

Vol. 18 No. 3 Fall 1995 Published by the American Homebrewers Association

# ZYMURGY

FOR THE HOMEBREWER AND BEER LOVER



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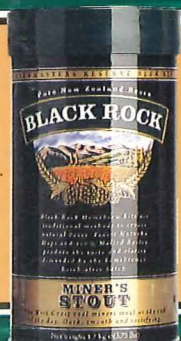
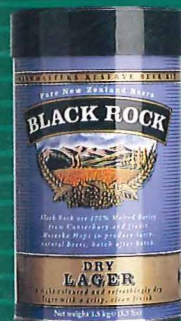
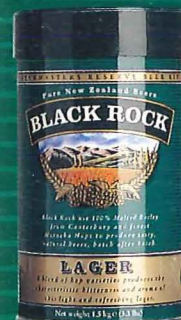
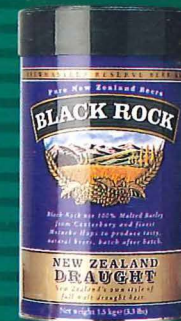
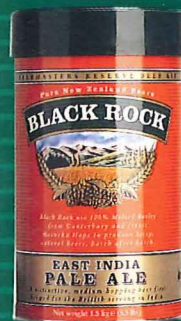
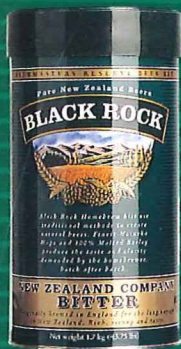
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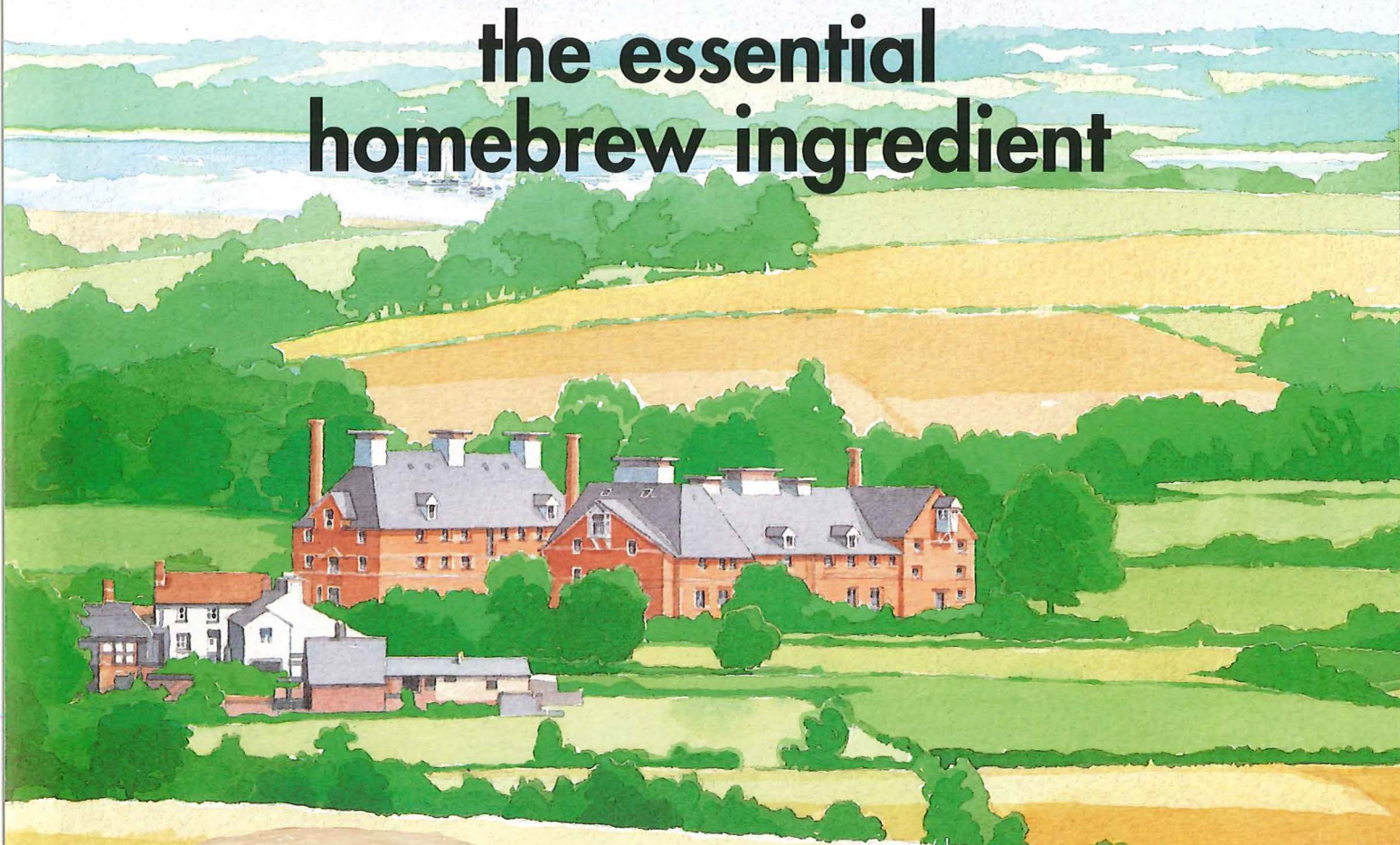
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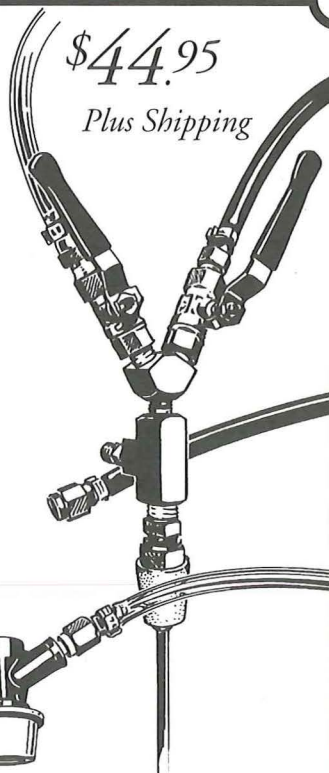
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Publisher—American Homebrewers Association  
Editor—Dena Nishek  
Associate Editor—Kathy McClurg  
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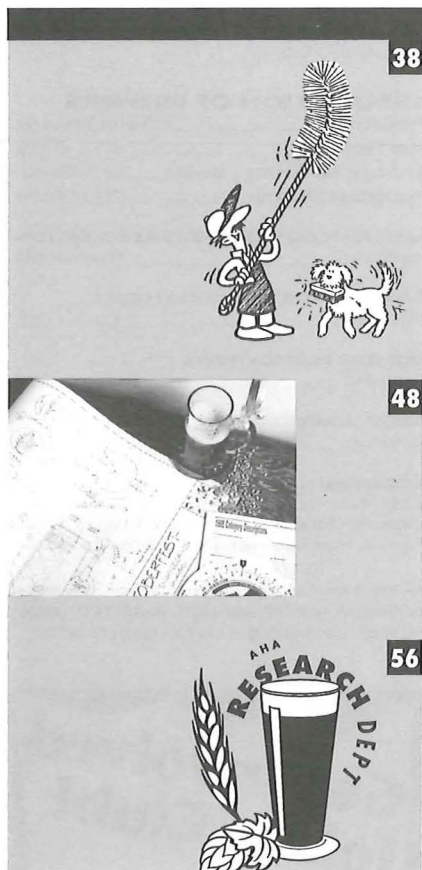
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(ISSN 0196-5921)

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Printed in the USA by EBSCO Media, Birmingham, Ala.





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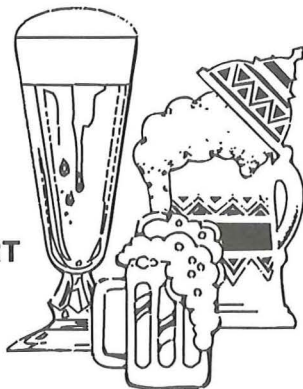
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zym18



# EDITORIAL



It was a very busy spring and summer around here, and lucky for me it involved lots of wonderful homebrew and brewing events. By far one of the coolest events involved only a few people and a couple of batches of homebrew.

The AHA organized a gathering on the back deck of our office to kick off the celebration of National Homebrew Day on May 6. We invited AHA members in the Boulder/Denver metro region and local brewers and shop owners to our offices on a Friday afternoon for a homebrew tasting and to meet the AHA and AOB staff. The entire AOB staff was easily enticed to brew beer for the event. The 35 employees were divided into six brewing teams, team captains were appointed and then teams took one afternoon off to brew and another a few weeks later to bottle or keg.

Dena's Divine Fermenters brewed a helles bock named "Two Suns Down" with just enough malty sweetness to balance the Hallertauer, Saaz and Tettnanger hops. For most of the homebrewers in Dena's group, this was their first partial mash and first attempt at brewing a lager. The word at the party: this beer was damn good.

Dunker's Dunkels brewed "Jackie's Abbey," a recipe by Jackie Keith of Louisville, Ky., that appears in *Victory Beer Recipes* (Brewers Publications, 1994). It was yummy, if a bit on the young side, and needed a bit more time to reach its full potential. However, that didn't stop anyone from enjoying it, and there wasn't a drop left in the keg to age.

Kyle's Brew Crew brewed a chocolate raspberry stout using a few unconventional methods. They took a basic stout recipe and, with one hour left in the boil, added two cups of cocoa powder, then added Chambord raspberry liqueur to the secondary about three days before kegging. This beer had a wonderful raspberry aroma with just a



## Chasing Our Brewing Dreams

hint of chocolate throughout the well-balanced roasty character.

Barela's Bitters brewed "Palace Bitter," a traditional ordinary bitter with the earthy character of English Fuggles and Goldings hops. Barela's team had a couple of first-time brewers who got lessons in making yeast starters and kegging.

Russ' Freak Show brewed "Dopple Butt Alt," a recipe created "as we went along." There is great potential for this beer as it ages slowly in a keg in one of our AOB refrigerators. Apparently members of this team did draw out a glass of "mud" the day of our party, but declined to share any with the rest of us. Instead of serving a beer before its time, the potential for another gathering remains in the keg.

James' team brewed "All Guy IPA," Quentin Smith's all-grain recipe also found in *Victory Beer Recipes* and followed the recipe exactly — well, except they must have thought it wouldn't have enough hop character so they dry-hopped with six ounces of whole Crystal hop flowers. Definitely the beer with the most hops of them all.

Our staff brews were a definite hit with our guests, and the best part is everyone at the AHA and AOB has once again experienced the joys

of brewing, enjoying and sharing our own homebrew. It was the second time in six months we had the entire staff brewing (we had a similar brewing project for our 1994 holiday party). Our company is unique in that employees are encouraged to homebrew, and periodically are encouraged to do so on company time. The AHA staff and about one-third of the AOB staff brew on a regular basis. We also have staff who participate in local one-day brewery internships, attend classes on technical brewing and sensory evaluation and we all read a lot of brewing publications.

But I'm not satisfied yet. My real dream is to have an on-site test kitchen. I'd like to have the opportunity to test all the recipes we publish in *Zymurgy*, play with the gadgets we write about and develop and test our brewing ideas. Visions of the future are what this company was built on, and part of my vision for our future includes a complete on-site facility for testing and homebrewing.

We work in an older building just off the Pearl Street Mall, an outdoor pedestrian mall in downtown Boulder. As the brewing industry grows and the AOB staff grows, so does our need for space. We hope to remodel the building rather than move to some industrial office-park space. Our remodel plans include keeping our outdoor roof deck (for more gatherings) and if my vision has anything to do with it, a homebrewery test kitchen as well.

In any case, and regardless of the state of our offices, you are welcome and encouraged to stop by and visit us anytime you are in Boulder. We have a well-stocked brewing library and usually have some homebrew around. If the weather is good, we'd like to share a beer with you on our deck. Maybe one day we can invite you to come by and brew with us in our test kitchen. Until then, I offer you my visions and encourage you to develop your own brewing dreams.





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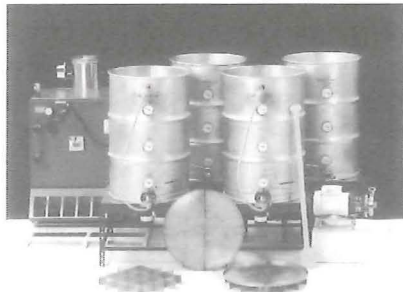
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# DEAR ZYMURGY

Our Readers

## Malt Magic

Dear *Zymurgy*,

The *Zymurgy* Winter 1994 (Vol. 17, No. 5) was one of the best in years, particularly the study of malt extracts. "The Enchanting World of Malt Extract — Make the Most of It," was useful and interesting to a wide audience. I don't brew extract beers any more, but I do use dry malt extract to make yeast starters. The quality of commercial extracts with respect to growing healthy, vigorous yeast is therefore very important to me. Reporting such factual information concerning commercial products, explaining its significance and identifying the manufacturers by name is a great service to your readers.

Publishing this kind of information encourages the manufacturers to supply quality products and provide the pertinent data in writing on the label. A package of dry malt extract I purchased a week or two ago was not only labeled "100 percent malt extract," but listed the typical color produced

by it in EBC units. I have no doubt that this is a direct result of recent questioning and investigations into the composition of malt extract products. It appears from the data in the article that the expected yield of extract should be provided as well. For liquid extracts at least, this varies quite a bit, and the true cost of the extract (to achieve a given original gravity) is therefore not revealed by the price per pound. Keep up the good work!

Cheers,  
Martin Manning  
Cincinnati, Ohio

## Altbier Mystery

Dear *Zymurgy*,

In *Zymurgy* Winter 1994 (Vol. 17, No. 5) "The Regal Altbiers of Düsseldorf," Roger Deschner says, "A typical malt bill would contain mostly German two-row Pilsener malt, Munich and Vienna specialty malt and no



more than a small amount of caramel malt." Later he states, "Too many brewers make the mistake of using too much crystal malt ...."

These statements seem incompatible with the recipe given later in the article in which the same amount (one pound) is used for caramel, Munich and Vienna malts.

What are the correct amounts of caramel, Munich, Vienna and Pilsener malts to use in a Düsseldorf alt?

Thanks,  
Dana Edgell  
Madison Homebrewers and Tasters Guild

Hi Dana,

Oh boy, I was afraid this would not be quite clear. Al Korzonas, myself and a number of others debated this exact point while working on the article. I hope you are not disappointed by the answer "it depends." There are several relevant points here.

First, there is considerable variation in altbiers even within Düsseldorf. Note the new hop range, 25 to 48 IBUs, is pretty wide.

Second, altbier depends on a complex mashing procedure, either the multistep in-

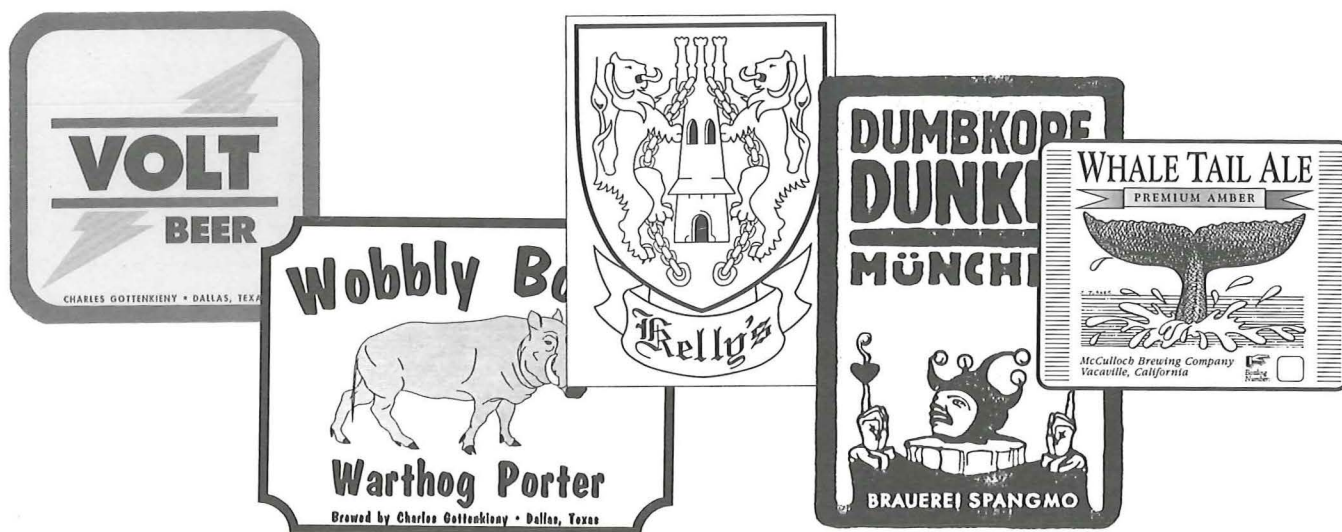
## Corrections

Rick Garvin's Cherry Blossom Wit recipe on page 57 of *Zymurgy* Spring 1995 (Vol. 18, No. 1) should have included a 0.6-ounce (18-milliliter) addition of 88 percent lactic acid added at bottling to lower the pH and add tartness.

The titles of the charts on page 66 of *Zymurgy* Summer 1995 (Vol. 18, No. 2) were reversed. The top chart shows "United States Regional Specialty Breweries, Microbreweries and Brewpubs Operating" and the bottom chart shows "Total U.S. Craft-Brewing Industry Annual Dollar Volume (\$ Millions)."

The Club-Only Competition winners listed on page 97 of *Zymurgy* Summer 1995 (Vol. 18, No. 2) competed in the Specialty Quest.





fusion I described in the article or double or triple decoction. At any rate, you're going to mash and mash and mash. I have become convinced with my own inadequate homebrewed altbiers that complex mashing procedures are a real key.

Third is balance. Altbier must be exactly balanced between maltiness and hop-piness. If you put in a full pound of crystal malt, you'd better be up toward the 48 IBU range to prevent sweetness. But sweetness-bitterness is not the only axis of beer balance, which is where mashing comes in. The best Düsseldorf altbier contradicts itself (or you could say it is in perfect balance) by being both very hoppy and very malty without being high gravity.

So what I'm saying is what I said in the article — Düsseldorf altbier is exceedingly complex in its flavor profile. Add a pound of crystal malt to some extract and boil a few minutes with any large or small amount of hops and you're doomed to fail. I am convinced that the exact recipe used at Zum Uerige is not written down, but rather is passed from brewmaster to apprentice through long training. The complexity and balance comes from more sophisticated ingredients handled the right way. You won't know what I'm talking about until you buy that airplane ticket to Düsseldorf in the next airfare war — then you'll be hooked!

Roger Deschner  
Chicago, Illinois

## Oregon is Beervana

Dear *Zymurgy*,

As a resident of Oregon, a state much above average in the production of quality wines as well as microbrewed beers, I can relate to the oenophilic temptations offered by a glass of wine, as admitted in the *Zymurgy* Winter 1994 (Vol. 17, No. 5) editorial. I am a cyclist as well as a dedicated homebrewer, and am inspired by the sight of hillside vineyards on my cycling forays into the countryside. On occasion, I seek out the excellent Oregon-made wines, especially the wonderful Pinot Noirs.

However fine these wines are, they do not outclass the distinctive beers and ales produced by the many outstanding breweries, microbreweries and brewpubs in Oregon. In my locale, Eugene, a city of 117,000, there are presently four brewpubs producing quality products, a well-stocked homebrew supply store and numerous pubs serving more than a few Oregon-brewed beers on tap. Even University of Oregon students serving food and beverages in local pubs and restaurants are generally knowledgeable concerning specific gravities, specialty malts, beer styles, etc.

If there is a Beervana, it has to be Oregon.

Sincerely,  
Will Cooper  
Eugene, Oregon

## A Great Find

Dear *Zymurgy*,

My husband and I recently moved into a house and in the basement we came across a case of homebrewed beer. This was some of the best beer we have ever tasted. Your company name and address was on the bottle cap so I decided I would write to try and get information about brewing our own beer.

Could you please send me any information you have on homebrewing? We are very interested in doing this ourselves.

I greatly appreciate any help you could give me.

Thank you,  
Natalie S. Blackshear  
Frederick, Maryland

Information is on the way, Natalie. Welcome to a great hobby. —Ed.

## Watch Your Head Space

Dear *Zymurgy*,

In the article For the Beginner "Judging Your Brews" (*Zymurgy* Winter 1994, Vol. 17, No. 5), the authors state that "In the literature, fill level has been linked with overcarbonation and undercarbonation whereas, in fact, it has no effect." This is a rather strong statement from a scientific standpoint, but fortunately a simple back-of-the-envelope calculation can clarify this issue.



Henry's Law states that at constant temperature the partial pressure of a gas over a solution is directly proportional to the solubility of the gas in that solution. Mathematically, this is expressed as

$$p_g = kn_1 \quad (1)$$

where  $p_g$  is the partial pressure of the solute gas,  $k$  is Henry's constant and  $n_1$  the gas concentration in solution. The ideal gas equation can then be used to transform Equation (1) into

$$n_g = \frac{k}{RT} n_1 \quad (2)$$

where  $R$  is the universal gas constant. This expression indicates that the density of the gas in solution is proportional to the density above the liquid.

