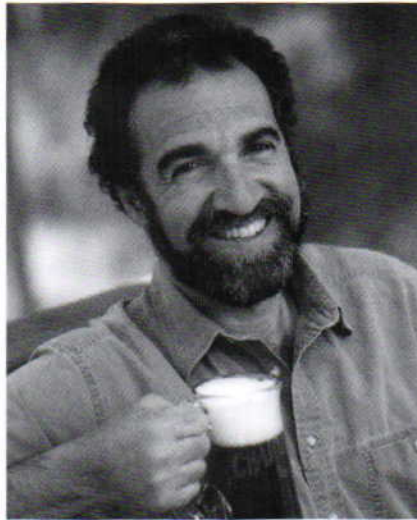
There's not a whole lot to write about in order to make my point. The data speaks for itself.

According to the U.S. government, 12 ounces of beer has fewer calories than 12 ounces of apple juice, orange juice, 2-percent milk or cola. So if you are really serious about losing weight and don't want to drink beer, then drink water only.

According to the U.S. government, 12 ounces of beer has fewer calories than a 1-ounce serving of potato chips or peanuts. Twelve ounces of beer has half the calories of just under a quarter-pound hamburger. So go ahead and eat the hamburger, but trade out the extra handful of potato chips or half handful of peanuts for two beers! I won't even get into a discussion about French fries or the cheese on the cheeseburger.

And just in case a wine drinker ever tells you that beer is fattening, tell them 12 ounces of wine has 75 percent more calories than 12 ounces of beer.

So let's cut the fat talk and get real. This data is not new. I realize I have simplified a discussion with many extenuating circumstances, but if the consumer is going to simplify "beer is fattening," then an equal response is sometimes warranted. Beer is no more fattening than so many other



Enjoying beer is about quality, not quantity, and not overdoing it. Beer is about being an individual with individual responsibilities.

things we eat and drink. Enjoying beer is about quality, not quantity, and not overdoing it. Beer is about being an individual with individual responsibilities. Our friends need to be reminded.

Speaking of beer, let's cut the shuck and jive and get on with the recipe.

Preeminent Pilsener is all about how ridiculously simple a recipe can be and how well a homebrew can be made. I'm taking a break from grains this time around. Even the most passionate all-grain-brewer-for-the-sake-of-being-an-all-grain-brewer can't argue the drinkability and enjoyment to be explored with this light German-style Pilsener lager.

Okay, the color may be a little on the dark side depending on the brand of extract you use, and the bitterness is a bit lower than your traditional German-style Pilsener, but let's pretend we're in Bavaria, where the Pilseners are on the less hoppy side. If you consider yourself an expert, go ahead and throw in an extra handful of hops—but don't overdo it. This is not supposed to be an India Pale Lager!

German and Czech hops accent the European origins of this beer. Late hopping

HOME BREW 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: $(2 \times 9) + (3 \times 5) = 18 + 15$. 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.

with Santiam adds a floral-honey accent that elevates malt flavor and aroma.

Use low-mineral, soft water for best results.

Preeminent Pilsener

Ingredients for 5.5 U.S. gallons (21 L)
Malt Extract Recipe

7.5 lb. (3.4 kg) light malt extract syrup
1.5 oz. (42 g) German Hersbrucker-Hallertauer whole hops (3.3% alpha: 5.2 HBU/145 MBU) 60 minute boiling
1.0 oz. (28 g) Czech Saaz whole hops (3% alpha: 3 HBU/84 MBU) 60 minute boiling
0.5 oz. (14 g) German Hersbrucker-Hallertauer whole hops

(3.3% alpha: 1.6 HBU/45 MBU) 20 minute boiling
0.5 oz. (14 g) German Hersbrucker-Hallertauer whole hops, 3 minute boiling
0.6 oz. (18 g) American Santiam hop pellets hops, 3 minute boiling
0.25 tsp powdered Irish moss
0.75 cup (180 ml measure) corn sugar (priming bottles) or 0.33 cups (80 ml) corn sugar for kegging
German, Bavarian or Pilsener type lager yeast

- Target Original gravity: 1.046-1.050 (11.5-12.5 B)
- Approximate Final gravity: 1.010-1.012 (2.5-3 B)
- IBUs: about 26
- Approximate color: 5 SRM (10 EBC)
- Alcohol: 4.7 % by volume

Add malt extract to about 2 gallons (7.6 L) of hot water. Stir to dissolve and add "60 minute" hops. Heat to boiling. After 40 minutes of boiling add the "20 minute" hops. After another 10 minutes of boiling add Irish moss. With 3 minutes remaining to the 60 minutes of boiling add the "3 minute" hops and turn off the heat.

