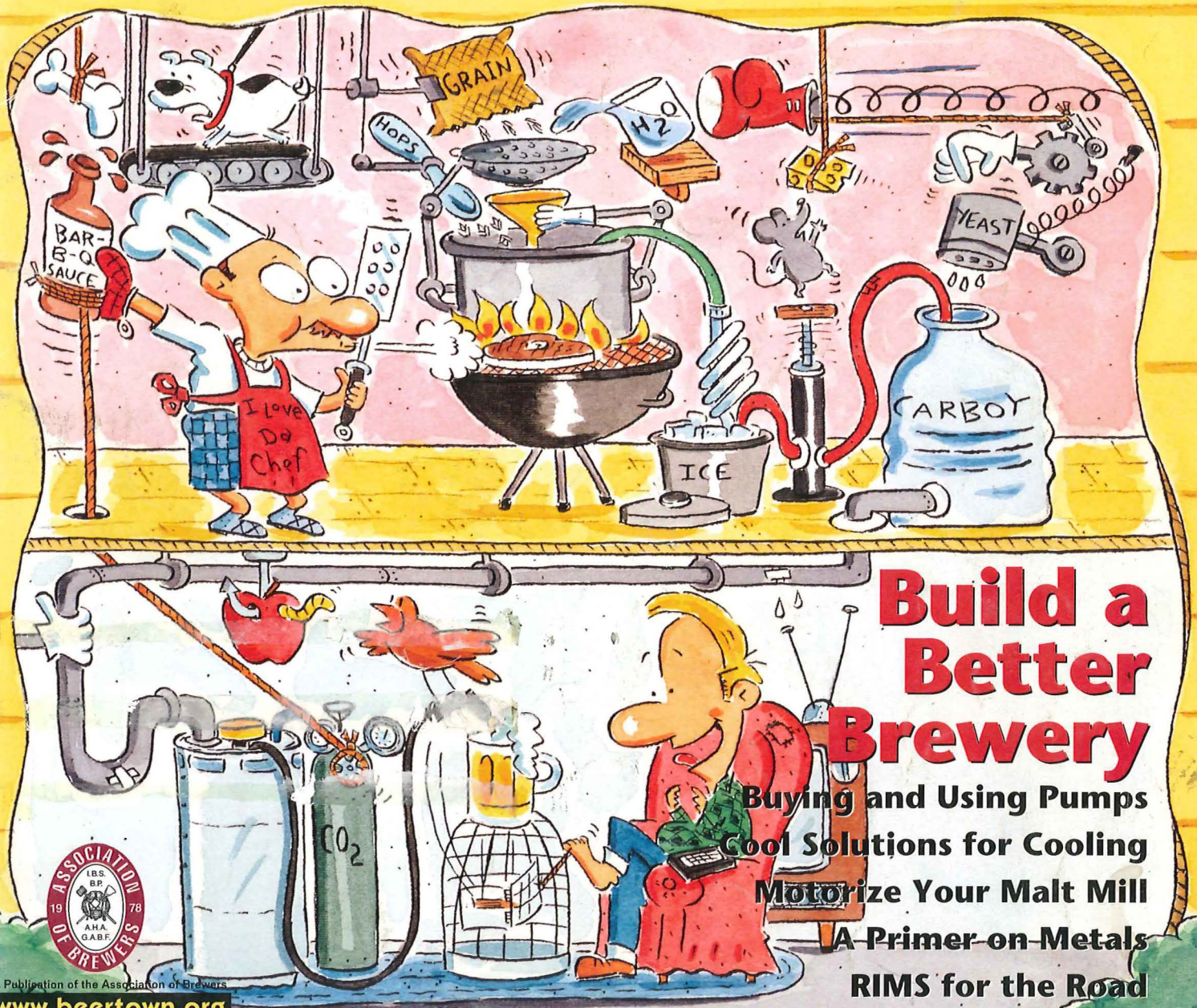
Vol. 24 No. 3 May/June 2001 The Journal of the American Homebrewers Association

ZYMURGY

FOR THE HOMEBREWER AND BEER LOVER



Build a Better Brewery

Buying and Using Pumps

Cool Solutions for Cooling

Motorize Your Malt Mill

A Primer on Metals

RIMS for the Road

In Geeks: Measure Your IBUs

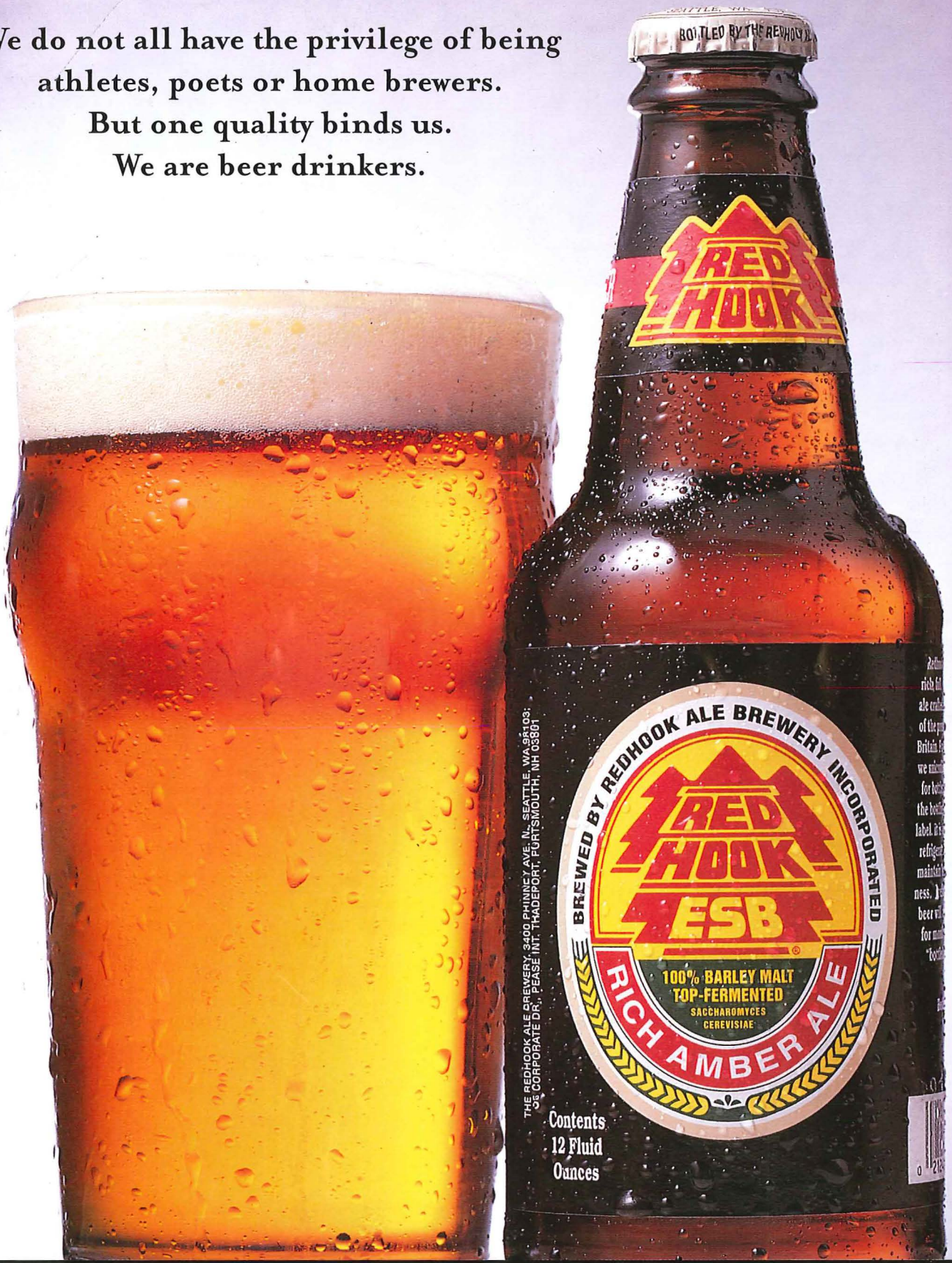
PLUS: AHA Board Elections
Homebrew Conference Info

A Publication of the Association of Brewers
www.beertown.org

0 74470 80980 7 05>

U.S. $5.50 Can. $8.00

We do not all have the privilege of being
athletes, poets or home brewers.
But one quality binds us.
We are beer drinkers.



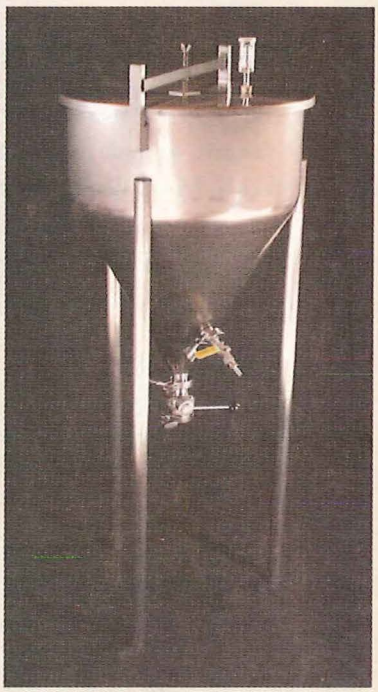
A well-built beer.

Redhook Ale Brewery, Seattle, WA & Portsmouth, NH - www.redhook.com

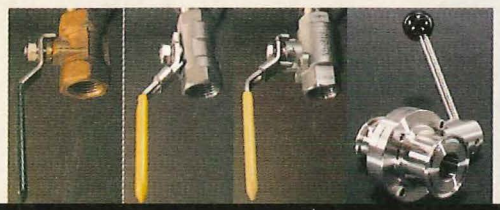
Stainless Steel Conical Fermenters

The essential tool for any advanced home brewery! The conical bottom allows quick and easy removal of trub and yeast. This eliminates any need for a secondary fermenter, allows for easy yeast harvesting, and also eliminates siphoning. Being that these units are constructed completely from 304 stainless steel, they will last forever and can be easily cleaned and sanitized.

Base Fermenters

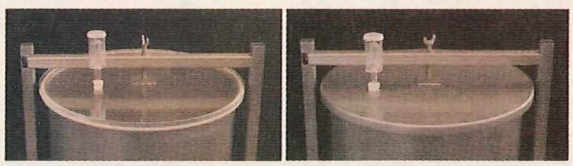


The conicals are based around a 14 gauge 304 stainless steel cone with 60 degree slope for easy trub and yeast removal. There are three sizes to choose from: 7, 12, and 27 gallons. The 7 and 12 gallon sizes come with stands that are separate from the cone itself, and the 27 gallon has welded on legs. The 12 and 27 gallon has legs that put the unit tall enough to gravity feed into a standard keg or bottling bucket, thus eliminating the need to start a siphon. The cone is one piece with no seams. The welding for the bottom dump and sideport is done from the inside, making the unit extremely sanitary. We top off the fermenter with a sanitary gasket that can be easily removed for cleaning and sanitizing.



Bottom Dump Options

You have a choice between brass and stainless valves, as well as NPT or stainless clover fittings. See the website or catalog for more information.



Lid Options

Choose acrylic or stainless steel.

Cooling Options

All three sizes of fermenters can be cooled 30 F or more below ambient temperature, allowing for lager fermentation in 80 F or lower and ales as high as 100 F! The cooling option is based on TEC (Thermal Electric Cooling). There is internal and external cooling solutions, so please see the website for more information.

Side Port Option

Allows you to pull from the center of the unit instead of the bottom for clean beer. Fits all size fermenters.

www.morebeer.com

975 Detroit Ave, Suite D, Concord, CA 94518 **925-939-BEER**

Beer Beer & more Beer

ZYMURGY®

FOR THE HOMEBREWER AND BEER LOVER

Journal of the American Homebrewers Association®

Publisher—Association of Brewers
Editor-in-Chief—Ray Daniels
Associate Editor—Amahl Turczyn
Art Director—Dave Harford
Graphics/Production Director—Stephanie Johnson
Graphics/Web Designer—Deborah Miller
Advertising Sales Manager—Julia Herz
julia@aob.org
Advertising Coordinator—Monica Tall
monica@aob.org
Circulation Coordinator—Matt Lovrinic

American Homebrewers Association®
Director—Paul Gatza
Membership Coordinator—Gary Glass

The American Homebrewers Association® Mission Statement

To promote public awareness and appreciation of the quality and variety of beer through education, research and the collection and dissemination of information; to serve as a forum for the technological and cross-cultural aspects of the art of brewing; and to encourage responsible use of beer as an alcohol-containing beverage.

Association of Brewers Inc.

The Association of Brewers Inc. is a Colorado not-for-profit corporation for literary and educational purposes to benefit brewers of beer and all those interested in the art of brewing. The Association of Brewers is a not-for-profit trade Association under Section 501(c)(6) of the Internal Revenue Code.

The Association of Brewers has four divisions— American Homebrewers Association®, Institute for Brewing Studies, Brewers Publications and Brewing Matters.

The American Homebrewers Association is a division of The Association of Brewers, a not-for-profit organization located at 736 Pearl Street, Boulder, CO 80302-5006 USA. Membership is open to everyone. ***Zymurgy*** (ISSN 0196-5921, USPS 018-212) is the bi-monthly journal of the American Homebrewers Association and is published six times per year. Periodicals Postage Paid at Boulder, CO and additional mailing offices. Annual memberships are $33 U.S., $38 Canadian and $51 International and include a $24 subscription to ***Zymurgy***.

Changing your address? Let us know in writing or e-mail your address changes to service@aob.org.

Zymurgy welcomes letters, opinions, ideas, article queries and information in general from its readers. Correspondence and advertising inquiries should be directed to ***Zymurgy***, PO Box 1679, Boulder, CO 80306-1679, (303) 447-0816, FAX (303) 447-2825, www.beertown.org.

The opinions and views expressed in articles are not necessarily those of the American Homebrewers Association and its magazine, ***Zymurgy***.

POSTMASTER: Send address changes to ***Zymurgy***; 736 Pearl Street; Boulder, CO 80302-5006.
Printed in the USA.

AHA Since 1978

MAY/JUNE 2001, VOL. 24, NO. 3

ZYMURGY®

Zymurgy \ zī'mər jē \ *n: the art and science of fermentation, as in brewing.*

COLUMNS

DEPARTMENTS

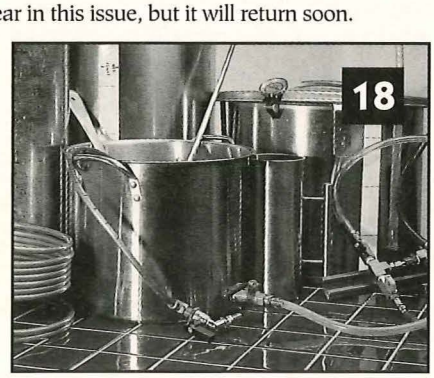
COVER ILLUSTRATION BY MICHAEL MORAN

FEATURES

ALSO IN THIS ISSUE

We regret that Extract Experiment does not appear in this issue, but it will return soon.

QUICK RECIPE GUIDE



IT'S THE BEER TALKING

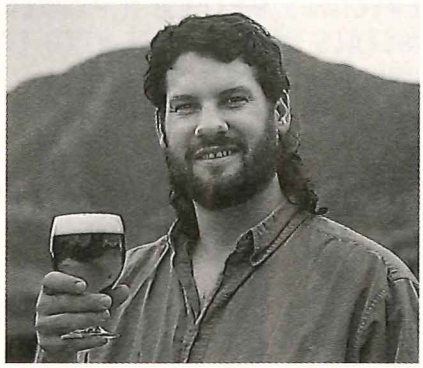
BY PAUL GATZA

Hi everyone. I hope your airlocks are glurping away happily. Feel free to pop open a maibock or brew of your choosing. Things are hopping here in the AHA office in more ways than one. We are smack dab in the middle of the season when most of our events come together. Information on all of these projects can be found on our website, **www.beertown.org**. Here is a quick schedule, followed by some more details:

April 20-22 National Homebrew Competition First Round Judging (7 regional sites)
April 27-29 National Homebrew Competition First Round Judging (continued)
May 4 AHA Rooftop Party (come on up for a homebrew)
May 5 National Homebrew Day/ AHA Big Brew
May 17 AHA Board of Advisor Election Ballots Due
June 21-23 National Homebrewers Conference in Los Angeles
June 21-22 National Homebrew Competition Second Round Judging
July American Beer Month
September 27-29 Great American Beer Festival in Denver

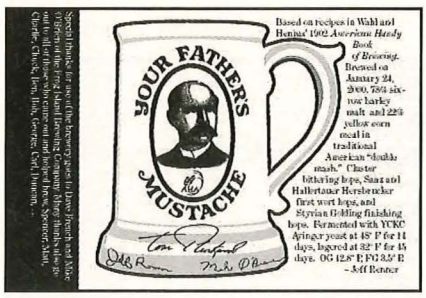
National Homebrew Competition

First Round Judging starts right around the time you get this issue of ***Zymurgy***. If you are near Portland (OR), San Diego, Austin, Kansas City, Chicago, Rochester or Toronto, please check with your site coordinator to sign up to help with the stewarding or judging. We'll have about 3000 beers to get through and need lots of help. Thanks to the hundreds of volunteers who do the work that makes the AHA National Homebrew Competition come together.



Big Brew

As you know, the 4th annual Big Brew is a reason to celebrate homebrewing and National Homebrew Day and toast to brewing solidarity. One thing a little different this year is that we are encouraging each of the Big Brew sites to have a site membership coordinator. The goal is for the AHA members to bring more new members into the fold. With a larger membership base, we'll have more funds available for our program work and to be able to spend in the creation of each issue of ***Zymurgy***. For current members, the Big Brew is a good time to renew your membership or sign on as an AHA sponsor. The Big Brew sign up form is on **www.beertown.org**, along with all eight versions of the three official recipes—Your Father's Mustache, representing lagers; Genessee My Butt, representing hybrids; and Lucky 13 Brown Ale, representing ales. Remember to toast at precisely noon Central time in solidarity with homebrewers worldwide. For those of you in Australia, I think that means your toast comes in the wee hours Sunday morning.



Wyeast Laboratories is the Big Brew Sponsor again this year. In addition to the **www.brewrats.org** rat chat, the Chicken City Ale Raisers will also be sponsoring a chat.

AHA Board of Advisors Election

The AHA Board of Advisors are an integral part of the decision making and operational activities of the American Homebrewers Association. The board works on competition, conference, cyber, clubs, membership and marketing issues for the AHA, as well as being a sounding board for staff and generating fresh ideas to further the hobby of homebrewing. I would like to publicly thank the advisors for their service to the AHA. A list of current advisors and their states of origin is listed in the masthead.

Now it is your turn to shape the management of the AHA. Six of the 15 board slots are open, waiting for your votes to fill them. Please read the candidate statements and check the board section of **www.beertown.org**. Then make a photocopy of the ballot on page 52, and send in your votes for the six candidates you think would best help the AHA promote the hobby of homebrewing and conduct effective programs for homebrewers. Only AHA members are eligible to vote. If you need your membership number, please call membership services at 1.888.UcanBrew. Thanks for your participation. Every member who votes can receive an extra ticket in the bin for the random drawing of the AHA Lallemand scholarship to the Siebel Institute in Chicago.

(continued on page 62)

PHOTO BY BOB GOLDMAN

BY RAY DANIELS

Firkins, Pins and Tuts

As I write this, I'm preparing for a very important date: in a few hours I'll be heading over to the local beer hall to accept delivery of 164 casks of real ale from all over the country. For the past five years, I have organized the efforts of the Chicago Beer Society toward the goal of producing the largest festival of real ales held anywhere outside of Britain. Along the way, I have learned a few things about the brewing and serving of real ale that I thought you might find illuminating, perhaps even amusing.

Let's begin with the obligatory real ale definition: real ale is any ale made from traditional ingredients which undergoes secondary fermentation in the vessel from which it is served and dispensed without the use of extraneous carbon dioxide. From personal experience, I can tell you that all too many homebrewers suffer from extraneous carbon dioxide. But despite this fact, bottled homebrew generally meets the criteria for real ale. Assuming that the beer in your hand is an ale, that it is bottle-conditioned and that it is not made with cinnamon-crusted sun-dried raisins or beef jerky, then it is a real ale. Plenty of bottle conditioned beers both in Britain and here are recognized as being real ales. Homebrew is just part of the party.

Of course, the ideal of the real ale art is a draft beer served from a British-style cask. Although fabricated from stainless steel these days, these casks emulate the behavior of an old wooden barrel. In short, they have a pair of openings that are both breached before serving. One hole lets the beer out, the other lets air in. (With homebrewers, the functions of the openings are reversed: one lets beer in, the other let gas out.)

Although this simple barrel might seem somewhat mundane, it is actually quite amusing. For instance, if you want to see a real ale purist make a funny face, just refer to one of their lovely casks as a "keg." "How much does one of these *kegs* hold," you might ask. Watch for the scowl and be prepared to be corrected. If you persist in using the word "keg" after being corrected, you'll be greeted by deepening and prolonged scowls. Have a camera ready to capture these: they make great screensavers.

PHOTO COURTESY OF RAY DANIELS

Of course the real ale aficionado rarely calls a beer container a "cask" anyway. Instead you'll hear something like, "firkin kilderkin hogshead." If you have persisted in the use of the "keg" word, you may (rightfully) think that this seemingly expletive string is directed at you. If so, buy the man a pint. But more than likely, you've simply overheard a conversation about casks of different sizes.

Our friends across the pond measure their beer in barrels, just like we do. But beyond the use of a common word all similarities end. We cleverly call a half-barrel keg a "half-barrel" or "keg." Of course, our quarter-barrel container has a unique name: it's called a "quarter barrel." Our Imperial friends refer to a half-barrel cask as a "kilderkin," and a quarter-barrel cask is called a "firkin." All of this is completely logical when you remember that they are the ones who gave us ounces, pounds and quarts to begin with.

Homebrew-sized casks (5.4 US gallons) are called "pins"—a somewhat pejorative term, especially for those sensitive about their manhood. This may explain why these containers are rarely seen in British pubs anymore. Still, they are quite popular here—when you can find them. Of course a barrel does not equal 31 U.S. gallons when you are talking to someone with a British accent. Their barrels are 36 gallons—Imperial gallons, that is. In addition to having bigger barrels, their basic unit of volume measure (the gallon) has more ounces than ours: 160 to be exact.

Of course that means that their quarts and pints are also bigger than ours are. But amazingly enough, anyone who thinks they are getting 25% more beer in a 20 ounce Imperial pint would be wrong. Yes, 20 ounces divided by the American-pint equivalent of 16 ounces equals 1.25, but you've forgotten one tricky little detail: British ounces aren't the same as American ounces!

After lording their larger measures over us at all the greater volumes, our Cockney cousins have the temerity to come up short in the ounce department. Here's the truth: an American fluid ounce is equal to 29.6 milliliters while the lowly British ounce is just 28.4 milliliters. Thus a British pint equals 568 milliliters while the US glass by the same name should hold 473.6 milliliters. The difference between the two is just 20 percent rather than the expected 25. In the right bar, this information might earn you a free beer someday. In the wrong bar it will get you thrown out.

Of course British beer has a great reputation in the US for being warm and flat and cask ale is to blame for this. In a bad bar, cask ale is warm and flat. But those examples no more represent the average cask ale than an infected, cidery homebrew represents amateur brewing in America. Done right, cask ale is a thing of beauty. It is served cool, but not cold. As most brewers know, cold is the enemy of flavor. So cask ale is served at a temperature that allows optimal enjoyment, usually around 50 to 55° F (10 to 12.8° C)

Similarly, good cask ale has a soft carbonation and will be topped with a nice foam head. The one difference between cask ale and bottle-conditioned products is the venting. Before it is served, a cask will be gently vented to release excess carbon dioxide. As a result, the average cask ale has about half the carbonation of the typical US beer.

The lower gas level in cask ale gives you a "gentle" pint. With less carbonate bite and less fizziness on the tongue, you can better get to the essential flavors of the beer. Epiphanies follow. In Britain, cask ale—long the traditional beverage of the people—has seen its share shrink in the face of lagers, wine coolers, peach schnapps and the like. To counter this, a group called CAMRA (the CAMpaign for Real Ale) was formed in the 1970s and it has succeeded in keeping cask ale alive and kicking. The British sentiment for traditional ways most likely explains this. But here in America we have seen an explosion of interest in real ales over the past five years. True, it is still a "niche of a niche of a niche" as Real Ale Festival cellarmaster Steve Hamburg says. But the question is what drives this interest at all. Beer quality is certainly one factor: no one can deny the fact that a great real ale is the best beer you'll ever have. But I think there is something more, some basic appeal to human nature. This all occurred to me when I heard Chuck Skypeck of the Boscos brewpubs in Tennessee talk about cellaring.

Chuck has a program where they tap a cask of real ale at each of his pubs every night of the week. The trick is that Chuck and his brewers don't do the tapping—they let one of their customers do it. Now it would be simple to give them a tap and a hammer and just let them go at it, but Chuck is a clever guy and he recognizes the potential that cask tapping and cellarmanship have for arousing the attention and interest of consumers. Although the cellarman of the day is supposedly chosen at random, pretty females somehow seem to win more often than not. Of course tapping a cask can be a messy business and they don't want to get beer on their clothes, so Chuck provides them with an apron. A rubber apron.

Next he teaches them about the anatomy of the cask. "This hole holds something called a *shive*. We often call it the bung hole," Chuck explains. "Now the first thing we have to do is penetrate the bung hole with a wooden rod called a *spile*." He goes on to explain about the *keystone*, which has a thin membrane of wood, and will be pierced by the long, hard, black tap. From here the opportunities for suggestive comments only multiply.

When it actually comes time for the tapping, Chuck gets out an instant camera and takes a picture of his student in action. The lucky tapper is asked to write a few comments about the experience on the picture and it is then included in a scrapbook, which catalogs all of these cask conquests. Not surprisingly, after Chuck's little talk, many of the comments written by the cask tappers are rather racy.

All of this goes to prove that even the most stodgy, tradition-bound aspects of beer can be presented in an appealing way to consumers. No doubt Chuck and other brewers around the country who have helped lead the charge of cask ale in America know more than a little about applying new ways to old arts. As I scan the daily Homebrew Digest and respond to the various questions that come my way each week, I can not help but realize that this is what homebrewing in America is all about. We embrace the old, but press on for the new. This year at the Real Ale Festival, I'll savor this old/new paradigm and the festival's own homebrewed roots as we tap a cask-conditioned hefeweizen and an oatmeal stout brewed "with real vanilla."

Ray Daniels cellars his casks in Chicago.

Good Things in a Bottle

Dear ***Zymurgy***:

Please let me take a moment to praise the current edition of March/April ***Zymurgy***. I think the geek-homebrewer-novice blend is just about perfect. I was especially pleased to see Alan Moen and Louis Bonham appear. Like many home brewers, I was a subscriber to both ***Zymurgy*** and *Brewing Techniques*. They were complementary, not competitive. And, as stated in ***Zymurgy***, the loss of *BT* is a loss to us all.

I had the pleasure to meet Stephen Mallery at Dixie Cup. It was the year of "Fred does sausage," "The Grateful Fred," and "Malt Liquor by the dumpster." Mr. Mallery walked up and started a conversation with my friend Charlie and I, atop the roof of the motel, during the pot-luck supper. First one thing then another led the discussion to articles and I pointed out that, to my knowledge, there had never been one written about bottling beer. Oh sure, lots of discussion about kegging and sun-struck beer in bottles, but never on the care and feeding of a beer bottle. This led to the idea of "Beer Bottles Basics for Beginning Brewers."

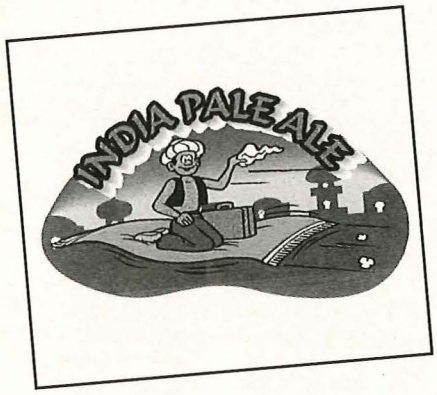
Any chance ***Zymurgy*** will do something along these lines?

Marlon Lang

Dear Marlon,

You read our minds! This year's special issue of Zymurgy *(September-October 2001) will address the issue of packaging beer in various ways. As a part of that we will most certainly be talking extensively about bottling and related issues. Perhaps you'll even contribute something on the subject!*

—Ed.



LABEL COURTESY OF LINDA A. RADER

Devilish Duvel

Dear ***Zymurgy***,

Firstly, kudos to you and your editorial team for ensuring that ***Zymurgy*** focuses on a broader spectrum of brewers. More articles on how to brew less expensively would be very helpful, too—if you can do this without raising the ire of your advertisers.

Secondly, Amahl Turczyn's recent article on Duvel was heartening, especially the news of the "cork change." I've grown weary of buying flat beer at $10 a pop. Unfortunately, the problem does not appear to be remedied yet. My first bottle of the New Year was a recently-purchased Duvel—flat. I hope this isn't a bad omen. Looks like it's time to brew my own clone and ensure there's enough carbonation. Frankly, I'm offended that Duvel changes their export product, "to suit our flatter palates."

Tim Ryan
Alexandria, VA

Dear Tim,

We at Zymurgy *know the parsimonious nature of most homebrewers, and try to keep an eye on the price tag whenever we publish articles. Of course, for the hardcore beer geeks who live to brew, and for whom money is no object, there needs to be a little bit of the high-end stuff as well; we'll leave it up to you to decide which side of the fence you're on.*

As to the Duvel question, we've had the same frustrating experience with corked Duvel bottles...fortunately, they also come in crowned four-packs, so it might be wise to hold out on the big 750s until they sort out the cork problems. As to flat American palates, we feel homebrewers have sufficient beer knowledge to enjoy all levels of carbonation, and are equally offended at such patronization!

—Ed.

Chlorine Dioxide Supplies

Dear ***Zymurgy***,

Great job on the current March/April ***Zymurgy*** issue! I'm impressed. I think this issue will really help homebrewers who have had cleaning and/or sanitizing problems. By the way, BIRKO is now distributing BCI's Oxine (2% available chlorine dioxide). One small step for BIRKO, one giant leap for homebrewers! (Or is that vice versa?) I'd like to get Steinbart's and Crosby & Baker to distribute it to the homebrew supply shops. This sanitizer is too good to keep away from homebrewers. I've been using chlorine dioxide for years and I love it. It really is the best no-rinse sanitizer for brewers out there, in my mind. Anyway, keep up the good work.

Dana Johnson
Birko Corporation R&D

Dear Dana,

While we normally don't publish letters promoting new products, we felt that it was particularly important news that a chlorine dioxide sanitizer may shortly be available at the home brew level. For more information about other kinds of sanitizers available to homebrewers, please refer to page 30 of the March/April 2001 issue of Zymurgy.

—Ed.