For example, consider a bottle-conditioned beer where the bottle has volume ( $V$ ) and the carbon dioxide ( $\text{CO}_2$ ) gas is distributed between the liquid and the headspace. The mass balance equation for the  $\text{CO}_2$  is then

$$n_1(V-v) + n_g v = N(1-v/V) \quad (3)$$

where  $v$  is the volume of the head space and  $N$  is the mass of  $\text{CO}_2$  produced by a volume  $V$  of the beer. The factor of  $(1 - v/V)$  of the right-hand side accounts for the smaller amount of priming sugar in a bottle with a lower fill level. Combining Equations (2) and (3) then gives

$$n_1 = \frac{N}{V} \left[ \frac{1-v/V}{1 + (k/RT - 1)(v/V)} \right] \quad (4)$$

For our reference carbonation level, we use the extreme example of a bottle with no head space:  $v = \text{zero}$ , so  $n_1 = N/V$  and all of the carbon dioxide is dissolved in the beer. The 12-ounce longneck bottles recommended for AHA sanctioned competitions hold approximately 382 milliliters of liquid, while a low-fill bottle with, say 2 1/2 inches of headspace, has approximately 26 milliliters of liquid replaced with gas. Although I couldn't find Henry's constant for carbon dioxide in beer, for an aqueous solution of  $\text{CO}_2$  it is 13.0 L atm/mol and 32 L atm/mol at temperatures of 32 degrees F (0 degree C) and

77 degrees F (25 degrees C), respectively (1).

Because beer is mostly water, these numbers should be reasonably accurate. Plugging these numbers in Equation (4) for the low-fill example, we find that the concentrations of  $\text{CO}_2$  dissolved in the liquid are  $n_1 = 0.96 \text{ N/V}$  at  $T = 0$  degrees C and  $n_1 = 0.92 \text{ N/V}$  at  $T = 25$  degrees C. These results indicate that while there is only a 4 to 8 percent decrease in the carbonation level with respect to the completely full bottle, there is certainly more than the "no effect" mentioned by the authors.

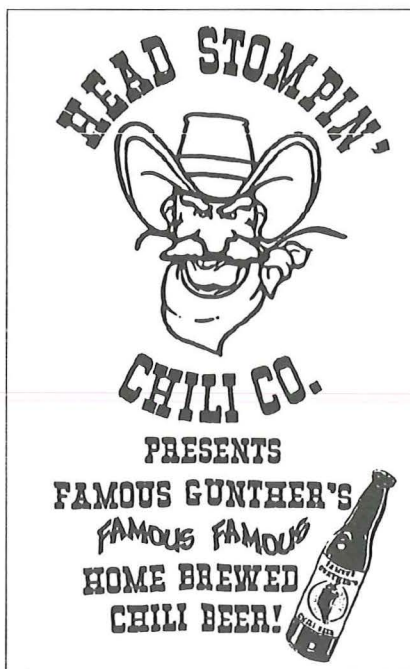
Scott Bickham

Physicist and BJCP National Beer Judge  
Ithaca, New York

(1) Moeller et al., *Chemistry with Inorganic Qualitative Analysis*, Academic Press, 1984.

*You are absolutely right, Scott, there is a difference in carbonation depending on fill. Even without all the math, 7 percent less beer means you will have 7 percent less priming sugar in the bottle. However, I believe we should have written, "virtually no effect." I believe the 6 percent difference in carbonation at a serving temperature of 55 degrees F (13 degrees C) is not detectable by someone tasting the beer even given your extreme difference in fill level.*

Al Korzonas



## More Extract Recipes, Please

Dear *Zymurgy*,

I do enjoy your magazine. I learn a great deal each time I devour your publication and I certainly do subscribe to the basic tenets of the AHA mission statement. I am not a member of AHA because I prefer to brew from extracts. The AHA members I have met appear to me to be somewhat elitist. They do not think much of discussing brewing if the discussion includes the use of extracts. I believe you know my son, Scott Pohlman, the proprietor of Mountain Mashers Homebrewing Supply in Frisco, Colo. He believes that I am a lazy, uninteresting brewer because I brew primarily from extracts, and yes, even hopped extracts on occasion. I have tried all-grain brewing and do not enjoy it as much as I do brewing from extracts and playing around with extract brews. Maybe when I have exhausted all the ways there are of making beer with extracts I will "graduate" to all-grain brewing. However, I have noticed that no one, regardless of brewing style preference, refuses a pint of my nut brown or red ales.

In the letters from readers section of *Zymurgy* Winter 1994 (Vol. 17, No. 5), you answered Mr. Miner's letter with a resounding "We Hear You." I suspect you were referring to the article in the same issue which touts the "Enchanting World of Malt Extract." If I read Mr. Miner's letter correctly, he was requesting more beginner (I would guess all-extract brewing) and intermediate (I would guess unhopped extracts with some grains for special effects) recipes. Well, you may have heard him, but it seems you did not pay attention. In the same issue there are only two recipes for all-extract beers and those were in the "Best From Kits" section. There was one partial extract recipe in "Winners Circle." There were 11 all-grain recipes. Extract brews can be wonderful. In fact, Scott won the stout category and placed second in fest at this year's Rocky Mountain Beer Festival with an extract brew made with a couple of specialty grains for special effects.

Our experience at Mountain Mashers may be different from most, but about 85 percent of our brewers use extracts in every



batch. If that is representative of the homebrewing population, then *Zymurgy* appears to be written for 15 percent of the population. If *Zymurgy* paid more attention to the extract brewer, maybe AHA would have more members. I know I would be among them.

Dave Pohlman  
Aurora, Colorado

*We'll try to present equal numbers of extract and all-grain recipes in the future. —Ed.*

## AHA Focus Groups

Dear AHA,

I just wanted to thank you for sending Lori Tullberg-Kelly, Association of Brewers marketing director, to Marin Brewing Co. in February. It is always a great opportunity to touch base with the AHA and this "fact-finding" mission is a clear sign the AHA does want to serve its members.

I am excited about becoming involved in brewing, judging and, of course, expanding my tasting. It was a pleasure to meet Lori and I hope we'll have the opportunity to work together (or brew together) in the future!

Sincerely,  
Karen Raby

*An AHA representative will travel to more cities this year to conduct focus groups with AHA members. The goal is to receive direct feedback from you, our members, on how we can better serve you. —Ed.*

## Send Labels

Dear Readers,

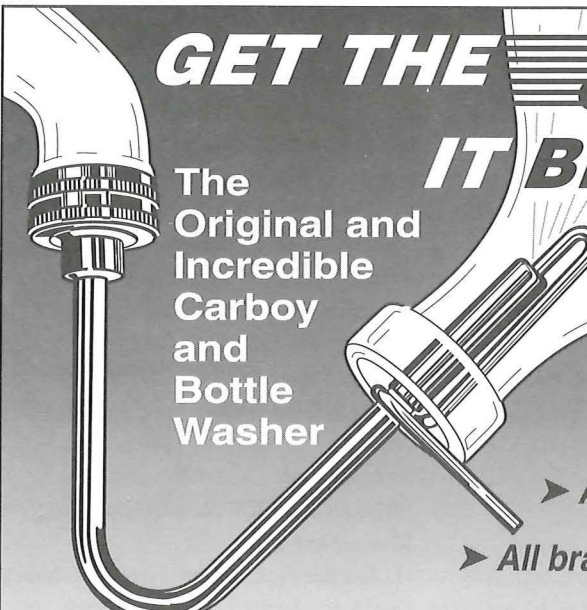
We like to publish the labels you design for your homebrew in "Dear *Zymurgy*." Next time you create a great label, send one to Homebrew Labels, PO Box 1679, Boulder, CO 80306-1679. If you include your name and address (and we choose to print your label), we'll send you a nifty gift.

Cheers,  
*Zymurgy*



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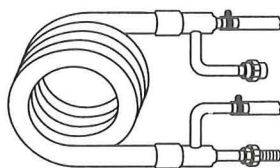
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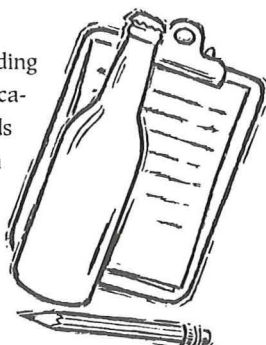
# A S S O C I A T I O N

# NEWS

← Karen Barela →

## New Judge Program

The AHA is busy working on a new judge program after deciding in January to discontinue sponsorship of the Beer Judge Certification Program. We believe the BJCP was no longer meeting the needs of our members because the structure prevented the program from growing and changing in a timely manner. The BJCP was formed in 1985 as a joint partnership of the AHA and the Home Wine and Beer Trade Association. The AHA has long desired to participate in a judge program that is educational, accessible, responsive and international in scope. Because of this philosophy, we have decided to develop a new beer evaluation program, one that represents the wide diversity of competition judging in this country and in the international community. We strongly believe the most effective way to accomplish these goals was to dissolve the original partnership and establish a new program.



We are dedicated to accomplishing the following objectives:

- ✓ Provide judges with opportunities to actively participate in policy formation and program reforms.
- ✓ Provide examinees with adequate and timely feedback on the results of their exams.
- ✓ Provide examinees with a clear and concise idea of what is expected from them on the exam.
- ✓ Provide judges with continuing education opportunities.
- ✓ Provide efficient, comprehensive and straightforward support systems five days a week.
- ✓ Make decisions, form policies and move forward with the speed that the expanding homebrewing hobby requires.
- ✓ Seek input and cooperation from the international beer community and form a global approach to beer judging.

To accomplish these objectives we began by mailing a letter explaining our decision and plans to judges. The response was overwhelmingly positive. We received a 26 percent return with many letters detailing judges' views on a variety of topics. From the survey we formed several task forces to focus on specific areas of concern and new directions for the program. These include rebuilding an administrative structure, evaluating judge levels and the experience point system, judge education, remodeling the exam and publishing study materials.

If you are interested in becoming a beer judge please contact us. We can introduce you to an exciting extension of your beer and brewing hobby. There are many ways to be involved and we encourage you to check them out. You'll find friends, fun, education and a whole new understanding of your favorite fermented beverages. We look forward to hearing from you. For information, comments, questions or concerns please contact James Spence, AHA administrator, (303) 447-0816, ext. 121; FAX (303) 447-2825; CompuServe 70240,1107; Internet james@aob.org.

## They Keep on Tasting

We are thrilled to announce the addition of one evening of public tasting at the 14th annual Great American Beer Festival®. The GABF<sup>SM</sup> has been expanded to bring you three (not just two!) days of the largest domestic beer festival. In celebration of the exploding beer scene and the ever-increasing quantity, quality and diversity of breweries and beers available, the GABF will open on Thursday evening, Oct. 5, 1995, and continue on Friday and Saturday evenings, Oct. 6 and 7. The additional evening session allows another day to sample an expected 1,350 beers.

## GABF Members-Only Tasting

With more than 300 breweries participating in the GABF, what could be more fun? Well, how about your own private session — the Members-Only Tasting! The general public does not have access to this special event that allows only AHA and Institute for Brewing Studies members (and participating Festival brewers) to mingle with other hard-core beer enthusiasts. Held on Saturday afternoon, the Members-Only Tasting is a great benefit of being an AHA member. Take advantage of your AHA membership status and attend this truly wonderful beer and tasting event. Ask any member who has attended in the past — it's a blast!





(Some restrictions apply: you must be 21 or older and have ID, your AHA membership must be active during the Festival dates, you must have purchased and have proof of a ticket to one night of the GABF and you must have a pass to get into the Members-Only Tasting. Passes are free and available from the Association of Brewers.)

The GABF is a division of the Association of Brewers. For details and ticket information contact the AOB, PO Box 1679, Boulder, CO 80306-1679; (303) 447-0126.

## Colorful New Looks



We hope you've been enjoying the addition of color we've been adding slowly and surely throughout the interior of *Zymurgy*. *Zymurgy* is laid out in Quark Express and uses Adobe Illustrator and Adobe Photoshop for supplemental art. The separated files are transferred on a 200 megabyte Syquest disk to the electronic pre-press department of our printer, EBSCO Media, in Birmingham, Ala. Our production team led by Graphics/Production Director, Tim Sposato and *Zymurgy* Art Director, Vicki Hopewell has enjoyed the opportunity of incorporating color into a black and white magazine through the use of digital technology. Since our photo files contain more than 17 years worth of black and white images, we're looking to build up our portfolio with color images. If you know a homebrewer photographer in your area who would be interested in helping us with full-color brewing images, write *Zymurgy* Editor Dena Nishek. Also, we're curious to know how you like the new look. Contact us with your comments, and as always we're interested in how much you're enjoying the most important aspect of *Zymurgy* — the content. Keep in touch. PO Box 1679, Boulder, CO 80306-1679.

## Changes from the Board of Advisers

Members of the AHA Board of Advisers met in June during the National Homebrewers Conference in Baltimore, Md. The purpose of the Board is to recommend activities, programs and/or courses of action for the AHA. Board members are expected to:

- ▶ Promote the art and science of homebrewing specifically and quality beer and brewing in general.
- ▶ Serve as AHA ambassadors by promoting AHA activities and programs.
- ▶ Strengthen the AHA as an educational association by communicating suggestions, complaints, needs and trends.
- ▶ Review and recommend AHA activities.
- ▶ Support the AHA mission statement.

In the past, members of the Board have been appointed. It was discussed at the meeting that in the future Board members could be elected. The Board discussed reasons for making this change, which included allowing AHA members the opportunity to have a direct voice in the organization, and how to implement that voice. The Board discussed a variety of ways to become more involved in influencing the directions of the AHA and serving in a more purposeful manner. We look forward to incorporating these changes and working more closely with the Board in the future. Stay tuned for details.

## We're Conducting a Survey



We want your input! We're putting together a survey that will be in *Zymurgy* Winter 1995 (Vol. 18, No. 5) (estimated mail date is Nov. 22). The survey is designed to give you a method of telling us what's on your mind and to provide the staff of the AHA with a set of guidelines for meeting your needs. We're here to provide you with products, programs and

services to help you brew and enjoy your beer. We think this survey will help us do that. The last time we polled all of the members directly was in 1993. The results of that survey told us that you are predominantly male, married, 26 to 45 years old, college graduates and professional. We learned what kind of brewing you do: you average eight gallons per month, spend \$350 per year and brew across the board with extracts, kits, specialty grains and all grains. In the new survey we're going to touch base with you again to see if this profile has shifted, and we will ask details about the AHA and *Zymurgy*. We hope you'll take the time to fill out and return the survey. We look forward to incorporating your feedback.

## International Members

AHA members frequently tell us they're surprised to discover active members worldwide. We've noticed that, with the availability of computer networks, our members are keeping in touch with one another. We love to hear stories about members who travel and meet with other members in places all around the world. Diverse cultures share the love of beer and brewing and the science of fermentation. Following is a list of international locations where AHA members reside: military bases in the Americas, Europe and the Pacific; Antilles; Antigua and Barbuda; Argentina; Austria; Australia; Aruba; Belgium; Brazil; Bahamas; Canada; Cayman Islands; China; Costa Rica; Denmark; Ecuador; England; Finland; France; Germany; Guinea; Guam; Hong Kong; Hungary; Ireland; Israel; Italy; Japan; Kenya; Kiribati; Korea; Luxembourg; Marshall Islands; Mexico; Micronesia; Netherlands; New Zealand; Norway; Philippines; Puerto Rico; Russia; Scotland; Singapore; South Africa; Sweden; Switzerland; Taiwan; Thailand; Tunisia and Venezuela.

## Call For Papers, HBC '96

On the heels of another very successful Homebrewers Conference (page 64)



the AHA already is planning the 1996 Conference. Mark your calendars for June 4 through 8, 1996, and start dreaming about visiting the great city of New Orleans, La. We'd sure like to make your Crescent City dreams come true, so pop us a note and let us know what you'd like to see at this Conference. We're looking for ideas on topics, speakers, special events and ways to make your Conference experience even more fun and educational. If you're out there thinking, "I would attend a Conference if only it had ...." then let us know! If you've been dreaming about sharing your knowledge, your gadget, your techniques or your brewing stories with other homebrewers, now is your chance! Write up an outline and send it in. The Conference needs you and you need this Conference. Don't miss out on one of the most fermentable things going for your beer!

### New AHA Membership Rates

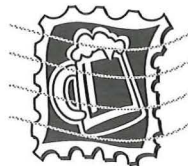



Beginning March 1, 1996, AHA membership rates will increase from \$29 to \$33 per year (domestic rate, U.S. dollars). Our last membership rate increase was June 1, 1993. Special renewal offers will be mailed in January 1996. In the meantime, you may use any of the forms in this issue to renew your membership now at the current rate, or contact the circulation department directly at (303) 447-0816, ext. 103 or 104. Anyone wishing to extend their membership at the current rate must do so before March 1, 1996.

## This Is Your Association

Please keep in touch to let us know how we may better serve your beer and brewing needs. We're easy to reach by phone, FAX and e-mail, or if you're in Boulder, Colo., stop in and say hello. Send article proposals to *Zymurgy* Editor Dena Nishek (author guidelines are available upon request); judging and National Homebrew Competition comments

to AHA Administrator James Spence; AHA Sanctioned Competition requests or applications and club information to



AHA Assistant Caroline Duncker; and general comments to AHA President Karen Barela. American Homebrewers Association, PO Box 1679, Boulder, CO 80306-1679; (303) 447-0816; FAX (303) 447-2825. Staff members can be reached via Internet by entering their first name followed by @aob.org. 

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2	cups	Cara-Pils Malt
2	cups	Crystal Malt - 120L
2		Grain bag
2 1/4	oz	Perle Hops (bittering hops)
1	tsp	Irish Moss
1	oz	Cascades Hops (finishing hops)
1	oz	Cascades Hops (for dry hopping)
1	pack	Windsor Dry Ale Yeast
3/4	cup	Priming Sugar (used at bottling)

Starting Gravity: 1.049-1.056      Alcohol = 5.0%      Terminal Gravity: 1.010-1.016  
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# CALENDAR



## 1995

### JULY

- 22** Sierra Brewfest, Nevada City, Calif. Contact Judith Weld at (916) 265-6173.
- 22** Eight Seconds of Froth - Frontier Days Brew-Off, **AHA SCP**, Cheyenne, Wyo. Entries due July 18. Contact Richard Mincer at (307) 632-0541.
- 22** Di Carlo Armanetti Liquors First Homebrew Competition, **AHA SCP**, Mundelein, Ill. Entries due July 18. Contact Steve Howard at (708) 234-4150.
- 23** Lunar RendezBrew, **AHA SCP**, Webster, Texas. Entries due July 15. Contact Mike Wiley at (713) 338-2241.
- 26-28** 1995 Northwest Craft Brewers Conference and Exhibition, Portland, Ore. Call (800) 427-2993; btcirc@aol.com.
- 28-30** Oregon Brewers Festival, Waterfront Park, Portland, Ore. Festival Information Hotline (503) 778-5917.
- 28-30** Master Brewers Association of the Americas Summer Outing, Kerville, Texas. Contact Michele Amsterdam at (817) 551-3487.

### AUGUST

- 1-5** Great British Beer Festival, Olympia, London. Contact Campaign For Real Ale at (011 44) 727-867-201; FAX (011 44) 727-867-670.
- 4-6** North Texas State Fair, **AHA SCP**, Denton, Texas. Entries due July 30. Late entries due Aug. 4th at noon. Contact Pat Morrison at (817) 383-4399.
- 5** Blues and Brews Fest in the Park Homebrew Competition, **AHA SCP**, Concord, Calif. Entries due July 22. Contact Leo Smith at (510) 372-8060.

- 12** Josephine County Fair, **AHA SCP**, Selma, Ore. Entries due Aug. 10. Contact Hubert Smith at (503) 597-2142.

- 12** Great Taste of the Midwest Craft Beer Festival, Madison, Wis. Tickets go on sale May 1. SASE to MHTG, Box 1365, Madison, WI 53701.

- 12** Beer and Sweat '95 keg-only competition, **AHA SCP**, Fort Mitchell, Ky. Entries due Aug. 12. Contact Tim Thomas at (606) 291-4843; tbird@iglou.com.

- 19** 1995 Michigan State Fair, **AHA SCP**, Ann Arbor, Mich. Entries due July 28-Aug. 11. Contact Hal Buttermore at (313) 665-1236. Open to Michigan residents only.

- 12** The Great Southern Brewers Festival, Atlanta, Ga. Contact Warren Scott at (617) 547-2233.

- 12-13** Denver Post LoDo BrewFest and Homebrew Brew-Off, **AHA SCP**, Denver, Colo. Event hours from 11 a.m. - 7 p.m. Contact Tito Christensen at (303) 458-6685 or Barbara Macfarlane at (303) 964-8997.

- 18** New Mexico State Fair Pro Am Beer Competition, **AHA SCP**, Albuquerque, N.M. Entries due Aug. 11. Contact Guy Ruth at (505) 294-0302; guyruth@abq-ros.com. Competition open to New Mexico residents only.

- 19** Made in the Shade, **AHA SCP**, Flagstaff, Ariz. Entries due Aug. 11. Contact Tim Andrews at (520) 774-8956.

- 19** Oregon State Fair, **AHA SCP**, Portland, Ore. Entries due Aug. 9. Contact Doug Henderson at (503) 236-5802.

- 20** Benton-Franklin County Fair, **AHA SCP**, Kennewick, Wash. Entries due Aug. 20. Contact Michael Hall at (509) 946-5735.

- 20** 1995 Alaska State Fair Homebrew Competition, **AHA SCP**, Palmer, Alaska. Entries due Aug. 19. Contact Rick Levinson at (907) 694-5135.

- 26** Weiss is Nice Club-Only Competition, **AHA SCP**, Boulder, Colo. Entries due Aug. 14. Contact James Spence at (303) 447-0816, ext. 121.

- 26** LA County Fair, **AHA SCP**, Pomona, Calif. Entries due Aug. 1-4. Contact Gregory Stark at (818) 374-6371.

- 26** Second Annual Southern Brewers Festival, Chattanooga, Tenn. Contact Rob Gentry at (615) 267-2739.

- 27** Colorado State Fair, **AHA SCP**, Pueblo, Colo. Entries due August 18. Contact Greg Kelley at (719) 578-5658.