Immerse the covered pot of wort in a cold water bath (change the water every 5 minutes) and let sit for 20 minutes or the time it takes to have a couple of homebrews.

Strain out and sparge hops and direct the hot wort into a sanitized fermenter to which 2.5 gallons (9.5 L) of cold water has been added. If necessary add cold water to achieve a 5.5-gallon (21 L) batch size.

Pitch the yeast when temperature of wort is about 70° F (21° C). Once visible signs of fermentation appear ferment at about 55° F (12.5° C) for about five to eight days or when fermentation shows signs of calm and stopping. Rack from your primary to a secondary fermenter and cool to about 40° F (4.5° C) if possible and "lager" for about four to five weeks.

Prime with sugar and bottle or keg when complete.

Charlie Papazian is founding president of the Association of Brewers.

Nutritional Comparison of Beer					
	Regular Beer	Pure Orange Juice	Pure Apple Juice	Milk 2%	Cola w/o caffeine
Serving size	12 oz	12 oz	12 oz	12 oz	12 oz.
Calories kcal	151.7	162.8	173.9	183.89	152
Protein g	1.11	2.96	0.222	12.21	0
Carbohydrates g	13.69	37	43.29	17.76	38.5
Fat g	0	1.11	0.407	7.03	0
Vitamin C mg	0	121.73	3.33	447.7	0
Calcium mg	18.5	37	25.9	50.69	11
Phosphorous mg	44.4	40.7	25.9	351.5	44
Potassium mg	92.5	703	440.3	569.8	3.7
Folate mcg	22.2	66.6	0	18.87	0
Sodium mg	18.5	3.7	11.1	185	14.8

	Regular Beer	Potato Chips	Hamburger	Peanuts Oil Roasted w/Salt
Serving size	12 oz	1 oz.	100 g/ 3.5 oz.	1 oz.
Calories kcal	151.7	152	305	164.8
Protein g	1.11	2	13.7	7.4
Carbohydrates g	13.69	15	34	5.4
Fat g	0	9.8	13	13.9
Vitamin C mg	0	8.8	0	0.0
Calcium mg	18.5	6.8	70	25.0
Phosphorous mg	44.4	47	114	146.6
Potassium mg	92.5	361	161	193.4
Folate mcg	22.2	12.8	59	35.7
Sodium mg	18.5	168	430	122.8

	Regular Beer	Red table wine
Serving size	12 oz	103 g or 3.5 oz
Calories kcal	151.7	74
Protein g	1.11	0.2
Carbohydrates g	13.69	1.7
Fat g	0	0
Vitamin C mg	0	0
Calcium mg	18.5	8.2
Phosphorous mg	44.4	14.4
Potassium mg	92.5	115
Folate mcg	22.2	2
Sodium mg	18.5	5.1

For this lineup of Winners Circle beers, we have quite a variety of styles. For something light, clean and refreshing, try John Watson's "Consumptioner" Helles, with its delicate noble hop balance. This is one you'll want to brew a lot of, because it will go quickly.

For malt lovers, just a hint of peated malt smokiness gives Carter Camp's "Nessy's Scottish Ale" just the right complexity. Dark beer lovers will revel in Stephen Klump's mellow "Split Rail Porter". Stephen shared some bottles of an amazing Old Ale he brewed called "Toxic Sludge" with Jim Parker and me back in Cleveland at the Homebrewers' Festival a few years back, so I know first hand that he likes his beers strong and malty.

And speaking of strong, if huge complexity and alcohol is to your liking (and probably a pretty long sparge from the looks of this grain bill) then look no further than Harold Gulbransen's "Peter Nelson's Weizenbock"—a traditional Bavarian classic with layers upon layers of flavor and aroma. Rick Georgette ups the original gravity even further with his Belgian tripel, nailing a 1.080. (And the judges still want more alcohol!)