BY GARY GLASS

Rocky Mountain Homebrew Rendezvous

Recently I joined a group of Colorado homebrewers representing various homebrew clubs gathered over pints of English Ale, Bangers and Mash, and Fish and Chips to discuss bringing the clubs of Colorado's Front Range, from Colorado Springs to Fort Collins, together for a fun homebrewing event. The meeting was spearheaded by Foam on the Range chief Tom Kosinski and attended by members of Boulder's Hop Barley and the Alers, and Broomfield's Keg Ran Out Club, Paul Gatza and me. Preliminary plans were laid out for the first Rocky Mountain Homebrew Rendezvous, a party and campout this September for Front Range homebrewers.

The goal is not only to stage a fun homebrewing event, but also to provide an opportunity for homebrew clubs to get to know one another and to introduce unaffiliated homebrewers to their local clubs. We foresee having several activities to involve the whole family. We expect to promote the Rendezvous by involving the homebrew clubs and the local homebrew supply shops in planning and encouraging homebrewers to attend.

Of course we are not the first group to come up with the idea of bringing clubs together in a regional event. Brewers United for Real Potables (BURP), based in the Washington D.C. metro area, have been putting on the Mid-Atlantic States Homebrewers campOUT (MASHOUT) for the past 13 years. In 1999 the MASHOUT attracted 200 homebrewers representing several East Coast Clubs. The three day campout includes numerous outdoor activities, bands, and of course plenty of homebrew. The homebrew clubs of Southern California organize what is probably the world's largest gathering of homebrewers every year in May at Skinner Lake: the Southern California Homebrewers Festival (SCHF). The 10th Annual SCHF held last year brought together 1,300 homebrewers from more than 20 clubs. The event hosts brewing speakers, a raffle, live music, and camping. Oh yeah—they also have homebrew. Lots of homebrew. As in hundreds if not thousands of gallons of homebrew. AHA Director Paul Gatza will be heading down to Southern California to represent the AHA at this year's Festival (lucky dog). These are just a couple of examples of club gatherings that occur across the country.

To me, it is these kinds of events that truly strengthen our hobby. Whether it be on a regional or a national scale, uniting homebrewers, spreading brewing knowledge, and having fun are absolute necessities of promoting and expanding homebrewing. It is this same kind of thinking that has motivated the AHA's movement towards a more grassroots orientation. Bringing homebrewers, homebrew clubs, and homebrew shops together to organize events such as the Rocky Mountain Homebrew Rendezvous or the National Homebrewers Conference will ultimately benefit all homebrewers.

If any of you involved in regional homebrewing events have advice you would be willing to share that might help us Coloradoans, I would be happy to hear it. You can email me at gary@aob.org or 303-447-0816 x 121.

Dunkelmania AHA Club-Only Competition

The American Homebrewers Association thanks Chris Kaufman and the Derby Brew Club for hosting the Dunkelmania AHA Club-Only Competition on February 24th. The competition covered the European Dark Lager category of Munich Dunkel and Schwarzbier. This competition was the fourth of our annual cycle of six club-only competitions. Points are awarded on a six-three-one basis for the club-only competitions and the first and second rounds of the AHA National Homebrew Competition. The club whose members have amassed the most points over the year is crowned the Homebrew Club of the Year.

Thanks to the club representative brewers. There were 24 entries in the Dunkelmania AHA Club-Only Competition. Congratulations to the following winners:

First Place: Jeff Seely from Cincinnati, OH representing the Cincinnati Malt Infusers with his Gabriel's Dunkel.

Second Place: Tom Hood of Stow, OH representing the Brew Rats Homebrew Club with his Black Kat Schwarzbier.

Third Place: Greg Lorton of Carlsbad, CA representing Quality Ale and Fermentation Fraternity with his Schwarzbier.

2001 AHA Club-Only Competitions Styles

Month	Style or Name	Cat.#	Host
May	Bockanalia	14	Cincinnati Malt Infusers
August	Witbier	19B	Gold Country Brewers Association
October	California Common	6C	Maltose Falcons
December	Mild Ale	10A	Brewers United for Real Potables

Homebrew Club of the Year Standings

Points	Club
6	Barley Literates Homebrew Club
6	Club Scioto Olentangy Darby Zymurygists
6	Prairie Homebrewing Companions
6	Cincinnati Malt Infusers
4	Brew Rats Homebrew Club
3	Fermental Order of Renaissance Draughtsmen (FORD)
3	Minnesota Homebrewers Association
3	Redstick Brewmasters
2	Quality Ale and Fermentation Fraternity (QUAFF)
1	Niagara Association of Homebrewers

Bockanalia AHA Club-Only Competition

The May AHA Club-Only Competition is Bockanalia. The competition is hosted by Elaine Seeley and the Cincinnati Malt Infusers. The Style for the competition is Bock, Category 14, including 14A Traditional Bock, 14B Helles Bock/Maibock, 14C Doppelbock, and 14D Eisbock. One entry of two bottles is accepted per AHA registered homebrew club. Entries are required to have a $5 check made out to AHA and an entry/recipe form and bottle i.d. forms. More information on the club-only competitions and forms are available a **www.beertown.org/AHA/Clubs/club-comp.htm**. Please send your entry to:

Bockanalia, c/o Elaine Seeley
1025 Maycliffe Place
Cincinnati, OH 45230

Entries are due by May 21, 2001. Judging is slated for May 26, 2001. Email for questions is quartermoon@earthlink.net. The Cincinnati Malt Infusers' web address is **http://w3.one.net/~philmac/infusers/index.html**.

Gary Glass is the Membership Coordinator for the American Homebrewers Association. When he isn't homebrewing he can be found working on his Masters Thesis in U.S. History.

BY AMAHL TURCZYN

Brugse Tripel

The authors of *Clone Brews* have again released an astonishing compendium of brewing secrets. Their latest effort, *Beer Captured*, gives homebrewers valuable insights into brewing some of the world's favorite beers, including notes on the breweries, conversions for extract and partial-mash brewers, as well as a great list of recipes for those of us who love cooking with beer (can you say White Beer & Saffron Mango Lobster Salad?). As homebrew shop owners, they've also packed a lot of their own practical brewing knowledge (about supplies, ingredients, water modification and yeast info) into the appendixes. Not to mention

Brugse Tripel

Brugse, known as the Venice of the north is one of the most beautiful, elegant cities in Europe. The best way to see the city in the summer is to take a boat ride in the canals. In the cooler months, a horse drawn carriage is a cozy way to view the sights. The brewery is in a 16th century building which still has its own maltings, which were built in 1902. The brewery, De Gouden Boom (golden tree), is named after the trophy that was given to successful jousters in Brugse. The brewery also houses a museum of Brugse breweries.

The frothy, white head full of Belgian lace is lathered on a deep, liquid gold beer. The aroma is one of warming alcohol leading to citrus and spicy hops. The palate is an explosion of lively, exotic flavors, well balanced and intriguing. The rich aftertaste is full of aromatic malts balanced by hops. Sipping this beer is like tasting paradise.

Recipe for 5 gallons (18.9 L)

Heat 0.5 gallon (1.9 liters) of water to 155° F (68.4° C). Add:

6 oz (170 g) Belgian aromatic malt
2 oz (57 g) Belgian biscuit malt

Remove the pot from the heat and steep at 150° F (65.6° C) for 30 minutes. Strain the grain water into the brew pot. Sparge the grains with 0.5 gallon (1.9 liters) of 150° F (65.5° C) water. Bring the water to a boil, remove from the heat and add:

9.5 lb (4.3 kg) Munton's extra light dry malt extract
1 lb (0.45 kg) Belgian clear candi sugar
1.5 oz (42 g) Styrian Goldings @ 4.8% AA (7.2 HBU) (bittering hop)

Add water until the total volume in the brew pot is 3.5 gallons (13.3 liters). Boil for 45 minutes, then add:

0.5 oz (14 g) Styrian Goldings (flavor hop)
1 tsp (5 ml) Irish moss

Boil for 10 minutes, then add:

0.5 oz (14 g) Styrian Goldings (aroma hop)

Boil for 5 minutes. Remove the pot from the stove and chill the wort for 20 minutes. Strain the cooled wort into the primary fermenter and add cold water to obtain 5.13 gallons (19.5 liters). When the wort temperature is below 80° F (26.6° C), pitch the yeast.

- 1st choice: Wyeast 1214 Belgian Abbey ale Ferment at 70-72° F (21-22° C)
- 2nd choice: Wyeast 1762 Belgian Abbey II Ferment at 70-72° F (21-22° C)

Ferment in the primary for 7 days or until fermentation slows, then siphon into the secondary fermenter (5 gallon glass carboy). Prime the beer in the second stage with another dose of the same strain of fresh yeast 3 days before bottling. Bottle when fermentation is complete, target gravity is reached and beer has cleared (approximately 6 weeks) with:

0.5 cup (120 ml) corn sugar and 1/3 cup (80 ml) Belgian clear candi sugar that has been boiled for 10 minutes in 2 cups (473 ml) of water.

Let prime at 70° F (21° C) for approximately 6 weeks until carbonated, then store at cellar temperature.

- OG: 1.091-1.092
- FG: 1.017-1.018
- SRM: 7
- IBU: 26
- ABV: 9.5%

Mini-mash method: Mash 2.5 lb (1.13 kg) German 2-row Pilsener malt and the specialty grains at 150° F (65.6° C) for 90 minutes. Then follow the extract recipe, omitting 1.75 lb (0.79 kg) Munton's extra light dry malt extract at the beginning of the boil.

All-Grain Method: Mash 15.75 lb (7.13 kg) Belgian 2-row Pilsener malt with the specialty grains at 149° F (65.1° C) for 90 minutes. Add 5.5 HBU (24% less than the extract recipe) of bittering hops for 90 minutes of the boil. Add the Belgian candi sugar, flavor hops, Irish moss and aroma hops as indicated in the extract recipe.

Helpful Hints: The Belgian yeast strains are very temperature sensitive. Beers fermented with them must be kept above 65° F (18.4°C) to avoid a stuck or slow fermentation. Tripels are usually highly carbonated. Adding another dose of yeast three days before bottling will ensure that the beer is fully fermented and will greatly improve carbonation. Although Tripels are strong, high alcohol beers, they peak between two and six months. They dry out as time goes on and lose some of their maltiness, but continue to taste good for up to one year. Enjoy this great beer early.

Serving Suggestions: Serve in a footed goblet at 50° F (10° C) with spring vegetable croquets, roasted shallots a blood orange and Tripel sauce.

Brugse Tripel recipe reprinted from *Beer Captured* with permission from authors Mark and Tess Szamatulski.

Sipping this beer is like tasting paradise.

—Beer Captured

the legwork involved in chasing down the recipes for 150 different beers! In homage to their clone brew efforts, we decided to reprint the recipe for their favorite beer in this edition of Clone Beers. As Tess and Mark Szamatulski are both big Belgian beer fans, they chose their clone beer recipe for Brugse Tripel from Brouwerij De Gouden Boom.

Amahl Turczyn is the associate editor of *Zymurgy* magazine.

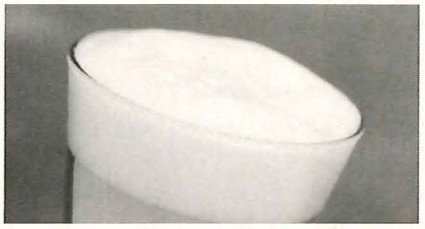


PHOTO ©2001 STOCKBYTE

AMERICAN HOMEBREWERS ASSOCIATION

DIAMOND

Jack Adkins—Lansing, MI
Kevin Anderson—Fairbanks, AK
Stephen Argilan—Altona ,NY
Rodger Ashworth—Sacramento ,CA
McCoy Ayers—Vacaville, CA
John Ayres Eau—Claire, WI
Patrick Babcock—Canton Township, MI
David Barlow—Davis, CA
Scott Bartmann—Ahwatukee, AZ—Barzona Brewing Co
Norm Bauer—Bremerton, WA
Roger Bauer—Tukwila WA—Dog Lips Brewhaus
Tim Beauchot—Albion, IN
Doug Benson—Pine, CO
Matt Berg—Medfield, MA
Thomas Bergman—Jefferson, MD
Tom Berntson—Salem, OR
Scott Berres—Mesa, AZ
Don Bockelmann—LeMars, IA
Brew City Supplies Inc.—New Berlin, WI
Terry Brown—Daphne, AL
Ben Campbell—Dawson, IL
A. Capone—South Plainfield, NJ
Alberto Cardoso—Brussels, Belgium—Alcatec Sprl
Carlen Company LLC—Englewood, CO
Kevin Carlson—Morrison, CO
Rand Carrothers—Port Orchard, WA
Bill Chirnside—Lakewood, CO
Robert Coleman—Germantown, MD
Dana Colwell—Warwick, RI
Robert Cooke—Springfield, VA
Edward Corn—Agua Dulce, CA
Sean Cox—Andover, NH
Carman Davis—Cuyahoga Falls, OH—Nemrac Marketing Co
Tim Deck—McEwen ,TN
Rick Deering—Frankfort ,IL
Michael Demchak—Rocky River ,OH
Steve Dempsey—Chandler ,AZ
Robert Devine—Riverton ,UT
Maj Scott Dick—APO AE
Mark Dills—Seattle ,WA
Michael Drew—Hillsboro, OR
Randy Drwinga—Chandler, AZ
Lease Duckwall—Abilene, KS
Karl Eden—"Lauingen, Do"—Germany
Timothy Egan—Medford ,OR
Arthur Eldridge—Esko ,MN
J. Ellnor—New Albany, IN
Douglas Faynor—Woodburn, OR
Lee Fellenberg—Tacoma, WA
Matthew Floyd—Bardstown, KY
Kevin Fluharty—Elgin, IL
Bob Frank—Frederick, MD—The Flying Barrel
Roy Fuentes—San Antonio, TX
David Gagnon—South Berwick, ME
Mark Gealy—Stockton, CA
Mindy & Ross P. Goeres—Glenndale, MD
Christopher Gould—New York, NY
Dana Graves—Newark, DE
Victor Grigorieff—Redwood City, CA
Bill Gwinn—Waxhaw, NC
Mike & Mary Hall—Los Alamos, NM
Joseph Hall—Chandler, AZ
Steve Hamburg—Chicago, IL
Alan Harlow—Reading ,MA
Stuart Harms—Wilconville, OR
Joseph Harrington—Dayton , OH
Jim Henegan—Edison, NJ
John Hewett—Petersburg, PA
Tim Higman—San Juan Capistrano, CA
Tom Hildebrandt—Greensboro, NC
Marc & Susan Hinck—Edmond, OK
Gary Huff—Colorado Springs, CO
James Hendrik Huiskamp—Keokuk, IA
Allan Hunt—Nashville, TN
Wayne Jameson—Hartford, CT
Arvydas Jasmantas—Logansport, IN
Art Jeyes—Severn, MD
Ray Johnson—Potterville, MI
Robert Kapusinski—Arlington Heights, IL
Charles Kasicki—Port Angeles, WA
Jim Kaufmann—Nevillewood, PA
Kevin Kline—Charlotte, NC
Ron Kloth—Phoenix AZ—Papago Brewing Co
Hirao Kohno—Yawata, Japan
John Kollar—Baltimore, MD
Gregory Komarch—Madeira Beach, FL
Ron Konecke—Wyoming, PA
Brian Kotso—Yuma, AZ
Kraig Krist—Annandale, VA
Thomas Kryzer—Wichita KS—Wichita Ear Clinic
Steve La Rue—Ogden, UT
Andrew Lamorte—Denver, CO
Steven Landry—Decatur, GA
Tom Larrow—Oklahoma City, OK
Jeff Legerton—Santee, CA
Tyrone Lein—Fort Atkinson, WI
Emily Leone—Newark, NY
Kurt Loeswick—San Jose, CA
Charles Lutz—Walden, NY
Keith MacNeal—Worcester, MA
David Manka—Jersey City, NJ
Frank Mataitis—Owings Mills, MD
Larry Matthews—Raleigh, NC
Paul McClure—Uncasville, CT
Dan McLaughlin—Bohemia, NY
Timothy McManus—Haskell, NJ
Charles McMaster—Tyler, TX
Richard Molnar—Lexington, MA
John Monahan—FPO AP
Darron Morris—Davenport, IA—Bent River Brewing Company
Fred Morris—Lynchburg, VA
Robert Morris—Whitehouse, OH
Lawrence Mrozek—Darien Center, NY
NCX Polled Herefords—Brosseau, AB Canada
Hillel Norry—New York, NY
Shawn Nunley—Tracy, CA
Ryouji Oda—Ashiya City, Japan—Japan Craft Beer Association
Rob Oglesby—Atlanta, GA
Gordon Olson—Los Alamos, NM
John Orosz—Bridgeview, IL
Robert Park—Evan Mills, NY
Don Peteisen—Bloomfield Hills, MI
Bruce Peterson—Superior, CO
Bill Pfeiffer—Brighton MI—Cork And Cap
Robert Pocklington—Houston, TX
Mark Powell—San Angelo, TX
Frank Pruyn—Lakeville, MA
Alison Quiros—New York, NY
John Rhymes—Homewood, AL
Darryl Richman—Santa Cruz CA—Crafty Fox
Duane Roberts—Colorado Springs, CO
Dan Robison—Bountiful, UT
Skid Rohe—Cockeysville, MD
Chuck Roosevelt—Englewood, CO
Richard Ross—Woburn, MA
John Roswick—Bismarck, ND
Daniel Ryan—Menlo Park, CA
Joseph Rzepka—Burtonsville, MD
Lance Saucier—Coventry, CT
Dan Schaeffer—Sandbury, OH
Michael Schiavone—Lewiston, NY
Kim Scholl—Alexia, NC—Xtract Xpress
Paul Schroder—Saint Charles, IL
Greg Schutter—Grand Rapids, MI
John Sievers—Towson, MD
Mike Simmons—Iuka, IL
Mike Simon—Ft Atkinson, WI
Carl Singmaster—Columbia, SC
Tony Smith—New Orleans ,LA
Joseph Snyder—Chicago, IL
Thomas Spangler—Winston Salem, NC
Roger St Denis—San Jose, CA
Eric Steele—Milwaukee, WI
James Steenburgh—Rochester, MN
John Strantzen—Bundoora, Australia
Raymond Sullivan—Denver, CO
Peter Swift—Manassas, VA
John Tallarovic—Berwyn, IL
Alexander Talley Houston TX
James Thompson—Okemos, MI
Richard Todd—Raleigh, NC
Richard Tomory—Anchorage, AK
Richard Trouth—Sulphur, LA
William Tucker—Wh Sands Missle Rnge, NM
Les Uyeji—Vancouver, WA
D. Van Dame—Churubusco, IN
Gary Vanderlinden—Palo Alto, CA
Mark & Mary Vehr—APO AE
Steve Vilter—Anchorage, AK
Christopher Wagstrom—Palo Alto, CA
Harvard Waken—Bosque Farms, NM
Adam Walker—Cathedral City, CA
Bud Wallace—Merced, CA
Wade Wallinger—Kingwood, TX
Larry Weaver—Gaithersburg, MD
Robert Weber—San Diego, CA
Ed Westemeier—New Richmond, OH—West-Tech
Sabina Weyermann—Bamberg, Germany—Weyermann Specialty Malting Co
Lee Wiberg—Roseau, MN
Robert Wikstrom—Derby, KS
Thomas Wilk—San Antonio, TX
Steven Willey—Parker, CO
David Williams—Port Orchard, WA
Peter Wilson—Auburn Hills, MI
Kevin Winden—Anacortes, WA
Henry Wong—Rexdale, ON, Canada
Kent Woodmanse—Pierre, SD
Lowell Yeager—Canterbury, CT

GOLD

Rodger Ashworth—Sacramento, CA
Brian Baber—Temecula, CA—ParrotHead Brewing
Chris Brauning—Zanesville, OH
Shawn Brown—Minneapolis, MN
Tony De Shazer—Versailles, France
Andrew Fee—Nantucket, MA
Bill Garrard—Phoenix, AZ—Coyote Springs Brewing Co
Allen Goembel—Petersburg, IL
William Hassler—Pearl City, HI
David Hayes—Los Alamos, NM
David Hutchinson—Hopkinsville, KY
Peter Johnson—Portland, OR
Jonathan Lillian—Upper Montclair, NJ
Mike McClary—Midland, VA
Steve McDowell—Reno, NV
Robert Miller—San Luis Obispo, CA
Mark Morgans—Cannon Beach ,OR
Allan Murfitt—Anchorage, AK
Ian Quin—Glen Echo, MD
Franklin Radcliffe—Las Vegas, NV
Joel Rea—Corvallis, OR—Corvallis Brewing Supply
Thomas Rhoads—Chicago, IL
Michel Rousseau Longueuil—PQ Canada—Distrivin Ltd
George Santini—Cheyenne, WY
Glen Sprouse—Dunwoody, GA
Thomas Weeks—Denville, NJ

PEWTER

Tanner Andrews—Deland, FL
Russell Arakaki—Kailua, HI
Harry Bailey Oak—Harbor, WA
Roger Bauer—Tukwila, WA—Dog Lips Brewhaus
Steve Becraft—Ellicott City, MD
Richard Bender—Shenorock, NY—Bathtub Brews
Dominic Bender—Kilauea, HI
Rick Benfield—Morganton, NC
Jay Berman—Vista, CA
John Brice—Augusta, GA
Scott Brown—Indianapolis, IN
Steve Bruce—Portland, OR
Hugh Bynum—Portland, OR
Mark Caspary—Idaho Falls, ID—O & S Bag Company
Leon Chichester—FPO AP—Consulate General Hong Kong
Russ Clayton—Slidell, LA
Fred Clinton—Williamston, MI—Things Beer
Peter Cocchia—Norwalk, CT—Homemade Libations
Frank Constantino—Knightdale, NC
Michael Cron—Monsey, NY
Tony De Shazer—Versailles, France
Lyle Doerr—Canton, MI
Shawn Emerson—Sioux Falls, SD
David Feldman—Atlanta, GA—Sdr Inc
Kevin Fitzpatrick—Maple Grove, MN
Paul Ganci—Golden, CO
Michael Gordon—Sunnyvale, CA
Bill Hallett—Longmont, CO
H. Bruce Hammell—Trenton, NJ
Dan Hartley—Orangevale, CA
William Hassler—Pearl City, HI
David Hayes—Los Alamos, NM
Bryan Helzer—Waverly, NE
Tim Higman—San Juan Capistrano, CA
Walter Hodges—Carrollton, TX
Douglas Jenkins—Levittown, PA
Neal Kaufman—Westlake, OH
John Kelbert—Aftos, CA
Mark Kelly—Columbus, IN
Calvin Lee—London, Great Britain
Jonathan Lillian—Upper Montclair NJ
Ethan Magdovitz—London, Great Britain
Kevin Mapp—Westminster, MD—Midnight Homebrew Supply
Joel Masters—Cayce, SC
Neil McLellan—Gloucestshire, Great Britain
Heyo Mennenga—Rostock, Germany
Carlo Milono—San Francisco, CA
Mark Morgans—Cannon Beac, OR
Frederick Muller—Marysville, WA
Charles Murray—Golden, CO
Jeffrey Nameth—Arden, NC
Chris Neikirk—Norfolk, VA
Robert Neily—Phoenix, AZ
Michael Niemann—Angleton, TX
Shawn Nunley—Tracy, CA
Mike O'Brien—Ypsilanti, MI—Pico Brewing Systems
Leslie Oliver—Santa Barbara, CA

Dale Pedersen—Bedford, TX
Frank Pedroni—Concord, CA
Paul Petersen—Tulsa, OK
Steven Pettyjohn—Lynchburg, VA
Franklin Radcliffe—Las Vegas, NV
Gregg Rentko—Morristown, NJ
Richard Sanford—Denver, CO
Kirk Schmidt—Lancaster, NH
Carl Schubauer—Stirling, NJ
Robert Schubert—Naperville, IL
Jeffrey Schwab—West Lafayette, IN
Randell Sedlacek—Roeland Park, KS
Richard Siteman—Portland, ME
Alex Skripnik—Bloomington, MN
Chuck Slack—Antioch, IL
Tony Smith—New Orleans, LA
Stuart Sutton—Virginia Beach, VA
David Teckam—Elk Grove, CA
Michael Thimblin—Springfield, VA
Neil Tolciss—Brooklyn, NY
Robert Wallace—Kinnelon, NJ
Daniel Warthin—Jensen, UT
Thomas Weeks—Denville, NJ
Keith Welcker—Alger, MI
Edward Wells—Grand Haven, MI
Robert Whittemore—Middlebury, CT

PINT

Ken Akins—Atlantic Beach, FL—Ragtime Tavern Seafood & Grill
Edward Allen—Hickory, NC
Kevin Anderson—Fairbanks, AK
Tanner Andrews—Deland, FL
Todd Ashman—Flossmoor, IL
Richard Aumand—North Walpole, NH—Rca Distributors
Greg Baroch—Littleton, CO
Charles Barrett—Strongsville, OH
Brendan Barrett—Honolulu, HI
Ed & Joan Basham—Fort Worth, TX—The Winemaker Shop
Roger Bauer—Tukwila, WA—Dog Lips Brewhaus
Rocky Bennett—Eudora, KS
Adam Best—Lafayette, OR
Walter Blaschuk—Nashua, NH
Hal Buttermore—Ann Arbor, MI
Tom Cabot—Hermann, MO—The Herman Werks
Peter Carl—Chicago, IL
Jamie Carlson—Hughson, CA
Mark Castleman—Westminster, CO
Bradley Cate—Georgetown, DE
Mike Cavitt—Downs, IL
Rob Clark—Hartland, MI
Mike Claus—Lake Elsinore, CA
Russ Clayton—Slidell, LA
Larry Copeland—Smyrna, GA
James Cottingham—Colorado Springs, CO
Michael Croddy—Colorado Springs, CO
Russell Danstrom—Roanoke, VA
Vincent De Chiara—Spokane, WA
Raymond DeFelice—Philadelphia, PA
Double Barrel Homebrewers—Florence, OR
James Dudley—Wyoming, MN—Northwestern Extract Co
Jim Eddings—Albuquerque, NM
Michael Edwards—Des Moines, IA
Donald Ehrsam—Paradise, CA
Tom Fergusson—Tigard, OR
Allen Freeberg—Angel Fire, NM
Greg Gardner—Merrimack, NH
Mark Gatza—Bel Air , MD
Paul Gieser—Minneapolis, MN
Michael F. Gordon, Sunnyvale, CA
Jeff Goyette—Manchester, NH
Michael Hall—Pasco, WA—Ice Harbor Brewing Company
H. Bruce Hammell—Trenton, NJ
Tim Hanlon—Janesville, WI
David Hansen—Salt Lake City, UT
John Hatch—Rome, GA
Michael Hauert—Clermont, FL
David Hayes—Los Alamos, NM
Robert Henderson—Chester, VA—Week End Brewer
Todd Hicks—Niceville, FL
Paul Hummel—Emmaus, PA
Michael Ieronimo—Plymouth, CT
Jason Jackson—Oklahoma City, OK
William James—Chrisman, IL
Earl Josserand—Arlington, TX
Jim Kaufmann—Nevillewood, PA
Joel Keay—Oklahoma City, OK
Calvin Keen—Grand Rapids, MI
Stephen Keller—Tallahassee, FL
William Kervick—Cromwell, CT
Harold Ketterer—Oak Ridge, TN
Harry Kuchenbrod—Kings Park, NY
Rick LaFrentz—Sunnyvale, CA
Geoffrey Larson—Juneau, AK—Alaskan Brewing & Bottling Co.
Scott Lewis—Cheyenne, WY
Paul Lewis—Gresham, OR
Richard Lonquist—Austin, TX
Jeff Look—Little Rock, AR
Richard Lukas—Worcester, MA
Ethan Magdovitz—London, Great Britain
Ed Meason—Orlando, FL
Ed Megaw—Mc Clure, OH—Orygun Trail Antiques
Jay Menzel—Crystal Lake, IL
Tom Mercier—Timmonsville, SC
Thomas Miklinevich—West Redding, CT
Dean Mochizuki—Seattle, WA
Robert Moore—Muncie, IN
William Mulcahy—Medford, MA
Charles Murray—Golden, CO
Chris Neikirk—Norfolk, VA
David Newton—Colorado Springs, CO
Leslie Oliver—Santa Barbara, CA
Barth Olson—Seattle, WA
Koelle Paris—Chesterfield, MO—St Louis Wine And Beer Making
Thomas Parrish—Pittsburgh, PA—Parrish Plastics Corp.
Frank Pedroni—Concord, CA
Bruce Peterson—Superior, CO
Rick Pilling—Honolulu, HI
Tom Porter—Coral, MI
Terry & Valerie Price—Rochester, NH
David Quinn Menlo—Park, CA
Bradley Reeg—Chicago, IL
Mike Riddle—Napa, CA—Marin Society Of Homebrewers
Scott Ringler—Las Vegas, NV—House Argent Cellars
Thomas Ritchie—Kaneohe, HI
Jeffrey Rose—Chelmsford, MA
Rick Rudnick—Seattle, WA
Bill Ryan—Seattle, WA
Richard Salas—Petez Acres, GU
Alex Santic—New York, NY
Steven Schneider—Springfield, VA
Jay Scholz—Cedarburg, WI
Gregory Schuster—Sumner, WA
John Silliman High—Bridge, NJ
Kevin Skazalski—Dearborn Heights, MI
Ron Smith—Indianapolis, IN
Carter Stein—Portland, OR—Stein Beer
William Stone—Lansdowne, PA
David Stumpf—Wayne, NJ
Raymond Sullivan—Denver, CO
Dana Tessicini—Milford, MA
Shad Thornhill—Plano, TX
James Tighe—Burlington, MA
Dan Turczyn—Gladwin, MI
Pete Vickers—Seattle, WA
Steve Wall—Dallas, TX
Robert Wallace—Kinnelon, NJ
Allen Ward—Aurora, CO
Don Webb—Seattle, WA
Edward Wells—Grand Haven, MI
David & Cindy Wollner—Willimantic, CT—Willimantic Brewing Co

BY PROFESSOR SURFEIT

Got Wheat?

Dear Professor,

I inherited 150 pounds of raw wheat. I want to malt some of it, but all the malting info I have found is for barley. At this point I am planning to malt it as follows: Steeping at 50-55° F (10 to 12.7° F) to reach a moisture content of 45 percent; Germination at 55° F (12.7° C) until the acrospires are 0.75 the length of the kernel; Kilning after drying at 175° F (79° C) for a pilsner-like wheat malt. How does this sound? Do I let the acrospires grow to the same length as barley? Your expert advice would be greatly appreciated. Thank you.

Ted Hausotter
Dundee, OR

Dear Wheat Man Ted,

Some people inherit money and real estate. Others jewels and furniture. You got wheat. Oh well, some people have all the luck. Don't chaff about it too much. I'm no wheat man myself. But I do make a mean wheat bock! I've asked the Queen of Malt herself, Mary Ann Gruber of Briess Malting Company, Chilton, Wisconsin to provide some authoritative insight. Here's what she says:

1. Not knowing the age or condition of the wheat, it should be cleaned by removing any foreign materials, dust, etc. and then sized by removing any very small kernels. Then do a preliminary germination test by wrapping 100 kernels in damp paper toweling and put into a plastic baggie. Leave it on the counter top for three days and then count how many kernels germinated. If less than 80 percent I wouldn't advise trying to malt the wheat.