- 27** Western Washington Fair Beer Competition, **AHA SCP**, Puyallup, Wash. Entries due August 19. Contact Candace Blancher at (206) 841-5017.

- 28-31** Plum Creek Pub Club Homebrewing Competition, **AHA SCP**, Vernon, Mich. Entries due Aug. 25. Contact Ed Galazka at (517) 288-6778.

### SEPTEMBER

- 4** Ethnic Festival Homebrew Competition, **AHA SCP**, Springfield, Ill. Entries due Aug. 28. Contact Roger Meridith at (217) 428-7022.

- 4** Renaissance Beer Festival, **AHA SCP**, Shakopee, Minn. Entries due Aug. 25. Contact Tina Sigman at (612) 445-7361.

- 8-12** Festibiere de Chambly, Fort Chambly, Quebec, Canada. Contact Mario D'Eer at (514) 658-1200; FAX (514) 658-1313.

- 8-20** Great Beers of Europe Beer Tour, Beer Lovers Travel, Redding, Calif. Call (916) 244-6945; shuey@halcyon.com.

- 10** Brewer's Dream, **AHA SCP**, Libertyville, Ill. Entries due Sept. 1. Contact Steve Howard at (708) 234-4150.

- 13** Special Issue of *Zymurgy* (Vol. 18, No. 4) mails. Please allow 4 to 6 weeks for delivery.

- 15-17** First Great Lakes Beer Extravaganza. Contact Rick Coates at (616) 938-3247.

- 15-17** Fifth Annual Great Northwest Microbrewery Invitational Beer Festival and Homebrew Competition, Seattle, Wash. Entries due Sept. 1. Contact Tom McFarland at (800) 728-ALES.

- 16** Peach State Brew Off, **AHA SCP**, Atlanta, Ga. Entries due Sept. 12. Contact Phil Schlecht at (404) 518-8315.

- 23** Tampa Bay Beers Ultimate Alt Competition, **AHA SCP**, Tampa, Fla. Entries due Sept. 18. Contact Jeff Gladish at (813) 874-0937.

- 23** Common Ground Country Fair, **AHA SCP**, Windsor, Maine. Entries due Sept. 21 at drop-off points or Sept. 23 at the fair. Contact Thomas J. O'Connor III at (207) 236-3527.

- 23** Second Annual Rhode Island International Beer Exposition, Providence, R.I. Contact Festivals of America, PO Box 40907, Providence, RI 02940-0907 or call (401) 274-3234.

- 29-30** Ninth Annual Great Truckee River Beer Festival and Homebrew Competition, **AHA SCP**, Reno, Nev. Entries due Sept. 22. Contact Jeff Brooks at (702) 826-4128.

- 30** TRUB Open, **AHA SCP**, Durham, N.C. Entries due Sept. 27. Contact Mike Lelivelt at (919) 408-0451; mjl@email.unc.edu.

- 30** Second Annual Sin City Sudzer Homebrew Competition, **AHA SCP**, Sheboygan, Wis. Entries due Sept. 29. Contact Rick Woods at (414) 458-8752.

- 30** Mid-South Fair, **AHA SCP**, Memphis, Tenn. Entries due Sept. 9-11. Contact Jeannie Parrish at (901) 274-8800.

- 30** The Colorado Springs Microbrewer's Exposition, Colorado Springs, Colo. Contact Jan Winkler at (719) 632-0553.



## OCTOBER

- 1** Minnesota Brewfest, AHA SCP, Minneapolis, Minn. Entries due Sept. 11-17. Contact John Des-Harnais at (612) 227-2216.
- 1** Eighth Evanston First Homebrew Challenge, AHA SCP, Evanston, Ill. Entries due Sept. 24. Contact Christopher Nemeth at (708) 869-3621; idnemeth@gate.id.ill.edu.
- 5-7** Great American Beer Festival XIV<sup>th</sup>, Currian Hall, Denver, Colo. Call the GABF<sup>SM</sup> info line at (303) 447-0126.
- 7** St. Francis Annual Octoberfest Home Beer Brewing Contest, AHA SCP, Cordova, Tenn. Entries due Oct. 2. Contact Carol MacIntosh at (901) 758-3573.
- 7** Second Annual Tennessee Valley Homebrew Competition, AHA SCP, Knoxville, Tenn. Entries due Oct. 4. Contact Jeff Colfer at (615) 539-6614.

- 13-14** Real Ale Fest Conference, Chicago, Ill. Contact Dennis Davison at (414) 545-9246; ddavison@earth.execpc.com.

- 13-14** 12th Annual Dixie Cup, AHA SCP, Houston, Texas. Contact Autumn Woods-Moore at (713) 923-2412 or DeFalco's at (800) 216-2739.

- 14** Arizona State Fair, AHA SCP, Phoenix, Ariz. Entries due Sept. 22-Oct. 9. Contact Sherry Pew at (602) 252-6771.

- 14** Fourth Annual Home Brew U, Seattle, Wash. Contact Ian McAllister at (206) 322-5022.

- 14** Toast to the Northwest, 13th Annual Wine and Microbrew Festival, Tacoma, Wash. Call (206) 566-5257.

- 20-21** Fourth Annual Unfermentables' Homebrew Shootout, AHA SCP, Denver, Colo. Entries due Oct. 14. Contact Mark Groshek at (303) 757-8394 or John Barnholt at (303) 355-8727.

- 21** Stebs Oktoberfest & Homebrew Competition, AHA SCP, Cedar Falls, Iowa. Entries due Oct. 20. Contact Sherman McNeal at (319) 277-6447.

- 28** Best of Fest Club-Only Competition, AHA SCP, Rolling Meadows, Ill. Entries due Oct. 23. Contact James Spence at (303) 447-0816, ext. 121.

## NOVEMBER

- 4** 1995 Capitol District Open, AHA SCP, Washington, D.C. Entries due Oct. 30. Contact Fred Hardy at (703) 378-0329.

- 4** The Taste of the Great Lakes, AHA SCP, Frankenmuth, Mich. Entries deadline Oct. 11. Call Bibere Inc. at (517) 652-9081.

- 11** November Classic, AHA SCP, Madison, Wis. Entries due Nov. 4. Contact MHTG, Box 1365, Madison, WI 53701.

- 11** Salt City Brew Club Third Annual Competition, AHA SCP, Syracuse, N.Y. Entries due Oct. 28. Contact Peter Garofalo at (315) 428-0952; garofalo@aol.com.

- 12** HOPS-BOPS Homebrew Competition, Philadelphia, Pa. Entries due Nov. 10. Contact Sheila Elser at (215) 822-0917.

- 18** BJCP Exam, Brattleboro, Vt. Contact Pat Baker at (603) 355-3359.

- 18** 1995 Thirsty Homebrew Competition, AHA SCP, Iowa City, Iowa. Entries due Nov. 10. Contact Dave Schinker at (319) 523-2314.

- 22** Winter Issue of *Zymurgy* (Vol. 18, No. 5) mails. Please allow 4 to 6 weeks for delivery.

## DECEMBER

- 9** Renowned Brown Club-Only Competition, AHA SCP, Fargo, N.D. Entries due Dec. 4. Contact James Spence at (303) 447-0816, ext. 121.

- 9** Happy Holidays, AHA SCP, St. Louis, Mo. Entries due Nov. 29. Contact Ginger Wotring at (314) 773-7867; wotring@sluvca.slu.edu.

## 1996

### JANUARY

- 20** Keystone Hops War of the Worts, AHA SCP, Montgomeryville, Pa. Entries due Jan. 13. Contact Joe Mezo at (215) 256-0281.

### FEBRUARY

- 9** Las Vegas Winterfest, AHA SCP, Las Vegas, Nev. Entries due Jan. 14. Contact Stephen MacMillan at (702) 454-9949.

### MARCH

- 16** Winter Carnival Brewers Assay II, AHA SCP, Fairbanks, Alaska. Entries due March 15. Contact Roger Penrod at (907) 479-8795.

- 24** Fifth Annual Southern New York Spring Regional Competition, AHA SCP, Staten Island, N.Y. Entries due March 21. Contact Frank Salt at (718) 667-4459.

- 29-30** 10th Annual Bluebonnet Brew-Off, AHA SCP, Dallas/Ft. Worth, Texas. Entries prior to March 9 discounted. Entries due before March 16. Call the Winemaker Shop at (817) 377-4488.

## APRIL

- 19-20** James Page Open, AHA SCP, Minneapolis, Minn. Entries due April 13. Contact Harvie Holmes at (612) 331-2833.

- 19-20** Dukes of Ale Spring Thing, AHA SCP, Albuquerque, N.M. Entries due on April 13. Contact Guy Ruth at (505) 294-0302.

- 27-30** Institute for Brewing Studies 1996 National Craft-Brewers Conference and Trade Show. Hynes Convention Center, Boston, Mass. Contact the IBS at (303) 447-0816.

## MAY

- 4** National Homebrew Day. Contact the AHA at (303) 447-0816.

- 4-5** Sunshine Challenge, AHA SCP, Orlando, Fla. Entries due April 30. Contact Tom Moench at (407) 888-3533.

## JUNE

- 5-8** AHA 1996 National Homebrewers Conference, New Orleans, La. Contact the AHA at (303) 447-0816.

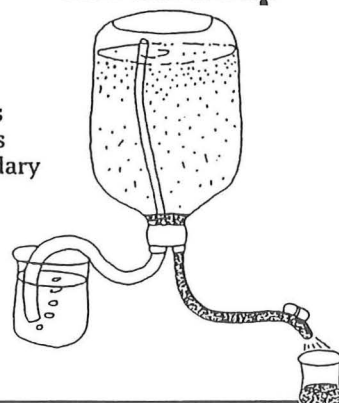
AHA SCP = American Homebrewers Association Sanctioned Competition Program

To list events, send information to *Zymurgy* Calendar of Events. To be listed in *Zymurgy* Winter 1995, information must be received by Oct. 14, 1995. Competition organizers wishing to apply for AHA Sanctioning must do so at least two months before the event. Contact Caroline Duncker at (303) 447-0816, ext. 116; FAX (303) 447-2825; PO Box 1679, Boulder, CO 80306-1679; or Internet caroline@aob.org.

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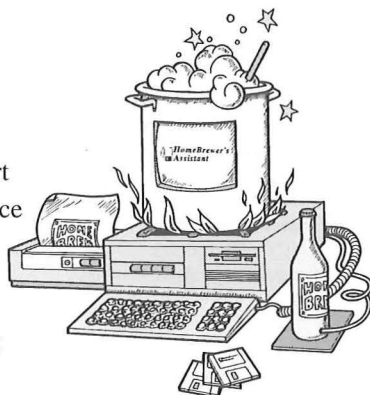
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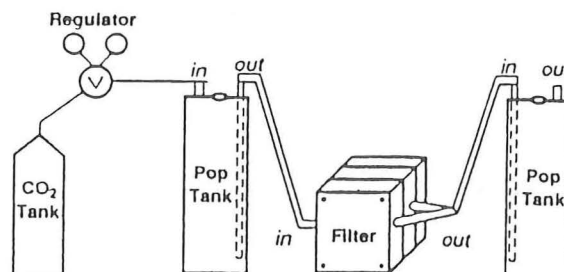
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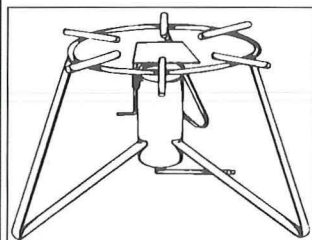
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# BREW NEWS

James Spence

## HEAD LINES

### Columbus Hop Released

Hopunion USA of Yakima, Wash., has developed Columbus, a new hop variety that possesses both high oil content and high alpha-acid content. The new hop, bred from an undisclosed pedigree, is intended to provide an alternative to the Centennial variety which is in short supply. Both hops are of the rare high oil, high alpha-acid variety. At harvest Columbus has 14 to 16 percent alpha acids by weight and total oil levels of 1.5 to 2.0 percent by volume. For comparison, the popular Cascade hop contains 4.5 to 7.0 percent alpha acid and 0.8 to 1.5 percent total oil. (*The MicroGlobe*, Winter 1994, Vol. 1, Issue 2.)



TOP PHOTO COURTESY OF CHARLES GLASSWARE  
BOTTOM PHOTO COURTESY OF HOPUNION USA

### Pete's Brewing Offers Bombers to Homebrewers

Pete's Brewing Co. of Palo Alto, Calif., is offering a long-term economical source of 22-ounce bottles as a direct response to homebrewers who were disappointed when the company switched to twistoff bottles. While most beer drinkers prefer the convenience of twistoff caps, homebrewers enjoyed the benefit of having sturdy, recappable bottles for their homebrewed beverages. The 22-ounce bottles are available through Pete's Wicked Ware hot line, (800) 382-7457, or by writing to Wicked Ware, 514 High St., Palo Alto, CA 94301. The price of 12 22-ounce bottles is \$3.50 plus shipping.

### Nucleation Glassware Gains Appeal



A patented glassware design is gaining popularity in the brewing industry for its ability to make carbonated drinks hold their sparkling appearance longer. Dubbed "nucleation glassware," the glasses are manufactured using a special process that provides nucleation sites for beverage bubbles (see *Zymurgy* Summer 1992, Vol. 15, No. 2, for information on nucleation sites). The glassware is treated with glass particles that are fired at a temperature of 1,076 degrees F (580 degrees C), making them part of the glass itself. The treated areas can take the form of a company logo or other design, if desired. The process is economical and does not weaken the glass as other techniques do. The glass helps beverages, particularly lagers and ciders, keep a fresh sparkling appearance right to the bottom of the glass. Brewers hope the attractive logos and the fresh appearance will engender brand loyalty. The glassware is patented by Charles Glassware of England and licensed to Ravenhead for manufacturing. Agreements are being drawn up in other parts of the world. (*Brewing and Distilling International*, December 1993, p. 23, and December 1994, p. 3.)



## Civil War Era Lager Brewery Excavated in Virginia

Archaeologists working with Norfolk Southern Railroad and Parsons Engineering Science have uncovered evidence of the earliest lager brewery in Virginia. The railroad is developing an area in Alexandria, Va., and must identify and avoid impacting important archaeological sites. Excavations between Interstate 95 and the Little River Turnpike near Old Town Alexandria have revealed a passageway and foundations of the Shutters Hill Brewery and Saloon and a subterranean vaulted beer cellar beneath 20 feet of more recent fill deposits. The brewery, operating between 1859 and 1892, was Virginia's earliest and largest lager brewery in the Civil War Period. Archaeologists found almost 4,000 glass and stoneware bottles, some imported from Scotland and the United Kingdom. An 1890- to 1917-era one-quarter keg embossed for Washington Brewery Co. was recovered intact. The brewery was known for being on the technological forefront, leading the industry in brewing lager and weissbier in America. With the introduction of artificial refrigeration, it was unable to compete with larger breweries and had to close its doors. (Parsons ES Newsletter, Winter 1994.)

## TECHNOTES

### Testing Brewing Knowledge

The following eight questions were given for the Associate Membership Examination in Brewing Science and Technology I by London's Institute of Brewing on June 6, 1994. Examinees were asked to answer any six questions. All questions were rated equally.

(1) Describe the physiological and biochemical changes that take place during barley germination.

(2) Write brief notes on three of the following:

- (a) color development in malting,
- (b) barley drying and storage,
- (c) the control of malting loss,
- (d) barley identification.

## MICROBREWERIES, BREWPUBS AND CONTRACT BREWERIES

Information provided by the Institute for Brewing Studies, Boulder, Colo. A complete state-by-state list of breweries and brewpubs in North America is updated quarterly and available from the Association of Brewers for \$5.

### OPENINGS

(As of March 1995)

### UNITED STATES Microbreweries

**California:** Carmel Brewing Co., Salinas; Carlsbad Brewery, Carlsbad; Coast Range Brewery, Gilroy; El Dorado Brewing Co., Mt. Aukum; Faultline Brewing Co., Sunnyvale; Orange County Brewing Co., Irvine  
**Colorado:** Mile High Brewing Co., Denver; Palmer Lake Brewing Co., Palmer Lake  
**Florida:** Miami Brewing Co., Miami  
**Idaho:** Table Rock Brewing, Madison  
**Maine:** Allagash Brewing Co., Portland  
**Minnesota:** Lake Superior Brewing Co., Duluth  
**Montana:** Big Sky Brewing Co., Missoula  
**New York:** Middle Ages Brewing Co., Syracuse  
**North Carolina:** Highland Brewing Co., Asheville  
**Oregon:** Blue Mountain Brewing, LaGrande  
**South Carolina:** Foothills Brewing Co., Moore  
**Tennessee:** Jack Daniel's Brewery, Lynchburg  
**Virginia:** Steamship Brewing Co., Norfolk  
**Washington:** Skagit River Brewing Co., Mt. Vernon  
**Wisconsin:** LaBelle Brewing Co., Oconomowoc

### Brewpubs

**California:** The Beach Chalet Brewing Co., San Francisco; Steelhead Breweries/Burlingame Station Brewing Co., Burlingame; Terrific Pacific Brewery & Grill, La Jolla  
**Colorado:** Denver Chop House & Brewery, Denver; Sharkey's Brew Club, Colorado Springs; The Waterline Brewing Co., Pueblo  
**Florida:** Buckhead Brewing Co., Tallahassee; Key West Overseas Brewery, Key West; New World Brewery, Tampa  
**Massachusetts:** Berkshire Beer Works, Great Barrington; Olde Salem Brewing Co., Salem  
**Michigan:** Wiltse's Brew Pub & Family Restaurant, Oscoda  
**Minnesota:** Back Water Brewing Co., Winona; Clubhaus Brew Pub, Rochester  
**Missouri:** Ebbet's Field, Springfield; River Market Brewing Co., Kansas City  
**New Hampshire:** The Woodstock Inn and Station, North Woodstock  
**New York:** Heartland Brewing Co., New York; Maxwell's Pub & Restaurant, Plattsburgh  
**North Carolina:** Olde Hickory Brewing Co., Hickory; The Smokehouse Brewing Co., Charlotte  
**Oregon:** Big Horse Brewpub, Hood River; Old Chicago Brewery & Pub, Portland; Rock Bottom Brewery (No. 4), Portland  
**Pennsylvania:** Valley Forge Brewing Co., Wayne  
**Rhode Island:** Trinity Brewing Co./Trinity Brew House, Providence  
**South Carolina:** The Chicago Brewpub, Greenville; Downtown Brewing Co., Greenville

**Tennessee:** Blackstone Restaurant & Brewery, Nashville  
**Texas:** Brazos Brewing Co., College Station; Hoffbrau Steaks Brewery, Addison  
**Washington:** Eagle River Brewing Co./Issaquah Brewhouse, Issaquah; Engine House No. 9, Tacoma; Glacier Peaks Brewing Co., Everett; McMennamin's at Queen Anne, Seattle; McMennamin's at Mill Creek, Woodinville; Mt. Baker Brewing Co., Bellingham; The Power House, Puyallup  
**Wisconsin:** Angelic Brewing Co., Madison; Black River Brewery & Cafe, La Crosse  
**Wyoming:** Medicine Bow Brewing Co., Cheyenne

### Contract Brewing Companies

**Massachusetts:** Pioneer Valley Brewing, Springfield  
**Oregon:** Oregon Ale & Beer Co., Lake Oswego  
**Pennsylvania:** Manayunk Malt & Hops Co., Philadelphia

### CANADA

#### Microbreweries

**British Columbia:** Bastion City Brewing Co., Nanaimo; Bear Brewing Co., Kamloops  
**Ontario:** F&M Breweries, Guelph  
**Quebec:** Beau Ce Broue, St. Odilon

### Brewpubs

**Alberta:** Brewster's Brew Pub & Brasserie, Edmonton  
**Saskatchewan:** Brewster's Brew Pub & Brasserie, Regina; Chubby's Brew Pub & Sports Bar, Humboldt

### CLOSINGS

#### UNITED STATES

**Missouri:** The Weathervane, Springfield  
**Texas:** Armadillo Brewing Co., Austin

#### CANADA

**Ontario:** Hometown Breweries, London; Lighthouse Brewpub, Bowmanville; Marconi's Steak and Pasta House, Etobicoke; The Spruce Goose Brewing Co., Toronto; Tapsters Brewhouse and Restaurant, Mississauga (closed 1993); Vinefera Bar and Grill, Toronto  
**Quebec:** Crocodile Club St. Laurent, Montreal

### Correction

Detroit and Mackinac Brewing Co. is not closed, rather their beers are being contract brewed by the Oldenberg Brewing Co. in Fort Mitchell, Ky.

(3) Describe the principal types of adjuncts used in brewing. What are the advantages and disadvantages of the adjuncts described?

(4) Discuss the influence on wort composition of the pH and temperature of the mash and the ionic composition of the water used in mashing.

(5) Write brief notes on three of the following:

- (a) hop extracts,

(b) hop utilization,

(c) the essential oils in hops,

(d) lead conductance value.

(6) With the aid of diagrams, describe the principal methods of wort boiling. What are the main chemical changes that take place during wort boiling?

(7) What methods are used to adjust the chemical composition of water used in brewing? How is the microbiological quality of



brewing liquor monitored and controlled?

(8) Write an essay on the breeding, selection and evaluation of barleys for malting.

The Institute of Brewing administers a number of examinations used as credentials in the brewing industry. The above exam was passed by 71 percent of those taking it, the highest pass rate in several years. The Associate Membership Examination is the first tier of exams of varying difficulty. (*Journal of the Institute of Brewing*, Vol. 100, 1994, p. 378.)

## Alcohol-free Brewing Methods

Dr. Siegfried Günther and Stefan Vetter summarize several methods of brewing alcohol-free beers on a commercial basis. A distinction is made between biologic methods of alcohol suppression and physical methods of removing alcohol.

Biologic methods include:

(1) Interruption of fermentation, where fermentation can be stopped by a one-minute pasteurization at 140 degrees (60 degrees C) at a desired alcohol level.