Finally, for a truly wild experience, try John Applegarth's "Pictish Brew." This is an ancient honey ale with lots of heather flower tips, for sipping around a Highlands fire. Dried heather tips are available from many homebrew supply stores, though it would of course be more fun if you "gruit" yourself. Studying history has never been so much fun!

European Pale Lager



SILVER MEDAL

AHA 2004 NATIONAL HOMEBREW COMPETITION

John Watson, Southbury, CT

Underground Brewers of Connecticut

"Consumptioner"

Muenchner Helles

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

- 24.0 lb (10.88 kg) Dust Turbo Pils malt
 - 2.0 lb (0.90 kg) Canadian wheat malt
 - 2.0 oz (57 g) aromatic malt
 - 2.0 oz (57 g) whole Hallertau hops, 5.2% alpha acid (60 min)
 - 1.5 oz (42 g) whole Spalt Select hops (15 min)
 - 0.5 oz (14 g) whole Spalt Select hops (1 min)
- Wyeast Czech Pils yeast
Forced CO₂ to carbonate

- Original specific gravity: 1.048
- Final specific gravity: 1.015
- Boiling time: 60 minutes
- Primary fermentation: 30 days at 38° F (3° C)
- Secondary fermentation: 60 days at 38° F (3° C)

Brewer's Specifics

Mash grains at 149° F (65° C) for 60 minutes.

Judges' Comments

"Excellent example with correct malt, hop, water profile. Exceedingly drinkable. Right to style, a minor knock for the astringency though I'd enjoy this all day in a Munich biergarten."

"Very tasty beer. Getting slight hop bitterness in aftertaste."

Scottish Ale



BRONZE MEDAL

AHA 2004 NATIONAL HOMEBREW COMPETITION

Carter Camp, Mercer Island, WA

"Nessy's Scottish Ale"

Export 80/-

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

- 11.0 lb (4.99 kg) Great Western 2-row malt
- 1.0 lb (0.45 kg) Hugh Baird 80° L crystal malt
- 0.5 lb (0.23 kg) Hugh Baird Munich malt
- 4.0 oz (113 g) flaked barley
- 3.0 oz (85 g) roast barley
- 1.0 oz (28 g) Simpson's peated malt
- 1.0 oz (28 g) Cascade pellet hops, 5% alpha acid (80 min)
- 0.5 oz (14 g) Cascade pellet hops, 5% alpha acid (45 min)
- 3.0 oz Big Time Brewery (Seattle) ale yeast

- Original specific gravity: 1.058
- Final specific gravity: 1.016
- Boiling time: 90 minutes
- Primary fermentation: 7 days at 68° F (20° C) in glass
- Secondary fermentation: 7 days at 68°-44° F (20°-7° C) in glass
- Tertiary fermentation: 12 days at 44° F (7° C) in steel

Brewer's Specifics

Mash grains at 152° F (67° C) for 60 minutes.

Judges' Comments

"Creamy, smooth, medium body—very nice beer, enjoyable and very well made."

Porter



SILVER MEDAL

AHA 2004 NATIONAL HOMEBREW COMPETITION

Stephen Klump, Des Peres, MO
Alchemy Brewing Club of St. Louis
"Split Rail Porter"
Brown Porter

Ingredients for 5.25 U.S. gallons (19.8 L)

- 8.5 lb (3.8 kg) pale malt
- 0.4 lb (181 g) black patent malt
- 0.4 lb (181 g) chocolate
- 8.0 oz (227 g) 60° L crystal malt
- 0.4 lb (181 g) Special B malt
- 0.4 lb (181 g) biscuit malt
- 1.0 lb (0.45 kg) Munich malt
- 8.0 oz (227 g) dextrin malt
- 4.0 oz (113 g) torrified wheat
- 1.0 oz (28 g) Northern Brewer whole hops, 8.9% alpha acid (60 min)
- 0.5 oz (14 g) Cascade whole hops, 5.8% alpha acid (60 min)
- 0.5 oz (14 g) Cascade whole hops, 5.8% alpha acid (5 min)
- 1 liter Wyeast 1056 American Ale yeast starter
- 1 cup dry malt extract

- Original specific gravity: 1.063
- Final specific gravity: 1.021
- Primary fermentation: 7 days at 68° F (20° C) in glass
- Secondary fermentation: 14 days at 63° F (17° C) in glass

Brewer's Specifics

Mash grains for 20 minutes at 150° F (66° C). Raise to 160° F (71° C) and hold for 30 minutes.