2. Assuming it is an acceptable malting wheat, one needs to be aware that wheat will malt very differently than barley. Wheat has no husk, so moisture pick up will be much more rapid. Because it has no husk, the kernels will tend to stick together during the malting process, forming an airtight bed. This creates problems. Thus one must gently "fluff" the grain bed more often. Also, because it has no husk it needs to be handled more gently so the acrospires are not prematurely broken off.

3. Procedure: Steep wheat 24 hours at 55° F (12.8° C) to 35 percent moisture. Every four hours, drain and fill with fresh water to supply oxygen and keep cool. Germination takes five to six days at 65° to 70° F (18.3 to 21.1° C). Every eight hours gently "fluff" the malting wheat. After every eight hours in the bed, mist with cold water; repeat every eight hours as needed to bring the moisture up to 45 percent. Do not let it stand in water. Continually pull small amounts of cool air through the bed to maintain the temperature, supply oxygen, and remove CO2. To test if it is ready for drying, kind of squeeze and roll a kernel between your thumb and forefinger. It should not take a great amount of force. Squeezing should leave a white, floury, paste on the finger. Most acrospires get broken off in handling so it is impossible to do a count of acrospires.

Kilning must be done slowly at low temperatures. Dry to 10 percent moisture at 120° F (49° C) This may take 36 hours. The 120° to 130° F temperature is necessary to preserve the enzymes. Then slowly raise the temperature to 180° F and hold there until four percent moisture remains.

4. After the malt is cooled, remove the rootlets. Store in a cool, dry place for 21 days before using. This allows the moisture to spread evenly throughout the kernel.

I hope this is what you are looking for. Sincerely, Mary Anne "the Queen of Malt" Gruber.

Well Ken, with that much wheat, you can always get into making Belgian style lambic beers. Those formulations call for up to 50 percent unmalted wheat in the mash!

I'll buy my malted wheat thank you,
The Professor, Hb.D.

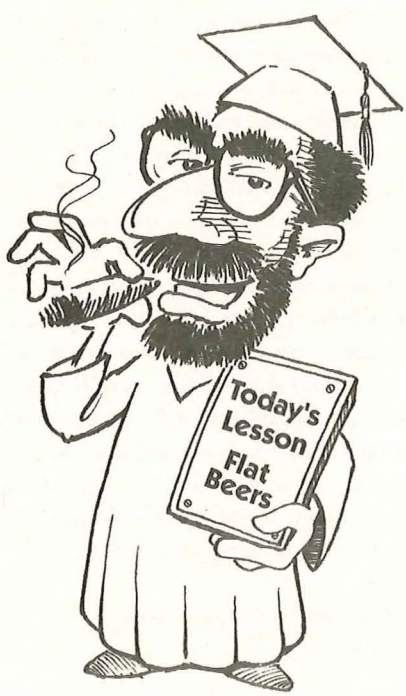


ILLUSTRATION BY JOHN MARTIN

Go to Helles!

Dear Professor Surfeit,

One of my favorite beer styles is Munich Helles, which I fell in love with on several business trips to Munich. I have tried to brew Helles here in Ohio using an

all grain recipe. But alas, it is has come out nothing like the beer in Germany. At a local beer club meeting (Bloatarian Brewing League, Cincinnati, OH) one of the members said one of the most important thing was the water. Without duplicating Munich water or coming very close there would be no way I could duplicate that wonderful beer style.

After doing some water research I am more confused then ever. In Charlie Papazian's book, *The New Complete Joy of Home Brewing* he wrote that Munich water had 70 - 80 ppm calcium and 5 -10 ppm sulfates. Byron Burch's book Brewing Quality Beers he wrote Munich Helles had 60 - 90 ppm salt and 120 - 180 ppm gypsum. Horst D. Dornbusch in Zymurgy (July/August 1999) stated that Bavarian water contained 100 - 300 ppm bicarbonate and gypsum should be added to brewing water.

My local water company draws its water from wells and reports hardness between 120 - 125 ppm calcium carbonate. I checked the water using a swimming pool test kit and found the following results: Before using a home filter, chlorine is at 3 ppm+, pH is 8.2+, and total alkalinity is 170 - 180 ppm. After filtering, chlorine levels were at 0 ppm, pH was 7.4 and total alkalinity was 180 - 200 ppm.

The last college chemistry class I had was about 35 years ago and since then I have gone chemistry brain dead. All of the above books, articles, and water test results have left me totally confused about what can be done with my water. I have access to plenty of distilled water. What can I add to distilled water to bring it up to Munich water standards? Can I add distilled water to my existing filtered water, and how much? Any help you may be able to give me would be greatly appreciated. Worry is not in my vocabulary, but the homebrew I am having is not a Munich Helles.

Ken Ewing
New Richmond, OH

Dear Ken,

I'm not using Brain-dead chemistry to try to explain this, because you won't understand it and I don't know it. This is an issue that continues to be debated by homebrewers, and has been, in fact, for decades...and I've been always a proponent of an explanation that water chemistry fanatics simply won't accept. Here is my opinion.

Use soft water! That's it. Use water that you might normally use for a pilsener. The original Munich style of beer was Dunkel. A dark beer. And for very good reason. The natural water in Munich was not acceptable for making light beer. Now why would dark beers be acceptable? The reason is quite simple. Without knowing chemistry, I am certain that the brewers of Munich a few centuries ago found that beers brewed with darkly roasted malts were smoother. This makes perfect sense. Dark roasted malts have acidity. When added to a mash with the alkaline and hard water of Munich the acidity of the malt would buffer or more simply stated, it would neutralize the harsh characters of the water and the resulting beers would be smoother.

Light lagers became popular with the introduction of pilseners from the Pilsen area. When more of the science of water chemistry was unraveled by brewers they found that if they treated their very hard and alkaline water with acids, they could neutralize the water and make it suitable for light lagers.

So forget trying to duplicate the lousy natural brewing water of Munich. I'd bet my liter of Helles that all of today's Bavarian brewers would love to have softer, more mineral free water to make their Helles. Most treat their water to make it as soft and neutral as possible for their Helles.

I make a damned good Helles using local relatively soft water. Don't use high alpha hops. Use low alpha acid "noble" hops, either from Germany or some selected varieties grown in the United States such as Mt. Hood, Santiam, Tettnanger or Hersbrucker Hallertau. Getting a good malt-hop balance requires a certain skill of homebrewers who are usually accustomed to heavily hopping their beers with "citrus-like" American hops. This ain't no pale ale! Helles is one of my favorite beers and should be enjoyed fresh when ready. Aging tends to diminish that fresh malt character you and I love.

Helles ain't a bad place to be,
The Professor, Hb.D.

Caress of Caramel

Dear Sir Prof.,

In Dave Line's famous tome, *Brewing Beers Like Those You Buy*, he mentions the ingredient brewer's caramel. I am going to follow his recipe for one of my all-time favorite beers, Ruddles. I can't figure out what brewer's caramel is or anything about its availability in the US. Sir Prof, could you be of some assistance (please)?

Best wishes for 2001,
David "Wild about Mild" Gilbreath
Marietta, GA

Dear David,

I asked Ray Daniels to provide some of his insight about brewer's caramel. This is what Ray says:

Back in the Dave Line days (in the late 1960s and early 1970s), caramel was made from ammonia and sugar (Mmmmm. Yummy. –Sir Prof.) and I think that the effect was mostly color and not flavor. Since then, concerns about possible carcinogens have arisen and practices have changed. These days brewer's caramel is made by heating a liquid sugar solution and the resulting product should have some flavor effect. Randy Mosher once made his own caramel by gently heating and caramelizing corn syrup. At least a small proportion of corn syrup is highly recommended if you are going to try caramelizing your own sugar solution at home, as it helps to prevent the syrup's natural inclination to crystallize as it reduces...simmer the sugar, water and corn syrup until it thickens, then turn the fire way down and watch it carefully. No stirring is necessary during the process once all the sugar is completely dissolved. The color change will occur very quickly, so once the syrup begins to darken, take it off the fire, and proceed cautiously...burnt sugar won't help your mild ale much! Once it reaches a deep, reddish brown, cool it down with cold water in the sink. It should be ready to add to your wort. As an alternative, you might use some of the darker raw sugars or just a bit of caramel malt. —Ray Daniels

David, let me (it's Sir Prof again) add

some of my own opinion. I've tasted many a Ruddles over the years. It's wonderful ale. I've also made it my passion to duplicate some of the qualities of ales like Ruddles and in particular Brakspear's Henley-on-Thames ales. See Charlie Papazian's article in the Jan-Feb 2001 issue of Zymurgy called "Beyond the Ordinary Ordinary." In it is described the use of Invert Sugar #2, a rich caramel tasting soft brown sugar. I used dark and rich rapidura, a soft granulated compressed dried natural sugar juice from sugar cane. The variety I use comes from northern Brazil. You can find lighter versions in health-alternative oriented sections of grocery stores. It works very well.

Signing off as Sir,
The Professor, Hb.D.

Flat Beer. Who Wants to be a Millionaire?

Dear Professor,

I'm looking for some help. My latest batch of beer did not carbonate. How can I save it? The beer is a winter wheat ale. It was in the primary fermenter for nine days and in the secondary fermenter (a glass carboy) for 21 days. I added 0.75 cup priming sugar mixed with one pint of boiled water to the bottling bucket before I racked the beer over. I then allowed the beer to mellow in my basement (maybe 62° F, or 16.7° C) for about three weeks. I chilled a couple in the refrigerator last night and was quite disappointed to discover that the beer did not carbonate. Could all the yeast have settled out in the secondary fermenter? I'm wondering if I can add a pinch of yeast to each bottle in the hopes it will promote carbonation. I would appreciate any suggestions.

Regards,
Steve Poklop

Dear Steve,

You've asked homebrewing's #1 question. One of these days I expect this question to be asked on television's popular program "Who wants to be a Millionaire?" What you got is beer that has been "mellowed" at temperatures too cool for refermentation in your bottle. The only thing you did incorrectly is to store the beer at 62° F and expect it to carbonate. Oh yes, at those temperatures ale will eventually carbonate, but it will take more time than you have patience for. Get the temperature up to 70° for one week and you should quickly have perfectly conditioned ale.

With a sparkle,
The Professor, Hb.D.

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

Precious

A Primer on the Metals

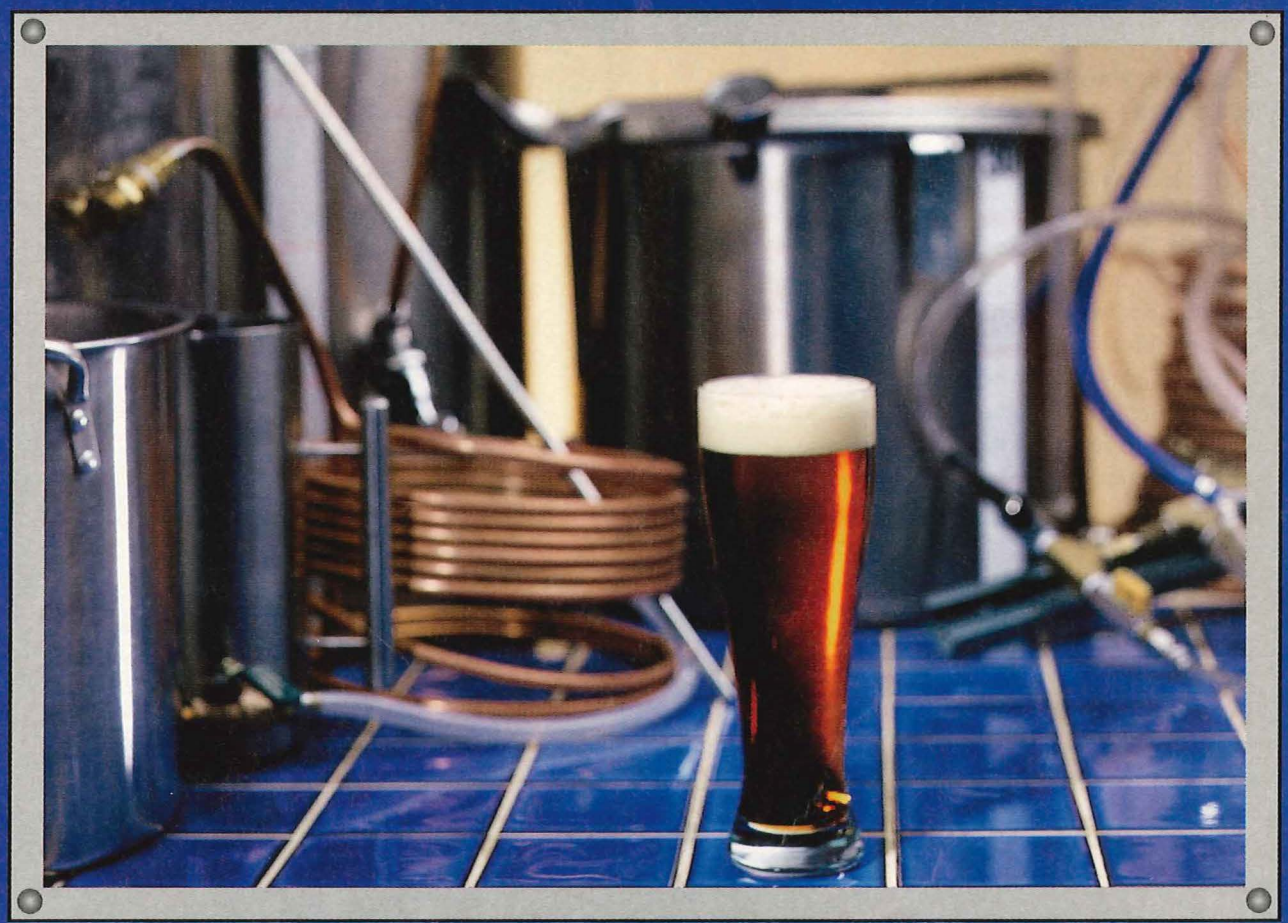


PHOTO BY RICHARD HARRIS
BACKGROUND PHOTOS ©2001 COREL CORP.

By John Palmer

METALS

Used in Brewing Equipment

So you are the proud owner of a new wort chiller or stainless steel keg. It looks great and makes brewing so much easier. Do you think you will still be enjoying it a year from now? While your answer may be a quick "yes," don't underestimate the potential for problems. Seemingly indestructible brewing equipment can be ruined by improper care or use. To protect against this, you'll want to familiarize yourself with the different metals used in brewing and the ways that they react with beer as well as the various cleansers and sanitizers available for your use.

In addition to buying gear, many homebrewers build some of their own stuff. Here again there is potential for problems as perfectly inert metals can become vulnerable to ruinous corrosion or toxic oxidation if mistreated during or after the fabrication process.

From these points, it should be clear that the following pages will cover what every homebrewer should know about the metals commonly used in brewing, including aluminum, copper, brass, carbon steel and stainless steel.

A primary concern in brewing is the purity of the product: we want to avoid any off-flavors due to the materials or processes used in production. One of the key concerns with metals is their potential interaction with beer and wort. We have a natural tendency to think of anything we drink as being neutral like water, but when it comes to beer this is far from the truth. Beer is an acidic substance with a moderately low pH (generally 4.0-5.0); wort is slightly less acidic, in the range from 5.0 to 5.5. This acidic characteristic requires special consideration when buying, building and using metallic objects in the production of beer. An important part of what we will discuss is how to prevent off-flavors that can come from these metals.

So that's our agenda: how to protect your precious metals from the fluids in your brewery and how to safeguard your beer from the off-flavors that might result. Let's start our review of brewing metals with a look at aluminum.

Aluminum

Aluminum is a good choice for brewpots and actively-heated mash/lauter tuns. It has high heat conductivity which helps prevent hot spots and scorching of the wort or mash, and is less expensive than stainless steel. The aluminum alloys most commonly used for cookware are alloys 3003 and 3004, which have very high corrosion resistance. Under the conditions of temperature and pH (4-8.5) normally encountered in brewing, aluminum (by itself) will not corrode and should not contribute any metallic flavor to your beer. However, when using aluminum for a brewing pot, do not clean the metal shiny bright between uses or you may get a metallic off-flavor. Like all metals, aluminum depends on a passive surface oxide for corrosion resistance, and scouring the metal shiny bright will remove the passive film. Allow it to grow dull and gray with use. To encourage a passive film in a brand new pot wash it thoroughly, dry it thoroughly, and then put it in your oven (dry) at 350°F for about 10 minutes. This will help the anhydrous

oxide layer to thicken. To clean aluminum, I recommend percarbonate-based cleaners like PBW, or an unscented dishwashing detergent. Do not use bleach because it can cause pitting of the aluminum.

Aluminum will corrode if placed adjacent to another metal like copper in wort or beer, but even this most aggressive situation is usually insignificant in home brewing.

Copper

Copper has a long history in brewing. It has high heat conductivity and is easy to form and was traditionally used for making the brewing kettles or "coppers." These days professional brewers typically choose stainless steel because it is stronger, more inert, and easier to maintain. But for the homebrewer, copper and brass are still the cheapest and best choices for wort chillers and fittings. Copper is relatively inert to both wort and beer. With regular use, copper will build up a stable oxide layer (dull copper color) that will protect it from any further interaction with the wort.

You should be aware that copper can develop a blue-green oxidation called verdigris. Verdigris includes several compounds chemically — cupric acetate, copper sulfate, or copper chloride – and these blue-green compounds are quite toxic and should not be allowed to contaminate your beer or any other food item. To clean heavy oxidation, including verdigris, use vinegar or oxalic acid-based cleansers like Revereware Copper and Stainless Steel cleaner.

For regular cleaning of copper and brass, unscented dish detergent or sodium percarbonate-based cleaners are preferred. Cleaning and sanitizing copper wort chillers with bleach solutions is not recommended. Copper is attacked by oxidizers like bleach and hydrogen peroxide. These cleaning agents will quickly cause copper and brass to blacken as oxides form. These black oxides do not protect the surface from further corrosion, and since they are formed under alkaline conditions, are quickly dissolved by the acidic wort. If a wort chiller is cleaned or sanitized with bleach, the yeast will be exposed to potentially harmful levels of dissolved copper. No off-flavors are associated with copper; almost all of it is removed from solution by the yeast.

Brass

Brass is a group of alloys made from copper and zinc with some lead thrown in for machinability. The lead percentage varies, but for the alloys used in plumbing fittings it is 3% or less. Lead does not alloy or mix with the copper and zinc in brass, but instead exists as tiny globules. These globules act as a lubricant during machining and result in a micro-thin film of lead being smeared over the machined surface. This lead that can be dissolved off by the acidic solutions of wort and beer. While this tiny amount of lead is not a health concern, most people would be happier if wasn't there at all.

Fortunately, this surface lead is very easy to remove by soaking the parts in a solution of vinegar and hydrogen peroxide. You can get these at the grocery store or drug store. You can use white distilled vinegar or cider vinegar, just check the label to be sure it is 5 percent acid by volume. The hydrogen peroxide should be 3 percent by volume. To make the solution mix them at a two-to-one volume ratio of vinegar to peroxide. The process takes about 5 minutes to clean and brighten the surface. The color of the brass will change to buttery yellow-gold when the process is finished. If the solution starts to turn blue or green and/or the parts start darkening, it means that the parts have been soaking too long, the peroxide is used up, and the copper is dissolving which will expose more lead. Make up a fresh solution and soak the parts again.

Excess zinc in wort resulting from the corrosion of brass (more than 5 ppm) can cause soapy or goaty flavors plus increased acetaldehyde and fusel alcohol production by the yeast. Like copper, brass will turn dull with regular use as it forms a stable oxide layer that protects it from the wort. Brass should be treated like copper for normal cleaning.

PHOTO BY RICHARD HARRIS

Carbon Steel

Carbon steel is predominantly iron, alloyed with carbon and other trace elements. In homebrewing it is commonly used for porcelain-enamel cookware and as rollers in grain mills. Many homebrewers get started in the hobby with a speckled, black brewpot because of their low cost. The drawback with these pots is that the porcelain can become cracked or chipped with use, exposing the steel to the wort. While a little extra iron/rust in your diet won't hurt you, it will taste bad. There is no practical way to fix these flaws in the porcelain, and the steel will rust between uses. A rusty pot will cause metallic, blood-like off-flavors in the wort.

Many brewers like to build their own roller mills for crushing grain. Carbon steel

is not stainless steel and needs to be protected against rusting by oiling or plating. If the roller steel is kept clean and dry between crushes, then it usually won't rust. It can be cleaned with a nylon or brass wire brush to remove any light rusting that may occur. Cleaning with steel wool or a steel wire brush will actually promote corrosion.

You can improve the corrosion resistance of carbon steel slightly by rubbing it with vegetable oil and buffing it off like car wax. By doing this you protect the surface oxides from hydration, producing a black oxide rather than rust. The black oxide is more adherent and will eventually cover the entire surface inhibiting further corrosion. The oil will become more wax-like too as the volatile components vaporize over time. This oxide/wax coating has limited corrosion resistance and direct contact with water will usually induce red rust. The rust can be cleaned away as described above to restore the more passive surface.

Stainless Steel

Stainless steel is the most common group of alloys used in the food and beverage industry. These alloys are typically American Iron and Steel Institute (AISI) 304 or 316 which are very corrosion resistant and are basically inert to beer.

All stainless steel is an iron-alloy containing at least 10.5 percent chromium (Cr) and with a carbon content of less than one percent. Various grades of stainless come from additions of other metals in the alloy, but the presence of chromium is what gives stainless steel its resistance to rust and corrosion. The 300 series has a nominal alloy content of 18 percent chromium and eight percent nickel. The carbon content is 0.15 percent or less.

Chromium on the surface of the alloy reacts with oxygen in the air (or in water) to create a passive coating of chromium oxide (CrO2). This layer is only 130 Angstroms thick (one Angstrom equals 1x10-8 cm), yet it prevents acidic materials, like wort or beer, from reacting with the alloy and giving a metallic taste to your beer.

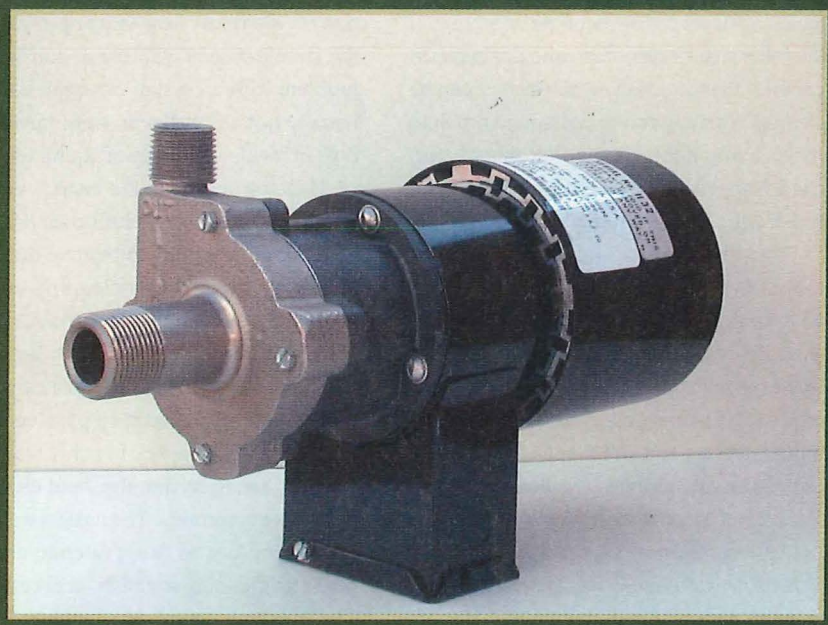
Stainless steel is referred to as being "passive" or "passivated" when the protective chromium oxide surface layer is unbroken. If this oxide layer is breached by iron (like from a wire brush or drill bit) or dissolved by chemical action (like bleach) or compositionally altered by heat (brazing or welding), the stainless steel will rust or corrode. The problem with corrosion of stainless steel is usually not an off-flavor, but more often a hole in a valuable piece of equipment.

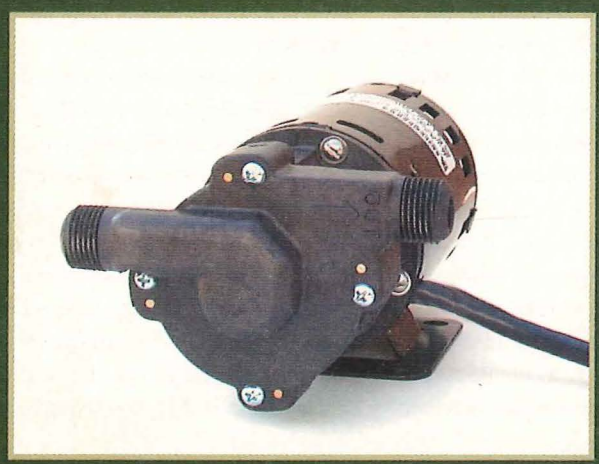
If the protective oxide layer is compromised, stainless steel can be repassivated by thorough cleaning to remove the contamination. Usually this cleaning involves dipping the steel in nitric or citric acid to dissolve free-iron or heavy oxides. But before you head out to buy acid, let me emphasize that you do not need it to passivate your stainless steel. The key to achieving a passive surface is getting the steel clean and free of contaminants. The easiest way to do this at home is to use a kitchen cleanser made for cleaning stainless steel cookware. Three examples are Bar Keepers Friend, Kleen King, and Revereware Stainless Steel cleanser. The active ingredient in these cleansers is oxalic acid, and it serves the same cleaning purpose as nitric acid. Once the surface has been cleaned to bare metal, the passive oxide layer will reform immediately. These cleansers also work very well for cleaning copper.

What this means is that you can perform cutting, grinding, soldering, or welding on your stainless steel and with just a few minutes of work with cleanser and a green scrubby, it will be passive again. Be sure to rinse thoroughly with clean water afterward so you don't leave any acid behind. Do not use steel wool or even a stainless steel scrubby, they will cause rust.

As you may be realizing, stainless steel is not invulnerable. Unfortunately, people tend to assume it is and then are shocked when it does corrode. From a homebrewer's perspective, perhaps the biggest Achilles heel for stainless steel is its vulnerability to chlorine—a common sanitizer. Chlorine can dissolve the protective oxides of stainless steel, exposing the metal surface to the environment. Let's suppose you are sanitizing a corny keg with bleach. If there is a scratch, or a rubber gasket against the steel creates a crevice, then these secluded areas can lose their passivation. Inside the crevice, on a microscopic scale, the chlorides can combine with the oxygen from the oxide to form chlorite ions. That crevice becomes a tiny, highly active site compared to the more passive stainless steel around it, so it corrodes. This mechanism is known as crevice corrosion.

The same thing can happen at the water's surface if the keg is only half full. In this case, the steel above the waterline is in air and the passive oxide layer is stable. Beneath the surface, the oxide layer is less stable due to the chloride ions, but it is uniform. With a stable area above, and a less stable but very large area below, the waterline becomes the "crevice." Usually this type of corrosion will manifest as pitting or pinholes. The mechanism described is *(continued on page 54)*

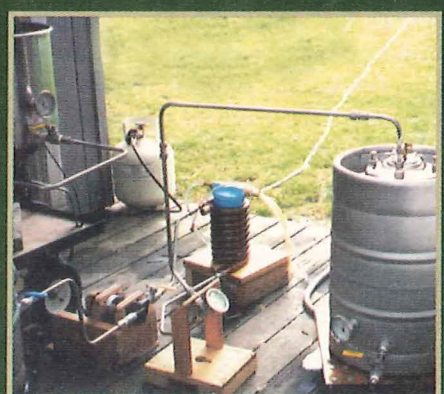




MOVING YOUR BREW:

BY BILL STEWART

A PRIMER ON PUMPS IN HOMEBREWING



PHOTS BY: BILL STEWART

Any homebrewer who has ever visited a commercial brewery has noticed that a lot of the stuff we do with siphons and tubes the big guys accomplish with the help of a pump. After that, you don't have to progress very far into the hobby to realize that there are times when it would be not just convenient but a lot more enjoyable to have a pump to help things along.

Pumps are quite simply machines that lift fluids. Today they are available in a wide variety of designs to cope with the demands of pumping fluids as different as air, water, gasoline, or even chunky peanut butter. Pumps are frequently described by their key mechanical feature—that is the way they move fluids. In the brewing industry, centrifugal pumps are widely used because their attributes and limits are well adapted to many brewing tasks.

Centrifugal Pumps

Centrifugal pumps have a simple basic design consisting of a rotating wheel or impeller with vanes that is something like fan or a multi-bladed airplane propeller. When the impeller spins, water flowing into the center of the pump is thrown out to the periphery at high velocity using centrifugal force. The water is guided into a volute (outer housing) surrounding the impeller, where the velocity of the water is converted into pressure energy in the discharge pipe. Centrifugal pumps offer the advantages of high fluid flow rates, relatively low pressures and a smooth non-pulsating flow. Their high flow rate makes them suited for moving the large quantities of liquids involved in brewing operations. The low-pressure operation and the smooth pulseless flow simplify the design, maintenance, and risks involved in the myriad pipes, tubes and connections found in the brewery. The low pressure and smooth flow also make life easier on the products being moved. The inherently simple design reduces manufacturing costs, allows easier customization to specific applications, and provides robust service under brewery conditions.

A typical brewery pump consists of a water resistant "wash-down service" motor connected to an all stainless steel pump, which is fitted with a "sanitary seal" at the point where the shaft driving the impeller penetrates through the rear of the pump housing.

When it comes to homebrewing, pump performance demands are comparable to those of a commercial brewery on a reduced scale. The need for relatively high flow rates, lower pressures, sanitary design and resistance to common brewing chemicals is the same. Although professional brewery pumps are costly, the scale of professional brewing makes their use unavoidable. Amateur, small-scale brewers are cost-conscious and require designs that can do the job and keep the price manageable. One style of centrifugal pump that has the ability to deliver the needed performance at a reasonable price is the magnetic drive pump.

Magnetic Drive Pumps

In magnetic drive designs, a powerful driving magnet is attached to the motor output shaft. A similar magnet, the "driven" magnet, is part of the impeller unit inside of the pump housing. The two magnets are magnetically coupled to each other by the magnetic attraction between them. There is no shaft or other mechanical linkage between the motor and the impeller, only the attraction between the two magnets allows the impeller to spin. The rear housing of the pump is a solid wall without any opening needed to admit a driving shaft.

The principal benefit of this design is to provide a pumping unit that is housed in a fully enclosed and sealed, separate and sanitary pump housing. Without magnetic coupling, this housing would require a drive shaft opening. Because they create the potential for leakage—both into and out of the pump housing—such openings cause problems in both the manufacture and operation of sanitary centrifugal pumps. Magnetic linkage means no shaft and no potential for contamination, leakage or friction loss from a shaft seal. The magnetic drive coupling also provides built-in overload protection. If something prevents the impeller from turning normally, the two magnets can temporarily uncouple without damage—much like a clutch—to eliminate overloading and motor burnout.