(2) Attenuation with special yeasts, where a low-gravity beer is produced under normal brewing conditions, but stains of *Saccharomyces iudwigii* are used, and only simple sugars are fermented.

(3) Yeast contact methods, where wort and yeast are mixed at 32 degrees F (0 degrees C), and filtered after a rest period. This method seems to reduce warty tastes and aromas.

Physical methods include:

(1) Thermal removal of alcohol under atmospheric pressure, where alcohol is boiled away in the brew kettle. The authors note that this method should not be used because of product damage.

(2) Reverse osmosis, where alcohol is removed by passage through diaphragms by means of pressure gradients.

(3) Dialysis method, where the beverage passes through fibers that are bathed with a counterflow dialysate that produces a concentration gradient.

The authors note that alcohol-free beers have gained acceptance in the market because consumers recognize them as an independent brand and do not compare them to "normal" beer. Thus, breweries usually do not link the

beers to the brewery in their marketing. (*Brewing and Beverage Industry International*, April 1994, p. 24.)

## Extrusion of Brewers' Hops

A new process for producing isomerized hop pellets uses an extruding machine to process a mixture of hop powder and an alkaline salt such as magnesium oxide or magnesium hydroxide. The hop powder enters the

extruder at 77 degrees F (25 degrees C), is heated as it passes through and emerges at 212 to 302 degrees F (100 to 150 degrees C). The extruder has five independent heating/cooling zones. Water is added in one zone to make up for moisture loss. The resulting product sustained slight beta acid and essential oil loss, and had completely isomerized alpha-acid content. In brewing trials, the extruded hop material had a bittering efficiency of 57 to 58 percent, compared to 22 to 28 percent for untreated hop powder. (*Journal of the Institute of Brewing*, Vol. 100, 1994, p. 359.)

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# JACKSON ON BEER

Michael Jackson

## A Brewpub Blooms in Brooklyn ... and just about everywhere else

**W**hen I started writing regularly about beer, back in the mid-to-late 1970s, there were fewer than 50 brewing companies in the United States. In early 1995 the number was around 500, and openings were at the rate of three a week.

Only five or six are nationals and about a dozen are regional or local. Some 175 are microbreweries, and more than 300 are brewpubs. Some make lagers (often outstanding), but the majority produce ales, usually all malt.

Some of these beers are served excessively cold, but that is by no means universal. Many are unfiltered and some are cask conditioned.

I used to find it understandable that Britons who visited the United States complained they could find no beer they enjoyed. Now, I am not so sure. There still are beer deserts, but oases are springing up everywhere.

The most popular point of entry, New York City, still is not the best for beer, but has five brewpubs. Symmetry would suggest one brewpub for each of the city's five boroughs, but that is not the case: four are in Manhattan and one in Brooklyn.

### Dodging in Brooklyn

Just as people go to Edinburgh's old and new towns without visiting Leith, or to London's West End without seeing historic Southwark, so New York tourists too often miss Brooklyn.

Neither the Water of Leith nor the Thames are quite as wide as the East River where it broadens into the Upper Bay, but the distance from the one town center to the other is much the same. I recently dodged into the subway



in Manhattan and alighted a few stops later at Brooklyn's Seventh Avenue station to visit the new Park Slope brewpub.

Seventh Avenue is the main street of the Park Slope neighborhood. The brewpub is a couple of blocks away, at 356 Fifth Avenue and Sixth Street. The area has many fine 1870s to 1890s row houses, some with gaslights outside, and for a moment I was transported to the world of "Arsenic and Old Lace," a play which was set in Brooklyn.

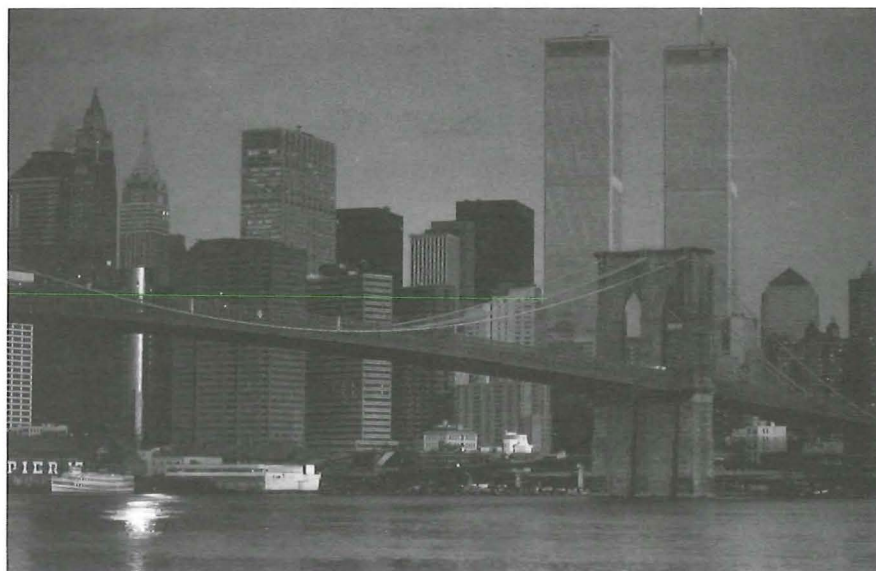
An 1890s bakery in a brownstone apartment block houses the brewery. In the basement the domed brick oven now serves as a malt bin.

A seven-barrel brewhouse has been improvised from Porter Lancastrian tanks. Ready-milled grain, Oregon and Washington hop varieties and an American ale yeast are used.

The beers are fined with isinglass, carbonated but not filtered and served at about 40 degrees F (4 degrees C). I tasted a soft and smooth but bitter blond ale with a gravity of 1.038; an India pale ale of 1.060, dry-hopped and full of the flavors of the magical cone; an oily, smooth, rounded, treacle-toffeeish porter (1.050); and a light, dry, leafy California pale (1.046).

The beers are made by Steve Deptula, a cabinetmaker by trade and a homebrewer. The fitting of the pub was his last contract in his former occupation.

The pub is run by his brother-in-law, Eugene Kaleniak, an electrical engineer. In the





creation of the beers they were assisted by Jack Streich, a well-known figure on the New York small-brewery scene.

Given the ethnicities of those names, it is no surprise that the menu includes kielbasa and sauerkraut (with smashed red potatoes and whole-grain mustard). On Mondays, Park Slope opens at 3 p.m. but other days begin at 11:30 a.m. for lunch.

Outside the brewery's mahogany shop front, behind iron railings, is a small terrace. The brewery takes its name from the neighborhood, which is on the slope leading to Prospect Park.

This particular oasis was designed by architects Frederick Law Olmsted and Calvert Vaux, whose Central Park in Manhattan is considered a lesser achievement by some. It is worth a visit.

Brooklyn once had 40-odd breweries. It also was famous for its extensive system of trams, and the street urchins who dodged them, giving a name to the now departed baseball team.

## Pints in Pittsburgh

Like Brooklyn, the city of Pittsburgh, Pa., is far more elegant than its popular image. It also once had breweries by the dozen, and it still has trams.

Pittsburgh is built on the hills that form the valleys of the Allegheny and Monongahela rivers as they meet to form the Ohio.

There, on a site that has made beer since 1848, the former Eberhardt and Ober brewery (1800 to 1952) was in 1989 restored to activity by Tom Pastorius.

Pastorius, who bears a passing resemblance to Jack Lemmon, has a degree in biochemistry, but worked in computers for the military. It was a spell in Germany that set him on his true vocation.

When I first visited in 1990, the brewery was still feeling its way, and I wondered whether the solid-copper, purpose-built, 25-barrel German brewhouse was an extravagance, and whether the sizable beer hall would ever be full.

Five years later there are two floors and a beer garden, and a bottling line has just been installed. The establishment, originally called Allegheny, is now known as the Pennsylvania

Brewing Co. (Troy Hill Road and Vinial Street).


All of the beers are brewed according to the German Purity Law. The flagship beer is arguably a Dortmunder in style, but is called Penn Pilsener. It has a perfumy hop character, a biscuity maltiness and a gravity of 1.050. Kaiser Pils (1.044 to 1.048) is truer to the description, with a very clean palate and lingering hoppiness.

Penn Dark (1.050 to 1.052) is lightly syrupy, malty but well-balanced and an Oktoberfest (1.058) had a deliciously chewy maltiness.

The Pennsylvania Brewing Co. closes on

Sunday but opens at 11 a.m. all other days.

*Reprinted with permission from What's Brewing, newspaper of the Campaign for Real Ale.*

Michael Jackson is internationally the best-known writer on beer. His *Beer Companion* (Running Press, 1994) was awarded the 1994 Glen Fiddich Trophy, an honor never before bestowed to a book on beer. His articles, books and documentary videos have introduced beer styles to countless drinkers and brewers outside their native lands. His use of taste descriptions and accounts of his travels introduced a new genre of writing on beer. 

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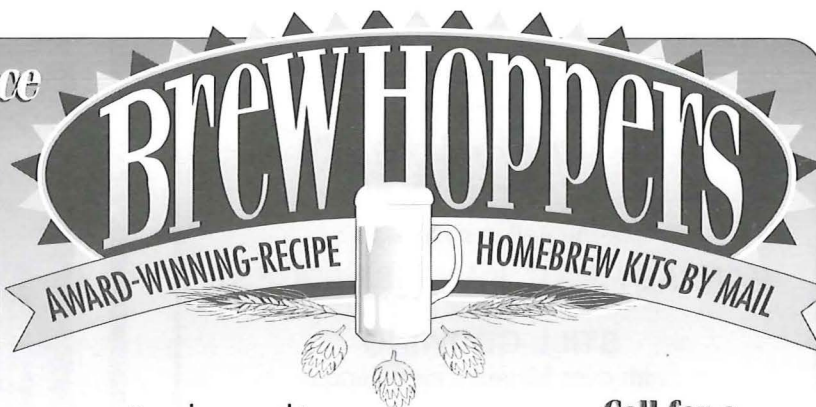


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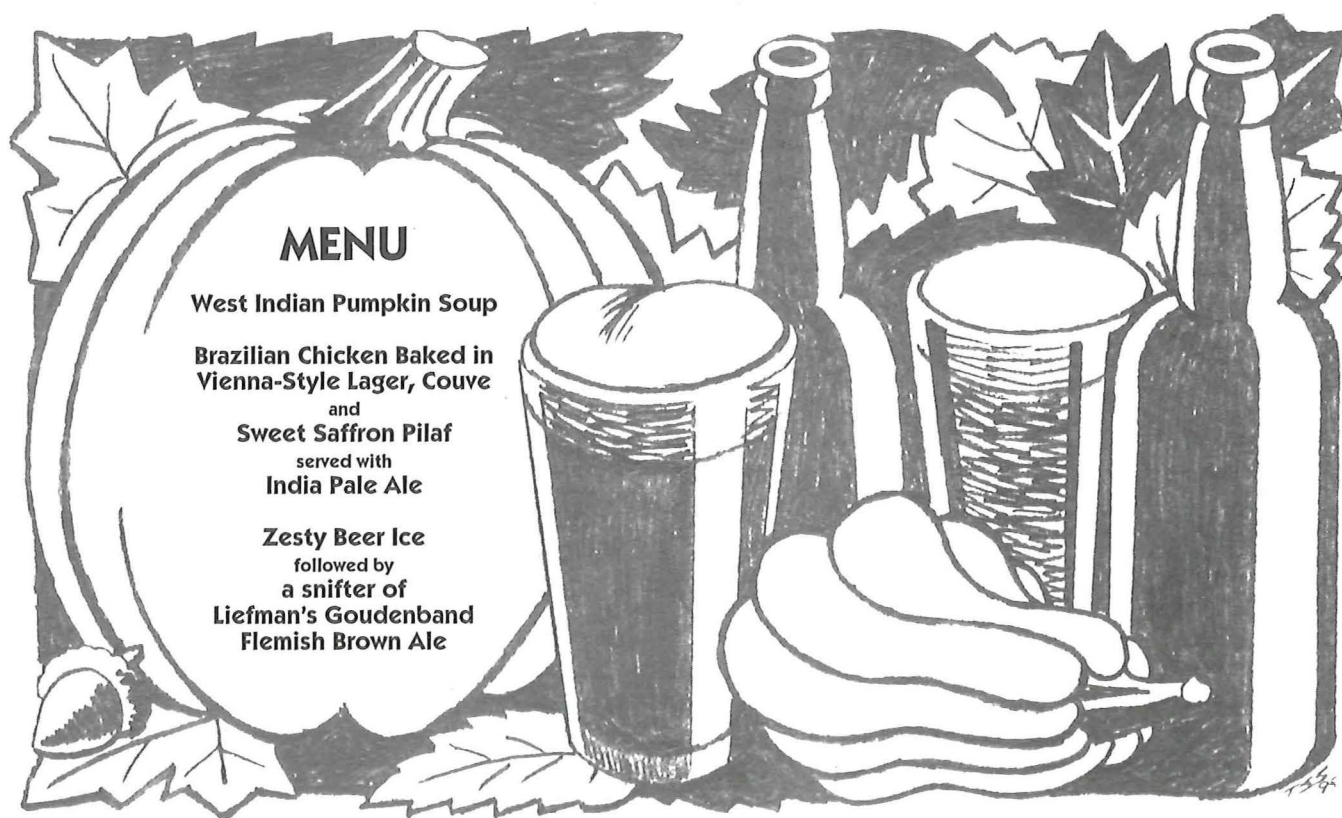
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# HOMEBREW COOKING

Lon Hall

## An Autumn Escape Through Food



**F**or the brewer and the cook, fall is more a beginning than an end. The days are becoming shorter and the temperatures more brisk. The larder is filled with the harvest and your home can be filled with the company of friends sharing homebrews and home cooking.

The range of produce available in the autumn allows the cook a full spectrum of flavors, making the pairing of food and beer a task limited only by the host's imagination. Our fall menu takes advantage

of ingredients that are readily available. The recipes have all been adapted to a lighter style of eating that is mindful of fat, salt and calories without sacrificing either the earthy or the ethereal pleasures of the table.

Beer, as an ingredient of a recipe and a companion to the food, integrates the meal. The beer suggestions are just that and free substitution of similar styles is encouraged. In most cases, a sampling of your own homebrews will be

greatly appreciated as another personal and hand-crafted ingredient in the communal meal.

Our main course started out as a recipe from São Paulo-born Valmor Neto. To make the recipe easier and more convenient to prepare, chicken thighs replace whole frying chickens. This dish has been most popular when the beer used in the marinade is either Negra Modelo (one of the most outstanding beers brewed in Mexico) or Anchor Porter.



The beer served with the main event should contrast with the food, bringing together the diverse flavors of the chicken, couve and rice. A fruity, floral pale ale, such as Sierra Nevada Pale Ale, or a refreshingly dry Grant's India Pale Ale, with its strong bitter hop finish, can stand out from the food and provide a unifying balance.

For dessert, beer is eaten instead of drunk. This course is best accompanied by coffee or tea. After dinner, the guests can ease back into their chairs and savor Liefman's Goudenband, a Flemish brown ale, served at 55 to 60 degrees F (13 to 16 degrees C) in brandy snifters.

## West Indian Pumpkin Soup

Serves 4 to 6

- 1 cup diced celery (110 g)
- 1 cup diced carrots (120 g)
- 1/2 cup diced onion (80 g)
- 1 1/2 cups water or vegetable stock (360 mL)
- 1 lb cooked pumpkin (or canned) (455 g)
- 2 cups vegetable stock (480 mL)
- 1/4 tsp pepper (0.5 g)
- 1/4 tsp thyme (0.2 g)

Purée celery, carrots and onion in a food processor while gradually adding the water or stock. Pour purée into a large saucepan. Blend in the remaining ingredients.

Bring to boil, reduce heat, cover and simmer for about 1 hour and 15 minutes, stirring occasionally. May be thinned to desired consistency with stock.

## Brazilian Chicken Baked in Vienna-Style Lager

Serves 4

- 8 chicken thighs
- 1 small onion, sliced
- 2 bottles Vienna-style lager (about 720 mL)
- 1 tbsp chopped garlic (15 g)
- 2 tsp dried tarragon leaves (8 g)
- 2 tsp dried oregano leaves (8 g)
- 1 1/2 tsp dried basil leaves (5 g)
- 2 1/2 tsp paprika (15 g)
- 1/2 tsp black or white pepper (3 g)
- 1/2 tsp red pepper flakes (2 g)
- 1 tsp kosher salt (20 g)

Arrange the chicken thighs skin-side down in a deep roasting pan or casserole and lay the onion slices on top. Add beer to nearly cover the chicken. Scatter the garlic, herbs, peppers and salt over the surface and gently spoon the beer around to moisten everything evenly. Cover the pan with aluminum foil or a lid and marinate two hours (or overnight) in the refrigerator.

Preheat the oven to 400 degrees F (204 degrees C). Remove the chicken from the refrigerator and return to near room temperature (about 30 minutes). Bake the chicken, covered, for 1 1/2 hours. Remove the cover, turn chicken thighs skin-side up and return to oven to bake 15 minutes longer. Let cool then refrigerate meat and sauce separately overnight.

On serving day remove fat from the surface of the sauce. Reheat the chicken and sauce uncovered in a 400 degrees F (204

degrees C) oven. If your baking dish is flame-proof you can reheat the chicken on top of the stove. When it is thoroughly reheated, lift the pieces out of the sauce and arrange on a platter or individual plates; set aside and keep warm. Bring the sauce to a boil (transfer to a large skillet first if your baking dish is not flameproof) and reduce the volume by about two-thirds, making a thick glaze. Spoon the glaze over the chicken and serve with saffron rice and couve.

## Sweet Saffron Pilaf

Serves 4

- 1 cup basmati rice (200 g)
- 1/2 tsp saffron threads (100 mg)
- 1 tbsp clarified butter or light vegetable oil (14 g)
- 5 whole cloves
- 4 green cardamom pods
- 1 stick cinnamon, 1 1/2 inches long
- 2 cups water (480 mL)
- 2 tbsp seedless raisins (20 g)
- 2 tbsp sugar (24 g)
- 1/2 tsp kosher salt (3 g)

(This recipe is adapted from a Julie Sahni classic.)

Wash the basmati in several changes of cold water until water runs clear, then cover with plenty of water and soak for 30 minutes. Let basmati drain through a sieve for 30 more minutes.

Place the saffron threads in a small plate and, using the back of a spoon or your fingertips, crumble them. Add 2 tablespoons (30 mL) of water, and continue mashing until thoroughly dissolved. Set aside.





Heat the clarified butter or vegetable oil over medium heat in a heavy-bottomed pan. When hot, add the cloves, cardamom and cinnamon, and fry until lightly browned and puffed (about one minute). Add rice and fry until thoroughly coated and it begins to brown (about three minutes). Stir constantly to prevent burning.

Add water, saffron water, raisins, sugar and salt, and stir well to keep the rice from settling. Bring to a boil. Reduce heat and simmer partially covered for 10 minutes or until most of the liquid is absorbed and the surface of the rice is filled with steam holes. Do not stir.

Cover the pan tightly, reduce heat to the lowest possible temperature and, if possible, raise the pan an inch over the heat source by resting the pan on metal tongs or a wok ring. Let the rice steam for 10 minutes and turn off the heat. Now let it rest undisturbed, covered, for five minutes. The rice remains warm for 20 minutes if left covered. Uncover and fluff the rice with a fork before serving.

### Couve

Serves 4

- 1 onion, chopped
- peanut or sesame oil
- 4 garlic cloves, chopped
- 1 bunch of collard greens

Cut out stems from the collards, roll the leaves and slice very thinly. Heat a large skillet over medium-high heat and add just enough oil to coat the pan. Cook onion until it begins to brown, about 10 minutes, add garlic and cook for 30 seconds. Throw in greens and wilt.

### Zesty Beer Ice

Makes 1 quart (946 mL)

- 1 envelope unflavored gelatin
- 2 bottles brown ale (Samuel Smith's or Newcastle) (720 mL)
- 1 cup sugar (180 g)
- 2 tsp grated lemon peel (10 g)
- 1/2 cup lemon juice (118 mL)

Sprinkle gelatin over one bottle of beer in a saucepan. Let stand five minutes to

soften then add sugar. Cook over low heat just until dissolved. Add remaining bottle of beer, lemon peel and juice. Turn into a shallow pan lined with plastic wrap. The plastic wrap makes it easy to lift out the ice for processing. Freeze until firm but not hard. Process in food processor or blender until smooth. Pack into a one-quart tightly sealed container and return to freezer.

Lon Hall is an analytical chemist for a pharmaceutical firm and freelance writer on the topics of computers, food and travel. He is a

sysop for Cooks Online Forum on CompuServe and a charter member of the Bread Bakers Guild of America. Cooking has been an avocation for more than 30 years and he firmly believes that fermentation is the cradle of civilization.