Judges' Comments

"Nice brown porter. More substance than a brown ale, softer than a robust porter. Just a little undercarbonated."

"Nice flavor—crystal may be a bit big, but with more CO₂, it may be just right."

Wheat Beer



SILVER MEDAL

AHA 2004 NATIONAL HOMEBREW COMPETITION

Harold Gulbransen, San Diego, CA
Quality Ale and Fermentation Fraternity
"Peter Nelson's Weizenbock"
Weizenbock

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

- 7.25 lb (3.29 kg) wheat malt
- 2.5 lb (1.13 kg) pale ale malt
- 2.0 lb (0.9 kg) dark Munich malt
- 0.75 lb (340 g) caramel wheat malt
- 1.0 lb (0.45 kg) melanoidin malt
- 0.75 lb (340 g) caramel Munich malt
- 0.25 lb (113 g) Carafa
- 12 g (0.42 oz) Horizon pellet hops, 11% alpha acid (60 min.)
- 12 g (0.42 oz) Santium pellet hops, 6.8% alpha acid (60 min.)
- 15 g (0.52 oz) Czech Saaz pellet hops, 3.5% alpha acid (15 min.)
- White Labs WLP 300 Hefeweizen ale yeast
- 4.93 g (0.17 oz) corn sugar to prime

- Original specific gravity: 1.072
- Final specific gravity: 1.017
- Boiling time: 90 minutes
- Primary fermentation: 7 days at 62° F (17° C) in glass
- Secondary fermentation: 7 days at 65° F (18° C) in glass

Brewer's Specifics

Mash using a single decoction schedule with rests from 135° to 154° F (57° to 68° C).

Judges' Comments

"Very nicely done—big, full and rich. There's a little age on this, but it has matured gracefully. Very complex and dynamic—every sip brings more nuance."

"Complex flavors of malt, wheat, dark fruit and spices, with addition of alcohol notes and what might be a hint of sherry from oxidation."

Belgian Strong Ale



BRONZE MEDAL

AHA 2004 NATIONAL HOMEBREW COMPETITION

Rick Georgette, West Broomfield, MI
[Untitled]
Tripel

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

- 29.5 lb (13.4 kg) Cargil Pils malt
- 2.25 lb (1.02 kg) light candi sugar
- 2.0 oz (57 g) Saaz whole hops, 2.7% alpha acid (30 min)
- 2.0 oz (57 g) East Kent Golding whole hops, 5% alpha acid (30 min)
- 1.0 oz (28 g) East Kent Golding whole hops, 5% alpha acid (15 min)
- 2.5 oz (71 g) Saaz whole hops, 2.7% alpha acid (15 min)
- 0.5 gallon White Labs WLP 550 Belgian ale yeast
- 0.5 gallon Wyeast No. 3787 Trappist High Gravity ale yeast

- Original specific gravity: 1.080
- Final specific gravity: 1.025
- Boiling time: 90 minutes
- Primary fermentation: 7 days at 70-74° F (21-23° C) in plastic
- Secondary fermentation: 14 days at 70-74° F (21-23° C) in steel
- Tertiary fermentation: 90 days at 32° F (0° C) in steel

Brewer's Specifics

Mash grains at 152° F (67° C) for 60 minutes. Mash out for 10 minutes at 165° F (74° C).

Judges' Comments

"Beer tastes wonderful, but it lacks the punch of a tripel. Body is a little thin and alcohol seems a bit low for the style."

"Overall a very good attempt at the style. Needs a bit more malt complexity, and even a bit more hop."