This design has only one moving part inside the pump housing: the impeller. Generally the only other parts touching the pumped liquid are the front and rear housings, the spindle the impeller rotates on, a spindle thrust washer, and an O-ring seal

that seals the two housings together. This simplicity minimizes both initial cost and maintenance requirements.

Priming Centrifugal Pumps

One thing that it is important to know about centrifugal pumps is that they are not self-priming. This means that the inlet line and the pump chamber must be filled with liquid before the pump is started. This happens because the clearances surrounding the impeller inside the pump are generous. As a result, the pump cannot move air effectively enough to generate suction and draw liquid up the inlet tube and into the pump. On the plus side, those generous impeller clearances allow the pump to be forgiving when it encounters soft particulate matter like husks and hop bits in the fluids it is pumping.

As a result of this feature in centrifugal pumps, you can't just throw an inlet line over the top of your kettle into the wort and turn on the pump. If you do, nothing will happen. You will have to get fluid into that tube and flowing to the pump in order for the pump to do its job. The easy way to do this is to have a drain port on the vessel you are pumping from. If that is not an alternative, then you'll be back to the science of siphoning to get things rolling. This feature is important to consider when thinking about how and where you might use a pump in your homebrewing system.

Picking a Pump For Homebrewing

Selecting a pump for use in home brewing requires two separate evaluations. First consider what brewing problems you wish the pump to solve. Decide which brewing tasks you wish the pump to perform. You can then evaluate the various pumps available to see which are going to meet your performance and budget requirements.

What the pump will be asked to do will vary with every brewer and brewery. Some of the more common duties to consider are:

- Moving heated water from one vessel to another (mash-in, sparge)
- Recirculating mash liquor during mashing and vorlauf
- Moving wort from the lauter tun to the boil kettle
- Moving post-boil wort through a counter-flow chiller to a fermenter
- Moving chilled post-boil wort to a fermenter
- Circulating hot water, cleaners or sanitizers through any part of your system for cleaning and sanitizing

While all of these tasks may seem desirable at first, most small brewers find that it is easy to use gravity in many situations. As a result, they only use their pump for some subset of these activities. Remember too that the pump itself will have to be cleaned and sanitized appropriately for each application.

Once you have decided how you will use your pump, you will need to consider the following variables for each application:

- The vertical distance (height) that the pump will lift the liquids
- The flow rate in gallons per minute that would be suitable for the task
- The temperature of the liquid being pumped

The maximum vertical distance that a pump can raise a liquid is called the "head". This capability is often given as the "shut-off height". It is the height at which the pump can no longer push the liquid any higher. The pump you buy will need to have a head rating that is somewhat greater than that of your highest lift. To determine your lift needs, measure the distance from the bottom of the vessel you will pump from, to the top of the vessel you will pump to.

The maximum flow rate that will be delivered will be at the pump discharge and will diminish with vertical distance, until it reaches zero at the shut off height. You should consider your flow rate needs at the heights you will need to reach. Manufacturers will list the flow performance at various heights, or provide a graph to show the performance curve (see Figure 1).

Look for flow rate performance at the highest vertical distance you plan to pump. Choose a pump that has a bit more head performance than you expect to need. Not having the vertical pumping ability you need is a bit like trying to jump from the roof of one tall building to another, "almost far enough" is likely to be a significant disappointment. Look for a bit more flow rate than you think you need at that height. But remember: far too much performance can also be annoying.

The brewing process involves a wide range of temperatures, from boiling to freezing. Because different pump materials and seals are rated for different temperatures, you must consider exactly what range of temperatures you will require. For instance, if you will use the pump in mashing, you know that it must tolerate temperatures of at least 160° F (71° C) and possibly as high as 180° F (82° C). Still this application does not require a pump that can withstand temperatures approaching those of boiling water at 212° F (100° C).

Needless to say, the manufacturer's maximum temperature rating should exceed the liquid temperatures you anticipate using. Factory temperature ratings are based on the interaction of all of the parts. It's not just "what it's made out of," but even magnet performance varies with tempera-

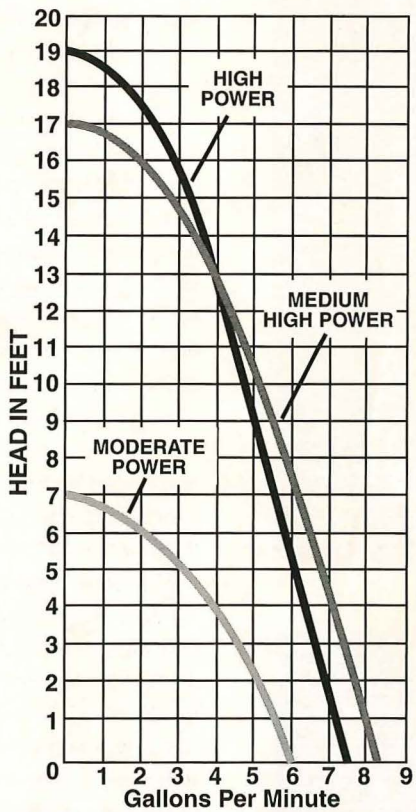


Figure 1. The pump represented by the moderate power curve has a head of seven feet. It will give a flow of 5.5 gpm when the fluid is being raised one foot, but the flow drops to 4 gpm when being raised four feet

PHOTOS BY BILL STEWART

ture. Don't attempt to get away with too low a rating and hope for the best.

When you are looking at pumps that are being offered for use in homebrewing, you will find that they typically utilize standard household current (120 volt 60 Hz) and draw less than two amperes. Thus the electrical needs of the pump itself are not usually a significant consideration. However be aware that if you are looking at surplus or industrial pumps be sure to check the power requirements carefully to ensure that they can be accommodated in a household setting.

Other pump attributes that you will see listed are horsepower rating, motor RPM, and connection types. Of the three, connections are the most important to your buying decision.

Pump inlet and discharge ports must provide some mechanism for attaching tubes or pipes that will supply and carry away the fluid being pumped. Two designs are common among pumps sold for homebrewing. In the first, the pumps have smooth surfaces designed for attaching half-inch inside diameter (ID) tubing and clamps. In the second, the pumps have threaded inlets and outlets using half-inch or three-eighths-inch NPT fittings. While pumps set up for direct attachment of tubing might seem to be more convenient, they also are less adaptable than threaded attachments. Threaded fittings can be used with hose barbs for flexible tubing, for threaded connectors for rigid tubing or with quick disconnect fittings.

Horsepower and RPM ratings aren't particularly useful in selecting a pump for homebrewing purposes, because performance can vary widely at any given value. Your best decision information comes from the pump performance specifications or graph for output at different heights mentioned above. Still, you may be interested to know that most pumps for homebrewing tend to fall in the range of one-fiftieth horsepower up to one-twenty-fifth horsepower and work well with five- to 15-gallon batches. RPM ratings generally fall in two ranges: about 1,600 RPM for less powerful, lower-head pumps, and 3,000 RPM for more powerful, higher-head pumps. As a practical matter, homebrewing pumps having comparable performance are likely to have comparable RPM ratings.

Installation and Set-up

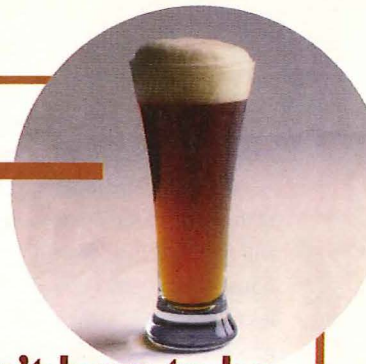
As we discussed earlier, centrifugal pumps are not self-priming, so you must carefully consider where you will place your pump when it is in operation. Your first decision about pump installation will be whether you will want the pump to remain in a fixed position relative to your brewery components, or whether you will wish to be able to move the pump around your brewery. In commercial breweries, you may find both rigid semi-permanent installations, and dolly-mounted pumps ready to roll to where the work is. Your brewing set-up, space requirements, and personal preferences will help you decide. The following guidelines for setting up a centrifugal pump will help produce successful operation for either type of installation.

Place the pump as low as possible. Use the force of gravity to push the liquid through the inlet line and into the pump. Each 2.3 feet (0.7 m) of height differential between the liquid supply and the pump will produce one pound per square inch of force pushing the liquid into the pump and helping to prime the pump. Mounting the pump lower does not "steal" from the pump's head ability. The same forces would push the liquid through the discharge line back up as far as the original height with the pump off. Try to have the pump inlet at least one foot below the source vessel.

Don't restrict your inlet. Keep the inlet line generous, as straight as possible, and with no elbows or sharp turns near the pump inlet. Use the largest flow path to the pump that is practical and convenient for your situation. It will help you get the maximum performance possible from your pump by delivering the maximum amount of liquid to the pump and keeping inlet line velocities lower. To avoid flow disruptions going into the pump keep the inlet line as straight as possible. Place any inlet side elbows or sharp turns away from the pump, preferably six inches (15.2 cm) or more.

Also, don't put anything on the inlet side that may impede flow to the pump. A valve on the supply vessel is always a good idea, but it must always be fully open when the pump is operating. Check to make sure the valve has a flow *(continued on page 55)*

HOMEBREWING.



Making great beer doesn't have to be as difficult as putting a man on the moon. Let the American Hombrewers Association (AHA) be your ground control.

Membership Benefits Include:

***Zymurgy* Magazine:** This award-winning magazine is packed with homebrewing advice and information on your favorite beers. Six issues per year. (A $35 value!).

Members-Only Tasting: an exclusive tasting just for AHA members at the annual Great American Beer Festival®.

Book Discounts: Save on the best beer and brewing books available.

Member Web Site: Includes the Talk Back Forum, Tech Talk, and AHA updates.

Conference Discounts: Join for the world's largest educational homebrewers' gathering. Fun-filled and informative the annual AHA National Homebrewers Conference and save on your registration. Enter your best brews at the National Homebrew Competition at a discounted rate. This event judges thousands of beers every year!

AHA Sanctioned Competition Program: Sanctions hundreds of homebrew competitions throughout the country.

AHA Sponsorship Opportunities:

The strength of the AHA is you. We need your support to make this your Association. As a sponsoring member you will receive a sponsor's certificate and your name, club or business listed in the six issues of *Zymurgy* as an active supporter of the AHA. Membership includes a subscription to *Zymurgy*. Choose from: **One-year Sponsorship** ($51): One-year membership to the AHA and an honorary certificate. **One-Year Family Sponsorship** ($60): One-year membership to the AHA and an honorary certificate. **Two-Year Sponsorship** ($103): Two-year membership to the AHA and an honorary certificate. **Five-Year Sponsorship** ($230: five-year membership to the AHA and honorary certificate. **Lifetime Sponsorship** ($460): distinguished recognition and lifetime membership to the AHA, T-shirt (please indicate size) and an honorary certificate.

It isn't Rocket Science.

Unless you want it to be.

Join on-line at www.beertown.org or call 1.888.U.CAN.BREW

We Have Liftoff.

Yes! I want to be *member* of the American Homebrewers Association.

(Membership price includes $24 subscription to Zymurgy)

☐ $33 One-year U.S. membership
☐ $58 Two-year U.S membership
☐ $87 Three-year U.S. membership

Yes! I want to *sponsor* the American Homebrewers Association. *(Sponsorship price includes $24 subscription to Zymurgy)*

☐ $51 One-Year AHA Sponsorship
☐ $60 One-Year AHA Family Sponsorship
☐ $103 Two-Year AHA Sponsorship
☐ $230 Five-Year AHA Sponsorship
☐ $460 Lifetime AHA Sponsorship, enter T-Shirt size_____

For family sponsorships, enter names of family members here:

_____

Name _____ Address _____

City _____ State/Prov. _____

Zip Postal Code _____ Country _____

Telephone _____ Fax _____ E-mail _____

Method of Payment (in U.S funds only)

☐ Check ☐ Mastercard ☐ Visa ☐ AmEx

Card Number _____-_____-_____-_____

Name on Card (please print) _____ Exp. Date _____/_____

Signature _____

Please photo copy and return with payment.
Make checks payable to: American Homebrewers Association,
P.O. Box 1510, Boulder, Colorado 80306-9871. Telephone (303) 546-6514,
FAX (303) 447-2825, Web site http://beertown.org

American Homebrewers Association
A Division of the Association of Brewers

BY DAN SCHULTZ

Freezer

Conversion for Fermenting and Serving Homebrew

One thing that most homebrewers never quite have enough of is temperature-controlled cooling space. For starters, there is the collection of beer that you want to have ready to drink—both homebrewed and commercial. Next come beers that are at the peak of flavor and need to be cold-stored until you get a chance to enjoy them or show them off. And of course, since we are brewers, there are all the production considerations: various temperatures for fermentation, lagering and maturation of various beers. While refrigerators can fill many of these roles, freezers are a viable—and often preferable—alternative. The horizontal orientation and the larger box offered by freezers helps to accommodate Cornelius tanks and fermenter carboys. In addition, the overall storage capacity is significantly greater than the typical refrigerator.

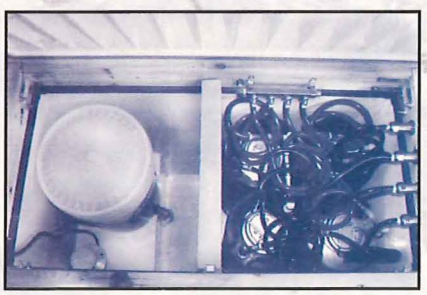
Of course freezers are made to *freeze* things, and we usually just want them chilled. This is easily fixed with a temperature controller, but it also means that there is excess cooling capacity. Thus, to further expand the storage space offered by the freezer and create other opportunities for better utilization, I have come up with a modest freezer expansion project. This approach utilizes a collar at the top of the freezer box to raise the lid and provide a solid and semi-permanent mounting place for taps. In addition, it creates a section of wall that can be breached for gas and beer lines without concern for the location of cooling coils and insulation inside the freezer walls. I have also found that the collar also allows a fermentation carboy equipped with an airlock to sit on the internal shelf without hitting the lid. Finally, I have also divided the interior of the compartment into two sections that can be set at different temperatures to accommodate different temperature needs simultaneously.

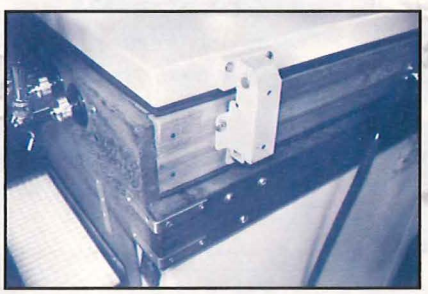
This project started out as a 10.5 cubic-foot freezer. It now has two chambers, one holds a fermenter, the other holds up to four Corny kegs. It currently has two taps to serve my homebrew with room to add two more. While fermenting a batch of homebrew, the fermentation chamber temperature is closely controlled by an add-on temperature controller.

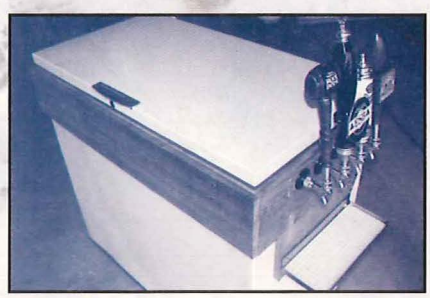
With that introduction, let me proceed to tell you a bit more about the project and how you can apply it to your own homebrew freezer.

Construction Details

I started out with a typical chest freezer and purchased a FermTemp temperature controller from Brewer's Resource. The freezer's built-in thermostat is set to maximum cooling (my freezer maintained a 0° F (-18° C) temperature at this setting) and the external FermTemp controller uses feedback from its thermocouple located inside the freezer to either turn on power to the freezer or to turn power on to a heater also located inside the freezer.







Here is the list of additional materials needed for construction of the collar itself:

2	cedar 2-by-4s (5 cm by 10.1 cm) 6-foot (1.8 m) or 8 ft (2.4 m) long
1	8-foot (2.4 m) or 10 ft (3 m) cedar 1-by-8 (2.5 cm by 20.3 cm)
1	6-foot (1.8 m) cedar 1-by-4 (2.5 cm by 10.1 cm)
12	3-in. (7.6 cm) right-angle brackets
22	#8 1 in. (2.5 cm) wood screws
8	#8 0.5 in.(1.2 cm) wood screws
18–22	0.25 in. by 3 in (6.4 mm by 7.6 cm) carriage bolts

Machine screws to match those that secure the hinges to the freezer box but 0.75 in (19 mm) longer.

A drill, saw, screwdrivers, wrenches and clamps are necessary. A router also helps but is not necessary.

The horizontal orientation and the larger box offered by freezers helps to accommodate Cornelius tanks and fermenter carboys. In addition, the overall storage capacity is significantly greater than the typical refrigerator.

The heater was made from a typical electrical junction box, ceramic light bulb base, electrical cord, and a ceramic reptile heater available from pet supply stores. I placed the heater in the fermentation chamber. If you live in a cold climate like I do (Portland, OR) and keep your freezer/fridge in a non-heated area like a garage, an internal heater will be necessary to maintain temperatures above that in the surrounding room.

Here is the list of additional materials needed for construction of the collar itself:

The first thing you will need to do is remove the lid from the freezer, keeping the hinges attached to the lid.

Next, measure and cut the two-by-fours to make a collar that will sit on top of the freezer compartment. When constructed, the outside edge of this collar should be flush with the outside surface of the freezer. If you wish, you can use a router or circular saw to notch the corners to improve the strength of the collar. Consult a cabinetry book if a fancy joint is desired.

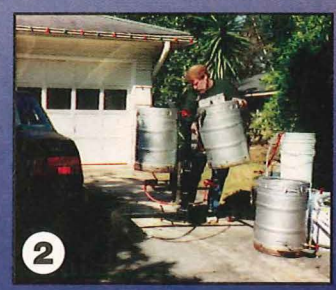
Right angle brackets are attached at each corner on the inside of the joint. At this point only one of the two mounting holes on each leg of the bracket is used. Each right-angle bracket has two holes on each leg of the bracket. The inner hole is the one closest to the bent part of the bracket. At this point in the process, you want to fasten the brackets to each corner using only the inner bracket holes and the one-inch long #8 screws.

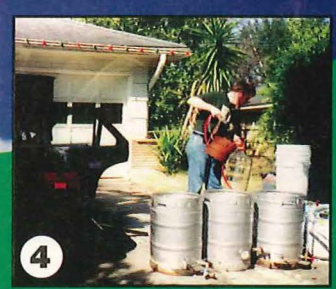
Next, cut the cedar one-by-eight to mount on the outside of the two-by-fours for the two sides and the front. The top edge of the one-by-eight needs to line up with the top edge of the two-by-four. One at a time, clamp a one-by-eight to a two-by-four and drill out the open hole in the right angle brackets in order to fasten the carriage bolts. Repeat with the other two one-by-eights.

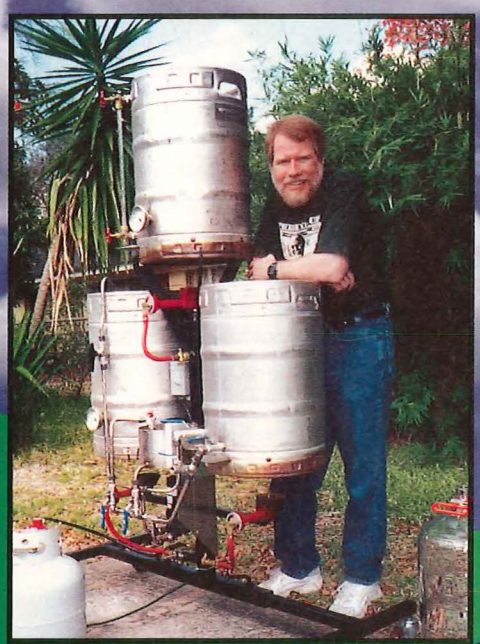
Sit the freezer lid on top of the wood collar you have built and mark the holes for the hinges in the two-by-four on the back side. Drill holes for the screws one-eighth inch lower than the marks to ensure that the lid gasket will contact the collar when closed. Fasten the hinges with the one-inch #8 screws.

Cut the cedar one-by-four to match the length of the back of the freezer. You will mount this on the rear of the freezer below the two-by-four. But before mounting it, locate the holes that were originally used to mount the lid to the freezer. In a minute you will attach screws through the one-by-four and into these holes, so you want to determine where to drill holes in the one-by-four in order to make that attachment. Once this is done, attach the one-by-four to the side one-by-eights with right angle brackets placed on the outside of the joint using the half-inch #8 screws. Now attach the one-by-four to the freezer box using appropriate-sized machine screws. This is the only place the wooden collar attaches to the freezer box. The three one-by-eights and the one-by-four will hold *(continued on page 56)*

RIMS for the ROAD



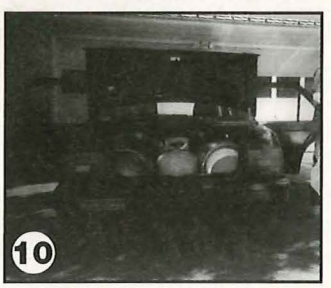




By Bev D. Blackwood II

Having your own Recirculating Infusion Mash System (or RIMS for short) is one of the truest signs you've reached beer geek nirvana. It ranks right up there with your first refractometer, your second fermentation fridge and the digital pH meter. (In case you're wondering, I'm three for four there.) If you believe everything you read, RIMS is designed to wring every last drop of extraction out of your grain, allow for more complex mash profiles and produce cleaner, more consistent brews in nice big ten-gallon batches. But no matter what the performance is like, there is no question that when you get one of these rigs, you suddenly have lots of beer to share, your brew days seem like less drudgery and best of all, you look like a pro. But given the size and complexity of such systems, they are hard to haul around when you want to show off—I mean, participate in a brew—at some place that is not your home.

Our homebrew group here in Houston, like many across the country, has an annual celebration at the local microbrewery for National Homebrew Day. This celebration is often referred to as "The Battle of the Big Rigs," but it could just as easily be "The Parade of Pickup Trucks Hauling the Big Rigs." One thing most big brewing rigs have in common is long, rigid stands that require something long and open to get them to a brew day. At least one brew club has solved this problem by building their big rig on a trailer, which eliminates the need for a truck (except to tow the trailer.)



Unlike three-tier gravity systems, a RIMS system has a pump to move liquids and recirculate the wort, so hot liquor tank, mash tun and brew kettle may be placed in any arrangement that works for the person designing the system. The most well known example of this is the SABCO systems, which are "two up, one down" with the Kettle being the "down" vessel. The vessels are arranged in a linear fashion on a sturdy metal frame that supports burners, piping, pump and in-line heater.

A more common sight in these parts are the rigs built by local brewer and welder Phil Endacott. He started making brewing equipment back when he was a welder out in West Texas. He was a member of a four-man brewing club and as they advanced in skill, they acquired larger and larger kettles, requiring Phil to build ever more complicated brewing stands. His first true "big rig" was assembled here in Houston after he and his wife moved to town. Since that time he has an impressive 14 systems to his credit, with the majority of them still residing in the Houston area. Phil has also transitioned from amateur brewer to professional in that time, starting with The Bay Brewery and moving to Saint Arnold before becoming the brewmaster at Bradley's.

Phil's rigs are usually "one up, two down," taking advantage of gravity to feed hot liquor to the mash tun for mash-in and sparging, while using the pump to transfer wort between the mash tun and kettle. Mash heating is accomplished through a low pressure burner beneath the mash tun, which can be controlled either manually or by a computer.

While Phil's systems function wonderfully, they still have the disadvantage of requiring a truck to carry them. Six-foot rigid steel frames just don't lend themselves to picking up the brew house and heading to your friend's place to brew. It was that simple problem which led Phil to construct a new type of RIMS, one which not only loses the pickup truck, it is actually small enough to fit into a compact car like my 1988 Honda Accord four-door.

The original concept for this rig evolved from a conversation where a Houston area brewer wanted to have one of Phil's "Big Rigs" but didn't want to buy a pickup truck to haul it. Spurred by the challenge, Phil adapted his standard rig to a central post system, which supports the pump, three burners and the necessary plumbing. Hanging from either side are the mash tun and brew kettle. Centered at the top of the entire assembly is the hot liquor tank, allowing for gravity feed. Removable wheeled supports provide the wide base needed to stabilizing the entire assembly. The system uses the standard recycled kegs common to most RIMS designs, although this design makes use of the handles of the Mash Tun and Brew Kettle kegs as their means of support, further reducing the bulk of the assembly.

The system incorporates all the same features as a "normal" Big Rig. There's a grant to allow sampling of the runoff, sight glass for the hot liquor tank and whirlpool for the kettle. I opted for a clean-in-place (CIP) fitting as well, allowing me to use the pump for cleaning carboys and kegs.

Brewing on one of these rigs is a lot of fun, although it requires a new set of skills. Suddenly you have to be aware of where things are flowing, monitor flow rates and still do all the data collection of a normal brew. There are moments when the new owner just has to shut it all down and catch up! However, like any fine instrument, practice makes perfect and what a joy it is to sample the results.

Innovation and experimentation are the hallmarks of our hobby. New methods, new tools and new ideas move us ahead as brewers. The portability of this design allows the brewer to take the excitement of the hobby on the road much more easily. Phil will be missed here in Houston, as he is on the move again. Brewers in Anchorage, Alaska will soon be joining the ranks of "big rig" owners as Phil continues to refine his craft.

Bev Blackwood has rapidly ascended the ranks of beer geekdom since starting to homebrew in late 1998. He writes for the *Southwest Brewing News* and Houston area club newsletters as well as producing (irregularly) his own cable access program, The Malt Show. He is the Grand Wazoo of Houston's Foam Rangers, is a recognized beer judge and travels the world looking for new beers to try.

MOTORIZE THAT MILL!

For a long time, I hand-cranked my grain mill. But after doing 27 pounds (12.2 kg) of malt for a barleywine, the thought occurred to me that there must be a better, easier—to be honest, a lazier—way of milling grain. I'd seen motorized mills—my local brew shop had one—and knew that in theory it was an easy way to mill lots of grain in a short time without all the manual labor. Between that and the fact that building brewing gadgets is a fun activity in its own right I was off on the trail of a motorized mill. Here's what I did to make this little homebrew dream a reality.

STEP ONE: FIND A MOTOR

Motors are pretty cheap if you can find them rebuilt, used, or in surplus outlets. Mine was better than cheap; it was free! In this case, it is good to have friends who are packrats. I mentioned my dream of a motorized mill to my buddy Craig, and a trip to his basement turned up an old furnace fan motor he was saving. It didn't take long to convince him that a motorized mill in the neighborhood would mean more homebrew for him, so he readily allowed me to liberate the motor. This is a one-quarter horsepower 1,725 RPM motor—perfect for running a mill.

A key design consideration, I quickly discovered, is the direction the motor runs. For example, if the mill runs clockwise, the motor must run clockwise if it is sitting next to the mill, or counter-clockwise if it is facing the mill or you're using a direct drive. My motor runs counter-clockwise, so I decided to design a stand allowing the motor to sit facing the mill.

STEP TWO: BUILD THE STAND

I had already cut a base for my Valley Mill, which would fit nicely over the top of a bucket. Without some sort of a base or some other mounting mechanism, a mill is pretty much useless. It was a simple matter of finding some extra particle board in the garage to build three sides of stand. I used one-and-a-half inch wood screws and some carpenter's glue hold this simple design together.

STEP THREE: GET THE SHEAVES

Sheaves, or pulleys, connect the mill and motor using two grooved wheels and a drive belt. One beauty of such a system is that you can adjust the RPM delivered to the mill by changing the relative diameter of the sheaves or pulley wheels attached to the

RECOMMENDED SPEEDS FOR VARIOUS MALT MILLS

We asked the manufacturers of various popular homebrew grain mills what speed they would recommend for their products if motorized. Here's what they told us:

LISTERMAN MANUFACTURING

Philmill II: "runs fine at about 800 rpm"
Philmill I: "runs with a 1/2 inch Craftsman Drill at maybe 300 rpm, but could run faster without problems."
Note: Motorizing either mill requires that the handle assembly be replaced with a 3/8 inch shoulder bolt whose head has been removed. Listerman sells these bolts.

JSP PRODUCTS

The maximum effective speed is around 500 RPM—based only on the fact that above that speed, the rollers tend to throw the malt around instead of pulling it through.

BREWTEK PRODUCTS

GM-100 Mill—Support the shaft, otherwise pulley force will wear out the bushings.

AUTOMATIC EQUIPMENT MANUFACTURING

An electric drill is the only recommended motorizing alternative as continuous operation over 200 rpm will cause heat buildup and bushing failure.

BY DREW AVIS

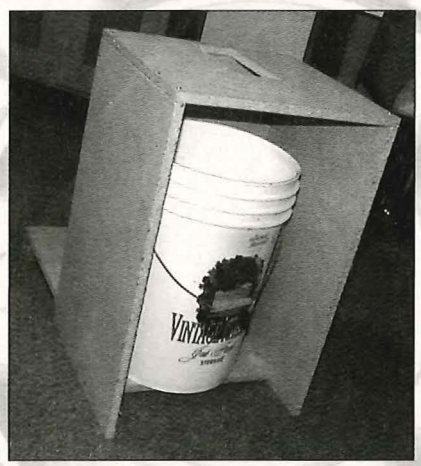


Figure 1: A sturdy stand is required to hold the mill and motor above a bucket or other container for collecting the ground grain.

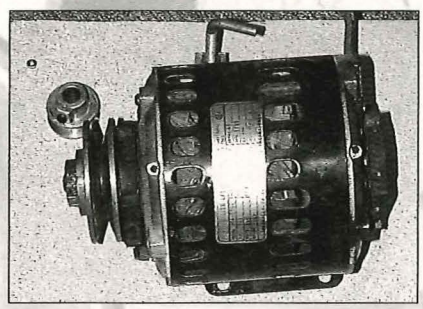


Figure 2: This quarter-horsepower 1,725 RPM motor works great for motorizing a grain mill.

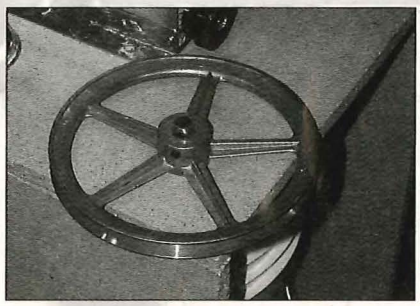


Figure 3: This nine-inch sheave was adapted with a copper bushing for proper mounting on the mill shaft.

motor and the mill. In this case, the motor runs at 1,725 RPM and the mill manufacturer recommends operating it at less than 300 RPM.

To determine the relative sizes of the sheaves on the motor and the mill, you simply divide the motor RPM by the mill RPM: 1,725/300 = 5.75. Based on this, I knew that my mill-sheave-to-motor-sheave ratio should be around six. The smallest sheave I could find for the motor was 1.5 inches in diameter. This meant that I would need a sheave that was nine inches or more in diameter for the mill. We find this by multiplying the motor sheave diameter (1.5 inches) by the mill sheave-to-motor sheave ratio of six. Thus: 1.5 x 6 = 9.