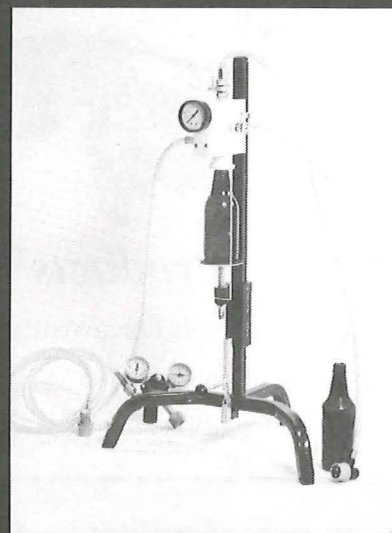
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*This column was reviewed by Candy Schermerhorn, author of the Great American Beer Cookbook (Brewers Publications, 1993). Candy will be contributing one column annually to "Homebrew Cooking."*



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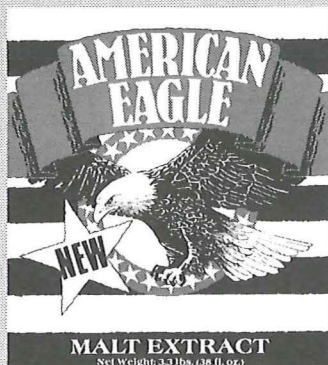


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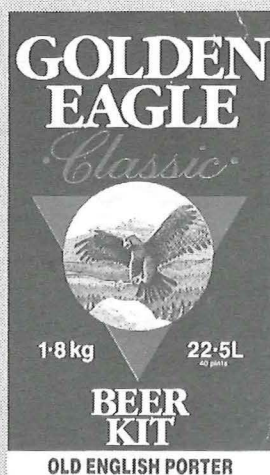
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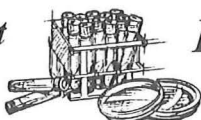
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# TIPS & GADGETS

Our Members

## Carbonating in PET Bottles

My version of a PET bottle pressure adapter allows me to pressure carbonate small quantities of homebrew for any occasion. Buy a few new automotive tire valve stems (with valve cores). These cost less than a dollar at an auto parts store. To assemble, carefully drill a one-half-inch-diameter hole in the center of a PET bottle cap with a brad-point bit (you want a clean, smooth edge). Press and pull the valve stem into the cap from the inside.

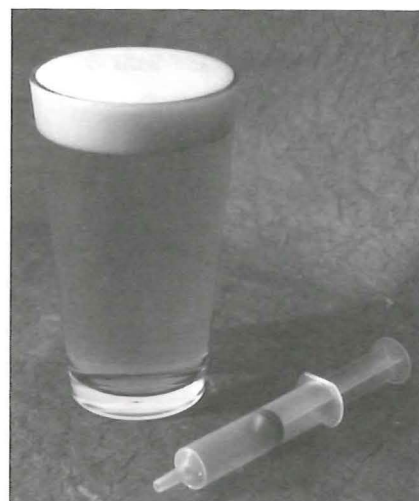
To carbonate, I made an adapter with the gas-in fitting from a Cornelius keg, a Teflon-threaded tube from the plumbing sec-

tion of a hardware store, a hose barb, hose clamp and a new brass tire-inflator air chuck from an auto supply store. Fit the hose barb into the Teflon tube and secure with a hose clamp. Using Teflon tape on the threads, tighten the air chuck onto the hose barb. Then, with more Teflon tape, thread the gas-in fitting onto the other end.

Purge the air from the PET bottle with a 15-second blast of CO<sub>2</sub>. Fill the PET bottle about three-quarters of the way with uncarbonated beer. Cap tightly, pressurize to about 15 psi then refrigerate. When the beer has cooled, bring the CO<sub>2</sub> pressure back up to 15 psi and agitate the bottle to dissolve the CO<sub>2</sub>. The bottle will hold pressure for several weeks.

*From Frank Longmore of Olathe, Kan.*

## 30¢ Beer Engine

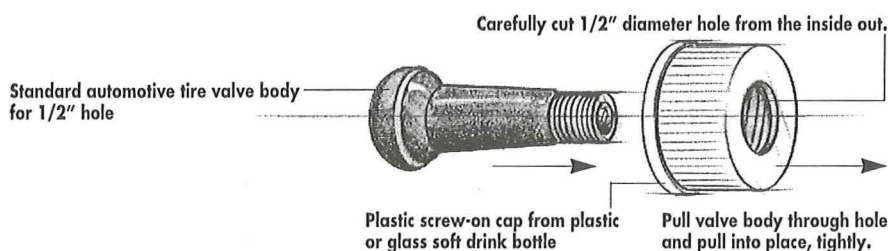


**An inexpensive way to serve a creamy head on your homebrewed real ale.**

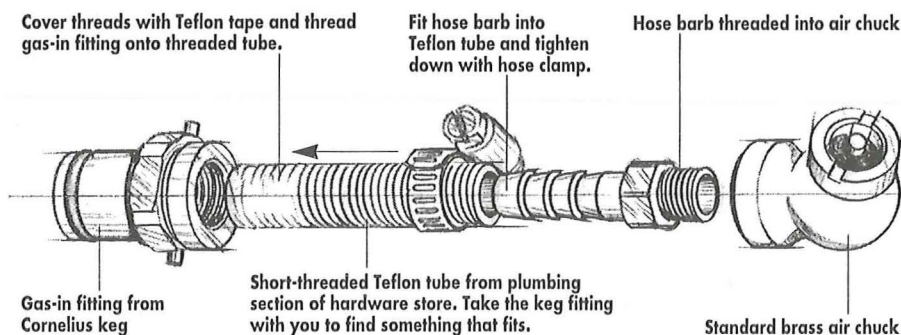
An inexpensive way to serve a creamy head on your homebrewed real ale without a beer engine is to get a 10 cc oral syringe available at most drugstores. Use it like this: Keep the carbonation on the keg a little high for the style of beer, dispense a glass of beer with 6 to 8 pounds per square inch (psi) at cellar temperature (50 to 55 degrees F or 10 to 13 degrees C) then use the syringe to draw up about 10 cc of beer. Hold the tip of the syringe above the surface of the beer and shoot it back into the glass with a quick push of the plunger.

This produces the same swirling, milky mass of tiny bubbles as a beer engine. The bubbles settle into a creamy, long-lasting head and your beer will have a creamy mouthfeel because of the low carbonation.

The device works by knocking out excess CO<sub>2</sub> from solution thereby making a creamy head. The beer also seems to have



**"Franken Brau Cap"**



**CO<sub>2</sub> Adapter**

PHOTO BY GALEN NATHANSON  
ILLUSTRATION BY RANDY MOSHER

ZYMURGY Fall 1995



a smoother taste than if it were simply stored and dispensed with the level of CO<sub>2</sub> it ends up with. If the beer is too carbonated, two shots may be necessary (remember to leave extra head space in the glass). If the beer is too cold it benefits from a few seconds in a microwave before the syringe treatment. Serving a beer at cellar temperature not only brings out flavor, but reduces the amount of CO<sub>2</sub> the beer can hold at saturation thus enhancing the desired results. This procedure also works with bottled beers.  
*From Jeff Renner of Ann Arbor, Mich., via Internet.*

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*From Greg Josiak of Stavanger, Norway.* ☺

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## A Complete Guide to

# Cleaning & Sanitation



Beer has been brewed for thousands of years and the majority of this brewing was done before anyone knew about germs or sanitation. Sometimes the beer was good and sometimes it wasn't. Over time, brewers learned which practices seemed to make good beer, and these practices became ritual. A case in point is the historic Norwegian beer totems used in the Middle Ages. Michael Jackson reports that these sticks were passed down from generation to generation and used to stir the developing beer. The totems harbored yeast (and bacteria) of previous batches. Reusing the totems inoculated each new batch with these yeast and bacteria. Maintaining this "house yeast" was the basis for a family's brewing success. The totems were very important and were treated carefully to preserve their power for turning wort into beer.

Late in the 1860s, Louis Pasteur discovered yeast as the cause of fermentation. At about the same time he discovered that bacteria and "wild" yeasts caused the spoilage of beer (1). From Pasteur's work, it was recognized that using large amounts of healthy yeast could overcome any small amounts of bacteria present and help reduce the risk of spoilage of the final product. Once the effects of yeast and bacteria were identified, measures could be taken to control them in brewing. Unfortunately problems with beer infections persist today, particularly during the summer months when the air is teeming with bacteria and wild yeast. Only by maintaining vigilance over our sanitation techniques can we be assured of successful batches.

Sanitation is important because without it our wort, and even beer, could become infected with bacteria or wild yeast leading to off-flavors and off-aromas. Wort is an excellent source of nutrients that will support the growth of many organisms, not just yeast. Given the opportunity, any organism that ends up in the wort will begin to grow and produce metabolic byproducts that lead to any number of flavors and aromas not normally associated with beer. Thus it is very important to eliminate as many sources of potential contamination as possible. It is not possible nor is it necessary to remove every last bacterium or wild yeast that may spoil our precious homebrew. Bacteria and wild yeast are everywhere in the environment: in the air, on the kitchen counter, on the floor, on the cat or dog, on you and on all your uncleaned, unsanitized brewing equipment. By following a few simple steps to clean, then to sanitize your equipment, you can eliminate the major causes of contamination and brew beer free of off-flavors and off-aromas produced by non-brewing organisms.

By James Liddil  
&  
John Palmer



the

Wild

things

LED WHITE  
VINEGAR

BLEACH

DETERGENT

ALCOHOL







## DEFINING THE TERMS

Let's begin by defining some terms. Many brewers talk about sterilizing their brewing equipment when they really mean sanitizing. Unless you have an autoclave or can bake the item for an extended period of time you aren't really sterilizing. To sterilize means to eliminate all forms of life, especially microorganisms, either by chemical or physical means. None of the sanitizing agents used by homebrewers to kill microorganisms are capable of eliminating all bacterial spores and viruses. Instead of worrying about sterilization, homebrewers can be satisfied if they consistently reduce these contaminants to negligible levels.

The best a homebrewer can hope for is to clean and sanitize brewing equipment and sanitize the wort that ultimately ferments (boiling accomplishes this). *Cleaning* is the process of removing all the dirt and grime from the surface, thereby removing all the sites that can harbor bacteria. Cleaning is usually done with detergent and elbow grease.

When it comes to actually ridding brewing equipment and the environment around the brewery of germs, the best homebrewers can do is *disinfect*. More likely they will only *sanitize*. In order of decreasing rank it is sterilize, disinfect, sanitize. The term disinfect has a number of legal and regulatory definitions, but for our purposes it means to kill all the harmful microorganisms that can cause beer to spoil. A disinfectant is defined as an antimicrobial agent that is intended for application to inanimate objects or surfaces for the purpose of killing all pathogenic organisms (excluding spore-forming bacteria). To pass the official test, a disinfectant must kill the organisms in 10 minutes or less, according to the defined conditions of the appropriate test of the Association of Official Analytical Chemists (AOAC) (2). (For this discussion we will exclude the microorganisms responsible for lam-

bic and other similar styles of beer.) The majority of chemical and physical agents homebrewers use will clean and sanitize and/or disinfect but not sterilize. But remember, sterilization is neither readily achievable nor necessary.

The most common terms used by homebrewers are sanitize and sanitizer. In general, sanitize means to use an agent to reduce the number of microorganisms to safe levels. One official definition states that a sanitizer must kill 99.999 percent of the specific test microorganism in 30 seconds (2). It is generally acknowledged that 90 percent of the sanitizing process is the physical cleaning of surfaces and the other 10 percent involves the use of a sanitizing agent (3). The focus of this article will be interpreting these definitions as they pertain to homebrewing.

To simplify matters we will talk primarily about cleaning and sanitizing agents, how to use them and how they can affect our brewing equipment. Some of the chemical agents mentioned may also be disinfectants but we will refer to all of them as sanitizers to avoid confusion.

All sanitizers mentioned in this article are meant to be used on clean surfaces. Their ability to kill microorganisms is reduced by the presence of dirt, grime or organic material present on the surface being sanitized. These organic deposits can harbor bacteria and shield the equipment from being reached by the sanitizer. So it is up to you to make sure the surface of the item to be sanitized is as clean as possible. This may require a certain amount of scrubbing, brushing and elbow grease, but remember that a dirty surface can never be a sanitized one.

Adequately cleaning brewery materials presents another set of issues. The foremost concerns are whether or not the cleaner will have a negative effect on the life of the equipment and/or on the quality of the beer.



## CLEANERS

ACETIC ACID (VINEGAR) ✶ CHLORINE ✶ DETERGENTS  
DISHWASHERS ✶ SODIUM HYDROXIDE (OVEN CLEANER/LYE) ✶ PERCARBONATES

### Acetic Acid

Acetic acid, also known as white distilled vinegar, is a very effective cleaner for copper. Brewers who use immersion wort chillers are always surprised how bright and shiny the chiller is the first time it comes out of the wort. If the chiller wasn't bright and shiny when it went into the wort, guess where the grime and oxides ended up? Yes, in your beer. The oxides of copper are more readily dissolved by the mildly acidic wort than is the copper itself. By cleaning copper tubing with acetic acid once before the first use and rinsing with water immediately after each use, the copper will remain clean with no oxide or wort deposits that could harbor bacteria.

Acetic acid is available in grocery stores as white distilled vinegar at a standard concentration of 5 percent acetic acid by volume. It is important to use only white distilled vinegar as opposed to cider or wine vinegar because these other types may contain live acetobacteria cultures, the last thing you want in your beer!

Some brewers use a number of brass fittings in conjunction with their wort chillers or other brewing equipment and are concerned about the lead that is present in brass alloys. A solution of two parts white vinegar to one part hydrogen peroxide will remove tarnish and surface lead from brass parts soaked for 15 minutes at room temperature. The brass will turn a buttery yellow color as it is cleaned.

If the solution starts to turn green, then the parts have been soaking too long and the copper in the brass is beginning to dissolve.

### Chlorine

Chlorine, commonly available as bleach, is an effective cleaner because, when dissolved in cold water, it forms a caustic solution that is good at breaking up organic compounds. Grungy deposits in old beer bottles can be effectively removed by soaking in a bleach solution for a couple of days. Bleach contains an aqueous equilibrium of chlorine, chlorides and hypochlorites. These chemical species all contribute to bleach's bactericidal and cleaning powers,



but these agents are also corrosive to a number of metals used in brewery equipment. If bleach is going to be used to clean a metallic surface, care should be taken to minimize the contact time and rinse the surface thoroughly so that corrosion will not occur.

Copper is sensitive to oxidation. Oxidizers like bleach and hydrogen peroxide will quickly cause copper and brass to blacken as oxides form. These oxides will rub off, exposing new metal to corrosion. Cleaning and sanitizing copper wort chillers with bleach solutions is not recommended. If the acidic wort is run through a chiller that was cleaned or sanitized with bleach, the black oxides would quickly dissolve into the wort, possibly exposing yeast to unhealthy levels of copper during fermentation.

Aluminum also is attacked by caustic solutions, and the protective surface oxides will be dissolved into the solution. Brewers using aluminum brewpots in areas of alkaline water may experience a metallic taste from the aluminum in their beer; however, this detectable level of aluminum is not hazardous. There is more aluminum in a common antacid tablet than would be present in a batch of beer made in an aluminum pot with alkaline water.

As in aluminum, the corrosion inhibitor in stainless steel is the passive oxide layer that protects the surface. The 300-series alloys commonly used in the brewing industry are very corrosion-resistant to most chemicals. Unfortunately, chlorine is one of the few chemicals to which these steels are not resistant. The chlorine in bleach acts to destabilize the passive oxide layer on steel, creating corrosion pits. This type of attack is accelerated by localization and is generally known as crevice or pitting corrosion.

Many brewers have experienced pinholes in stainless-steel vessels that have been filled with a bleach-water solution and left to soak for several days. On a microscopic scale, a scratch or crevice from a gasket can present a localized area where the surface oxide can be destabilized by the chlorine. The chlorides can combine with the oxygen, both in the water

and on the steel surface, to form chlorite ions, depleting that local area of protection. If the bleach water is not circulating, the crevice becomes a tiny, highly active site relative to the more passive stainless steel around it and corrodes. The same thing can happen at the liquid's surface if the keg is only half full of bleach solution. A dry stable area above, a less stable but very large area below, and the crevice corrosion occurs at the waterline. Usually this type of corrosion will manifest as pitting or pinholes because of the accelerating effect of localization.

A third way chlorides can corrode stainless steel is by concentration. This mode is very similar to the crevice mode described above. By allowing chlorinated water to evaporate and dry on a steel surface, those chlo-

There are a few simple guidelines to keep in mind when using chlorine with stainless steel and other metals.

(1) Do not leave the metal in contact with chlorinated water for extended periods of time (no more than a few hours).

(2) Use buffered/inhibited cleaning solutions that reduce the amount of corrosion attack on the metal. Buffered or inhibited solutions contain salts that maintain a nominal pH or silicates that inhibit metal corrosion.

(3) Fill vessels completely so corrosion does not occur at the waterline.

(4) Circulate or stir the water to eliminate local concentration/deoxidation.

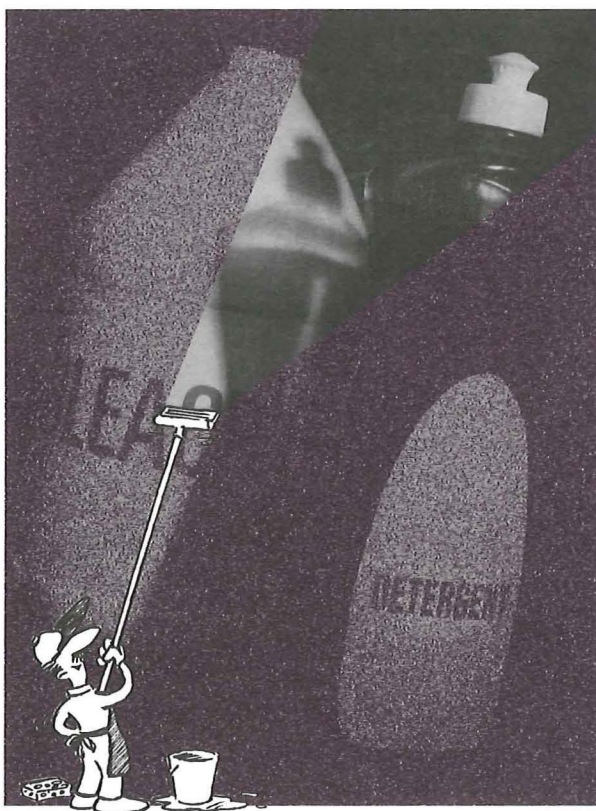
(5) After the cleaning or sanitizing treatment, rinse the item with deionized water to prevent evaporation concentration and either dry the item completely or fill it with beer.

## Detergents

Household cleaning products such as dish or laundry detergents and cleansers should be used with caution when cleaning organic deposits from brewing equipment. These products often contain perfumes that can be adsorbed onto plastic equipment and manifest in the beer. In addition, some detergents and cleansers cannot be rinsed completely and often leave behind a soapy film that also can be tasted in the beer. Several rinses with hot water may be necessary to remove all traces of the detergent. There are laboratory detergents such as Alconox that can be rinsed clean when used as directed. Detergents containing phosphates generally rinse more easily than

those without, but because phosphates are regarded as pollutants to the environment, they are slowly being phased out.

A case in point is trisodium phosphate (TSP) and chlorinated (CTSP). TSP is a very effective cleaner for organic brewing deposits and the chlorinated form provides a sanitizing capability. TSP and CTSP are becoming harder to find, but are still available at hardware stores in the paint section. (Painters



rides become concentrated and destabilize the surface oxides at that site. The next time the surface is wetted, the oxides will quickly dissolve, creating a shallow pit. When the keg is allowed to dry, that pit probably will be one of the last sites to evaporate, causing chloride concentration again. At some point in the cleaning life of the keg, that site will become deep enough for crevice corrosion to take over and the pit to corrode through.



use it for washing walls because it can be rinsed away completely.) The recommended usage is one tablespoon per gallon of hot water. Solutions of TSP and CTSP should not be left to soak for more than an hour because a white mineral film will deposit on glass and metal that requires an acid solution to remove. In an experiment done with technical-grade (greater than 95 percent pure) TSP, a one molar solution (about two ounces in a quart) left no film on Pyrex®, regular glass or polypropylene after 24 hours.

## Automatic Dishwashers

Using dishwashers to clean equipment and bottles is a popular idea among homebrewers, but there are a few limitations. First, the narrow openings of hoses, racking canes and bottles usually prevent the water jets and detergent from effectively cleaning inside. Second, if detergent does get inside these items, there is no guarantee that it will get rinsed out again. Third, dishwasher drying additives (Jet Dry™, for example) work by putting a chemical film on the items that allows them to be fully wetted by the water, thus preventing spots. The film can ruin the head retention of beer put into these washed items. The wetting action destabilizes the proteins that form the bubbles.

It is best to use automatic dishwashers only for heat sanitizing, not cleaning. The use of dishwashers for heat sanitizing will be discussed in the next section.

## Sodium Hydroxide

Commonly known as lye, sodium hydroxide (NaOH) and sometimes potassium hydroxide (KOH) is the caustic main ingredient of most heavy-duty cleaners like oven and drain cleaner. In its pure form, sodium hydroxide is very hazardous to skin and should only be used when wearing rubber gloves and goggle-type eye protection. Vinegar is useful for neutralizing sodium hydroxide that gets on your skin, but if sodium hydroxide gets in your eyes it could cause severe burns or blindness. Oven cleaner is an adequate substitute for any case that calls for sodium hydroxide. Brewers often scorch the bottoms of their brewpots, resulting in a black, burned wort area that is difficult to remove for fear of scouring a hole in the pot. The easiest solution is to apply a common brand of spray-on oven cleaner and allow it to dissolve the stain. After the burned-on area has been removed, it is important to thoroughly rinse the area of any residue from the oven cleaner. Because oven cleaners are caustic, rinsing with vinegar, a mild acid, will neutralize any remaining cleaner. Then a little detergent and water will suffice to remove any traces of the vinegar. Rinsing with vinegar is not usually necessary. It depends on the size of the stain and the amount of cleaner you use.

Sodium hydroxide is very corrosive to aluminum and brass. Copper is generally re-

sistant to sodium hydroxide and stainless steel is only negatively affected by boiling-hot solutions of sodium hydroxide (not recommended). Strong unbuffered solutions of NaOH should not be used to clean aluminum brewpots because the high pH causes the dissolution of the protective oxides, and a subsequent batch of beer might have a metallic taste.