Specialty/ Experimental/Historical



BRONZE MEDAL

AHA 2004 NATIONAL HOMEBREW COMPETITION

John Applegarth, Grand Rapids, MI

Primetime Brewers

"Pictish Brew"

Historical Heather and Honey Ale

Ingredients for 3 U.S. gal (11.35 L)

- 5.0 lb (2.27 kg) Maris Otter pale malt
- 0.5 lb (227 g) dextrin malt
- 0.4 lb (181 g) 60° L crystal malt
- 0.37 lb (168 g) Munich malt
- 0.5 lb (227 g) flaked barley
- 0.31 lb (139 g) clover honey
- 4 cups heather tips, boil
- 1.0 oz (28 g) Spalt pellet hops, 2.7% alpha acid (60 min)
- 4 cups heather tips, steep
- 3 cups heather tips, secondary
- 1 cup honey in secondary
- 2.4 oz (68 g) corn sugar to prime
- White Labs WLP 028 Edinburgh ale yeast

- Original specific gravity: 1.044
- Final specific gravity: 1.006
- Boiling time: 60 minutes
- Primary fermentation: 24 days at 70-76° F (21-24° C) in glass
- Secondary fermentation: 50 days at 70-75° F (21-24° C) in glass

Brewer's Specifics

Mash grains at 146° F (63° C) for 70 minutes. Raise to 153° F (67° C) and hold for 30 minutes.

Judges' Comments

"Sour lactic character. Spicy and phenolic. Floral character. Finishes somewhat bitter. Sort of like chewing on flowers. I like the 'wild yeast' character. You'd make your clan proud."

"Very drinkable interpretation of an ill-defined historical style. Heather shows through and balance is amazingly even. Well done."

"Excellent attempt at style. Not sure how to accomplish it, but there needs to be a way to keep CO₂ in solution."

Amahl Turczyn Scheppach is former associate editor of *Zymurgy*. He writes and brews in Lafayette, Colo.

Mark Your Calendars!

American Homebrewers Association
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BALTIMORE

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Building the Slots o' Hops

At the July 2003 meeting of the Maltose Falcons Homebrewing Society, club president Drew Beechum brought exciting news from the National Homebrewers Conference in Chicago—the 2004 NHC would be held in Las Vegas! This meant only 300 miles stood between us and what was sure to be the homebrew party of the year. We immediately began to ponder ideas for appropriate “Sin City” Club Night props.

For the 2001 Beer Odyssey Club Night, a couple of us had produced a Monolith bar, and I had built a Draught Droid beer-dispensing robot. Our mission now was to outdo those feats. My suggestion: a slot machine...that pays off in homebrew. My fellow Falcons thought that idea hit the jackpot, but asked, “Can you actually make such a contraption?” Like many homebrewers I really love to tinker, so my answer was, “Why not?”

My first thought was to simply acquire an actual slot machine and install the necessary beer “plumbing.” In brief, this plan proved problematic. The ultimate solution was even simpler: build one from scratch! A quick eBay search yielded three critical parts, namely the reels and stepper motors that drive them. Modern slot machines have a PC-like computer motherboard controlling stepper motors to spin and stop the reels.

These motors turn 1/200th of a revolution at a time and require electric pulses in a particular sequence to make each step. Stepper motors are used in hundreds of everyday machines—they operate the autofocus lens in a camera, drive the print head and platen in inkjet printers, and more powerful versions are used in computer aided CNC manufacturing. They are also commonly employed in robotics.

This is where my foray into hobby robotics for the 2001 NHC paid off. I already had a versatile programmable microcontroller



called an OOPic that I had used for the Draught Droid. I had since become fairly adept in writing simple programs for it. With a little support from an online user group, I was able to write the code to get the OOPic to interact with the reel motor driver boards. The boards also have optical sensors that “see” notches in the sides of the reels so that the computer can stop the reels at one of 22 positions. Eleven of those “stops” align a graphic (such as a lemon, orange or cherry) on the payout line, and the other 11 stops are blank. When the reels stop with the right pictures lined up, the machine pays out.

Instead of a big motherboard, I was dealing with a microcontroller a little bigger than a credit card, with 2K total memory. To make a long story a little shorter, I wrote a program that turns the reels three turns, counts the number of stops and then stops the reels at pseudo-random positions. I needed this machine to pay out a lot more often than a real one, so the program stops the first reel randomly at one of the 22 stops, and the other two reels at predeter-

mined positions. If the first reel stopped at a picture, so did the second and third, opening one of two beverage-grade solenoid valves for a timed interval to deliver homebrew to the winner. Writing and debugging the program was the most laborious part of the project.