Now just because you know what you need doesn't mean that you are going to have an easy time finding it. After calling the Canadian branch of Grainger, driving out to Gord's Small Engine Repair, Larry's Small Engine Repair and a few other places, I was unable to find what I needed. I finally found a nine inch sheave at Canadian Tire, but the bore hole was 5/8 inch in diameter—a bit too large for my half-inch mill shaft. Luckily, I was able to solve this problem using a copper bushing found in the plumbing section of my local hardware store. The bushing acted as a "spacer," or sleeve, filling the gap between the shaft and the sheave bore. Drilling a hole in the bushing allowed the set nut to tighten against the mill shaft, preventing slippage.

Finally I was equipped with the sheaves I needed: 1.5 inch diameter on the motor and nine-inch diameter on the mill, so that the mill would turn at slightly less than 300 RPM.

STEP FOUR: WIRE THE SWITCH

Wiring was pretty easy, although a bit scary for me since I don't have not much electrical experience. Of course I did what you should do in this situation: consult someone who knows what they are doing. I got guidance from my thirsty buddy Craig and found the power wire coming off the motor—it had a black thread running in the insulation. Stripping an extension cord, I found the black power wire, and wired both to the terminals on the switch. The neutral wires I wired together (white on the power cord side), and the green ground wires were also wired together).

STEP FIVE: PUTTING IT ALL TOGETHER

Next I mounted the switch on the stand, bolted the motor to the stand, and bolted the mill to *(continued on page 57)*

PHOTOS COURTESY OF DREW AVIS

A Simple, Cost Effective Fermentation Chiller for Your Homebrewery

BY KEN SCHWARTZ

With spring turning into summer soon, many a homebrewer's handicraft will be marred by fermentation temperatures well above the recommended range for most yeast strains. Fruity, even solventy flavors and aromas can result from warm fermentations. Many homebrewers simply hang up the racking hose for the warm months, and wait for Old Man Winter to make his comeback. And even in winter, using ambient temperatures doesn't always give the best results. Ideally, you would like to optimize the fermentation temperature for every yeast you use. Now there are a number of ways to lower the temperature of your wort during warm weather, but the fermentation chiller presented here can provide cooling power and accurate temperature control rivaled only by refrigerators. The difference is, you can build this one yourself.

The fermentation chiller is a specially designed insulated box which uses ice, a thermostat, and a small fan to accurately regulate the temperature of a fermenter. While simpler insulated boxes and other simple temperature-management techniques often work reasonably well to *lower* the temperature, they can't *regulate* the temperature. Furthermore, this system is capable of maintaining five gallons of beer at temperatures that are 25 to 35° F (14-19° C) above ambient. For instance, I have been able to keep a Steam beer fermenting at 60° F (15° C) in my garage in summertime, which often stays for hours at 95° F (35° C) and is almost always above 85° F (29° C). If you have a place in your living area to use the chiller, you should be able to ferment lagers at 50° F (10° C) when ambient temperatures are at typical "room" temperatures.

The key to the chiller's control is the thermostat. It only circulates cold air from the ice when the temperature begins to rise. The arrangement of the panels inside the chiller "traps" the cold air behind the fan panel. When the temperature of the air

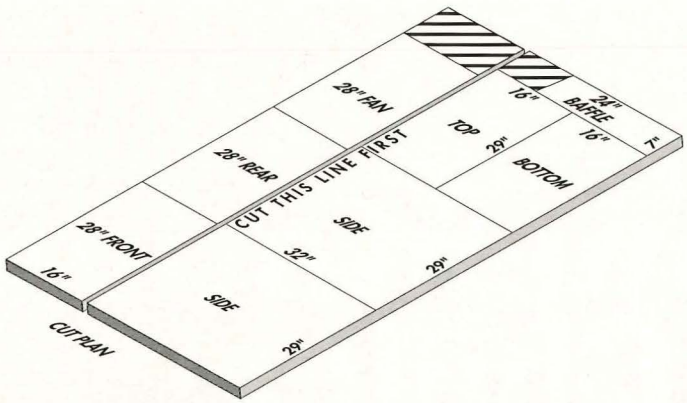


Figure 1: Cut Plan. This diagram shows how to layout the pieces of the fermentation chiller on a two-inch thick extruded polystyrene foam board.

around the fermenter rises above the thermostat's setpoint, the fan is switched on and the cold air is circulated around the fermenter until the temperature drops back to the desired point. The chiller operates on safe low-voltage DC current from an AC adapter and is very efficient to operate.

The cooling power for the chiller comes from gallon jugs of ice. With a 15° F (8° C) differential between your wort and the outside world, you'll need to change the ice about every two days. Having four jugs of ice available allows you to "rotate" them through the chiller — two in the chiller and two in the freezer.

Compared to a refrigerator, the chiller offers several advantages. Even if you got a fridge for free, you'll probably still have to spend $40 or more on a suitable thermostat controller. The chiller takes up far less space than a fridge—about a two-foot by three-foot area—and can easily be moved by one person. It can be stored in an attic or shed when not being used.

Construction

The Fermentation Chiller was designed to efficiently utilize a standard four-foot by eight-foot sheet of foam board. While some very basic woodworking and construction skills are required, it is not difficult to build and you probably have (or can easily borrow) all the tools you'll need. Here are some key points. First, use "construction adhesive" such as Liquid Nails for Projects to assemble the panels. Second, cut out all the pieces using the layout or "cut plan" shown. Draw the lines directly onto the foamboard with a pen (a "Sharpie" works nicely). An electric saber saw used freehand (slowly and carefully) works well for cutting the panel. *Don't* use a circular saw. Don't worry if the cuts aren't perfectly straight — the construction adhesive will compensate somewhat for crooked cuts. *Do* try to cut squarely *through* the foam. Mark the pieces before you cut so you don't get them mixed up.

Cut two square notches the same size as your fan, in the two corners at one end of the fan panel. Glue your fan in either notch making sure you don't get glue on the fan blades. Glue the edge of the baffle to the fan panel down the fan panel's center, flush with the notched edge of the fan panel. Secure the baffle in place with a few strips of masking tape to keep the baffle from sliding around while the glue is still wet. (See the sidebar for details on all the required parts.)

Glue the rear panel at one end of the bottom. Apply glue to the uncut edge of the fan panel, and also on the long edge of the baffle. Attach this fan/baffle assembly to the bottom and the rear (see Figure 2, left-hand side illustration).

Apply glue to the side edges of the bottom panel, the side edges of the rear panel, and the side edges of the fan panel. Attach the sides (see Figure 2, center illustration). Temporarily fit the front and top panels in place *without glue* to help hold everything straight and square while the glue dries overnight (see Figure 2, right-hand illustration). Use masking tape to hold things in place while the glue is setting up.

Once all the glue is dry, remove the masking tape from the assembly. Run a fillet of glue or caulk along all interior corners to "seal" the chiller. A little air leakage won't hurt much, but any obvious gaps should be plugged.

Attach pieces of half-inch quarter-dowel wood molding to the inside of the chiller as shown (see Figure 3). Align the flat edge of the molding with the top edges of the rear and fan panels, and two inches in from the front edges of the sides.

Attach self-sticking half-inch wide by quarter-inch thick open-cell weather stripping across the top edges of the fan and baffle panels, and to the molding as shown. Add a strip of weather stripping to the top edge of the front panel (see Figure 4).

The removable top and front panels are "pinned" in place with dowels. You will need to bore holes through the sides, and into the edges of the top and front panels.

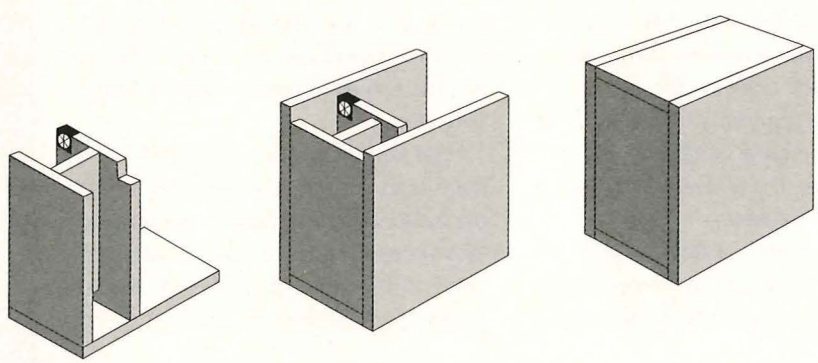


Figure 2: Assembly. This diagram shows the assembly of the bottom, rear, baffle, fan, side and top portions of the chiller.

These holes are reinforced using brass grommets. The grommets are the kind used to repair tarps and can be found in packages of 24 for about $2, which is exactly how many you'll need. Get the three-eighths inch size. Also get a two-foot length of five-sixteenths wooden dowel and cut eight four-inch lengths.

Discard the flat washer-like grommet parts and use just the "top-hat" pieces. Make two three-eights inch holes in each side about one-inch from the top, and about four-inch from the front and rear. Make two more holes in each side about an inch from the front and about four inches from the top and bottom. To make the holes, twist a three-eights inch drill bit through the foam by hand (don't use a drill). Carve a shallow "countersink" around each hole for the "brim" of the grommets to sit in.

Apply a liberal amount of adhesive to the outside of each "top hat" grommet, then insert it into both "ends" of each hole. Allow the glue to completely set up before proceeding with the matching holes in the front and top panels.

After the glue has set, place the front and top panels into position. Mark the top panel with an arrow near the front panel so that it goes on the same way every time. Now, press down firmly on the top, so that a good tight seal is formed against the weather stripping and molding. Insert the dowels through the holes in the side one at a time and push just firmly enough to mark the correct hole location in the edge of the top panel. Remove the top panel and drill out a three-eights inch diameter hole, 1.5 inches deep, at the mark. Drill and countersink these holes as described above. Do this one hole at a time, and be sure to press firmly against the weatherstripping when marking each hole. Repeat for the front panel. After all four holes are created on each panel, install the grommets and again allow the glue to set up before use. Round the ends of the dowels with sandpaper or a knife, so that they don't catch on the grommets as they are inserted into the holes.

Instead of using the dowels, you can simply place a heavy book or other item on the top, and simply press-fit the front into place. This works OK, although the seal of the front panel will not be as effective and some reduced performance may result.

Installing the Thermostat

If you can't tell which AC adapter wire is positive, try wiring it directly to the fan and plugging it in. If the fan does not operate, unplug and reverse the wires. Mark the wire attached to the red wire for reference when wiring the thermostat.

Poke a small hole near the bottom of either side for the AC adapter wire to pass through, near the fan panel and inside the fermentation chamber. Cut off the plug (if any) at the end of the adapter wire and pass the wire through the hole. Wire up the thermostat as illustrated below. Glue the wired thermostat to the fan panel just under the fan.

Use a heat/cool or cool-only thermostat designed for the home. Do not use a heat-only style—remember, we want the chiller to cool! Connection is made as shown to the "RH" and the "G" terminals, or as otherwise recommended by the manufacturer to activate cooling equipment. **Note: Do NOT use "programmable" or "digital" thermostats, as they require 24 VAC power supply to operate, rather than the 12 VDC we're using. Stick to the simple, mechanical units described here. DO NOT attempt to attach any heating device or use household current (120 VAC), as this is a fire and shock hazard.**

Using the Chiller

Set the chiller in a convenient location, with the front end accessible for monitoring and handling the fermenter. Remove the top and front panels. Place the fermenter in the fermentation chamber. Place one jug of ice in each ice chamber. Set the thermostat to "cool" and adjust the thermostat temperature as desired for fermentation. Plug in the

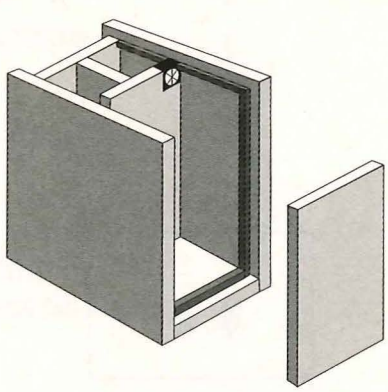


Figure 3: Placement of quarter-dowel molding near front and top.

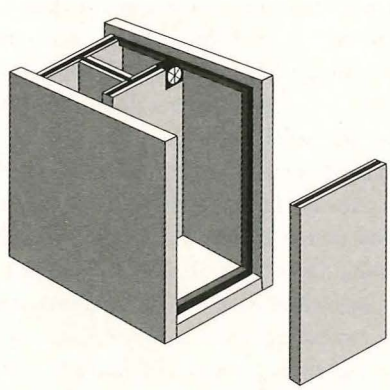


Figure 4: Placement of open cell insulation strips to seal the chiller.

Sources for Parts & Supplies

I got the fan and AC adapter from Jameco (www.jameco.com, (800) 831-4242). All Electronics (www.allcorp.com, (888) 826-5432) sells comparable products. Radio Shack also sells suitable parts but their prices are much higher.

AC Adapter: Jameco 163993, All Electronics DCTX-1222, Radio Shack 273-1773

Fan: Jameco 154288, All Electronics CF-67, Radio Shack 273-243

Thermostat: Any inexpensive mechanical heat/cool or cool-only thermostat such as White-Rodgers 1C21-1 or Robertshaw CM-65. I got my 1C21-1 for less than $10 brand new. Try "Home" stores.

Foamboard: Most "Home" stores don't carry the 2-inch thick (5 cm) extruded polystyrene material. White "beadboard" can usually be easily found but I don't recommend it due to its poor strength. To find the recommended extruded polystyrene brand-new, try an insulation supply dealer or contractor, or check with companies that make signs for businesses. I used Owens-Corning Foamular 250.

AC adapter. If the air in the fermentation chamber is warmer than the thermostat setting, the fan should start running. Install the top panel with the dowels. Check that cold air is blowing out of either the fan or the vent, depending on which way your fan is blowing (airflow direction is not important). Install the front panel using the dowels (sort of "scoop" it upward into place, to avoid dragging across the weatherstripping on the top edge). Eventually the fan will shut off, when the fermentation chamber temperature matches the thermostat setting. The fan might cycle frequently at first, if the wort is warmer than the thermostat setting. Once the wort is at temperature, cycling will be quite infrequent. When the fan cycles frequently or runs continuously, or when the ice is mostly or totally melted, replace the ice.

Use bleach jugs, which are stronger than milk jugs. This way, you can stack two jugs in each ice chamber for more cooling power and less-frequent ice changes.

Do not attempt to move a chiller with a carboy or bucket in it!! The chiller cannot support the weight. Remove the fermenter and the ice before moving the chiller.

To deal with condensation that can build up in the chiller, add drain holes by simply pushing a long screw, nail, or drill bit through the very bottom of the rear panel, so the hole is even with the "floor" of the ice chambers. Because you'll have condensation and perhaps small leaks from less-than-perfect sealing during construction, place the chiller on a surface that will not be damaged by any draining water. You could add some tubing to these holes to direct any drainage into a container, or just set the chiller on a towel or a tarp.

To monitor the operating temperature from outside the chiller, I use an inexpensive digital indoor/outdoor thermometer, with the "outdoor" probe run through a small hole in the side and mounted near the thermostat. Set the thermometer's selector switch to "outside" to display the probe's temperature. You can also use one of those little "instant reading" dial thermometers with the five inch probe. Simply push the probe through the side so that it sticks through near the thermostat.

Ken Schwartz has been brewing for over eight years and has been an engineer for, well, a lot longer than that. He has contributed to *Zymurgy* in the past and was a presenter at the 1998 AHA National Conference. More details on the Chiller as well as other articles and gadgets can be found on his website at http://home.elp.rr.com/brewbeer. He is currently Maximum Leader of the Borderline Brewers homebrew club in El Paso, TX.

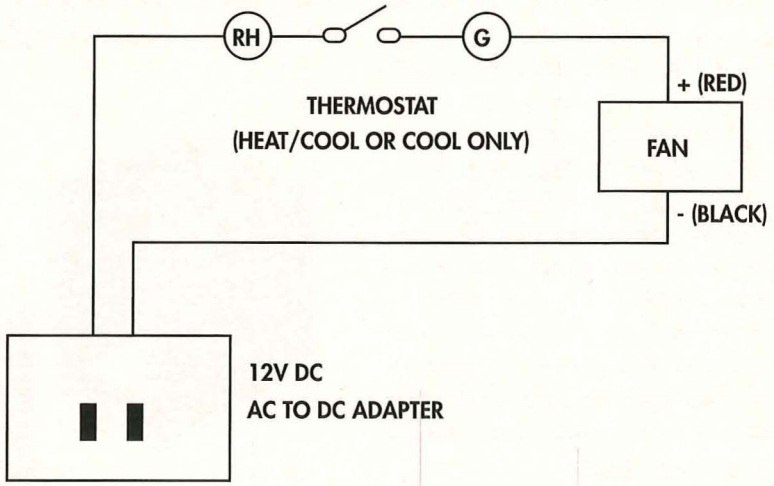


Figure 5: Basic electrical diagram for the fermentation chiller. For parts, see the sidebar.

For Geeks Only

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

Measuring Beer Bitterness

By Louis K. Bonham

One of the most pervasive myths among homebrewers is that you can accurately calculate the bitterness level of your beer. As long as you know the alpha acid level and weight of your hop additions, this belief goes, you can just plug these and other easily obtainable data into a formula, and *voila*, you've got the IBU level of your finished beer with mathematical precision. The truth is that there are so many variables affecting hop utilization that no formula can accurately predict IBU levels for a given recipe on every brewing system. Indeed, in an experiment where several dozen homebrewers used the same recipe and identical ingredients (including premeasured amounts of hops from the same lot), the measured IBU levels in the finished beer still varied from under 50 to over 75.(1).

Fortunately, although it requires a bit of lab equipment and practice, measuring the actual bitterness level of your beer is not particularly difficult to do. Additionally, once you have some empirical data on what your bitterness levels actually are, then you can tweak the various formulas to better predict your IBU levels for your particular brewing system. This article will briefly describe how to run the industry-standard ASBC bitterness assay,(2) as well as some thoughts on how to find the necessary equipment inexpensively.

The bitterness assay requires some equipment commonly found in most laboratories as shown in the sidebar entitled "What's Needed."

The assay also requires the following chemicals:

Isooctane, spectrophotometric grade. This is also known as 2,2,4-trimethylpentane. It needs to be a fairly pure grade (absorbance in 1 cm cell not more than 0.005 at 275 nm). Budget on needing about 45 ml per beer tested (test run in duplicate), so a liter of this will be enough to test about 22 beers. (A 4 liter jug costs about $100, and is usually the best buy.)

Octyl alcohol. You need less than a drop per test. It is usually sold in 500 ml containers, which would be enough for literally thousands of tests. Because this stuff is fairly expensive, best bet here is to befriend someone in a biochemistry lab and see if they can supply you with about 50 ml, which is enough for several hundred tests.

What's Needed

- UV spectrophotometer (must be capable of reading absorbance at 275 nm wavelength)
- 1 cm quartz cuvettes
- 1 ml and 10 ml volumetric pipettes (with pipette pump)
- 50 ml centrifuge tubes with screw caps
- disposable transfer pipettes
- small test tube
- small beaker, jar, or similar sample container
- centrifuge (capable of handling 50 ml centrifuge tubes)
- wrist action shaker (recommended but not required)

Hydrochloric acid (3N). You only need a few ml per test, so a 500 ml supply will last a long time.

While none of these chemicals are especially ugly, they do require common sense. Isooctane is as flammable as gasoline, and you should treat it accordingly. Octyl alcohol is quite poisonous, but fortunately it also smells awful so you're not likely to drink it by mistake. At 3N strength, hydrochloric acid is relatively benign, but do be careful if you buy more concentrated acid and dilute it (acid into water, always).

Running the Assay

In a nutshell, the assay involves extracting the bittering agents into an isooctane solution, and measuring the level of those agents in this solution with the UV spectrophotometer. Because these extracted bittering agents will degrade over time, the entire assay must be done at one

ILLUSTRATIONS BY CHARLES STUBBS

Are You A Geek Too? *Zymurgy* is looking for contributions for the "For Geeks Only" section. If you have studied a particular area of brewing science using in-depth library research or experimental data and would like to see the results published here, let us know by contacting Ray Daniels at ray@aob.org or via the mail address listed in the masthead on page 2.

session; *i.e.*, you can't do the isooctane extraction on one day and measure it on the spec on another.

(1) Turn the spectrophotometer on and let it warm up and stabilize while you prepare the isooctane extractions. Set the wavelength at 275 nm. Set out all your other equipment and chemicals.

(2) Pour about 50 ml of chilled, carbonated beer into a beaker, jar, or other sample container.

(3) Pour about 1 ml of octyl alcohol into a small test tube. Using a 10 ml volumetric pipette, draw up a small amount (<0.25ml) octyl alcohol into the pipette, then release the pressure on the pipette pump to let the octyl alcohol back run out into the test tube. (Do not "blow out" the pipette—just let gravity drain it.) The tiny bit of octyl alcohol that is held in the tip of the pipette by surface tension is all you need. This minute amount of octyl alcohol minimizes foaming in the pipette, thus allowing you to measure an accurate amount of carbonated beer.(3)

(4) Using this octyl alcohol-prepared volumetric pipette, draw up exactly 10.0 ml of beer. Transfer it to a 50 ml centrifuge tube. (*Do not* drink the beer in the sample container—it is now contaminated with octyl alcohol.)

(5) Using volumetric pipettes or other precision measuring equipment, add exactly 1.0 ml of HCl (3N strength) and 20.0 ml of isooctane to this tube. (If you have a repeater pipetter, they are very useful here.) Seal the tube.

(6) Repeat steps (3) through (5) to prepare a second tube of the beer to be tested(The ASBC protocol calls for the assay to be run in triplicate, but in my experience running it in duplicate is sufficient).

(7) If you have a wrist action shaker, put the tubes on it and let it run for 15 minutes. The shaking action should be vigorous. If you do not have a wrist action shaker, shake them by hand for about 8-10 minutes.

(8) While the tubes are shaking, prepare your "blank" solution (used to "zero" the spectrophotometer) by adding one drop of octyl alcohol to 20 ml isooctane.

(9) Transfer a few ml of this "blank" solution to a 1 cm quartz cuvette, and set the spectrophotometer to read 0.000 absorbance at 275 nm on this sample. (If you are running a lot of tests at one sitting, you only need to do this at the beginning of each session and after every five or so tests.)

(10) Examine the tubes. If the isooctane layer is clearly distinct from the beer layer, proceed to step (12). If there is not a nice clear isooctane layer on top, centrifuge the tubes (5 minutes at 2,500 rpm will do, but 1 minute at 10-15,000 is better).

(11) If the tubes still contain a jellylike "goo," (I see this more often with tubes that are hand shaken) instead of a nice clear isooctane layer, use the tip of a transfer pipette to gently stir this "goo" and then centrifuge again. This should cause the "goo" to coagulate and form a layer below the isooctane phase. (See photos by A.J. DeLange at www.members3.clubphoto.com/aj258779/Demo_Album/).

(12) Using a transfer pipette, carefully pipette off several milliliters of the clear isooctane layer from one tube. Use a bit of it to rinse the inside of the cuvette, and then fill the cuvette and place it in the spectrophotometer.

(13) Read the absorbance of this sample at 275 nm. Multiply the absorbance by 50 to get the IBU level. For example, if the absorbance level is 0.556, the IBU level is 27.8.

(14) Repeat steps (12) and (13) with the other tube.

(15) If the values for the two samples vary by no more than the greater of 2 IBUs or 10%, average the results. If the readings vary by more than this, you've probably made a significant pipetting error. Start over.(5)

Other tips on running the assay

A quick way to check your technique and equipment is to periodically do the assay on a commercial beer of known IBU strength. Due to their stringent qualify controls, beer from the megabreweries is particularly useful here. Coors Light, for instance, is 9.25 IBU, +/- 1 IBU, and so if your readings on this beer are between 7 and 11.5 you are probably OK. On the other hand, if you measure this beer at 20 IBU, something is wrong.

Many spectrophotometers only measure absorbance up to 2.000, making the maximum IBU reading 100. If you are testing a super-bitter beer (i.e., one you think may be near or above 100 IBUs), cut the size of the beer sample to 5ml and add 5ml of distilled water to the tube, and then multiply your absorbance reading by 100. (Due to the solubility limits of the various bittering compounds, the absolute maximum bitterness level you can get from boiling hops in the wort is about 120 IBUs.)

Equipping your own lab

If you do not have access to a lab, buying the necessary equipment at retail can be prohibitively expensive. However, with a little work, a suitable lab can be assembled for not too much money.

The volumetric pipettes, pipette pumps, disposable transfer pipettes, and 50 ml centrifuge tubes can be had from discount scientific supply houses for very modest sums.(4) The chemicals needed will cost about $1.50 per test, and can be had from most major chemical supply houses.

Quartz cuvettes cost about $75 each and, unfortunately, are essential. (The good news is that you only need one or two.) The cheaper glass and disposable cuvettes simply absorb too much at 275 nm, and thus skew the results unacceptably. While I have occasionally seen these in the surplus channels (a free "wanted" ad on LabX occasionally yields results here), this is one item where you may have to bite the bullet and buy them new.

The big ticket items are the UV spectrophotometer, centrifuge (large enough to handle 50 ml tubes), and wrist action shaker. Purchased new and at list price, each of these items can run into the thousands of dollars—new UV spectrophotometers, for instance, start at about $5,000. However, all of these are routinely available on various online surplus auction sites such as LabX.(6) Going rate for a good used UV spec in workable condition is between $200-600; centrifuges of the proper sort can be had for about $100; and wrist action shakers often go for $50-$100. (As with all online purchases of used equipment, *caveat emptor*.)

While this is certainly not an insignificant investment for an individual homebrewer, it is a worthy project for a homebrewing club.

Conclusion

The only way to know the bitterness level of your beer with any degree of precision is to actually measure it. However, running the bitterness assay is not particularly difficult once you have the equipment.

The author gratefully acknowledges comments and suggestions provided by A.J. DeLange.

Louis K. Bonham is a member of Houston's Foam Rangers, a member of the AHA's Board of Advisors and is the founder of the Masters Championship of Amateur Brewing ("MCAB"). A past columnist for *Brewing Techniques* magazine, he was awarded a Gold Quill and Tankard award by the North American Guild of Beer Writers in 1998.

References

(1) Bonham, Louis, "The HBD Palexperiment Results—Lab Analysis Part I, "7 Brewing Techniques 20 (1999).

(2) ASBC Methods of Analysis, Method Beer-23 (Beer Bitterness) (ASBC 1992, J. Thorn, ed.)

(3) Some descriptions of this assay indicate that a drop of octyl alcohol should be added to the beer after it is measured out. This is incorrect and inconsistent with the ASBC method.

(4) One such supplier that I can highly recommend is Cynmar, Inc. (www.cynmar.com).

(5) This 2 IBU / 10% "standard" is not part of the official ASBC protocol; indeed, most analytical chemists would probably cringe at such a lax standard. However, for homebrewers who are not professional chemists, it yields results that I believe are "close enough."

(6) www.labx.com

APRIL

19-21 10th Annual Crescent City Competition and Crawfish Boil, **AHA SCP**, New Orleans, LA. Entries due 3/19/01-4/6/01 with $6 entry fee. Contact Warren A. Chigoy, Jr. at 504-914-8836, wacjr@ix.netcom.com, http://members.nbci.com/wacjr/competition_2001.htm. Part of the Gulf Coast Homebrewer of the Year circuit.

20-21 14th Annual Bluff City Brewers Homebrewers' Extravaganza, **AHA SCP**, Memphis, TN. Entries due 4/2/01-4/13/01 with $5 entry fee. Contact Jay Grabowski at 662-449-0493, jgrabowski@aol.com, www.memphisbrews.com.

20-29 AHA National Homebrew Competition—First Round, **AHA SCP**, 8 regional sites in the U.S. and Canada. Entries due 4/4/01-4/13/01 with $8 for AHA members, $12 for non-members per entry. See www.beertown.org for Rules & Regulations and Entry Forms or contact Gary Glass at 1-888-UCANBREW, gary@aob.org for more information.

21 D.E.A. Challenge, **AHA SCP**, Greenville, NC. Entries due 2/1/01-4/14/01 with $6 for the first entry and $4 for each additional entry. Contact Brian Mentzer at 252-758-2474, stinkeeee@yahoo.com.

27-28 MCAB3 3rd Annual Masters Championship of Amateur Brewing Competition and Technical Conference, Berkeley, CA. Contact Mike Riddle at 707-259-1421, riddle@sonic.net, http://hbd.org/mcab/mcab3.

28 U.S. Open XI, **AHA SCP**, Charlotte, NC. Entries due 4/25/01 with $6 for the first entry, $4 for each additional entry. Contact John Mitchell at 704-868-8198, jlmitch@charlotte.infi.net,www.hbd.org/cbm/.

MAY

4-5 Annual Northern Brewer Homebrew Competition, **AHA SCP**, St. Paul, MN. Entries due 4/23/01-5/2/01 with $8 for the first entry, $6 for each additional entry. Contact Chris Schiffer at 651-291-8849, Schiffer@northernbrewer.com, www.northernbrewer.com.

5 **AHA** Big Brew 2001. For the 4th straight year, the **AHA** will be celebrating National Homebrew Day by hosting a day of simultaneous brewing around the globe. Contact Gary Glass at 303-447-0816 x 121, 1-888-U-CAN-BREW, gary@aob.org,www.beertown.org/AHA/BIGBREW/.

5 Green Mountain Homebrew Competition, **AHA SCP**, Burlington, VT. Entries due 4/11/01-4/25/01 with $5 entry fee. Contact Anne Duany Whyte at 802-655-2070, vtbrew@together.net, http://mail.symuli.com/NEHBOTY/. Part of the New England Homebrewer of the Year series.

5 2001 Dominion Cup, **AHA SCP**, Richmond, VA. Entries due 4/2/01-4/27/01 with $6 per entry. Contact Frank Timmons at 804-353-8318, francis0001@yahoo.com, www.weekendbrewer.com/jamesriverbrewers.html.

12 B.E.E.R. 5th Annual Homebrew Competition, **AHA SCP**, Nesconset, NY. Entries due 3/1/01-4/21/01 with $6 per entry for up to 9 entries, additional entries are free. Contact James B. Thoms at 631-269-5833, thomsjam@optonline.net, www.Homebrewshop.com.

12 Mt. Baldy Cup, **AHA SCP**, Michigan City, IN. Entries due 4/26/01-5/5/01 with $5 entry fee for a maximum of 2 entries. Contact Michael W. Pelter 219-662-9157, paradoc1@mindspring.com, www.angelfire.com/in3/dunelandbrewclub/.

AMERICAN HOMEBREWERS ASSOCIATION

• KUDOS •

SANCTIONED COMPETITION PROGRAM

• JANUARY 2001 •

Big Bend Brew-Off

Tallahassee, FL – James and Jean Michael of Sauk Rapids, MN won best of show.

Meadllennium 2001

Orlando, FL, 50 entries – Preston Hoover of Deltona, FL won best of show.

• FEBRUARY 2001 •

Coconut Cup 2001

Miami, FL, 47 entries – Mark Kelley of Homestead, FL won best of show.

13-19 A.L.E.S. 8th Annual Homebrew Competition, **AHA SCP**, Regina, Saskatchewan, Canada. Entries due 5/6/01-5/12/01 with $5 entry fee. Contact Barry Brem ner at 306-924-0101, bbremner@unibase.com.