## Percarbonates

Both B-Brite™ and One-Step™ contain percarbonates and are sodium carbonate complexed with hydrogen peroxide. There is no data available on the chemical composition of these products and how the composition affects the antimicrobial properties of the percarbonate. These products are approved as cleaners in food-manufacturing facilities. The hydrogen peroxide does provide some degree of sanitization, but it is better to rely on it only as a cleaner. B-Brite and One-Step effectively remove organic deposits from all types of brewery equipment. They will not harm plastics or metals, but the solution should not be left in contact with dissimilar metals (aluminum and stainless steel) for more than a day because corrosion could occur. Use these cleaners according to manufacturer's instructions, but generally use one tablespoon per gallon and rinse after cleaning.



## SANITIZERS

ALCOHOL IODINE MOIST AND DRY HEAT CHLORINE  
BOILING (PRESSURE COOKER, MICROWAVE) HYDROGEN PEROXIDE

ONCE YOU HAVE selected the appropriate cleaner and scrubbed all the grime off your equipment, it is time to sanitize the parts of your brewery that will come in contact with wort after the boil. There are several sanitizing agents available to the homebrewer and they can be used in a variety of situations.

## Alcohol

The most commonly available alcohols that can be used for sanitizing are methyl, ethyl and isopropyl. Alcohol's mechanism of action is still unconfirmed, but theories for how alcohol might kill cells include denaturing of cell proteins, interfering with cellular metabolism and destroying cell membranes. In the absence of water, proteins are not denatured as readily

by alcohol, and this explains why a solution of 70 percent alcohol and 30 percent water is a better sanitizer than 100 percent alcohol. Alcohol will kill most bacterial organisms in less than five minutes, but because some organisms may take longer, it is best to let items soak at least 10 minutes to kill the majority present. Alcohol does not kill bacterial spores, and viruses are only killed after exposure of an hour or more, but these microorganisms are not a concern to brewers. As with all san-

itizers, the degree of effectiveness is dependent on the initial cleanliness of the surface.

Alcohol as a sanitizer has limited uses in brewing. A major limitation is that all types of alcohol are reasonably flammable even at a 70 percent solution. Isopropyl and methyl alcohol are much more toxic if consumed than is ethyl alcohol, and are undesirable in finished beer because of this, let alone their undesirable flavor. Isopropyl alcohol is the most effective sanitizer of the



commonly available alcohols, with ethyl alcohol being a close second. Methyl alcohol is not a very effective agent compared to the other two and this fact, combined with its toxicity, means it is not often used as a sanitizing agent (4,5). For these reasons, ethyl alcohol is the more favored alcohol for sanitation, but is rather expensive because concentrated forms are highly taxed.

Alcohol is useful for sanitizing equipment and surfaces used in yeast culturing and propagation. Isopropyl alcohol at a concentration of 70 percent is an excellent, inexpensive choice for sanitizing work surfaces, bottle and flask necks, instruments and your hands. The alcohol can be applied to surfaces in a number of ways, the easiest being with a small spray bottle. A piece of gauze or cotton soaked in alcohol can be used to wipe down surfaces such as tables and container openings, or instruments can be soaked in alcohol until needed. Alcohol such as isopropyl and ethyl are safe to use on most surfaces. Don't use alcohol to sanitize tubing because it can dissolve the plastic to some degree. Some plastics, such as HDPE, are generally resistant to alcohol. Metals and glass also are unaffected.

It is often stated in homebrewing lore that you can simply gargle with vodka or some other high-proof alcoholic beverage and then use your mouth to start a siphon without fear of contamination. But based on the effectiveness of alcohol, this does not seem to be such a wise idea. First of all, alcohol's ability to kill bacteria, i.e., denature proteins, is constrained by the total amount of organic material present, which for the average mouth is a fair amount depending on when the last meal was consumed. Second, an 80-proof beverage such as vodka is only 40 percent alcohol and most organisms are not killed in less than five minutes at this concentration. For this method to be effective, you would have to gargle with 120-proof rum or something of equal strength for 10 to 15 minutes, by which time you probably would have forgotten about brewing. Rather than risk contamination, use a small tube that fits into the end of the racking hose and suck on that to start the siphon. Once the siphon starts, remove the small piece of tubing before the wort reaches it and you don't risk contamination.

## Iodine

Iodine by itself is a very good sanitizer, but it stains almost everything and is irritating to skin and other tissues. Solutions of iodine complexed with a high molecular weight carrier are more commonly used today and are called iodophors. The high molecular weight carrier is typically a polymer which is simply a molecule made up of a large number of atoms with a repeating structure. The complexing of the iodine with the polymeric carrier serves three basic functions. First, the solubility of the iodine is increased. Elemental iodine has limited solubility and combining it with a polymeric molecule greatly improves this. Second, the iodine-carrier complex provides a sustained-release reservoir of iodine because the iodine stays bound to the carrier until the free iodine concentration in solution falls below an equilibrium level. And finally, the equilibrium between the free form and the complexed form keeps the amount of free iodine low, yet at a level that kills microorganisms. Thus, the otherwise highly toxic iodine can be used safely in food and beverage applications.

Iodine can enter a microorganism fairly easily. Once it does, it kills the cell via a number of possible mechanisms. It is generally accepted that the most significant reaction involves the oxidation of the sulfur-hydrogen groups in the amino acid cysteine. Once this occurs the microorganism can no longer synthesize proteins and it dies. Other mechanisms for the disinfectant properties of iodine have been proposed but need not be discussed here (6). Suffice it to say that iodine is a very effective sanitizing agent. Data indicate a 10-minute exposure at 15 parts per million (ppm) will kill 99.999 percent of the microorganisms that cause contamination in the homebrewing environment (6).

All iodophors are produced by what is called a "cold process," meaning it uses no external heating. This process occurs in an acidic environment and the final complex in pure form has a pH of about 3, depending on the carrier used. Some formulations contain added phosphoric acid. These are primarily made for the dairy industry where



the additional acid helps dissolve calcium deposits on surfaces from milk. The formulations made for the food and beverage industry, and what you are most likely to find in your homebrew shop, do not contain any added acid. This is desirable because they are safer to handle than the acid-containing formulations. You may encounter the formulation made with acid if you purchase iodophor at a dairy industry supply store.

Iodophors are sold as a concentrate that is diluted to a working concentration in water. The label gives directions on how to dilute the iodophor to achieve an available iodine concentration of 12.5 ppm. Soaking equipment for 10 minutes in a solution of 12.5 ppm of available iodine is all that is needed to kill the majority of microorganisms that occur in the brewing environment. At 12.5 ppm the solution has a faint brown color that you can use to monitor the solution's viability. If the solution loses its color it no longer contains enough free iodine to kill microorganisms.



# S U M M A R Y T A B L E

## C L E A N E R S

PRODUCT/ COMMERCIAL EXAMPLES	USE/EFFECT	WARNINGS *	USAGE RATE **	COMMENTS
Acetic acid: white distilled vinegar	A good choice for cleaning copper.	Don't use other vinegars.	Full strength as needed.	Mix 2:1 with hydrogen peroxide for cleaning brass.
Bleach (sodium hypochlorite 5.25%): Clorox™ or generic household bleach	Good cleaner for organic deposits on glass and plastic.	Detrimental to all brewing metals. If used, limit contact time to a matter of minutes.	1 to 4 tablespoons per gallon for cleaning. Limit exposure time to plastics to an hour.	Don't stain your good shirt with bleach.
Detergents: TSP CTSP	Excellent cleaners for all brewing equipment.	Limit exposure time of TSP to less than an hour to prevent mineral film deposits. Watch for dissimilar metal corrosion as a result of soaking for a long time.	1 tablespoon per gallon.	The active ingredients in detergents are the sodium carbonates, sulfates and phosphates. Avoid the use of detergents containing fragrances.
Sodium hydroxide: lye oven cleaner	Excellent dissolver of organics, but may be too strong. Oven cleaner is the easiest form to use. Works well on burned-on deposits.	Wear rubber gloves and eye protection when using. Detrimental to brass and aluminum.	Read and follow the directions.	This is the elephant gun of cleaners. Use with caution, a little goes a long way.
Percarbonates: B-Brite™ One-Step™	Effectively remove organic deposits from brewery materials.	Do not leave in contact with dissimilar metals. Follow manufacturer's instructions.	1 tablespoon per gallon and rinse after cleaning. Follow manufacturer's instructions.	Will not harm plastics and most metals.



## S A N I T I Z E R S

PRODUCT/ COMMERCIAL EXAMPLES	USE/EFFECT	WARNINGS *	USAGE RATE **	COMMENTS
Alcohol: generic brands	Good sanitizer for doing yeast culturing. Use for work surfaces, hands and flask openings.	Highly flammable. Ethyl, methyl and isopropyl alcohol are toxic if ingested.	A mixture of 70% alcohol in 30% water with 10-minute exposure time.	A must for the homebrewer doing yeast culturing. Methyl alcohol is not very effective and is toxic.
Iodophor: BTF™ B.E.S.T.™	Excellent, broad-spectrum sanitizer. Use in room-temperature water on all equipment and surfaces that contact wort and beer.	Considered toxic in undiluted form; nontoxic at 25 ppm.	12.5 to 25 ppm with 10-minute exposure time. 1 tablespoon in 5 gallons of water equals 12.5 ppm.	Color of solution makes determining viability easy.
Bleach (sodium hypochlorite 5.25%): Clorox™ or generic household bleach	Excellent broad-spectrum sanitizer. Use in room-temperature water on all equipment and surfaces that contact wort and beer.	Considered toxic in undiluted form, nontoxic at 200 ppm.	1 tablespoon per gallon (200 ppm) with 10-minute exposure time.	The most economical sanitizer.
Hydrogen peroxide: generic brands (3% solution)	A very safe sanitizer that is best suited as a rinse after using other sanitizers or for sanitizing yeast culturing work areas.	Can be hazardous if splashed in eyes or ingested in large quantities.	Use straight from the bottle with 10-minute exposure time.	The sanitizer of choice for those who want a more "natural" sanitizer.

## S T E R I L I Z E R S

PRODUCT/ COMMERCIAL EXAMPLES	USE/EFFECT	WARNINGS *	USAGE RATE **	COMMENTS
Dry heat: oven	An excellent method for sterilizing glass and metal items.	Items that have been heated can be a burn hazard until cooled. Rapid cooling could cause fractures.	340 degrees F (171 degrees C) for 60 minutes.	Enables you to sterilize equipment in the home environment. Dry heat is less effective than wet heat.
Moist heat: pressure cooker microwave pressure cookers autoclave	An excellent method for preparing starters, slants, yeast culturing media and sterilizing small glass and metal items.	Items that have been heated can be a burn hazard until cooled. Rapid cooling could cause fractures. Follow manufacturer's instructions for pressure cooker or autoclave use.	257 degrees F (125 degrees C) at 20 psi for 20 minutes.	Enables you to sterilize equipment in the home environment.

\* As noted, all chemical sanitizers are hazardous in undiluted form. Always follow label directions carefully and use proper precautions.

\*\* All exposure times are conservative and based on data in *Disinfection Sterilization and Preservation*, 1991 4th Ed., edited by S. Block.



When iodophor is diluted in cold water an equilibrium is reached between the free, measurable and bound forms. The chemistry of this equilibrium is quite complex and is not relevant to our discussion. Those of you who are interested in more details should consult reference (6). What the chemistry boils down to is this: as iodophor is added to a water solution, the free iodine in the solution reaches a maximum amount and then actually begins to drop off. West-Agro Inc. of Kansas City, Mo., the manufacturer of the iodophor complex used in several commercial iodophor products, says the maximum amount of free iodine (that which kills microorganisms) that can be achieved in a water solution is 75 ppm. There is no advantage to using more than the specified amount. In addition to wasting the product, you risk exposing yourself and your beer to excessive amounts of iodine. In this case, more is not better.

Another important point is the action of iodophor is inhibited if the pH is outside the range of 3 to 6. Because of the acidic nature of the iodophor complex, achieving this range is not usually a problem. If you live in an area with high pH water (greater than 9) you should check the pH of your diluted iodophor and make adjustments with citric or phosphoric acid. Acidify your water below a pH of 9 then add the appropriate amount of iodophor. One iodophor manufacturer we spoke to recalled only one case where an industrial user had this problem, so it should not be a major issue for homebrewers.

Make only as much iodophor sanitizing solution as you need for each use. Iodine is volatile and will outgas from the solution with time, losing its sanitizing ability. You may have noticed that an iodine solution left in an open glass jar will lose its brown color. If you do have leftover solution, store it in a tightly sealed glass jar or a PET plastic soda bottle. Solution stored this way is stable for about a week. Do not store the solution in other types of plastics because they will either absorb the iodine fairly quickly or allow it to volatilize because of their gas permeability, again causing a loss of sanitizing ability. Iodophors, like other sanitizers, are most effective when used on clean surfaces. Proteins and other or-

ganic substances will bind the iodine making it unavailable for sanitizing purposes. Sulfur-containing compounds in particular are efficient iodophor inactivators.

## Heat

Heat represents one of the few means by which the homebrewer can actually sterilize an item. When a microorganism is heated at a high enough temperature for a long enough time period it is killed. Dry and wet heat are used to kill microorganisms.

### Dry Heat

Dry heat is less effective than wet or moist heat in killing microorganisms, but it can still be used. The best place to do dry-heat sterilization is, of course, in your oven. For an item to be sterilized by dry heat it needs to be heated at a given temperature for a given time as shown in Table 1.

TABLE 1  
DRY HEAT STERILIZATION  
TIME/TEMPERATURE TABLE

TEMPERATURE	DURATION
338°F (170°C)	60 minutes
320°F (160°C)	120 minutes
302°F (150°C)	150 minutes
284°F (140°C)	180 minutes
250°F (121°C)	12 hours (overnight)

The times indicated begin when the item has reached the indicated temperature. Though the durations seem long, remember this process renders the item sterile, not just sanitized. Items to be sterilized need to be heat proof at the given temperatures. Glass and metal items are prime candidates for heat sterilization. Consider heat-sterilizing flasks, tubes and petri dishes for use in yeast culturing. Some homebrewers bake their bottles using this method and thus always have a supply of clean sterile bottles. The opening of bottle or flask can be covered with a piece of foil prior to heating to prevent contamination after cooling and during storage. Other pieces of equipment should be wrapped completely in foil for best results. They will remain sterile indefinitely if kept wrapped.

A note of caution: Bottles made of soda lime glass are much more susceptible to ther-

mal shock and breakage than those made of borosilicate glass and should be heated and cooled slowly. You can assume all beer bottles are made of soda lime glass and that any glassware that says Pyrex™ or Kimax™ is made of borosilicate.

### Moist Heat

Typically when we talk about using moist heat we are referring to the use of an autoclave or pressure cooker. These devices use steam under pressure to kill all microorganisms. Because wet heat and pressure provide a more effective heat transfer mechanism, the cycle time for such devices is much shorter than when using dry heat. The typical amount of time it takes to sterilize a piece of equipment or solution is 20 minutes at 257 degrees F (125 degrees C) at 20 pounds per square inch (psi). A pressure cooker is excellent for sterilizing starter solutions, glass and certain plasticware and for preparing agar slants for yeast culturing. Because a pressure cooker operates at high temperatures and pressures, it is important that you follow the manufacturer's directions carefully. A pressure cooker can be used to sterilize most any heat-resistant item including objects made of heat-resistant glass, metal and polypropylene and polycarbonate plastics.

Another form of moist heat that can be used to sanitize, as opposed to sterilize, is the heat-drying cycle of an automatic dishwasher. By loading pre-cleaned bottles or equipment, and not using any detergent or rinse agent, the steam from the drying cycle will effectively sanitize even interior surfaces. Run the equipment through the full wash cycle including heat drying. (As an added bonus, the dishwasher door makes an ideal bottle-filling platform.)

## Chlorine

Chlorine is by far the least expensive and most widely available chemical disinfectant and sanitizer a homebrewer can use. It is available in the form of household bleach which is a 5.25 percent solution of sodium hypochlorite (NaOCl). This economical form of chlorine has the advantages of being a powerful germicide, colorless and nonstaining (except to clothes), nonpoisonous when diluted properly and a






deodorizer. Because of the widespread use of bleach, it is the standard to which other sanitizers are compared. For sanitizing purposes, a concentration of 100 to 200 ppm available chlorine is needed to kill most microorganisms with an exposure time of 10 minutes. It is the available chlorine that does the killing. Use one-half ounce (one tablespoon) of bleach in one gallon of water to get 200 ppm of available chlorine, according to the Clorox Co. in Oakland, Calif., assuming you have household bleach containing 5.25 percent sodium hypochlorite, as indicated on the label. The items to be sanitized should be allowed to soak for 10 minutes and then drip dried or rinsed to eliminate the majority of residual chlorine.

When sodium hypochlorite is dissolved in cold water it reacts to form hypochlorous acid, which is a very strong oxidizing agent. It is this compound that actually does the sanitizing in solution. Precisely how hypochlorous acid kills microorganisms has not been conclusively proven with experiments. Advanced theories revolve around the view that chlorine may inhibit in microorganisms important enzymatic reactions that are necessary for life (7, 8). Chlorine reacts rapidly with organic materials and when it does it can no longer act as a sanitizer. This high reactivity means that your equipment needs to be free of all dirt and residues prior to being sanitized with chlorine. Because of chlorine's high reactivity, it can combine with phenolic compounds found in wort or beer and form the dreaded chlorophenols that lead to medicinal off-flavors in the finished product. To combat this problem, start by using the proper amount of bleach (one-half ounce per gallon of water), and either allow your equipment to drip dry completely or rinse with pre-boiled water prior to use.

Bleach and bleach solutions degrade over time. Generally, a fresh batch of sanitizing solution should be prepared each time it is needed. If you don't know the age of your bleach, you may want to get a chlorine test kit from a homebrew supply shop or swimming pool supplier to make sure you are in the right concentration range. If your water has a pH of 9 or greater you should check the chlorine level of the solution. A high pH inhibits the sanitizing abil-

ity of sodium hypochlorite, requiring longer exposure times to kill microorganisms. If the pH is greater than 9, follow the instructions in the iodine section for adjusting water pH. The majority of chemical sanitizing agents are more effective at higher temperatures. Microorganisms will be killed faster by a room temperature (68 degrees F or 20 degrees C) sanitizing solution than a 40-degree-F (4-degree-C) solution. The exposure times presented in this article are on the conservative side to account for variations in tap water temperatures. For best results use the recommended exposure time and concentration indicated in the Summary Table on page 44.


## Microwaves

e were able to find some data indicating that microwave ovens can be used to disinfect solutions. These data demonstrate that small volumes (5 milliliters) of bacterial cultures could be decontaminated using a microwave oven (9). The data do suggest that a microwave can be used to heat solutions to the point of sterility. These data are based on the fact that a very heat-resistant form of bacteria could be killed when boiled in the media in which it was grown using a microwave oven.

Microwaves kill by heating the water molecules present in a microorganism. When the water boils, the internal structure of the microorganism is destroyed. Because microwaves heat only water, they cannot be used to sterilize dry material.

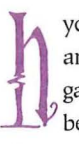


## TO RINSE OR NOT TO RINSE

hen the chemical sanitizers mentioned in this article are used at the recommended concentration they do not need to be rinsed off prior to using the equipment. Brewing equipment does not even need to be allowed to drip dry if the stated concentrations are used. Simply allow the majority to drain off and then use the sanitized items. If you still feel the need to rinse, then go ahead if it makes you feel better, but use either pre-boiled water or some no-name beer in a can. (Beer pro-

duced by some of America's larger brewing companies is packaged using sterile filling techniques and is pasteurized. Clean and sanitize the can tops before pouring beer as a rinse solution.)

## Hydrogen Peroxide

ydrogen peroxide is considered a safe and effective sanitizer. It kills microorganisms by oxidizing them, which can be best described as a controlled burning process. When hydrogen peroxide reacts with organic material it breaks down into oxygen and water. This inactivation can occur when hydrogen peroxide reacts with microorganisms, proteins or other organic residues. Hydrogen peroxide is active against a wide range of microorganisms, provided it is used full strength right from the bottle. It is active at lower concentrations but exposure times on the order of 30 to 60 minutes are required. The 3 percent solution sold in most drugstores is adequate to kill bacteria of most types in about 10 minutes. Because of its high cost, hydrogen peroxide has limited applications for homebrewing. It is probably best suited for disinfecting surfaces that you do not want to expose to alcohol or other sanitizers in yeast culturing. Simply pour it onto the surface or wipe it on with a piece of cotton or gauze. Or, if you need to rinse after using other sanitizers, then hydrogen peroxide is a good choice for a rinsing substance. As with other chemical sanitizers, hydrogen peroxide is inactivated when used on dirty surfaces, so make sure you use it on clean equipment.



duced by some of America's larger brewing companies is packaged using sterile filling techniques and is pasteurized. Clean and sanitize the can tops before pouring beer as a rinse solution.)

Tap water is not an acceptable solution for rinsing because it contains bacteria. In fact, the practice of rinsing with tap water negates any prior sanitation measures. Hot water in most homes is not hot enough to guarantee sanitization of the pipes between the water heater and the faucet. There are



likely to be several areas where conditions are right for minimal levels of microorganisms to grow. These levels are not dangerous, but they can result in a spoiled batch of beer. To be safe, always boil the water with which you intend to rinse.

The variety of cleaning and disinfecting methods available to today's homebrewer can ensure complete sanitization at every step of the brewing process. The most common sanitizing agents available are chlorine bleach and iodophor. These are the easiest to use and are effective on all brewing equipment. Sanitizing bottles can be better accomplished using heat, either in your oven or dishwasher. We hope the other methods presented here have given you options that can help in your particular homebrewery. A good understanding of the various sanitation methods should save you a lot of time and frustration in your pursuit of the perfect batch.