With the program working reliably, I constructed a plywood hulk that roughly resembled a one-armed bandit, installed the reel assemblies, solenoid valves and handle switch, and wired everything up. I made a matching drip tray to keep things neat, and fashioned two stainless steel spouts to deliver the brew. To dress the machine up, I used a nice black tap handle, complete with a Maltose Falcons 30th anniversary logo, for the “one-arm.” I printed custom reel strips with homebrew-related images of pale and crystal malts, three varieties of hops, Corny kegs, bubbling carboys and the logo. Then I made a “belly glass” frame full of whole Cascade hops, with a green backlight to make them glow. I topped it all off with 86 bright green LEDs wired together to spell “homebrew” in a window above the reels.

The Slots o' Hops (patent pending) was a big hit at Club Night. I was amused to see quite a few people posing to get their picture taken with it. Players would win either a Belgian Trippel or IPA, and many pulled the arm until they tasted both. Despite an algorithm that was the equivalent of flipping a coin, some people had to pull the handle eight or nine times to get a beer. I advised them to stay out of the casinos.

Kent Fletcher has been homebrewing and testing the patience of his wife, Suzanne, for about four years in Canoga Park, Calif. Kent is very involved in the Maltose Falcons brew club and serves as their newsletter editor.

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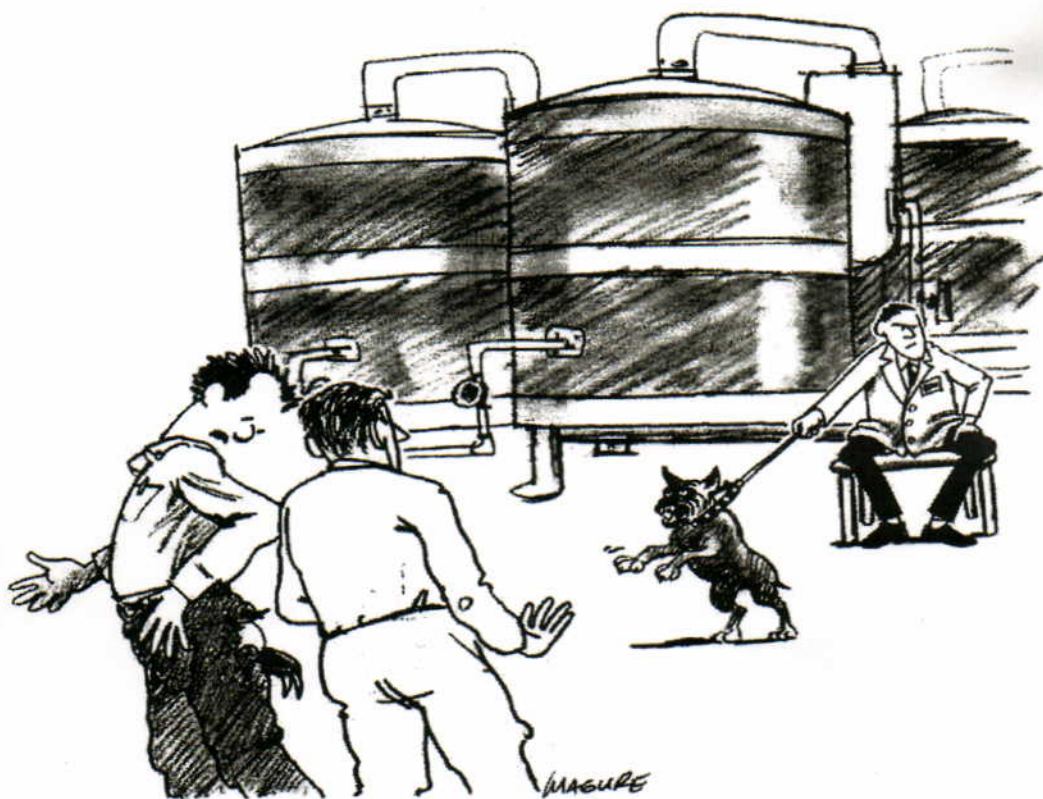
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