17-20 Sunshine Challenge, **AHA SCP**, Orlando, FL. Entries due 4/23/01-5/7/01 with $6 entry fee. Contact Ron Bach at 407-696-2738, sc@cfhb.org, http://www.cfhb.org/. This event is part of the Gulf Coast Homebrewer of the Year circuit.

18-19 19th Annual Oregon Homebrew Festival, **AHA SCP**, Corvallis, OR. Entries due 4/23/01-5/14/01 with $6 entry fee. Contact Joel E. Rea at 541-758-1674, cbsbrew@peak.org, http://hotv.org.

19 5th Annual Western New York Homebrew Competition, **AHA SCP**, Buffalo, NY. Entries due by 5/5/01 with $7 for the first entry, $5 for each additional entry. Contact Becky Dyster at 716-877-8767, ntbrewer@localnet.com, www.niagarabrewers.org.

19-20 Elizabethan Homebrew Competition, **AHA SCP**, San Bernardino, CA. Entries due 4/30/01-5/4/01 with $10 entry fee. Contact Laurie Poel at 909-880-6211, www.recfair.com.

26 Celtic Brew-Off, **AHA SCP**, Arlington, TX. Entries due 5/11/01 with $6 entry fee. Contact J. B. Flowers at 817-467-0398, APICT8@aol.com.

26 HoPS Annual Mayfest IV, **AHA SCP**, Tacoma, WA. Entries due 4/23/01-5/23/01 with $5 entry fee. Contact Jeffrey L. King at 253-843-2817, jeffking1958@earthlink.net.

JUNE

1-3 2001 Aurora Brewing Challenge, Edmonton, AB. Entries due 5/31/01 with $6 each for up to three entries, $5 for each additional entry. Contact Kevin Zaychuk at 780-436-8822, zaychuk@edmc.net, www.ehg.ca.

21-23 AHA National Homebrew Competition 2001, Second Round, **AHA SCP**, Los Angeles, CA. Entries advancing from the first round due 6/11/01-6/15/01. Contact Gary Glass at 303-447-0816 x 121, 1-888-U-CAN-BREW, gary@aob.org, http://beertown.org/AHA/NHC/2001/.

21-23 AHA National Homebrewers Conference Presented by Rogue Ales, Los Angeles, CA. This year's conference will take place at the Four Points Sheraton LAX. Plans include a club hospitality suite, a club night, a Southern California pub crawl, the National Homebrewing Competition, and a variety of educational lectures and workshops, plus the LA Brewers Open - part Real Ale Festival, part Draft Beer Festival, part Commercial Beer Competition with awards for brewers. Contact Paul Gatza at 303-447-0816 x 122, 1-888-U-CAN-BREW, paul@aob.org, www.beerodyssey.com/

AHA SCP = American Homebrewers Association Sanctioned Competition Program

For a complete listing of events, see www.beertown.org.

To list events, send information to ***Zymurgy*** Calendar of Events. To be listed in the July/August Issue (Vol. 24, No. 4), information should be received by May 11, 2001. Competition organizers wishing to apply for AHA Sanctioning must do so at least two months prior to the event. Contact Gary Glass at gary@aob.org; (303) 447-0816 ext. 121; FAX (303) 447-2825; PO Box 1679, Boulder, CO 80306-1679.

BY CHARLIE PAPAZIAN

Phat Fired Wheat Bock and The American Revolution

It's winter, 2001. It's cold outside. My homebrew stash includes Dusty Mud Irish Stout, Smokey 2000 German-style Rauchbier, Drop Dead Beautiful German-style Export Lager, Good Life Pale Ale #6, Rapidura Ordinary #2, Heaven's Orbit (dark) Dunkel Lager, Phat Fired Wheat bock and dozens of vintage strong ales, meads and lambics. I'm warm.

Popping open an eleven-year-old Gnarley Roots lambic-style barley wine, I begin reminiscing about memorable winter beer moments in my life. My immersion in intense relaxation takes me back to the winter of 1999 and my travels to the North Eastern United States when I visited homebrewers and craft brewers from New Jersey to New Hampshire.

The trip began in Rheinbeck, upstate New York, along the eastern bank of the Hudson River, an area steeped in American history and great, contemporary beer culture. Hosted by the local beer community, my wife Sandra and I stayed at the Beekman Arms Inn, America's oldest continually operating hotel. The second evening we retuned from a magnificent homebrew- and food-related dinner event at the Culinary Institute of America's St. Andrews Restaurant.

"How about one more brew?"

"You bet." Just a nightcap before retiring. We snuck off to the Inn's bar. It was bitingly cold outside. Snow covered the ground in moonstruck patches. We entered, welcomed by the warmth of a fire in the hearth. A sense of something special filled the air in here. The low wood-beamed ceilings and antique floors captured the ambiance of nearly 250 years. George Washington, Alexander Hamilton, John Adams and other revolutionary forefathers of America congregated in this very space and enjoyed locally made porters and other ales—I'm certain of that. The walls told me. The cold

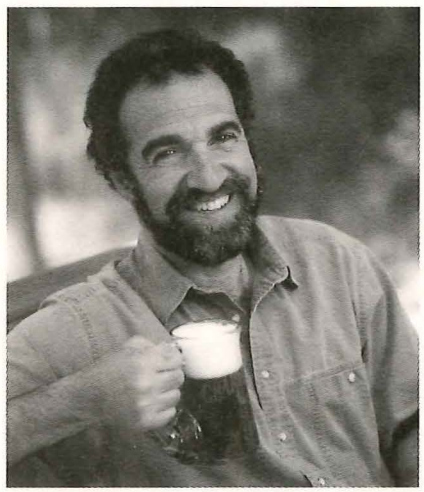


PHOTO COURTESY OF MICHAEL LICHTER

winter continued outside, unchanged from that time to now.

It was quiet. Well, almost quiet. We were the last two in the bar, except for the bartender and waitress, who were finalizing their evening's work. The floors creaked, the air was filled with the faint smell of smoke, and candle flames engraved their memorable glow on the walls around us. Just as it must have been in 1766. But I couldn't quite connect with the lack of beer choice (I had agreed to an imported British ale, but alas, it had lost to the ravages of staling) or with the music in the background: Spice Girls and En Vogue. Old George, I wonder how he would've handled it? He probably could have taken the pop music, but stale English ale! No way. No *bloody* way. I am glad that I am part of the current American Revolution.

One small five gallon batch at a time. Times 500,000 American homebrewers.

Back home, it's winter, and cold outside as I strive to meet May/June ***Zymurgy*** deadlines. My stash comforts me. Knowing that the near future holds a few more brews for the anticipated warmer months comforts me too.

Summer is nearly here as you read this and July 4, 2001 will be the biggest day for beer sales in the United States, ever! July is also American Beer Month. A tradition was born last year, initiated by a small group of Association of Brewers brewery members at the 1999 Great American Beer Festival. "American Beer Month"—a month to celebrate the tradition, history, diversity, taste and culture of American Beer. Americans would have been hard pressed to celebrate all of the above 25 years ago. But now, thanks to homebrewers and America's craft brewers, there is diversity and taste. Thanks to homebrewers, we know about our history. Thanks to all American brewers, there is a beer culture that contributes to the quality of our lives and that we can take pride in.

So will you take the pledge? Enjoying and recognizing the GREAT quality of beers made in America, all those who take the pledge promise to drink ONLY American-made beers in July, during American Beer Month. I will be doing just that, while not ever forgetting the other great beer traditions of the world, looking forward to later continuing my explorations and enjoyment of all the world's great beers and the warm experiences they bring.

So let's cut the shuck and jive and get on with the recipe:

Phat Fired Wheat Bock

A smooth, silky lagered wheat bock beer. The secret of this wonderfully balanced brew comes through the use of quality dried or liquid lager yeasts and the unique floral character of Santiam hops (replacing American Tettnanger in farm acreage). The floral character of Santiam really accents the malt character of this lager. The German debitterized Carafa malt adds richness of color and roast character without bitterness. The all-grain version is accented with a touch of sweet, toasted aromatics with the Belgian Aromatic

malt (but 15° L English crystal malt is an excellent substitute when you are not mashing). Phat Fired Wheat Bock, if handled properly, using clean and sound brewing techniques, keeps very well with time.

Phat Fired extract version

Ingredients and recipe for 6 U.S. gallons (23 L)

- **2 3.3 lb cans (3 kg) Munton's light malt extract syrup**
- **1 3.3 lb can (1.5 kg) Munton's light wheat malt extract syrup**
- **1 lb (454 g) English crystal malt (15 to 20° L)**
- **0.25 lb (113 g) chocolate malt**
- **0.25 lb (113 g) German Caraffe (black debittered) malt**
- **2 oz (57 g) German Spalt (7.2 HBU/200 MBU) whole hops (60 min.)**
- **1 oz (28 g) American Santiam or Am. Tettnanger (3.2 HBU/90 MBU) pellet hops (5 min.)***
- **1.4 oz (40 g) American Santiam or Am. Tettnanger pellet hops (2 min.)***
- **0.25 tsp powdered Irish moss**
- **0.9 cup (220 ml) corn sugar (to prime) or one third this amount for kegging**
- **Saflager dried yeast or German type liquid lager yeast**

***Try Mt. Hood if Santiam is not available.**

- **Original gravity: 1.064-1.068 (16-17 B)**
- **Final gravity: 1.016-1.018 (4-5 B)**
- **IBUs: about 30**
- **Approximate color: 21 SRM (42 EBC)**
- **Alcohol: 6.4% by volume**
- **Apparent attenuation: about 73%**

Add the crushed crystal, chocolate and black malt to one gallon (3.8 L) of 160° F (71° C) water. Let steep for 30 minutes. Afterwards, strain out the spent grains, sparge with hot water and collect the liquid extract. Add enough water to make three gallons (11.4 L). Add the malt extract syrup and Spalt hops. Bring to a boil and continue to boil for one hour. When 10 minutes remain, add Irish moss. When five minutes remain, add the one ounce (28 gm) Santiam hop pellets. When two minutes remain, add the final amount of hops and turn off the heat. Strain out the hops and sparge into a clean, sanitized fermenter to which three gallons of very cold water has been added.

Final primary batch size is six gallons (23 L). If necessary, add additional cold water to achieve this volume. Aerate the wort very well. If using dried yeast, rehydrate the yeast in 100° F (38° C)—yes 100° F—water (and only water) for 10 minutes. Add rehydrated slurry or a liquid yeast starter culture when the temperature of the wort is about 70 to 75° F (21-24° C). Preferably, begin ferment in the 70 to 72° F (21-22° C) range until visible activity is seen, then reduce temperature to about 55° F (13° C) for the primary fermentation. After primary fermentation is complete, rack (transfer) the beer into a secondary fermenter and lager at temperatures between 34 and 40° F (1-4.5° C) for a minimum of four weeks. Bottle with corn sugar. Age and carbonate/condition at temperatures between 70° F (21° C) and then chill for storage.

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

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

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

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:

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

METRIC BITTERNESS UNITS (MBUs) are equal to the number of grams of hops multiplied by the percent alpha acid.

Phat Fired all-grain version

Ingredients and recipe for 5.5 U.S. gallons (21 L)

- **7 lb (3.2 kg) Pils malt**
- **2 lb (0.91 kg) Munich malt**
- **2 lb (0.91 kg) American wheat malt**
- **0.5 lb (227 gm) Belgian aromatic malt**
- **0.25 lb (113 gm) chocolate malt**
- **0.25 lb (113 gm) German Caraffe (debittered black) malt**
- **1.4 oz (40 g) German Spalt (7.2 HBU/200 MBU) whole hops (60 min.)**
- **0.6 oz (18 g) American Santiam or Am. Tettnanger (3.2 HBU/90 MBU) pellet hops (5 min)***
- **1 oz (40 g) American Santiam or Am. Tettnanger pellet hops (2 min.)***
- **0.25 tsp powdered Irish moss**
- **0.75 cup (220 ml) corn sugar (to prime) or one third this amount for kegging Saflager dried yeast or German type liquid lager yeast**

***Try Mt. Hood if Santiam is not available.**

- **Original gravity: 1.064-1.068 (16-17 B)**
- **Final gravity: 1.014-1.016 (3.5-4 B)**
- **IBUs: about 30**
- **Approximate color: 19 SRM (38 EBC)**
- **Alcohol: 6.7% by volume**
- **Apparent yeast attenuation: about 78%**
- **Mashing extract based on 85% extraction efficiency**

For maximum extraction efficiency (85%), a two-step infusion mash is used. Add 12 quarts (11.5 L) of 151° F (66° C) water to the 12 pounds crushed malt (5.45 kg), stir, stabilize and hold the temperature at 133° F (56° C) for 30 minutes. Then add 6 quarts (5.7 L) of 200° F water to the mash, mix well and stabilize temperature at 156° F (69° C) for another 30 to 40 minutes. Then raise temperature to 167° F (75° C), lauter and sparge with four to five gallons (15-19 L) of 170° F (77° C) water. Collect about 5.5 gallons (20 L) of runoff.

Add Spalter hops. Bring to a boil and continue to boil for one hour or more to reduce the volume to 5.5 gallons (21 L). When 10 minutes remain, add Irish moss. When five minutes remain, add the 0.6 ounce (18 gm) Santiam hop pellets. When two minutes remain, add the final amount of hops and turn off the heat. Cool the wort to about 70 to 75° F (21-24° C). This can be done simply by immersing the brewpot (with lid on) in a bath of cold running water for about 30-45 minutes. Other means of chilling can be used if desired.

Final primary batch size is 5.5 gallons (20 L). If necessary, add additional cold water to achieve this volume. Aerate the wort very well. If using dried yeast, rehydrate the yeast in 100° F (38° C)—yes 100° F—water (and only water) for 10 minutes. Add rehydrated slurry or a liquid yeast starter culture when temperature of wort is about 70 to 75° F (21-24° C). Preferably, begin ferment in the 70-72° F (21-22° C) range until visible activity is seen, then reduce temperature to about 55° F (13° C) for the primary fermentation. After primary fermentation is complete, rack (transfer) the beer into a secondary fermenter and lager at temperatures between 34 to 40° F (1-4.5° C) for a minimum of four weeks. Bottle with corn sugar. Age and carbonate/condition at temperatures between 70° F (21° C) and then chill for storage.

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

REGISTER ONLINE AT www.beertown.org/AHA/homebrewing.h

National Homebrewers

2001 AMERICAN HOMEBREWERS ASSOCIATION

CONFERENCE

JUNE 21-23, 2001 SHERATON FOUR POINTS LAX LOS ANGELES, CA

A BEER ODYSSEY

REGISTRATION FORM

REGISTER BY MAY 15, 2001 AND SAVE!

FIRST NAME _____ LAST NAME _____

CLUB/COMPANY _____ DAYTIME PHONE _____

ADDRESS _____

CITY _____ STATE _____

AHA MEMBER # _____ E-MAIL _____

WOULD YOU OR YOUR CLUB LIKE TO SET UP A FREE HOSPITALITY TABLE AT 2001:

A BREWER'S ODYSSEY? ■YES ■NO

REGISTRATION TO JUDGE OR STEWARD

JUDGE RANKING: ■CERTIFIED ■NATIONAL ■MASTER ■RECOGNIZED (BUT NOT IN BJCP PROGRAM)

STEWARD: ■EXPERIENCED ■NOT EXPERIENCED

METHOD OF PAYMENT

CASH■ MASTERCARD■ VISA■ AMEX■ CHECK # _____

CREDIT CARD NUMBER _____ – _____ – _____ EXP. DATE _____ /

NAME ON THE CARD _____ SIGNATURE _____

REGISTRATION OPTIONS

	MEMBER RATE	NON-MEMBER RATE	*MEMBER RATE	*NON-MEMBER RATE	*Post May 15, 2001 Price
FULL CONFERENCE REGISTRATION (includes all conference events)	$185	$220	$220	$260	$
GUEST PACKAGE (includes all social and hospitality events)	$125	$150	$150	$180	$
GUEST NAME					
2001: A BEER ODYSSEY (club night)	$20	$25	$30	$36	$
LUNCHEON ONLY	$30	$35	$40	$46	$
L.A. BREWERS OPEN (outdoor ale festival)	$30	$36	$30	$36	$
ROGUE ALES GRAND BANQUET ONLY	$55	$65	$65	$75	$
SATURDAY ONLY (conference and awards banquet)	$90	$107	$115	$137	$
AHA MEMBERSHIP	$33	$33	$33	$33	$

PRICES INCREASE AFTER MAY 15, 2001

Reproduce this form for additional registrants. Each member may register one guest at the member rate. Send completed form to: AHA, Attn: Conference Registration, PO Box 1679, Boulder, CO 80306-1679 or FAX to 303.447.2825. Call 303.447.0816 with questions regarding registration. For hotel reservations at the Sheraton Four Points LAX in Los Angeles 310.645.4600 and reference AHA Conference for special room rate of $88 per night if booked before May 21, 2001. For more information, on the conference visit www.beerodyssey.com.

American Homebrewers Associati
A Division of The Association of Brewe

BY AMAHL TURCZYN

While March and April are, traditionally, the last two months of the brewing season, in many parts of the country May weather still allows home brewers to squeeze in a few last cold-brewed beers. Then too, there is the chance to brew lagers all summer if you have decided to buy, build or convert some refrigeration capacity following one of the projects outlined in this issue of ***Zymurgy***. Still, plenty of outstanding lagers have been made without the use of fancy refrigerators or thermostats. And while many dedicated ale brewers have shied away from lagers because they take too much time to ferment out, or the decoction mash schedules take the better part of a day (as well as every pot, pan and kettle in the house), in this issue's collection of Winners Circle recipes comes one lager that will make you throw all those excuses out the window. Shane Coombs' "Sharico American Lager" is a simple, straightforward take on the American Pilsener tradition, and it won't take you too much longer to brew than your average ale recipe, either in the brew house or in the cellar. Of course, if 38° F (3° C) is still a chillier temperature than you can achieve, an old German ale tradition may give you a similarly clean, crisp beverage at 58° F (14° C): give Robert Neubauer's "Beginner's Luck Koelsch" a try for lager-like results at higher temperatures. Whatever you decide to brew up in the immediate future, though, there's no doubt that Spring marks the end of the best brewing time of the year—so don't wait much longer!

Scottish Ale

SILVER MEDAL
AHA 2000 NATIONAL HOMEBREW COMPETITION
Don Darst, Salem, OR
"Moon Under Me Kilt"
Export 80/-

Ingredients for 5 US. gal (19 L)

8	lb British two-row malt (3.6 kg)
8	oz Munich malt (0.23 kg)
5	oz biscuit malt (142 g)
8	oz 60° L crystal malt (0.23 kg)
4	oz chocolate malt (113 g)
2	oz peated malt (57 g)
1	oz Fuggle whole hops, 5.5% alpha acid (28 g) (45 min.)
	White Labs No. WLP 028 Edinburgh ale yeast
	Forced CO2 to carbonate

- Original specific gravity: Unknown
- Final specific gravity: Unknown
- Boiling time: 90 min.
- Primary fermentation: seven days at 68° F (20° C) in glass
- Secondary fermentation: 14 days at 68° F (20° C) in glass

Brewer's Specifics

Mash grains at 158° F (70° C) for 60 minutes.

Judges' Comments

"Very clean...pretty close to style and a drinkable beer. I'd like a little more malt."

"Malty, roasty, toasty. Slightly sweet. Nice, drinkable beer. Enjoyable—good balance."

American Lager

SILVER MEDAL
AHA 2000 NATIONAL HOMEBREW COMPETITION
Shane Coombs, Warrenville, IL
"Sharico American Lager"
Premium Lager

Ingredients for 5.75 U.S. gal (21.7 L)

7.5	lb American Pilsner malt (2.04 kg)
1	lb flaked corn (0.45 kg)
0.5	lb German Vienna malt (0.23 kg)
0.5	oz Perle pellet hops, 8.4% alpha acid (14 g) (60 min.)
0.25	oz Perle pellet hops, 8.4% alpha acid (7 g) (20 min.)
0.25	oz Perle pellet hops, 8.4% alpha acid (7 g) (5 min.)
	Wyeast No. 2035 American lager yeast
	Forced CO2 to carbonate

- Original specific gravity: 1.045
- Final specific gravity: 1.011
- Boiling time: 70 min.
- Primary fermentation: 14 days at 59° F (15° C) in glass
- Secondary fermentation: 21 days at 52° F (11° C) in glass
- Tertiary fermentation: 22 days at 38° F (3° C) in steel

Brewer's Specifics

Mash grains at 153° F (67° C) for 60 minutes.

Judges' Comments

"Nice low malt/hop balance. Finishes slightly sweet. Excellent example, great effort."

"This is a very nice drinking beer. A little sweet for style, but not too detrimental."

German Ale

BRONZE MEDAL
AHA 2000 NATIONAL HOMEBREW COMPETITION
Robert Neubauer, Trenton, NJ
"Beginner's Luck Koelsch"
Kölsch

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

8.5	lb Pilsener malt (3.8 kg)
1	lb Munich malt (0.45 kg)
0.5	lb Cara-Pils malt (0.23 kg)
1	lb wheat malt (0.45 kg)
0.5	oz Hallertauer whole hops, 4% alpha acid (14 g) (60 min.)
1	oz Tettnanger whole hops, 7.5% alpha acid (28 g) (60 min.)
0.5	oz Hallertauer whole hops, 4% alpha acid (14 g) (5 min.)
	White Labs No. WLP029 German Ale/Kölsch yeast
1	cup corn sugar (177 mL) (to prime)

- Original specific gravity: 1.047
- Final specific gravity: 1.006
- Boiling time: 60 min.
- Primary fermentation: 11 days at 62° F (17° C) in glass
- Secondary fermentation: 18 days at 58° F (14° C) in glass

Brewer's Specifics

Heat 3.5 gal (13.25 L) of water to 132° F (56° C). Add 2 tsp (10 mL) gypsum. Add grain, stabilize at 126° F (52° C), and hold for 30 min. Heat mash to 145° F (63° C) and hold for 90 min. Heat mash to 170° F (77° C) and hold for 10 min. Sparge until brew pot volume is 6.3 gal (24 L). Add hops, proceed with boil, and chill to 65° F (18° C) before pitching yeast.

Judges' Comments

"Nice, clean beer. I'll have another. Watch mash-out temperature when dealing with Pils malt!"

"A nice, drinkable beer with a little too much hop character."

Wheat Beer

SILVER MEDAL
AHA 2000 NATIONAL HOMEBREW COMPETITION
Wes & Nancy Sampson, Ocoee, FL
"Helige Schieser Dunkelweiss"
Bavarian Dunkleweizen

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

6	lb wheat malt (2.7 kg)
2	lb light Munich malt (0.9 kg)
2	lb dark Munich malt (0.9 kg)
3	oz chocolate malt (85 g)
0.25	oz Hallertauer whole hops, 4.5% alpha acid (7 g) (90 min.)
0.25	oz Hallertauer whole hops, 4.5% alpha acid (7 g) (60 min.)
0.25	oz Hallertauer whole hops, 4.5% alpha acid (7 g) (20 min.)
	Wyeast No. 3068 Weihenstephan Weizen yeast
1.25	cup light dry malt extract (296 mL) to prime

- Original specific gravity: 1.057
- Final specific gravity: 1.010
- Boiling time: 90 min.
- Primary fermentation: 1 week at 65° F (18° C) in glass
- Secondary fermentation: 1 week at 65° F (18° C) in glass

Brewer's Specifics

Mash grains using a double decoction mash schedule.

Judges' Comments

"Good effort. Increase Vienna or Munich style malts to bring this closer to perfection. Great aroma fails to deliver in the flavor."

"Nice beer, but could have a bit more sweetness in malt and is lacking in characteristic yeast profile for style."

Fruit Mead

BRONZE MEDAL
AHA 2000 NATIONAL HOMEBREW COMPETITION
Jackie Rager, Lenexa, KS
"Ludwig's Foche"
Still Pyment (Grape Melomel)

Ingredients for 13 U.S. gal (49.2 L)

40	lb Marchel Foche grapes (18.2 kg)
12	lb locust honey (5.4 kg)
12	lb clover honey (0.91 kg)
1	tbs yeast energizer (14.8 mL)
0.5	cup bentonite (118 mL) (finings)
3	tbs Sparkalloid (44.4 mL) (finings)
	Sweet Mead yeast

- Original specific gravity: 1.120
- Final specific gravity: 1.022
- Boiling time: n/a
- Primary fermentation: 8 days at 72° F (22° C) in glass
- Secondary fermentation: 21 days at 72° F (22° C) in glass

Judges' Comments

"Nice mead, but the honey is hard to identify. Try to increase the honey component."

"Very nicely done. Needs a bit more honey expression, but otherwise, very drinkable."

Amahl Turczyn is the associate editor of *Zymurgy* magazine.

The Homebrew Connection

The #1, most comprehensive listing of Homebrew Supply Shops.
To list here and on www.beertown.org, call Monica Tall at (303) 447-0816 ext.108.

ALABAMA

Home Wine & Beer Makers
2520 Old Shell Rd.
Mobile, AL 36607
(334) 478-9387

Werner's Trading Company
1115 4th Street SW
Cullman, AL 35055
(256) 734-5673
FAX (256) 734-5687
rob@wernerstradingco.com
www.wernerstradingco.com

ARIZONA

Brew Your Own Brew
2562 North Campbell Avenue
Tucson, AZ 85719
(520) 322-5049;
Toll free (888) 322-5049
www.brewyourownbrew.com

Homebrewers Outpost & Mail Order Co.
823 N. Humphreys
Flagstaff, AZ 86001
(520) 774-2499;
(800) 450-9535
FAX (520) 774-8765;
outpost@homebrewers.com
www.homebrewers.com

What Ale's Ya
6362 West Bell Road
Glendale, AZ 85308
(623) 486-8016;
way2brew@inficad.com

ARKANSAS

The Home Brewery
455 E. Township St.
Fayetteville, AR 72703
(501) 587-1440; (800) 618-9474
FAX (501) 587-1499
homebrewery@arkansasusa.com

CALIFORNIA

Beer + Brew Gear
218 East Grand
Escondido, CA 92025
(760) 741-BREW (2739);
www.beer-brewgear.com

The Beverage People
840 Piner Rd. #14
Santa Rosa, CA 95403
(707) 544-2520; (800) 544-1867;
FAX (707) 544-5729
catalog@thebeveragepeople.com
www.thebeveragepeople.com

Doc's Cellar
855 Capitolio Way, Suite #2
San Luis Obispo, CA 93401
(805) 781-9974;
(800) 286-1950;
docscellar@thegrid.net
www.docs-cellar.hypermart.net/

Stein Fillers
4160 Norse Way
Long Beach, CA 90808
(562) 425-0588
brew@steinfillers.com
www.steinfillers.com

COLORADO

Beer at Home
3157 S. Broadway
Englewood, CO 80110
(303) 789-3676; (800) 789-3677;
FAX (303) 781-2388;
beer@beerathome.com;
www.beerathome.com

The Brew Hut
15108 East Hampden Ave.
Aurora, CO 80014
(303) 680-8898; (800) 730-9336;
www.thebrewhut.com

The Homebrew Hut
555 I Hwy. 287
Broomfield, CO 80020
(303) 460-1776
beerwine@earthnet.net
www.earthnet.net/thehomebrewhut

My Home Brew Shop & Brew on Premise
1834 Dominion Way
Colorado Springs, CO 80918
(719) 528-1651
info@myhomebrew.com
www.myhomebrew.com

CONNECTICUT

Wine and Beer Art
(of Smith-Tompkins)
1501 E. Main St., Route 202
Torrington, CT 06790
(860) 489-4560

FLORIDA

Heart's Home Beer and Wine Making Supply
5824 North Orange Blossom Trail
Orlando, FL 32810
(800) 392-8322; (407) 298-4103;
FAX (407) 298-4109;
www.Heartshomebrew.com

Sunset Suds, Inc.
PO Box 462
Valparaiso, FL 32580-0462
(800) 786-4184; SunsetSuds@aol.com;
www.members.aol.com/SunsetSuds/Index.htm

GEORGIA

Marietta Homebrew Supply, Inc.
1355 Roswell Road, Ste. 660
Marietta, GA 30062
1-888-571-5055
Marietta.brew@juno.com

Wine Craft of Atlanta
5920 Roswell Rd.
Parkside Shopping Center
Atlanta, GA 30328
(404) 252-5606
winecraftatl@usa.com

ILLINOIS

The Brewer's Coop
30W114 Butterfield Rd.
Warrenville, IL 60555
(630) 393-BEER;
FAX (630) 393-2323;
www.TheBrewersCoop.com

Chicagoland Winemakers Inc.
689 W. North Ave.
Elmhurst, IL 60126-2132
(630) 834-0507;
(800) 226-BREW;
FAX (630) 834-0591;
cwinemaker@aol.com
www.cwinemaker.com

INDIANA

Beer & Wine by U
1456 N. Green River Rd.
Evansville, IN 47715
(812) 471-4352;
(800) 845-1572
www.beerwinebyu.com

Great Fermentations of Indiana
1712 East 86th St.
In the Northview Mall
Indianapolis, IN 46240-2360
(317) 848-6218;
(888) HME-BREW (463-2739)

KANSAS

Bacchus & Barleycorn Ltd.
6633 Nieman Rd.
Shawnee, KS 66203
(913) 962-2501;
FAX (913) 962-0008;
www.bacchus-barleycorn.com

KENTUCKY

Winemakers Supply & Pipe Shop
9477 Westport Road
Louisville, KY 40241
(502) 425-1692
customerservice@wine-beer-makerssupply.com
www.wine-beer-makerssupply.com

MAINE

The Purple Foot Downeast
P.O. Box 116
Waldoboro, ME 04572
(207) 832-6286

MARYLAND

The Flying Barrel (BOP)
103 South Carroll St.
Frederick, MD 21701
(301) 663-4491;
FAX (301) 663-6195;
mfrank2923@aol.com;
www.flyingbarrel.com

MASSACHUSETTS

Beer and Wine Hobby
155T New Boston St.
Woburn, MA 01801
(781) 933-8818;
(800) 523-5423;
shop@beer-wine.com;
www.beer-wine.com

The Modern Brewer Co.
2304 Massachusetts Ave.
Cambridge, MA 02140
(617) 498-0400;
FAX (617) 498-0444;
www.modernbrewer.com

Strange Brew Beer & Winemaking Supplies
197 Main St.
Marlboro, MA 01752
(508) 460-5050;
(877) 460-5050;
zymurgy@Home-Brew.com
www.Home-Brew.com

MICHIGAN

Siciliano's Market
2840 Lake Michigan Dr. NW
Grand Rapids, MI 49504
(616) 453-9674;
FAX: (616) 453-9687
sici-2840@msn.com
www.sicilianosmkt.com

Things Beer "Home of the Fermentation Station"
100 E. Grand River
Williamston, MI 48895
(517) 655-6701;
homebrew@thingsbeer.com
www.thingsbeer.com

MINNESOTA

The Home Brewery/Hanson's Hobby Homebrewing Inc.
211 Oak Street SE
Minneapolis, MN 55414
(612) 379-3115
FAX (612) 379-3121
mhanson@winternet.com
www.homebrewery-mn.com