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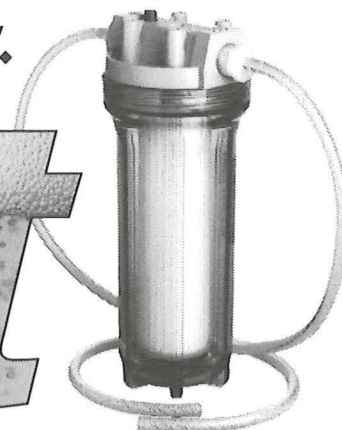
James Liddil is a research specialist at the University of Arizona and has been home-

brewing for almost four years. He enjoys brewing Belgian-style beers including lambic-style ales. His "Wild Pseudo-Lambic" earned him the AHA 1994 Homebrewer of the Year award.

John Palmer is a metallurgical engineer for McDonnell Douglas Aerospace in Huntington Beach, Calif. He is a frequent contributor to the Home Brew Digest on the Internet and the author of "How to Brew Your First Beer," available at several computer sites around the world. He is an enthusiastic member of the Crown of the Valley Brewing Club in Pasadena.

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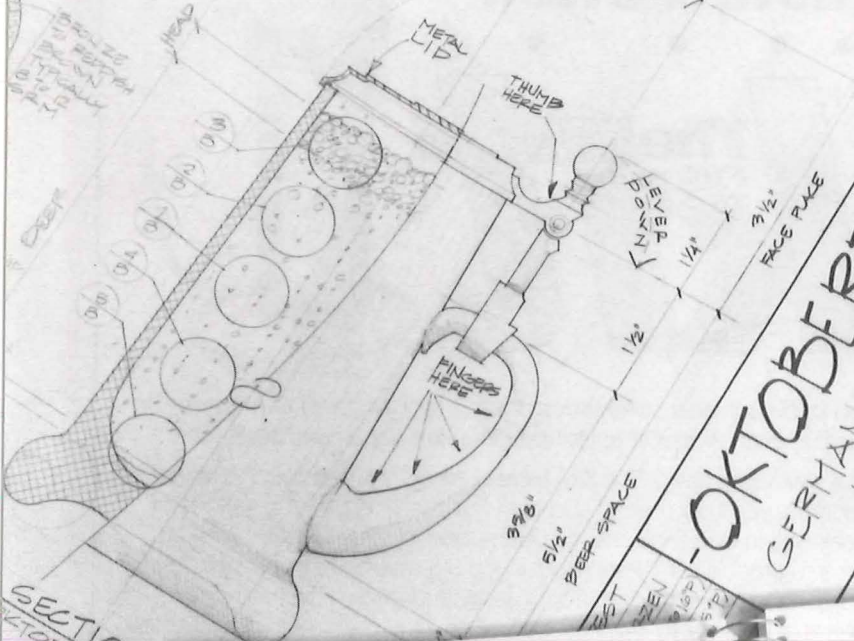
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## A black and white photograph of a glass of beer with a metal handle, surrounded by spilled seeds and a small packet of seeds. The word "FEST:" is overlaid in large, stylized letters at the top.



1/4" x 3 1/2" FACE PLATE

OCTOBERFEST  
SERVAL ENGINEERING  
IN A GLASS

15 GALLONS  
15 175 2

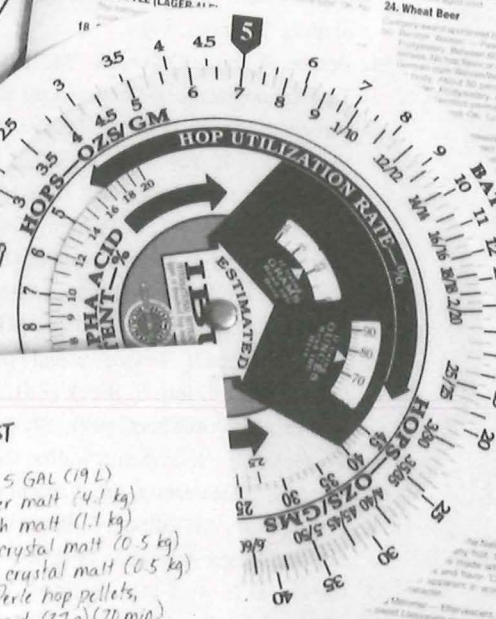
## American Homebrewers Association 1995 National 1995 Category Descriptions

17. Vienna Oktoberfest Märzen

MIXED STYLE (LARGE)

23. California C-

24. Wheat Bee



INGREDIENTS FOR 5 GAL (19 L)

- 4 lb pale malt syrup (1.8 kg)
- 4 lb dry malt extract (1.8 kg)

OR

- 9 lb pale malt extract syrup (4.1 kg)

OR

- 7 lb dry malt extract (3.2 kg)

- 6 oz light German crystal malt (170 g)
- 6 oz dark German crystal malt (170 g)
- 6 oz 20°L English caramel malt (170 g)
- 8 oz two-row Munich or Vienna malt (227 g)

3½ ounces Tettnanger hops,  
4% alpha acid (17g) (60 min)

4.1 lb (1.8 kg) German Goldings hops,

INGREDIENTS FOR 5 GAL (19 L)

- 9 lb (4 kg) Pilsener malt (4.1 kg)
- 2 1/2 lb (1.1 kg) Munich malt (1.1 kg)
- 1 lb (0.5 kg) dark crystal malt (0.5 kg)
- 1 lb (0.5 kg) light crystal malt (0.5 kg)
- 1 3/10 oz German Perle hop pellets,  
5.2% alpha acid (37g) (20 min)
- 1 oz German Hallertauer hop pellets,  
5% alpha acid (28g) (30 min)
- 2 oz German Hallertauer hop pellets,  
5% alpha acid (14g) (10 min)
- Wyeast No. 2308 (Weihenstephan 308)  
lager yeast
- Original Specific Gravity: 1.064  
Final Specific Gravity: 1.020



# GERMAN ENGINEERING IN A

# GLASS

visions of blue and white checked banners, oompah bands and maas-laden fräuleins are what typically come to mind when someone mentions Oktoberfest. Americans take this most Germanic of holidays to heart in part because of our melting-pot culture.

The celebration of Oktoberfest is really the celebration of the harvest and its bounty. These occasions need a festive beer, one with an elegant balance between hop bitterness and malty flavor that will not tire the palate. It should possess enough alcohol to lift the spirit but not deaden the senses. These lagers are subtle, malty, mildly bitter, soft, round, yet slightly dry amber beers known most commonly as Märzen (or Maerzen), Oktoberfest or Vienna.

The last name, Vienna, echoes the style's heritage, which originated in Austria, not Germany. Brewing had been under the control of monasteries until the 17th century, when various royal courts took over. With the advent of the Industrial Revolution, brewing became a commercial enterprise. Three of Europe's big brewing centers, Munich, Pilsen and Vienna, were all in proximity to one another, the latter two cities being part of the great Austro-Hungarian Empire. It should come as no surprise that the introduction of modern bottom-fermentation techniques happened at all three breweries within a year during the early 1840s.

The great Austrian brewer, Anton Dreher, is responsible for the classic lagers of this style originally brewed in Vienna. Dreher collaborated with a contemporary and friend, the great German brewer Gabriel Sedlmayr of Munich, to introduce the technology that has forever changed brewing. During the two decades following the introduction of bottom-fermenting yeast, Dreher perfected the lagering process necessary for brewing Märzen and Oktoberfest beer in the spring and storing it in cold cellars through the summer.

Vienna was a popular style at the time, even with the success of the new Pilsener style. Munich brewers could not ignore this success, and the poor results in brewing Pilsener-style beers led them to try Vienna. The alkaline water of Bavaria is suitable for the darker Vienna malts and their natural acidity. The beers produced were a pleasant change from the dark Münchener style of the time and are popular in Germany to this day.

Once brewers such as Dreher and Sedlmayr introduced refrigeration to their breweries in the late 1850s they began brewing lager beers year-round. At this point the Vienna style in Austria began to differ from Märzen/Oktoberfest. As a popular standard style, the Vienna lagers became a slightly lower gravity beer aged for shorter periods of time. The German brewers held to tradition, brewing beers labeled Märzen in March for consumption during the Oktoberfest.

Several factors led to a decline of Vienna, especially in Austria: the fall of the Austro-Hungarian Empire, Dreher's death and the increase in popularity of lighter colored beers such as Pilsener and Dortmunder Export. George and Laurie Fix, in their book *Vienna, Märzen, Oktoberfest* (Brewers Publications, 1992), propose that many reputable brewers emigrated to the Americas because they found brewing conditions in Austria and the use of lower quality barley for malting unacceptable. These brewers attempted to continue the style in the United States and Mexico.

Prohibition essentially wiped out any remaining examples of Oktoberfest in the United States. Those that survived in Mexico fell prey to the practice of using adjuncts, primarily corn, that lightened their flavor and body. Fortunately, the microbrewery movement in the 1980s revived the style and led to its renewed popularity in the United States.

By Brad Kraus



LEFT PHOTO BY GALEN NATHANSON  
BLUEPRINT ILLUSTRATION BY SAM NISHEK  
BOTTOM RIGHT PHOTO COURTESY OF JERRY GRIEF



“Märzen is one of most quaffable styles of beer there is. Obviously, if hundreds of thousands of liters are consumed during the 16 days of Oktoberfest, there has to be some intrinsic quality of the beer that makes it so drinkable. Perhaps it is the malty character that has just the right touch of sweetness. Maybe it's the noble hop character of the fine German hops. Most likely it's the circumstances under which Festbiers are consumed: Good times with good friends.”

ERIC WARNER, WEIHENSTEPHAN GRADUATE AND HEAD BREWER AT TABERNASH BREWING CO., DENVER, COLO.



“What intrigues me the most about märzen is the history behind the beer. It is the beer originally consumed at the Oktoberfest and was deemed fit for a royal wedding. The complex malts were actually used to cover up the flaws that formed during aging in the summer months because of the lack of refrigeration.”

DAN GORDON, DIRECTOR OF BREWING OPERATIONS, GORDON BIERSCHE BREWERY AND RESTAURANT, EMERYVILLE CALIF.

Oktoberfest has ceased to exist in Austria, except for the occasional anniversary brew. The German versions show remarkable variance, from the bronze to gold-colored festbiers to the more traditional reddish-brown Märzenbiers. Spaten, Gabriel Sedlmayr's original brewery, produces both a Märzenbier and a lighter colored Oktoberfest, which are exemplary of the style. Interestingly enough, some Scandinavian breweries, such as Norway's Aass Brewery, produce lager beers that fit the style very well.

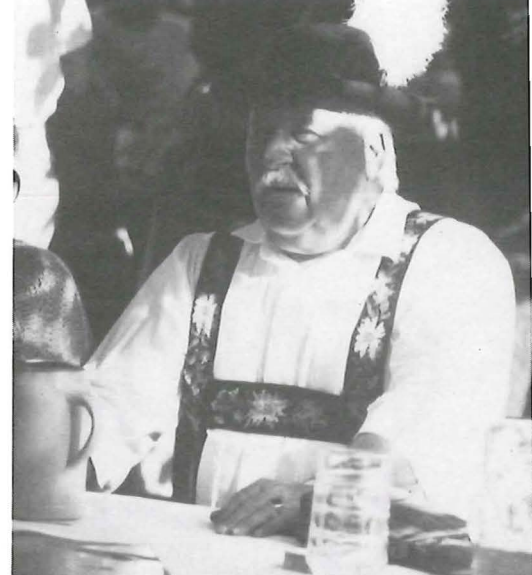
The remnants of the style that exist in Mexico include Dos Equis, Negra Modelo and Christmas beers such as Noche Buena and Commemorativa. Most of these now use cornstarch or other corn adjuncts that would surely have Dreher turning in his grave. Though Negra Modelo and Noche Buena are on the dark side of the style, they are examples of what Fix and Fix call the Graf style. These beers could include very small portions of roast malts in the grist. Santiago Graf

was the pre-eminent brewer of Mexico in the late 19th century. I remember when Noche Buena was an all-malt brew with amazing complexity and flavor. After a short absence from the American market in the late 1980s, it returned, but in a lighter bodied version more reminiscent of Dos Equis.

Gary Bauer, a homebrewer turned professional contract brewer at Ambier Brewing Co., was responsible for reintroducing the style to the United States in 1985 with his Vienna-style Lager Beer, since renamed Ambier. I remember it well from its first incarnation. It was a nicely balanced, complex, malty example of the style, though there were some grainy notes. He used six-row pale malt, dextrin, CaraPils, crystal and Vienna malt, and he hopped with Spalt and Hallertauer Mittelfrüh. Many others have followed, including the lighter, drier version I have tasted at Gordon Bier-sch in San Francisco.

The major breweries are brewing some examples of Vienna-style lagers including Coors' Winterfest and Anheuser-Busch's test market Märzen of the late 1980s. I tasted the Coors Winterfest from the filtration line in 1993 and enjoyed it immensely. Though predominately malty and more amber than red in color, it had the complex malt character, subtle hoppiness and soft dryness that one would expect of the style. Of special note is Coors' use of Moravian III barley for its own maltings. The Anheuser-Busch Märzen was a malty bronze-colored lager made entirely from two-row malt. I felt it lacked the true character and complexity of the style.

This complexity is what made Vienna/Märzen/Oktoberfest such a popular and renowned style. According to Fix and Fix this complexity along with the elegance, soft-



ness and balance are the four best descriptors of the style. These beers are typically 8 to 12 SRM in color (bronze to reddish-brown) and 1.048 to 1.056 (12 to 14 °P) original gravity. Hop bitterness is from 18 to 28 IBU, though typically in the mid-20s. Vienna/Märzen/Oktoberfest beers are generally higher in alcohol (and therefore original gravity) than Pilseners and Munich Helles for example and can have a slightly greater range of color, especially to the deep gold- en side. Esters, if present, are minimal.

A point stressed by Fix and Fix is Dreher's insistence on the highest quality ingredients. Dreher allowed only malted Moravian barley to be used in his beers. Its low protein and exceptional malting characteristics also led to its use in the paler kilned Pilsener malts. Dreher also used only the finest hops, typically Saaz or Styrian Goldings.

The original style uses only one malt, a darker kilned Moravian malt. Vienna-type lager malt is similar in extract, moisture and protein to pale lager and Pilsen lager malts. Vienna malts are twice as dark and lower in diastatic power than Pilsener malts. Vienna malts of high quality are not widely

	Original Gravity (Balling/Plato)	Final Gravity (Balling/Plato)	Percent alc. w/w (w/v)	IBU	Color SRM (EBC)
VIENNA	1.048-55 (12-12.5)	1.012-18 (3-4.5)	3.5-4.7 (4.4-6)	22-28	8-12 (16-30)
MÄRZEN/OKTOBERFEST	1.052-64 (13-16)	1.012-20 (3-5)	3.8-5.1 (4.8-6.5)	22-28	4-15 (10-35)
VIENNA — Amber to deep copper/light brown. Toasted malt aroma and flavor. Low malt sweetness. Light to medium body. Hop bitterness “noble-type” low to medium. Low hop flavor and aroma, “noble-type” OK. No fruitiness, esters. Low diacetyl OK.					
MÄRZEN/OKTOBERFEST — Amber to deep copper/orange. Malty sweetness, toasted malt aroma and flavor dominant. Medium body. Low to medium bitterness. Low hop flavor and aroma, “noble-type” OK. No fruitiness, esters or diacetyl.					

FROM THE AMERICAN HOMEBREWERS ASSOCIATION 1995 STYLE GUIDELINES



available these days. A grist of mostly Pilsener or pale lager malt (75 percent or more) with the remainder made up of various color malts would be appropriate. In place of the pale malt, you may use malt extract, but I recommend the freshest pale or extra pale varieties only.

These color malts or specialty grains should be a blend of caramel or crystal malts made from two-row barley. I agree with Fix and Fix that a certain complexity develops by using a blend of light and dark German crystal malts with the addition of some British caramel malt. Recently, more malts of higher quality have become available that would be well-suited to the style.

The original light and dark German crystal malts referred to are most likely from Ireks. Similar products are now available from Durst, another German maltster. Other malts to consider are the Pilsen (1.4 to 1.8 °L), Munich (5.7 to 6.5 °L), CaraVienne (19 to 23 °L) and CaraMunich (53 to 60 °L) from DeWolf-Cosyns of Belgium. Gambrius Malting of Canada has some interesting malts they say are made from European two-row varieties. These include pale (1.8 °L), Munich-90 (10 °L), Munich-100 (25 to 30 °L) and honey malt (18 °L). Their product description claims Munich-90 can make up to 100 percent of the grist and the Munich-100 up to 30 percent. The honey malt has an intense sweetness and bears the name brumalt in Europe. There are, of course, many fine British maltsters, such as Munton and Fison, Hugh Baird and Pauls, that produce malts from two-row varieties.

Dreher's choice of hops would be Saaz or Styrian Goldings. Tettnanger or Hallertauer varieties from Germany or the United States would be acceptable as well. Avoid using other American or English varieties, especially the high alpha-acid ones which would be too coarse for the subtle nature of this beer. A three-addition hop schedule is traditional with the last hops added 10 to 15 minutes before the end of boil.

Brewing water is less a concern as long as it has a minimal sulfate content. This also would mean avoiding the use of gypsum or Burton salts. The calcium and magnesium sulfates contained in these will produce harsh flavors and a hard dryness not appropriate for the style.

Mashing can be either infusion or decoction, though the latter would tend to be more traditional and increase yields and malt flavor. A mash-in at 122 degrees F (50 degrees C) will degrade beta-glucans in malt and aid runoff during the sparge, but is not a necessity. Mash temperatures are best between 150 and 156 degrees F (66 and 69 degrees C). Sparge water should be at 166 to 168 degrees F (74 to 76 degrees C).

A good lager yeast is a necessity. Typically clean, neutral ones are your best bet. Wyeast No. 2308 or No. 2206 are good choices. I have had good luck using Danish strains, but less with American lager strains. Though there is some historical evidence that the original was somewhat fruity, it would be best to avoid strains that produce esters in any quantity. Ferment at temperatures typical for most lagers, 48 to 55 degrees F (9 to 13 degrees C), and follow with a long period of cold maturation. If the beer is to be bottle conditioned, condition before cold maturation. The cold maturation should be at 32 to 35 degrees F (0 to 2 degrees C) for at least three to four weeks, though there are benefits to longer aging periods even the seven-month March to October tradition.

This recipe gives you three malt extract choices.

#### Ingredients for 5 gal (19 L)

- 4 lb pale malt syrup (1.8 kg)
- 4 lb dry malt extract (1.8 kg)
- OR
- 9 lb pale malt extract syrup (4.1 kg)
- OR
- 7 lb dry malt extract (3.2 kg)
- 6 oz light German crystal malt (170 g)
- 6 oz dark German crystal malt (170 g)
- 6 oz 20 °L English caramel malt (170 g)
- 8 oz two-row Munich or Vienna malt (227 g)
- 3/5 ounces Tettnanger hops, 4% alpha acid (17 g) (60 min.)
- 4/5 ounces Styrian Golding hops, 5% alpha acid (23 g) (30 min.)

- 4/5 ounces Saaz hops, 3% alpha acid (23 g) (15 min.)
- lager yeast

- Original specific gravity: 1.059 to 1.063
- Final specific gravity: 1.012 to 1.016

Steep crushed grain in one-half gallon (1.9 L) of water at 150 to 156 degrees F (66 to 69 degrees C) for 45 minutes. Rinse grains with at least another half gallon of water at 166 to 168 degrees F (74 to 76 degrees C). Dissolve malt extract in the runoff and add water to bring volume to five gallons (19 L). Boil wort for at least 60 minutes. Cool, oxygenate and ferment with lager yeast at 48 to 55 degrees F (9 to 13 degrees C).



**“My first impression of an Oktoberfest in Munich was walking into a crowded tent and my attention being immediately drawn to the stage. There was an Oompah band dressed in decorative Lederhosen playing ‘New York, New York.’ A German accent never made a stronger impression ... ‘Samuel Adams Oktoberfest is our most popular seasonal beer. We achieve a smooth, malty, full-bodied character through a combination of specialty malts and a decoction mash. Decoction mashing contributes some color formation and caramel notes, allowing us to decrease the percentage of specialty malts which, when used at higher rates, can cause astringency.’”**

JIM PERICLES, BREWER AT THE BOSTON BEER CO.'S PILOT PLANT IN BOSTON.

**“Ayinger Oktober Fest-Märzen is a golden-amber beer with a soft palate and a very nice malt bouquet. It is a big Märzen at 18.5 °Plato. Brauerei Aying uses two-row German barley and German Tettnanger hops.”**

IAN MCALLISTER, ASSISTANT MARKETING DIRECTOR, MERCHANT DU VIN CORP., SEATTLE, WASH.





## BOCKTOBERFEST

### Ingredients for 5 gal (19 L)

- 9 lb Ireks Pilsener malt (4.1 kg)
- 2 1/2 lb Ireks Munich malt (1.1 kg)
- 1 lb Ireks dark crystal malt (0.5 kg)
- 1 lb Ireks light crystal malt (0.5 kg)
- 1 3/10 oz German Perle hop pellets,  
5.3% alpha acid (37 g) (70 min.)
- 1 oz German Hallertauer hop pellets,  
5% alpha acid (28 g) (30 min.)
- 1/2 oz German Hallertauer hop pellets,  
5% alpha acid (14 g) (10 min.)
- Wyeast No. 2308 (Weihenstephan  
308) lager yeast
- Original specific gravity: 1.064
- Final specific gravity: 1.020

Use a triple decoction mash procedure or an infusion mash with a 30-minute protein rest at 122 degrees F (50 degrees C). Ferment for 10 days at 45 to 50 degrees F (7 to 10 degrees C) with a two-day diacetyl rest at 55 degrees F (13 degrees C). Rack to a secondary and ferment 14 days at 40 degrees F (4 degrees C). Lager for two months at 34 degrees F (1 degree C).