Lake Superior Smokin' Brews
320 E. Superior St.
Duluth, MN 55802
(218) 720-3491;
(800) 720-0013;
FAX (218) 720-6459;
homebrew@smokinbrews.com;
www.smokinbrews.com

MISSOURI

Home Brew Supply LLC
3508 S. 22nd St.
St. Joseph, MO 64503
(816) 233-9688;
(800) 285-4695;
info@thehomebrewstore.com;
www.thehomebrewstore.com

St. Louis Wine & Beermaking
251 Lamp & Lantern Village
St. Louis, MO 63017
(636) 230-8277;
(888) 622-WINE;
FAX (636) 527-5413;
www.wineandbeermaking.com

NEBRASKA

Fermenter's Supply & Equipment
8410 'K' Plaza, Suite 10
Omaha, NE 68127
(402) 593-9171;
FAX (402) 593-9942;
www.fermenterssupply.com

NEW HAMPSHIRE

Hops & Dreams
PO Box 914
Atkinson, NH 03811
(888) BREW-BY-U;
www.hopsanddreams.com

NEW YORK

The Brew Shop @ Cornell's
310 White Plains Rd.
Eastchester, NY 10707
(800) 961-BREW;
FAX (914) 961-8443;
brewshop@cornells.com;
www.cornells.com

D.P. Homebrew Supply
1998 E. Main St., Route 6
PO Box 625
Mohegan Lake, NY 10547
(914) 528-6219

Homebrew & Grow-East Coast Hydroponics Inc.
439 Castleton Ave.
Staten Island, NY 10301
(718) 727-9300;
FAX (718) 727-9313

146-49 Horace Harding Expressway
"Service Road of L.I.E"
Flushing, NY 11367
(718) 762-8880

Niagara Tradition Homebrew
1296 Sheridan Drive
Buffalo, NY 14217
(716) 877-8767;
(800) 283-4418;
FAX (716) 877-6274;
ntbrew@localnet.com;
www.nthomebrew.com

NORTH CAROLINA

Alternative Beverage
114-0 Freeland Lane
Charlotte, NC 28217
(704) 527-2337;
(800) 365-BREW;
altbev@e-brew.com;
www.e-brew.com

Homebrew Adventures
1109-A Central Avenue
Charlotte, NC 28204
(704) 342-3400;
(888) 785-7766;
FAX (704) 342-3401
www.homebrew.com

OHIO

The Grape and Granary
1035 Evans Ave.
Akron, OH 44305
(330) 633-7223;
(800) 695-9870;
www.grapeandgranary.com

JC Homebrewing Co.
8306 State Route 43
East Springfield, OH 43925
(740) 543-4200;
(800) 899-5180;
jcbrew@1st.net;
www.jchomebrew.com

JW Dover Beer and Wine Makers Supplies
24945 Detroit Rd.
Westlake, OH 44145
(440) 871-0700;
jwdover@aol.com;
www.jwdover.com

Portage Hills Vineyards
1420 Martin Rd.
Suffield, OH 44260
(800) 418-6493;
portage@portagehills.com;
www.portagehills.com

Vinbrew Supply
8893 Basil Western
Canal Winchester, OH 43110
(800) 905-9059
www.vinbrew.com

OKLAHOMA

The Brew Shop
3624 N. Pennsylvania
Oklahoma City, OK 73112
(405) 528-5193;
www.thebrewshopokc.com
brewshop@swbell.net

PENNSYLVANIA

Brew By You
3504 Cottman Ave
Philadelphia, PA 19149
(215) 335-BREW
FAX (215) 335-0712
bill@brewbyyou,net
www.brewbyyou.net

Keystone Homebrew Supply
779 Bethlehem Pike
Montgomeryville, PA 18936
(215) 855-0100;
FAX (215) 855-4567;
keystonehb@juno.com
www.keystonehomebrew.com

The Wine and Beer Barrel
The Old Ridge Village Shops
101 Ridge Road #27
Chadds Ford, PA 19317
(610) 558-2337
www.wineandbeerbarrel.com
hbrewdude@aol.com

SOUTH CAROLINA

Bet-Mar Beer & Wine Making Hobby Shop
4421 Devine St.
Columia, SC 29205
(800) 882-7713
(803) 787-4478

TENNESSEE

All Seasons Gardening & Brewing Supply
3900 Hillsboro Pike, Suite 16
Nashville, TN 37215
(615) 385-0300;
(800) 790-2188
epthomp@ix.netcom.com
www.allseasonsnashville.com

TEXAS

Foreman's "The Home Brewery"
3800 Colleyville Blvd
PO Box 308
Colleyville, TX 76034
(817) 281-7252
FAX (817) 581-4332
greg10@flash.net
www.flash.net/~greg10

St. Patrick's of Texas Brewers Supply
1828 Fleischer Dr.
Austin, TX 78728
(512) 989-9727;
(800) 448-4224;
FAX (512) 989-8982;
stpats@bga.com;
www.stpats.com

The Winemaker Shop
5356 W. Vickery Blvd.
Fort Worth, TX 76107
(817) 377-4488;
(800) IT BREWS;
FAX (817) 732-4327;
brewsome@home.com;
www.winemakershop.com

UTAH

The Beer Nut Inc.
1200 S. State
Salt Lake City, UT 84111
(801) 531-8182;
FAX (801) 531-8605;
(800) 626-2739;
sales@beernut.com;
www.beernut.com

VIRGINIA

Bluestone Cellars
52 East Market St.
Suite 2
Harrisonburg, VA 22802
(888) FURMENT
bluestone@rica.net
www.bcbrew.com

The Brewmeister
1215G George Washington Memorial Hwy.
Yorktown, VA 23693
(757) 595-HOPS;
FAX (757) 596-1034

The Week End Brewer-Home Brew Supply (Richmond Area)
4205 West Hundred Rd.
Chester, VA 23831
(804) 796-9760;
FAX (804) 796-9561;
wkendbr@erols.com;
www.weekendbrewer.com

WASHINGTON

The Cellar Homebrew
14411 Greenwood Ave. N.
Seattle, WA 98133
(206) 365-7660;
(800) 342-1871;
staff@cellar-homebrew.com;
www.cellar-homebrew.com

Larry's Brewing Supply Retail and Wholesale
7405 S. 212th St. #103
Kent, WA 98032
(800) 441-BREW;
www.larrysbrewing.com

WISCONSIN

Homebrew Market, Inc.
520 East Wisconsin Ave.
Appleton, WI 54911
(800)-261-BEER
FAX (920) 733-4173
HBMarket3@aol.com
www.Homebrewmarket.com

Life Tools Adventure Outfitter
930 Waube Lane
Green Bay, WI 54304
(920) 339-8484;
www.Lifetls.com

BY AMAHL TURCZYN

Paulaner Octoberfest

Brewmaster Dean Coffey of Angelic Brewing Company in Madison, Wisconsin has always been a fan of strong German beers, most notably of the Doppelbock style. So it was with some surprise that I learned his favorite beer was actually Paulaner Octoberfest. Probably best known for its Salvator Doppelbock, Paulaner makes an Oktoberfest of legendary proportions. Given the choice between rival products from Ayinger, Hacker-Pschorr and Spaten, Coffey insisted Paulaner was the best. "When it's good and fresh," he says, "you can smell the decoction." A small local German pub in Madison called "The Essenhaus" has several of the major German Oktoberfests on tap, so Coffey says he's had plenty of time to size them up back to back. "Nights at the Essenhaus can get ugly when they have Paulaner Oktoberfest on tap," he confides.

Thus, when brewing an Oktoberfest at home, Coffey believes decoction mashing is of the utmost importance. "If you want that malty, melanoidin aroma, decoction is the only way to go," says Coffey. Most of Angelic's beers, which have consistently taken medals at both the World Beer Cup and Great American Beer Festival®, are made with a standard infusion mash—due mostly to the limitations of the brewery's equipment. But for homebrewers decoction mashing is often easy to achieve. "That's the fun of homebrewing," Coffey remarked. "You can do crazy stuff like that." Still an active homebrewer himself, he should know.

Oktoberfest should have a good, substantial mouthfeel and a light, barely orange-tinted color (9 to 11° L). Pilsener malt (Belgian or German) is best for the base malt. German Carafoam malt is great for Helles style lagers, as it adds almost no color to the beer, but it also works well for the Oktoberfest style. Dextrin, sometimes called Cara Pils malt can

be substituted if Carafoam is unavailable. Color comes from the addition of a light caramel malt, around 30° L, and a medium-dark caramel malt, around 75° L. Vienna and Munich malts are often recommended for Oktoberfest beers, but I believe you will get a fuller, richer flavor using their "caramelized" counterparts, Cara-Vienne and Cara-Munich. DeWolf-Cosyns makes very high-quality examples of these malts. In keeping with the suggestions of George and Laurie Fix in their Classic Style Series book *Vienna, Märzen, Oktoberfest*, German and English crystal malts are fine to use too.

Water for this style should be soft and slightly carbonate. Starting with filtered water is fine. In no case should you add gypsum or Burton salts! Save these for your IPAs.

Hops should be of the noble variety, with preference given to Tettnanger and Hallertauer. While German hops are again given

preference, some excellent domestic varieties have surfaced lately which also give good results, among them American Tettnanger, Mt Hood, Liberty, Ultra, Vanguard and Crystal. You want a hop presence, especially in the aroma, but just barely so. Tettnanger can be used in a pinch, and some use Saaz for the last addition. In any case, as always, use the freshest hops you can.

The best yeast to use is a matter of preference. Any good German lager strain, Munich or Bavarian, will work well. While there have been differing opinions about pitching yeast at lager fermentation temperatures or pitching at ale temperatures until the yeast begins to work and then lowering it to lager temperatures, if a proper pitching rate is used, start cold. Yes, the lag time will be longer, but the temperature will help to protect the brew from unwanted microflora, and the resulting beer will be cleaner. The best-case scenario if one is confident about sanitation practices, is to pitch lots of fresh slurry from a previous batch of lager.

And finally, long, cold storage is what will really make this beer shine. Rack the beer into kegs, if possible, and put them to rest. Refrigeration with a thermostat is the ideal—maintain a temperature just a touch above freezing, and forget about it for four to six months. The beer should be brilliantly clear after all that time. (Remember that there will probably not be enough yeast in the beer to successfully prime it with sugar, so forced carbonation is preferable.) The most difficult thing about brewing this lager is having the patience to wait until it is finished!

Amahl Turczyn is the associate editor of *Zymurgy* magazine.

Paulaner Octoberfest Clone

Recipe for 5 gallons (19 L)

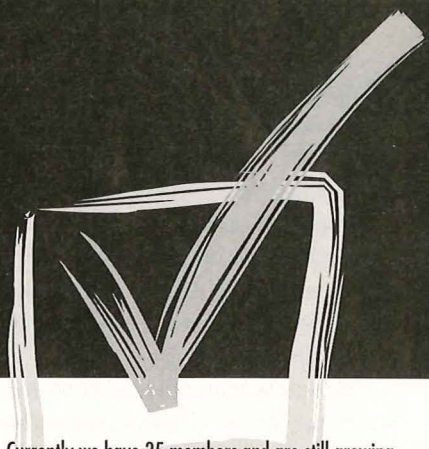
8	lb German or Belgian Pils malt (3.6 kg)
8	oz Cara-foam malt (170 g)
8	oz DWC Cara-Munich malt (170 g)
8	oz DWC Cara-Vienne malt (170 g)
0.5	oz Tettnanger hops, 5% alpha acid (14 g) (45 min)
0.75	oz Hallertauer hops, 5% alpha acid (21 g) (30 min)
0.75	oz Hallertauer hops, 5% alpha acid (21 g) (15 min)
0.5	oz Hallertauer hops, 5% alpha acid (14 g) (5 min)
1	tsp Irish moss (4.9 mL)

Brewer's specifics: Mash grains using a single- or double-decoction method. Sparge and boil collected wort for 90 minutes. Chill to 45-50° F (7.2-10° C) and pitch yeast slurry Two weeks at 45 to 50° F (7.2 to 10° C) should be sufficient for primary fermentation. Then the beer can be racked into secondary containers and lagered at 32 to 35° F (0-1.7° C) for four to six months.

- Munich or Bavarian lager yeast
- Forced CO2 to carbonate
- Boiling time: 90 minutes
- Original gravity: 1.056
- Finishing gravity: 1.014

AHA BOARD OF ADVISORS ELECTION

Relax, don't worry...cast your votes!



Scott Abene ..... East Kingston, NH

I would like to see the education of home brewers become more widespread and kept free on the web.

It is important to me that access to directions for the making of equipment and general brewing studies is readily available to the home brewers currently out there. Building a baseline of companies/resources that brewers can go to for equipment, directions, supplies and general support are the keys to keeping the art alive.

It is important to me that new brewers learn from veterans and where the veterans never stop teaching and learning. Producing an online environment where this can happen is my main goal.

Keeping the home brew market as a free resource is really what I am all about.

George de Piro ..... Nyack, NY

I would welcome the opportunity to represent the members of the American Homebrewers Association. If elected to the Board of Advisors I would strive to increase homebrewers' level of knowledge of brewing techniques and beer evaluation. I would also endeavor to forge stronger bonds both within the homebrewing community and between homebrewers and their commercial counterparts.

In the past few years I have done these very things on both local and national levels. I have taught many beer appreciation courses to a wide spectrum of people, from uninitiated palates to experienced homebrewers. I have written feature articles for both *Zymurgy* and *Brewing Techniques* and been a guest on several radio and television programs.

As a commercial brewer I have maintained my ties to the homebrewing community by judging at homebrew contests, providing yeast and other ingredients to hobbyists, teaching classes and participating in club events. I feel that it is very important for brewers of all levels to communicate with each other extensively; there are educational benefits for all.

Dave Dixon ..... Bedford, TX

My name is Dave Dixon and I am a local homebrewer in Bedford, Texas. I have been brewing since 1996 when I received a homebrew kit from my mother and father for Christmas. Brewing has become more than a hobby to me– it has become my passion. I believe the AHA has provided guidance in taking my brewing to the next level and I would like to provide that assistance to fellow homebrewers. I would like to see the AHA move forward with establishing a state representative program that would help with the grassroots approach the AHA has adopted. This would empower AHA members like you and me to represent the AHA at events and help open the lines of communication with Paul, Gary, and the Board of Advisors. This would also provide an avenue to gain membership for our association.

I enjoy a challenge and have had many accomplishments in my brewing career. I was instrumental in the formation of The NET Hoppers Homebrew Club serving Euless, Hurst, Bedford, Colleyville, Grapevine, and Northeast Tarrant County in 1998 and have been president for the past three years. Currently we have 35 members and are still growing. I have served on the Bluebonnet Brew-off Committee for the past three years and was Assistant Director in 2000 and Director for the 2001 competition. With the help of many individuals dedicated to homebrewing, we established the Gulf Coast Competition Committee in 2000. This provides direction for this regional competition, which includes the Bluebonnet Brew-off (Dallas/Ft. Worth), Crescent City Competition (New Orleans), Sunshine Challenge (Orlando), and The Dixie Cup (Houston). In 2000 these four competitions had over 2,500 entries

I feel it is an honor to be nominated for the AHA Board of Advisors and if elected I will do everything in my power to ensure the AHA will work for the homebrewers which make up our association.

Jeffrey Donovan ..... Santa Barbara, CA

Hello Peoples of the AHA!

I understand I have been nominated to be on the AHA Advisors Committee. I am honored to accept this nomination. Let me give you a little background on myself:

I have been a homebrewer going on 10 years now, and have two years of professional brewing experience at SpeakEasy Ales and Lagers in San Francisco. I am an all-grain brewer but also fluent in the ways of extract syrups. I am also an AHA and IBS member in good standing. Additionally, I am the author of the software program ProMash, a program regularly advertised in *Zymurgy*.

What could I offer the AHA?

1) My personal views on brewing and the needs of the brewing community.

2) As our software has literally thousands of users, I do feel I have my "finger on the pulse" of the homebrewing community. I am in constant contact with our user-base and am well versed in their desires and needs.

3) As a regular *Zymurgy* advertiser I am also keenly aware of the needs of retailers in the homebrewing community and feel I have much to contribute in this regard. Our software is now sold in over 50 homebrew shops throughout the US, and I am also in constant contact with many of our retailers.

4) I feel one of my strongest points (anyone who knows me will back this up) is the ability to actually listen to users and take action based on their suggestions and recommendations. While not all users get what they want, I am very diplomatic in determining a) how we can implement exactly what they want if deemed appropriate or b) how we can come to a solution acceptable to them, which will also be acceptable to all users given the differences. As a small example, our software is intended for American, Metric, Home Scale and Pro Scale. Because of the scope this entails, I have become quite adept at understanding and fulfilling the needs of an extremely wide variety of brewers, even though their needs are quite different.

Should I be elected to the Board of Advisors, I will take this duty very seriously. The well being of the AHA is one that is also key to our well being and survival and I will strive to see it become stronger each and every year. Thank you for your time.

Steve Ford ..... Roeland Park, KS

I've been a home brewer for more than eight years and am currently a National ranked judge in the BJCP program. I have been a member of the Kansas City Bier Meisters for almost as long as I've been brewing and have always felt the greatest part of the hobby is the people I have met along the way.

I also think it important to try to give as much back to your hobby as you take from it. To that end I've served as both president and secretary of the Bier Meisters, published the club's newsletter, worked on its web site, as well as served as the Bier Meisters' competition chairman for three years.

I also never hesitate to offer my advice and assistance to new faces in the local brewing community. I've worked part-time in the local home brew supply shop, served on the National Homebrew Competition first-round committee and was an active member of the planning committee when the AHA National Conference came to Kansas City in 1999. I also spearheaded the Mo-Kan Brewer-of-the-Year award three years ago (currently expanded to the High Plains Brewer-of-the-Year) and have served as point keeper since its inception.

In short, what began as a hobby several years ago now is a rather large part of my life. I believe I would benefit the AHA through my dedication, experience and perspective as a member of its board.

Mike Hall ..... Los Alamos, NM

I welcome the opportunity to continue to serve the homebrewing community by being re-elected to the Board of Advisors of the American Homebrewers Association. During my past three years on the board, my main mission was to ensure that the AHA survived the downturn in the homebrewing hobby while continuing to help homebrewers brew beer.

We have effected a number of changes in the AHA, together with the efforts of Paul Gatza (AHA Director) and Gary Glass (AHA Administrator). One of the big changes was to make the AHA more of a grassroots organization, in order to make sure that the concerns of individual homebrewers were being heard and addressed. Toward this end, we are transitioning to a completely member-elected board — after this election, 11 out of 15 advisors will have been elected by the membership. We have changed the model for the National Homebrewers Conference from a nationally-directed conference to a local, volunteer-supported conference that can keep costs down and take advantage of local opportunities. We have convinced the AHA to adopt the official BJCP style guidelines that were developed by BJCP committees on which two of us (myself and Dave Houseman) served. We have developed an active email list as a means of communication and decision-making on the board. We have retained an excellent editor for *Zymurgy* (Ray Daniels) and have added a "For Geeks Only" section to fill the hole left by the demise of Brewing Techniques. I have personally pushed for all of these changes.

I am a homebrewer. On the AHA Board of Advisors, I represent homebrewers. I am not involved in any commercial aspect of homebrewing or craft brewing. I see myself as a consumer of the services that are provided by the AHA. Since I am a lifetime AHA member, I have a vested interest in seeing the AHA survive for the long term. This can happen only if it provides services that the members need and use.

I started homebrewing in 1989, not long after getting my Ph.D. in nuclear engineering/mathematics. I am currently an all-grain brewer and meadmaker. I was one of the founders of the first homebrewing club in Los Alamos, the Atom Mashers; I was the first newsletter editor, treasurer, secretary and president. I am currently the president of the Atom Mashers. I am a National BJCP judge, and I have enough experience points to become a Master judge. I have judged in almost every NM state competition since 1990, in seven NHC first rounds and five second rounds. I have written articles for national homebrewing publications (*Zymurgy*, *Inside Mead*, *Best of Zymurgy*, and a recipe for *More Homebrew Favorites*). I helped the AHA redesign its mead score sheet and then served on a BJCP committee to overhaul its mead score sheet and guidelines. I have been active in the past in several on-line digests: Cider, Mead-Lovers, JudgeNet (I was the first archivist of JudgeNet), Historical-Brewing, Lambic and the HBD. I have taught homebrewing and beer appreciation classes through my local university, and I have conducted beer tours at the Great American Beer Festival.

I believe the AHA can improve on giving the average homebrewer value for his or her dollar. In the future, I will push for: AHA sponsorship of inexpensive regional conferences (jambeerees); making *Zymurgy* the best that it can be, with articles for every brewer from

Vote Now!

American Homebrewers Association Board of Advisors Election OFFICIAL BALLOT

Select the six (6) candidates you feel are best qualified to serve on the AHA Board of Advisors.

- ❑ Scott Abene
- ❑ Gorge de Piro
- ❑ Dave Dixon
- ❑ Jeffrey Donovan
- ❑ Steve Ford
- ❑ Mike Hall
- ❑ David Houseman
- ❑ Susan Ruud
- ❑ Mark Tumarkin

BALLOTS MUST BE POSTMARKED NO LATER THAN MAY 17, 2001

Name _____ Membership Number _____

Signature _____

Mail completed ballot to: Rob Moline, AHA Board of Advisors Secretary, 1332 Arizona Avenue, Ames, IA 50014

Election Guidelines:

Photocopy the ballot. (That way you don't have to cut a piece out of *Zymurgy*.) Read the statements. Candidates have also been invited to place additional campaign materials in the Board of Advisors section of http://www.beertown.org/ AHA/aha.htm. Vote for SIX (6) candidates by putting an "X" on the line next to the candidates' name.

Fill in your name and membership number in the appropriate place. If you do not know your membership number, call us at 888-UcanBrew or email gary@aob.org to get your number. Only AHA members are permitted to vote. If you are not a member and would like to become one, call us at 888-UcanBrew and we'll set you up with a membership number on the spot.

Mail your vote in to Rob Moline, AHA Board of Advisors Secretary,1332 Arizona Avenue, Ames, IA 50014 by May 15th, 2000.

the beginner to the geek; more member involvement; more interaction with local clubs; and, in general, finding better ways to help homebrewers brew great beer.

Dave Houseman ..... Chester Springs, PA

I'm honored to run for re-election to the Board of Advisors of the American Homebrewers Association. Since first being appointed to the AHA Board of Advisors three years ago, we have brought open member elections to the board and adopted a single set of style guidelines from the BJCP for sanctioned competitions. I'm proud to be a part of the "New AHA" and having been a part of leading these changes.

Since brewing my first beer, I've thrown myself into many aspects of the hobby, including active participation in our local club as an officer, initiating our first local competition, initiating the Delaware Valley Homebrew of the Year, becoming a BJCP Grand Master Judge, tutoring perspective judges, participating in AHA National conventions, visiting brewpubs and breweries, and reading almost anything to learn more about the art and science of brewing. As both a member of the AHA Board of Advisors and a regional representative to the BJCP's Board, I've worked for a closer relationship of the two organizations.

As a Vice President of Unisys Corporation, I think that I bring many of the organization and management skills that are necessary to any managing board. Additionally, the function of my organization is applying new technologies, creating new products, exploring new ideas, and inventing new processes to improve our current products. I'm actively involved in marketing, financials, advertising, and new business venturing. Additionally, I work with many peers in a teaming relationship. All of these functions and skills have proven to be transferable to serving on the Board of Advisors.

As a member of the Board of Advisors for an additional term I'd like to see improvements in our web presence, improvements in our competition software and continued democratization of the AHA. The AHA needs to attract more people into homebrewing and help retain those people as active brewers; while many people start in the hobby each year, many people also lose interest and stop brewing. Finding new ways to keep the interest of brewing up in all levels of brewers should be a priority so that the merchants who support the hobby can be supported by it.

I enjoy teaching and public speaking, so continuing to serve as an ambassador and educator for the AHA will continue to be fun and beneficial to the membership. I believe that as an AHA member, active Board of Advisors member, active brewer, active BJCP judge, active club member, and competition organizer, I will continue to bring my professional and personal skills and contacts within the homebrewing community from Philadelphia, to Washington, Maine, Florida, Minneapolis, and California in assisting and advising the AHA via its Board of Advisors to meet its mission.

Susan Ruud ..... Harwood, ND

I have a Master's degree in Microbiology from North Dakota State University in Fargo, ND and I am currently employed there in the Department of Plant Pathology. My appreciation of good beer began about seven years ago and I started homebrewing approximately three years after that. Since joining the local homebrew club I have developed a keen interest in this hobby. I am now President of the Prairie Homebrewing Companions here in Fargo. For the past three years I coordinated our club's annual Hoppy Halloween Challenge homebrew competition. A good part of my brewing effort has involved the competition aspect of homebrewing. I am a BJCP Certified judge and I have coordinated judging classes and helped proctor the BJCP exam held in our area last year. As a result, five new judges entered the BJCP program from our club. I have won medals and ribbons at several regional homebrew competitions as well as the AHA National Competition.

Homebrewing has become more than merely a hobby for me. It is now a way of life. I thoroughly enjoy homebrewing but I also really enjoy attending homebrewing events and meeting other people who have the same intense interest in the hobby that I have. My enthusiasm for this hobby will be an asset to the Board of Advisors to the AHA. Since I am a relatively new brewer, I feel that I am open-minded and have a fresher view of homebrewing and the homebrewing industry. I would definitely be willing to listen to any suggestions given by homebrew clubs and individual homebrewers and am willing to work hard to represent their interests. Without the individual homebrewer there would not be an AHA.

Mark Tumarkin ..... Gainesville, FL

First, I'd like to say that I am honored to be considered for this position, and I'd like to thank the AHA for this opportunity to help contribute to the homebrewing community.

I began brewing in 1995, and became a member of the AHA shortly thereafter. Dave Barry said that there is a fine line between hobby and obsession. I crossed that line shortly after I began homebrewing and haven't looked back since. Reading the Home Brew Digest with my first cup of coffee is a daily necessity. I am a BJCP Certified judge, and am currently serving my second term as Primary Fermenter of the Hogtown Brewers.

Last year, I started the Florida Brewers newsgroup on the HBD server in Order to better facilitate communication between brewers, both amateur and professional; as part of our ongoing attempt to change the restrictive bottle laws here in Florida. We are very hopeful that we'll be able to change this law in the current legislative session. I'm also currently involved with a number of other Florida club leaders in making a bid to host the 2002 AHA Convention in Orlando.

One of the things I like most about brewing is the incredible sense of community that connects brewers locally, nationally and even internationally. This is exemplified by the recent changes in the AHA, which is becoming more member-driven and responsive to our wants. Through the GABF, the AHA National conventions, and the HBD, I have gotten to know the AHA staff and a number of the current BOA members. I think I can work well with them, and I'd like the chance to help make the AHA an increasingly positive force in the homebrewing community.

Precious Metals *(from page 21)*

accelerated by localization so a pit is most often the result and can cause pinholes in kegs within a few hours.

Bio-fouling (trub deposits) and beerstone scale (calcium oxylate) can cause corrosion of stainless steel by a similar mechanism. The metal underneath the deposit can become oxygen depleted via biological or chemical action. When this happens, it will lose passivation and become pitted. This is why the removal of beerstone from stainless steel storage or serving tanks is important. The dairy industry has the same problem with calcium oxylate and uses phosphoric acid to dissolve the buildup. Phosphoric acid is a good choice as it does not attack the steel. Do not use swimming pool (muriatic) acid to dissolve beerstone or clean stainless steel. The acid used for swimming pools is actually hydrochloric acid, which is very corrosive to stainless steel.

A second way that chlorides can cause corrosion of stainless is by concentration.

Stainless Steel Protection

To prevent the stainless steel from being attacked and pitted by the use of chlorinated cleaning products like bleach, follow these three simple guidelines:

1. Do not allow a stainless steel vessel to sit for extended periods of time (hours, days) filled with bleach-treated water or another chlorinated cleaner solution.

2. If practical, don't use chlorine solutions at all. Use alternative cleaning and sanitizing products (See March/April 2001 ***Zymurgy***) instead.

3. If you do use bleach or another chlorine-containing product for cleaning or sanitizing, rinse the vessel thoroughly with water and dry it to prevent evaporation concentration.

This mode is very similar to the crevice mode described above. By allowing chlorinated tap water to evaporate and dry on a steel surface, the chlorides become concentrated. The next time the surface is wetted, dissolution of the oxides at that spot will occur quickly, creating a shallow pit. The next time the keg is allowed to dry, that pit will probably be one of the last sites to dry, causing chloride concentration again. At some point in the life of the keg, that site will become deep enough for crevice corrosion to take over and the pit will corrode through.

Conclusion

This primer on brewing metals covers the basics that every homebrewer should understand. Armed with this knowledge, you should be able to avoid some common pitfalls that can lead to off-flavored beer and ruined vessels. In a future issue of *Zymurgy*, we'll continue this look at homebrewing metals by discussing galvanic corrosion and metal-joining techniques such as welding and brazing.

John Palmer is a metallurgical and welding engineer currently employed by 3M Corporation. He has been brewing for nine years and has written an online book for new homebrewers titled, *How To Brew*. It is located at www.howtobrew.com John lives in Monrovia, CA.

Moving Your Brew *(from page 25)*

path size consistent with the rest of your inlet line. Some ball valves, called standard port, are much smaller inside than the piping they fit.

Place a valve on the discharge side of the pump. Every pump should have a valve on the discharge side of the pump, either on the pump itself or close to it. As the pump operator you can use the valve to avoid, or minimize potential difficulties and to regulate the flow. Using a discharge valve will not cause the pump any difficulties. It will allow you to control the flow rate, but will not reduce the pump's head capabilities.

Provide support for your piping or tubing. Don't ask the pump housing and connections to support any heavy tubing or piping.

Provide the pump motor with a shield against spills and splashes. The internal fan that cools the pump motor needs free circulation of air around the pump, and the motor itself needs to be protected from stray liquids.

Work safely with electricity. Make sure that the pump and all other electrical equipment in your brewery is on a ground fault interrupter circuit (GFIC). If you have any doubt about your circuit, consult a qualified electrician. Since the pumps utilize 120 volt household current, standard three wire grounded wiring, drawing moderate amperage, a basic wiring guides such as Black & Decker's "Basic Wiring and Electrical Repairs" (ISBN 0865737142) can help you incorporate basic wiring, on-off switches, etc. Take care to make sure the wiring and switches are physically protected and water-resistant.

Operational Considerations

Several issues that frequently come up in discussions of pump use include priming, cavitation, grain bed compaction, and aeration. The installation and setup suggestions just presented will help you prevent or control any potential difficulties in those areas. Here are some key considerations.

When the pump is laid out following the first four suggestions above, start-up of the pump consists of the following steps:

a) open the valve on the supply vessel
b) open the valve on the discharge side of the pump
c) allow liquid to flow down into and beyond the discharge valve
d) close off the discharge valve completely.

When you have completed these steps, you can start the pump with the discharge valve closed, then crack the discharge valve open for a moment and then open it up to the flow rate you desire.

One thing that you want to avoid when using a pump is cavitation. Cavitation is a destructive process in which small bubbles are formed inside the pump and implode violently. This can cause severe damage to pumps. You will know if your pump is cavitating by the sound it makes. This sound is quite harsh and unpleasant and has been described as sounding like someone shaking marbles in a coffee can. Cavitation is a complex process, but occurs when you are asking the pump to provide an output rate that is greater than the inlet flow. This can be caused by restricted or undersized inlet plumbing or by constraints in the volume of inlet flow.

To operate a pump without cavitation, reduce the flow rate by adjusting the discharge valve. Reduction of the output volume brings the relationship between discharge and inlet back into balance. If you cannot quickly eliminate cavitation this way, you should turn off the pump and check the inlet plumbing and valves for obstructions.

If you are pumping wort from a mash tun, it is possible for the suction of the pump to cause compaction of the grain bed and lead to a stuck mash. To avoid this, you must match the output of the pump to the runoff rate of the mash tun. This is another reason to start the pump with the discharge valve closed, then open it slowly to the desired flow rate.

Another solution to this problem is to place a second vessel, known as a "grant" between the mash tun and the pump. In this arrangement, wort from the mash tun empties into the grant and the outlet on the bottom of the grant flows to the pump inlet. The pump is then cycled to empty the grant as necessary.

On the issue of aeration, you should be aware that normal pump operation cannot aerate the wort. If you don't have air in the inlet source, the pump can't create it. However, if you have a loose fitting anywhere on the inlet line that can allow air to be sucked into the wort this will create problems. On the output side, you can avoid splashing by placing the discharge tube below the surface of the liquid in the receiving vessel.

Conclusion

This brief introduction to the world of pumps in brewing should allow you to decide whether a pump is right for you and your brewery and then confidently proceed to select and use a pump suitable for your location. There is no doubt that appropriate use of a pump can help you make better beer while also allowing you to reduce the work and therefore increase enjoyment of the brewing process.

Bill Stewart has been a homebrewer since 1993 and is a member of the BURP brewing club. He has been assisting small scale brewers around the world with pumps and related brewing equipment at Moving Brews (www.movingbrews.com) since 1996. He may be reached at pumps@movingbrews.com

If you keep your freezer in the garage ...you'll need a thermostatic controller that has a heating circuit as well as a cooling circuit.

Freezer *(from page 28)*
the collar in place. The machine screws provide just a bit more strength.

Improvements to this design would include sealing the cedar against moisture and adding a sheet metal strip to the top of the collar for an improved seal.

Adding the CO2 lines and taps

The CO2 manifold allows the CO2 line to be split into multiple lines; one for each keg. Mount it on the collar. Supply the CO2 manifold from outside the freezer by running the CO2 line from the tank through the collar to the manifold.

With access to the freezer being from the front, it's a good idea to put the taps on one side or the other. I used a three inch spacing for the taps but I would suggest four inches if you are going to use nice tap handles. Drill the tap holes with a one inch wood drill bit.

Multi-compartment temperature control

If you keep your freezer in the garage and live in a cold temperature climate, you'll need a thermostatic controller that has a heating circuit as well as a cooling circuit. The controller for this freezer is an older model that is no longer available. It allows for heating or cooling without flipping any switches. An insulating wall can be added that will allow for two different temperature settings within the freezer. This works great when lagering and serving or fermenting and serving from the same freezer.

Split the freezer into two sections with a piece of two-inch polystyrene insulator board available from most hardware stores. The better it fits, the better the temperature differential will be. Place the heating element on the warmer side along with the thermocouple for the thermostat. The heater can be a ceramic reptile heater bulb, a reptile heater pad or a brewer's heater belt.

When the thermostat calls for cooling, the entire freezer will cool. When it calls for heating, only the heated side will heat. Some heat will get to the other side and help stabilize the cooler side.

On the system described here, a 10-15° F (5.6–8.4° C) differential is typical. More in summer (more cooling), less in winter (more heating). The my case, the seal between the two sides is not very good, so you could expect a 15-20° F (8.4–11.2° C) differential if a better seal is devised.

A second controller can be used to control the cooler side. The cooling of the warmer side can be accomplished by adding a fan in the insulator board that separates the two compartments by pulling air from the cooler side over to the warmer side.

Dan Schultz has been homebrewing for three years and is a member of the Oregon Brew Crew. He can be reached at d2schultz@qwest.net. More details on the freezer can be seen at www.users.qwest. net/~d2schultz/.

Motorize That Mill! *(from page 32)*

the stand. The last item was to find a proper sized v-belt to drive the mill. Thanks to an article by Mike Dixon on the Internet, I discovered the formula for belt length is:

Belt Length = 2 x Distance between shafts + (1.57 x (mill sheave + motor sheave diameters))

In my case, the distance between shafts is 21 inches, so this equation read: 2 x 21 + (1.57 x (9 + 1.5)) = 58.49, or a 59 inch belt. Since only a 58 inch or 60 inch belt was available, I settled on the 58 inch model and shimmed the motor up to reduce the distance between shafts slightly.

STEP SIX: MILL SOME GRAIN!

Once it is all set up, it is time to mill some grain. Few things can be as satisfying as the use of a labor saving device that you have built yourself—especially when it leaves an extra hand free to hold a glass of homebrew!

Drew Avis lives in Merrickville, Ontario. He is the author of StrangeBrew homebrewing software (www.geocities.com/andrew _avis/sb/).

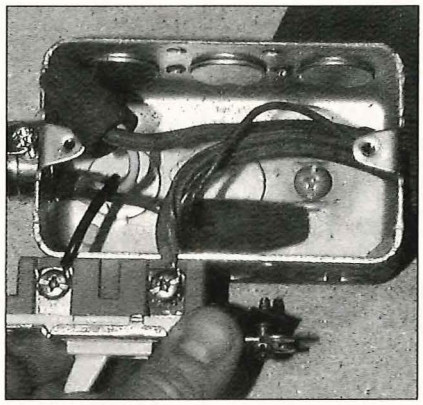


Figure 4: Wiring for a switch to control the motor.

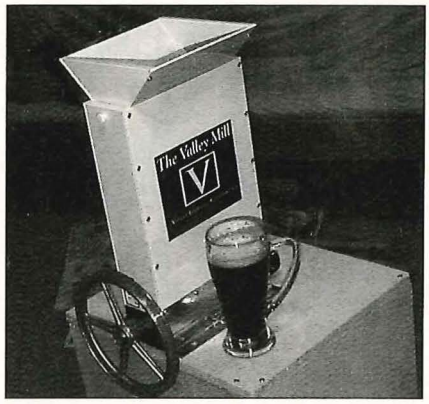


Figure 5: With the sheave attached to the mill and the mill mounted on the support box, this motorized mill is nearly ready for use.

Motors are pretty cheap if you can find them rebuilt, used, or in surplus outlets. Mine was better than cheap; it was free! In this case, it is good to have friends who are packrats.

BREW BEER WITH 1,800 OF YOUR CLOSEST FRIENDS!

Celebrate National Homebrew Day with Big Brew 2001—a day of simultaneous brewing by homebrewers across the country and around the world. Last year, over 1,800 homebrewers gathered at 269 locations around the world for a simultaneous brewing celebration, producing 4,259 gallons of homebrew in one day. Help make this year's Big Brew even bigger by gathering your local homebrewing buddies together, firing up your burners, and raising a pint in honor of hopheads everywhere.

National Homebrew Day

Big Brew 2001

Saturday, May 5, 2001

Simultaneous Toast at 12:00 PM (CST)

Visit us at

www.beertown.org

for registration information, this year's recipe, and other details.

Sponsored By

BREWER'S CHOICE
WYEAST USA
Flavor • Purity • Integrity
Guaranteed

1.888.U.CAN.BREW
303.447.0816.
AHA@AOB.ORG

Presented by The American Homebrewers Association
A Division of The Association of Brewers

BY AMAHL TURCZYN

Beer Delivery Guy Qualifies for PGA Tour

Mark Johnson usually drives an Anheuser-Busch delivery truck, but has recently shown equal driving skill on the golf course with a one wood. After a stellar day in the Pebble Beach National Pro-Am, he found himself one stroke from the lead, and with a better score than Tiger Woods. Johnson only turned pro a few years ago—at 46, he was twice the age of most golfers at the event, and was intending to join the senior tour. However, he's no stranger to Pebble Beach—he won the California State Amateur tournament there in 1996. And, for his other job, he's been working for A-B in Barstow, CA for the last 20 years, driving up to 300 miles a day and delivering anywhere from 600 to 1,000 cases of beer a day. He may be getting out of the beer business soon, however; he plans to move to South Carolina and hopefully get into a few more events.

The Perils of Poor Aim

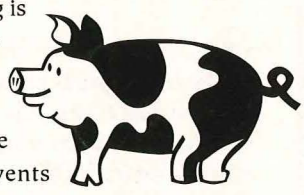
After urinating on the leg of a woman student during Munich's annual Oktoberfest celebration, an intoxicated German beer drinker was fined $600 by a Munich court. The 22-year-old man told the court he had consumed two liters of beer when he'd suddenly "felt an urgent need to relieve himself." Although the Oktoberfest tent had been crowded, the man still claimed he had tried to do it "in an inconspicuous way." When asked to explain his actions, the man said, "I didn't mean to hit anyone."

College Beer Polka Offends Parent

A popular college football song called "In Heaven There Is No Beer" gained unwanted attention after one of the Iowa Hawkeye marching band member's parents complained about the lyrics. The upbeat polka tune contained the words, "In Heaven there is no beer. That's why we drink it here. And when we're gone from here, all our friends will be drinkin' all the beer." The song has been played for years after Iowa Hawkeye football and basketball games. Iowa athletic department administrative associate Les Steenlage said the song isn't meant to promote drinking, and says he thinks fans react more to the polka style and upbeat tempo. "To us, it isn't meant to send a message. It's just a celebration song." The marching band will continue to play the song after games, but to avoid further complaints, it will henceforth omit the lyrics.

Last Call for Pigs

According to a London newspaper, 570 pigs with the enviable occupation of consuming brewery wastes including yeast, grain, hops and up to three gallons of beer from Suffolk's Adnams brewery have recently been relieved of duty. A slump in pig farming is apparently the cause of this unfortunate turn of events for the swine, and the pig farmer has decided to sell the herd. Jonathan Adnams, managing director of Adnams brewery, said, "The pigs were very pleased with their diet." Now, the brewery's by-products are being converted to fertilizer.



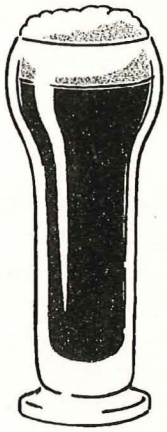
Guinness Targets Illinois with Widget Rocket

As many stout-lovers well know, a widget is the ingenious device in "nitro pour" beer cans that sprays millions of tiny gas bubbles into the beer when it is opened. With a deft and rapid pour, the beer then forms a thick head, which resembles that of a draft beer poured from a nitrogen tap. The widget device has been evolving over the years—if you've ever been curious enough about that thing rattling around in your beer can to actually rip it open and take a look, you'd know. First, it looked like a flattish, rectangular piece of plastic. Then, it took the shape of a plastic sphere about the size of one of the balls on a foosball table (which can come in handy for those of us short on change). The latest permutation of this wonderful invention is about to be introduced to the US, although if you happen to live in Illinois, you may already have seen it. A six-month test of bottled Guinness containing the new widget commenced February 19. As with previous widgets, this rocket-shaped device floats inside the bottle and is "activated" when the bottle is opened. The new design, however, allows a mixture of gases to be released each time the bottle is tipped, creating the same creamy head Guinness drinkers expect when ordering the beer on tap. The idea here is that if one were heathen enough to drink a beer straight from the bottle (as suggested right on the bottles themselves) one could still enjoy that famous Guinness head one sip at a time.

The bottle's entire message reads: "Hear something? That's the new floating draught system delivering you the great taste of Guinness Draught. To really enjoy Guinness Draught, chill for at least two hours. Drink straight from the bottle." The accompanying advertising campaign also emphasizes the rocket widget theme. A 30-second television commercial depicts the rocket widget traveling through what appears to be space. As the camera pulls back, viewers find out the widget is moving through a bottle of Guinness. The camera pulls back even farther to beer drinkers enjoying the beer in a backyard setting. Radio spots, intended to sound as if Orson Welles recorded them, warn citizens to prepare for the arrival of the rocket widget. Print ads resemble a stylized airline safety card and advise consumers what to do when the rocket widget hits town. You can see these videos on the Guinness web site, but be warned: Guinness won't be winning any awards for the ease of its site's navigation.

Beer's Good for your Liver?

Yes, according to a study done by Ukrainian scientists at the Biological Institute at the University of Charkov, moderate consumption of beer can have a positive effect on the liver. The study, published In BeerNet Publica tions, showed that bee drinkers can get rid c toxic metals up to fiv times more effectivel than tee-totalers. Alcc hol apparently dilates small blood vessels in the liver, allowing potentially poisonous metals like lead and copper to be flushed more effectively; It also causes the liver to expand and speeds up metabolism.



Amahl Turcyzn is the associate editor of *Zymurgy* Magazine.

ILLUSTRATION BY JOHN MARTIN

Classifieds

Advertising to the most passionate homebrewers anywhere!
To list here, call Monica Tall at (303) 447-0816 ext.108.

INGREDIENTS

THE PURPLE FOOT

We love to talk beer (and wine) and we know what we're talking about! Fast reliable friendly: The Purple Foot. Complete selection. Never out of stock. Free catalog: 3167 S. 92 St. Dept. Z, Milwaukee, WI 53227; (414) 327-2130; FAX (414) 327-6682.

SUPPLIES

MAKE QUALITY BEERS

The Cellar Homebrew, Dept. ZR, 14411 Greenwood Ave. N, Seattle, WA 98133. Supplying home beer & winemakers since 1971. FREE CATALOG/Guidebook–Fast, Reliable Service (800)342-1871; Secure Online Ordering www.cellar-homebrew.com

DRAFTSMAN BREWING COMPANY

You'll love our prices! Call today for our free Homebrew Supply Catalog. 1-888-440-BEER; (440) 257-5880 www.draftsman.com; sales@draftsman.com.

HOPS & DREAMS

Homebrew and Winemaking supplies. Low prices. Large selection. Free catalog & free call (888) BREW-BY-U or www.hopsanddreams.com

PROPERTY FOR SALE

BUILD YOUR OWN BREWERY

Historic grain elevator and 16,000 sq ft warehouse in quaint, fast growing Mead, CO. on the Dynamic Ft. Range corridor. Only $450,000.00. Call Arnold Turner @ Turner Realty Today (303-776-1105 or turnerrealty@earthlink.net)

TOURS & TRAVEL

BEER TOURS TO EUROPE

Germany & Czech Republic. Famous brewery tours, sampling and fun! Pilsner Urquell, Prague, Munich Oktoberfest and more! Call (888) 991-6718 www.alpventures.com

It's the Beer Talking *(from page 4)*

AHA National Homebrewers Conference Presented By Rogue Ales

Yes, it is conference time again. Before coming onto the staff at the Association of Brewers, I had heard about the conference, thought it sounded pretty good, but had never attended. Friends in Hop Barley & the Alers, Bob and Caroline Kauffman and Jim Homer, had been going for years and plan their summer around it. I heard them talk about how much fun it is, but I didn't really hear them. I think back to each of the past three years, and the most fun I've had with beer in each of those years was at the conference. The bonds that develop among the homebrewers around the conference are formed anew or refreshed with each passing year. This year the conference is being led by AHA board of advisor Steve Casselman and dozens of Southern California homebrewers from the neighboring clubs. Steve provides us with a run-down of the conference activities elsewhere on page 63. There is a registration form in this issue of ***Zymurgy***. Register by May 15 and save.

American Beer Month

We make some really good beer in the United States. U.S. homebrewers and professional craft brewers are among the elite brewers in the world, and it's time to stand up and celebrate American beers. Our goal is to get media attention about the quality of American beers and to help sales of well-made American beers from our brethren in the professional brewing community. I ask that each of you take the American Beer Month pledge to only drink American beer in July. If you must have a trippel, please choose one made in the US, or make it yourself.

Phil Sides Jr. of the Brew Free or Die homebrew club in New Hampshire is leading his club members in visits to local pubs in an effort to encourage those establishments to take the Guinness and Bass offline for July and replace them with fine American microbrews that month. Other homebrewers who live in states with strong brewers guilds will be working together to build awareness for American beers. Perhaps the Boston Wort Processors would consider dumping all imported beers into Boston Harbor during July.

ZYMURGY ADVERTISER INDEX

***Zymurgy* Advertisers help strengthen the homebrewing industry. Please consider offering them your support.**

Call (303) 447-0816 ext. 109 for advertising rates in *Zymurgy*.

**Cover 2 is the inside front cover. Cover 3 is the inside back cover. Cover 4 is the outside back cover.*

If you wish to support the Association of Brewers efforts with American Beer Month, please start getting the word out among your club members, your brewpubs and taprooms and restaurants. Tap into any connections you have with your local media. For activities and ideas, visit **www.americanbeermonth.com**. The book is wide open on what we can do for American Beer Month. If you come up with a creative way to celebrate, please post it on the AHA members TalkBack section of **www.beertown.org**. I would love to see some discussion of the topic there. American Beer Month will culminate with activities led by former AHA director Jim Parker at the Oregon Brewers Festival in Portland the last weekend of July.

As homebrewers get behind American Beer Month, we help our fellow professional brewers raise the bar of quality beer. Discussions between the all members of local brewing communities will build stronger bonds, information exchange and mutual benefits between the home and professional brewing communities. Many communities are already tightly knit, and the result is more fun with beer. Let's raise our glasses high for American Beer.

Great American Beer Festival®

GABF Director Nancy Johnson has announced that September 27 through 29, 2001 are the dates of the 20th anniversary of the Great American Beer Festival. The event will again be held at Colorado Convention Center Hall A in downtown Denver. The host hotel will again be the Denver Marriott City Center, which books fast, so make those reservations soon. The event is always a blast, and the anniversary year promises some extra special treats. I'll have more news on the GABF next issue.

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

National Homebrewers Conference Spins Up in LA

By Steve Casselman

This year I'm the head of the committee putting on the National Homebrewers Conference, so I thought I would take a minute to let you know what we have planned.

First let's look at the beer. We are having the conference at the LAX Four Points Sheraton Hotel. Now I know what you are thinking, but rest assured that this is not your average airport hotel when it comes to beer. They have Rochefort 10, Old Foghorn and cask-conditioned beer on tap . Overall, they must have 30 beers on the menu and something special for every palate.

The other beer event going on during the conference is the LA Beer Odyssey and Brewers Championship. This is the real ale/beer knock-down, drag-out big-time brewing championship that rewards the winning brewer rather than his employer. Just imagine what the brewers are going to think up to win that prize! If you come to the conference, you'll be lucky enough to find out.

Almost as important as the beer is the food. Carlos Solis, head chef at the hotel, outdoes himself with beer-related events. A recent beer-tasting menu included smoked potato soup made with stone smoked porter, striped sea bass with a Bigfoot cream sauce and Beef Medallions with a wild mushroom Chimay Grand Reserve sauce. If that is what Carlos does for these little (50-100 people) tastings, imagine what he will come up with for the AHA convention. In addition, the Grand Banquet will be prepared by renowned chef Sang Yoon. Sang is a world-class chef who likes beer so much he bought out the local high-end beer bar called Father's Office (40-60 taps of nothing but great beer).

That brings us to the other reason that you'll want to come to the AHA conference this year: information. While the conference speakers are not fully confirmed, here are some of the things we have in the works: Charlie Papazian and Ray Daniels; Louis Bonham—Yeast Lab Techniques and Beer Assay; David Logsdon (Wyeast)—Fermentation Characteristics and Beer Profiles; Chris White —Yeast; MB Raines Casselman (Great Beer Company)—Yeast Propagation; Jeff Renner—Mashing/split mashes/adjuncts; George Fix—Mashing: water, temps; Mary Ann Gruber—Cold Steeping; Byron Burch—Mead making; Tomme Arthur—Making Farm House Ales; Alex Puchner—Beer Evaluation; Alan Sprints—Making Very Big Beers; John Palmer—Fluid Flow System.

There will be panels with professional brewers and beer experts to answer your most burning questions and more great brewers to hobnob with than you've ever seen before.

So here is the bottom line: this is the going to be the best AHA conference ever, so don't miss it!

Keep your eyes on www.beerodyssey.com for all the latest and greatest information concerning the AHA National Homebrewers Conference – 2001: A Beer Odyssey.

Steve Casselman is a long-time homebrewer and member of the AHA Board of Advisors.

Last Drop *(from page 64)*

the party, and says, all-in-all, she didn't feel too uncomfortable being there. "You just have to remind yourself not to stare at the wrong spot," she says.

Do the Nude Brewers ever have trouble with the local police at their parties? "What party doesn't?" laughs Badowski. What about the neighbors? "We invite 'em!" he says. But seriously folks...no, Badowski claims, there's never been a problem at any of their events. People generally know what they're getting into when they come to a Nude Brewers event (Deena Bray's story notwithstanding), and if they're going to take offense, they don't come in the first place. You don't have to come to my party if you don't want to," he says.

"We're a fun, honest group that reaches across all socio-economic groups," Badowski says. "You can't embarrass us."

Hank Stewart has enjoyed experimenting with different ways of brewing for many years. We hesitate to speculate on what new techniques he might try when the weather turns warm this year.

BY HANK STEWART

Bare Naked Brewers

How many members of your homebrew club would you like to see naked? For Ray Badowski, the answer is all of them. And that's exactly what happens. At every meeting.

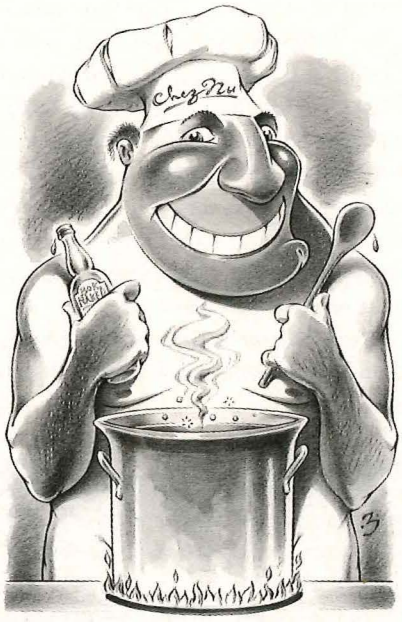
Badowski, you see, is the unofficial President ("We're not big on bureaucracy," he says) of the Nude Brewers, a real life, honest-to-goodness, American Homebrew Association-registered homebrew club in Gainesville, FL.

The Nude Brewers came to be in 1986 when Badowski, already a practicing nudist and homebrewer, wore a T-shirt from an area nudist resort to a meeting of his homebrew club, the Hogtown Brewers. Another member of the club saw Badowski's shirt, and informed him that he, too, had logged some tan-line-free hours at that particular establishment. Upon further exploration, the two discovered not only were their respective wives amenable to the twin diversions of brewing and nudity, so were several other members of the Hogtown Brewers. Before long, the idea snowballed, and the new club was formed. In other words, an article of clothing led to the creation of an organization that eschews it (and that, Alanis, is ironic).

So, do the Nude Brewers actually brew in the nude? "No," says Badowski, "that would be foolish." He believes the minimum amount of clothing required for brewing is an apron, which is what he generally wears.

Since nude brewing itself is not encouraged, you may be wondering what, exactly, makes one a Nude Brewer. "We have a little initiation rite," says Badowski. "You must take part in the producing, aging, or drinking stage of homebrew with no clothes on." Basically, if you've ever undressed in front of a beer, you could be eligible.

Badowski, a 40-year-old computer consultant, estimates there are currently 15 to 30 members of the Nude Brewers at the moment. The membership is comprised of roughly the same number of men and women. "We have a lot of couples," he says. "A few single men and women, but mostly couples." Members range in age from early 20s to retirees, with Badowski estimating the median age to be in the late 30s. Being situated in a college town (Gainesville is home of the University of Florida), the club has become accustomed to dealing with the transient nature of the population. "We're used to people coming and going," Badowski says.



But what...um...about the general physiques of the members? Are these people you'd actually want to see naked, or are they built...well, like beer drinkers? "We're not a bunch of fat guys sitting around," replies Badowski. "But neither are we *Playboy* or *Playgirl* centerfolds. We're just normal, everyday people."

And lest you think the club's events degenerate into wild, debauch, homebrew-soaked, Roman orgies, Badowski is swift to firmly squash that notion. "We are not a sexually oriented operation," he stresses. "We are a legitimate, honest, above-board nudist group. We enjoy high quality beer, brewing it, and discussing it within our chosen hobby of being nudists."

Badowski says the club has events just like any other homebrew club: meetings, style tastings, group trips, holiday parties, Octoberfests, even AHA-sanctioned competitions. Only naked. "The only thing we haven't done is a group brew, and that's just because the logistics haven't worked out," he says. "Sooner or later, everybody gets to one of our parties."

Deena Bray can testify to that. The owner of Bray's Brewing Supplies, and member of the Hogtown Brewers, Bray received an email to attend a Halloween party from Badowski in 1999. The invitation used words like "adult" and "risqué," but didn't say anything about nudity.

Bray gathered seven or eight friends, donned what she considered to be a sexy costume, and headed off to the party. When Bray and her friends walked in the room, they realized just how broad the definition of "risqué" can be.

"Everyone was very nice," Bray says. "They (the nudists present) seemed to be freer—more at home with themselves, which is great." Bray and her friends chose to keep their costumes on that night. "I wish I could be that liberal," she says, "but I can't." (This is in keeping with what Badowski describes as the club's "clothing comfortable" policy, that is, you wear as much or as little clothing as you are comfortable with.)

Bray has high praise for the homebrew that was served at *(continued on page 63)*

ILLUSTRATION BY PATRICK MEREWETHER

"It tasted just as good - if not better - than many a pint I've drunk in London pubs."

Richard Neill
'Weekend Telegraph' (April 99)

"I wouldn't have believed that a kit beer could be so good"

Roy Bailey - Beer Correspondent
CAMRA's 'What's Brewing' magazine (April 2000)

"It resulted in as good a home-made beer as I have ever tasted"

Maximum 5-point rating in kit review
'Bizarre' magazine (September 99)

This man is passionate about brewing. And he loves to fish.

He was finding more and more that his brewing was keeping him at home when he wanted to be down at the lake. Then he discovered Smugglers Special Premium Ale, Old Conkerwood Black Ale and Midas Touch Golden Ale - the Premium Gold range of brewkits from Muntons.

Because we use only the finest English 2-row barley and water, our kits give the same result you expect from full grain mashing. Only ours comes in a can and is a whole lot more convenient and easy to use.

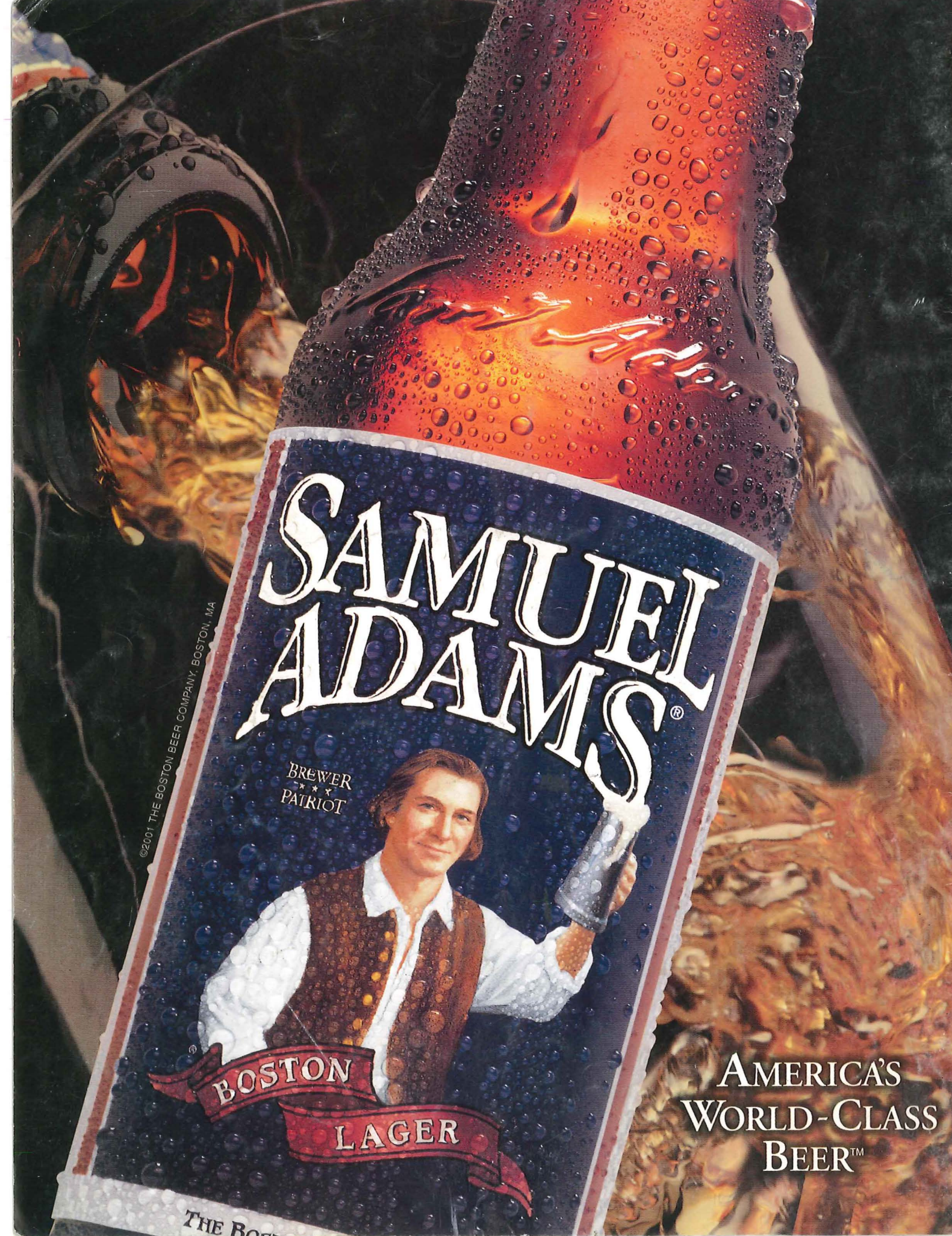
Since switching to kits our man has never looked back. He's still proudly brewing quality beers that taste every bit as good as his full mash brews. But Premium Gold allows him to pursue his other liquid pleasure.

If you've been a slave to full grain mashing, don't be! Try Premium Gold and get hooked on the taste of Muntons.

Ask for Muntons Premium Gold at your nearest brew store.

Muntons
A World of Difference
www.muntons.com/premiumgold

Grain Malts • Liquid Malts • Spray Dried Malts • Brew Kits • Plain & Hopped Malt Extracts


SAMUEL ADAMS®
BREWER
PATRIOT
BOSTON
LAGER
AMERICA'S
WORLD-CLASS
BEER™
©2001 THE BOSTON BEER COMPANY, BOSTON, MA