## TRIPLE KROWN OKTOBERFEST

Rich Madole and Andy Patrick of Libertyville, Ill., took second place in the AHA's 1994 Best of Fest Club-Only Competition with this recipe.

### Ingredients for 5 1/2 gal (20.8 L)


- 10 1/2 lb DeWolf-Cosyns Pils malt (4.8 kg)
- 3 lb DeWolf-Cosyns Munich malt  
(1.4 kg)
- 1 lb DeWolf-Cosyns CaraPils malt  
(0.5 kg)
- 1/2 lb 40 °L crystal malt (0.2 kg)
- 1 oz Hallertauer hops,  
4.6% alpha acid (28 g) (60 min.)
- 1/4 oz Tettnanger hops,  
4.4% alpha acid (7 g) (40 min.)
- 1/4 oz Tettnanger hops,  
4.4% alpha acid (7 g) (20 min.)
- Wyeast No. 2206 in prepared starter
- Original specific gravity: 1.062
- Final specific gravity: 1.012

Mash grains for one hour at 151 degrees F (66 degrees C). Boil wort for 90 minutes. Cool wort, pitch yeast and ferment for three weeks at 46 degrees F (8 degrees C). Rack and lager for four months at 36 to 40 degrees F (2 to 4 degrees C).

## REFERENCES

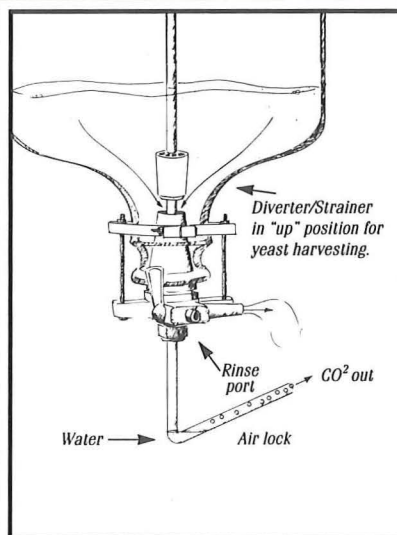
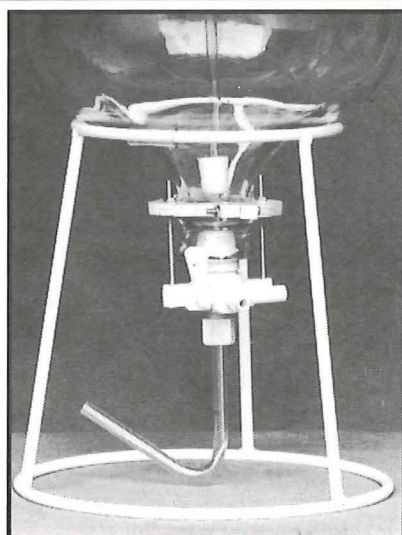
Briggs, Hough, Stevens and Young, *Malting and Brewing Science*, Volume 1, Second Edition,

Chapman and Hall, 1981, Table 5.9, p. 136. Fix, George and Laurie, *Vienna, Märzen, Oktoberfest*, Brewers Publications, 1991. Jackson, Michael, *Michael Jackson's Beer Companion*, Running Press, 1993.

Brad Kraus of Santa Fe, N.M., is brewmaster at Rio Bravo Restaurant and Brewery in Albuquerque, N.M., and Santa Barbara, Calif. He also is head of Kraus Brewing Services, a brewery consulting firm. A homebrewer for 12 years and Master judge in the BJCP, he was formerly brewmaster of Santa Fe Brewing Co. 

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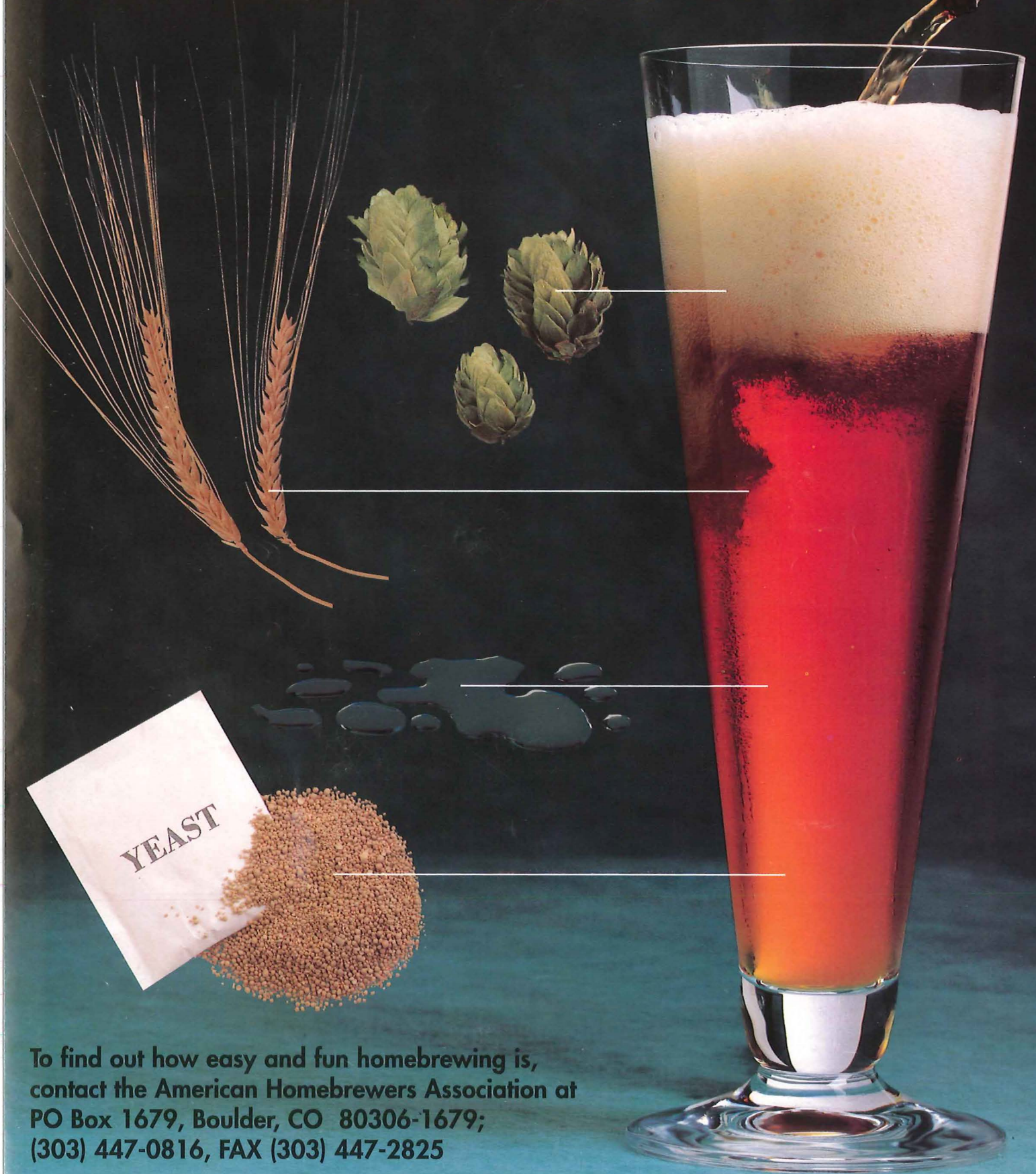
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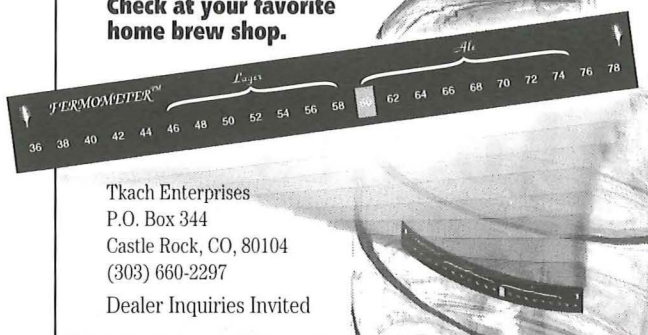
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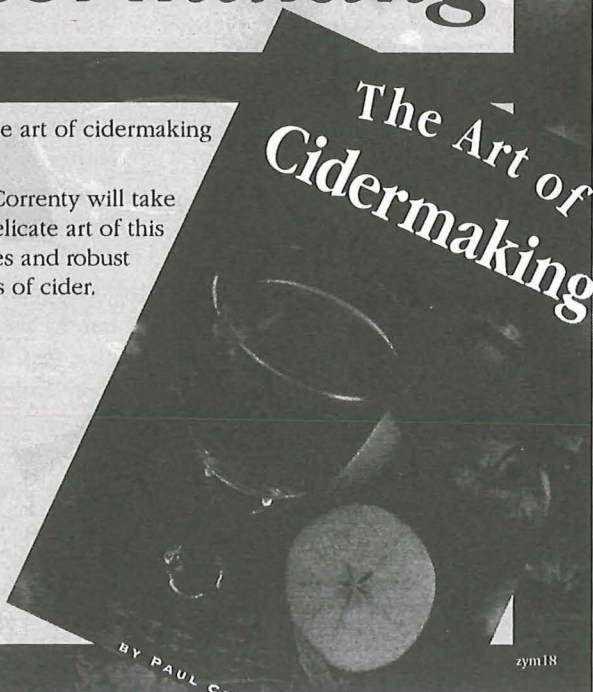
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zym18



# THE COUNTERPRESSURE CONNECTION



*In an effort to demystify counterpressure bottle filling, the AHA funded the following research project. Fillers were borrowed from manufacturers and returned. All testing and shipping was paid for by the AHA. -Ed.*

**BY DAVID  
RUGGIERO,  
JONATHAN  
SPILLANE  
AND DOUG  
SNYDER**

## Where Bottles & Kegs Unite

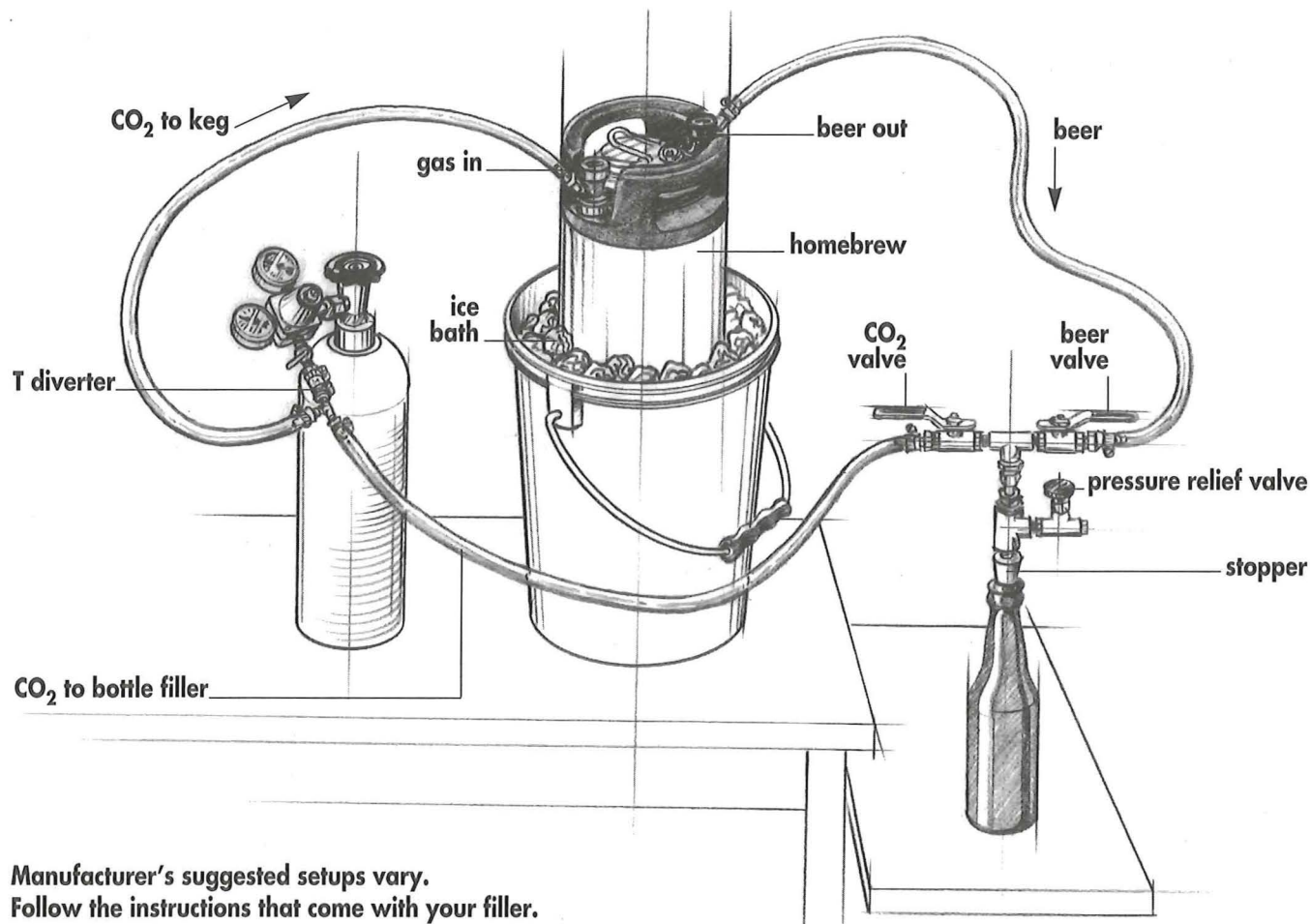
**B**ottling beer is a necessary part of beermaking. It requires about one or two hours to clean and sanitize 52 bottles, transfer beer to a bottling bucket, prime, then fill and cap the bottles. In comparison, kegging beer is simpler and requires only 15 minutes to clean and fill a keg. Priming isn't necessary, there are no multiple transfers and no capping. Let's face it, bottling takes time and effort while kegging doesn't, and the more time you spend bottling the less time you have for brewing and tasting.

With that said, why would a homebrewer want to put kegged beer into bottles, the very bottles that kegging is supposed to do away with? It's simple: homebrewers want to share their beer. They want to give it to friends and enter it in competitions. They want to do these things without lugging around a heavy keg or carbon dioxide (CO<sub>2</sub>) tank, and they want to do it with ease.

A counterpressure bottle filler (CPBF) is the piece of equipment a homebrewer needs to transfer beer from the pressurized CO<sub>2</sub> environment of a keg into a bottle. In an effort to explain the CPBF process and show homebrewers what kind of equipment is available we used seven commercial bottle fillers and one homemade filler. All were evaluated during one bottling session with the same beer. Strict adherence to the manufacturer's directions was observed. In total, 24 bottled samples were collected, three from each filler. We noted the range of each filler's application, home or commercial depending on both cost and ease of operation, and whether it could simply be attached to a CO<sub>2</sub> tank and used or if assembly and additional parts were required. The fillers were then rated and described with regard to the following: additional equipment required, ease of setup, ease of operation, effectiveness of operation, quality of materials and quality of construction. The coded samples were then forwarded to Dr. George Fix for laboratory analysis of CO<sub>2</sub> and O<sub>2</sub> amounts. The findings follow, but first, an introduction and explanation of counterpressure bottle filling.



## Sample Counterpressure Bottle Filler Setup



Manufacturer's suggested setups vary.  
Follow the instructions that come with your filler.

### COUNTERPRESSURE BOTTLE FILLER PRINCIPLE

The term "counterpressure bottle filling" may seem ominous, but it really is not. When you use a CPBF you are filling a bottle from a keg of carbonated beer. If you were to bottle by conventional means, siphoning the carbonated beer into an open bottle, the  $\text{CO}_2$  in the beer would come out of solution and the beer would foam up and out. The same release of  $\text{CO}_2$  occurs when you pour yourself a glass of beer. But when you apply  $\text{CO}_2$  top pressure to the bottle, or counterpressure, the release of  $\text{CO}_2$  from the beer can be decreased, if not eliminated. To achieve this balance the beer must be kept cold and at a constant pressure. The standard method used by a majority of U.S. bottle fillers is to fill bottles with beer that is between 32 and 37 degrees F (0 and 3 degrees C).

The need for counterpressure filling is based on the following: when carbonated beer experiences a pressure drop, a temperature increase

or some turbulence, it cannot hold as much  $\text{CO}_2$  in solution, and therefore  $\text{CO}_2$  bubbles out of solution. Simply pouring from a keg faucet into a room-temperature bottle causes all three, so there will be foaming, carbonation loss and oxidation (because of the air in the bottle). CPBFs allow the user to transfer beer without a pressure drop (the beer is moved from pressurized keg to pressurized bottle) and, in some models, to purge air from bottles, thus minimizing oxidation. Although turbulence during transfer cannot be eliminated, long fill tubes minimize this and the  $\text{CO}_2$  under pressure in the bottle increases the tendency of the  $\text{CO}_2$  in the beer to stay in solution.

All eight fillers we used required the beer to be processed cold. Seven incorporate the principle of counterpressure filling. Of those seven, six instruct the operator to evacuate air from the bottle prior to filling.



## Evaluation Criteria

With more than 15 years of homebrewing experience between the authors, an evaluation of counterpressure bottle fillers seemed an interesting task. We relied on the individual with the least kegging/CPBF experience to review all of the instructions and coordinate the bottling activities for two reasons: First, we assumed that most CPBFs are purchased by brewers unfamiliar with CPBF operations and second, Jonathan wouldn't let us play with all the neat toys we were sent.

Each filler was assessed on a scale of one to 10 for the first five criteria:

### INSTRUCTIONS

Practical and theoretical information was presented with each filler. How easy to follow were the step-by-step instructions? How did they stack up against the physical principles of CPBFing?

### CONSTRUCTION AND MATERIALS

What was the filler made of? How durable did the parts appear? What degree of detail and level of craftsmanship was evident?

### EASE OF SETUP

Was the filler ready to use right out of the box? What extra equipment was needed and at what cost? How compatible to typical homebrewing keg equipment was the bottle filler?

### EASE OF OPERATION

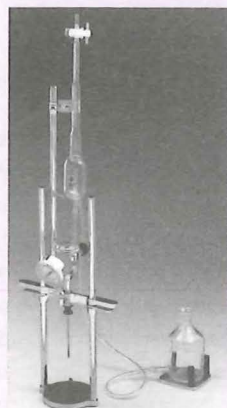
How comfortable was the filler to hold and operate? Was it heavy, awkward or unruly? Does it require one, two or three hands to operate?

### EFFICIENCY

How easily did the filler purge the bottle, pressurize it, bleed the pressure and fill the bottle according to the manufacturer's instructions?

### EFFECTIVENESS

Dr. Fix used a Zahm and Nagel CO<sub>2</sub>/Air Tester to measure the effectiveness of each CPBF. The results indicate how well CO<sub>2</sub> was retained and the total volume of air in milliliters introduced during the filling process. Effectiveness percentages were determined by taking the average volume of CO<sub>2</sub> per bottle divided by the original volume of CO<sub>2</sub>. The higher the percentage, the greater the effectiveness. (Special note: Not all bottles tested were filled per manufacturers' instructions. If the fillers were uncooperative or the instructions were poorly documented liberties were taken to fill the bottles.)

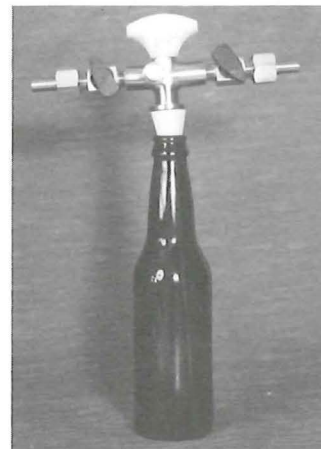


**Zahm & Nagel's CO<sub>2</sub>/Air Tester was used to test the effectiveness of each CPBF.**

How much air was brought into solution during the CPBF process? Air, of course, contains oxygen and high levels of oxygen result in a higher rate of oxidation-related spoilage and subsequently a shorter shelf life. According to the Master Brewers Association of the Americas, the standard of 1 milliliter of air is often sighted as the commercial brewing industry's acceptable high-end level. Homebrewers use higher levels, about 2 milliliters of air, and this analysis uses the 2-milliliter level as its standard. The levels of air are listed in percentage form above or below 2 milliliters. A level of air at or below 2 milliliters is optimal for homebrewers provided the homebrew did not suffer thermal abuse, according to *Brewing Science* (Academic Press, 1981).

## ZAHM & NAGEL CO.

74 JEWETT AVE.  
BUFFALO, NY 14214  
(716) 833-1532



Retail price: (P/N 9800) \$370  
(w/ 1/4" ID adapters)

Application: Home ✓ Commercial ✓  
Ready to use: Yes No ✓

### INSTRUCTIONS (10)

Zahm and Nagel covered all the bases with a first-class, single-page, step-by-step hose hookup and bottle-filling fact sheet. The company also sent a copy of their catalog, which proved to be an invaluable reference and tutorial for preparing this article. A supplier to the commercial brewing industry, Zahm and Nagel manufactures high quality CO<sub>2</sub> volume meters and bottle fillers, among other items. This hand filler is part of the series 9000R Zahm Pilot Plant filter, carbonator and filler product.

### CONSTRUCTION AND MATERIALS (10)

(All stainless-steel construction.) This unit is impeccably made and easy to handle. The polished stainless-steel fittings and Delrin plastic handles not only look good but feel good and are easy to use. From setup and filling through cleanup, the filler's design and materials make it first rate.

### EASE OF SETUP (2)

The filler we received came with three-eighths-inch tubing stems which is not typical for homebrew kegging systems. Retrofitting quick-disconnects and obtaining the proper sized pressure-rated tubing may be



difficult and could cost around \$10. When ordering, specify the interior diameter you require for your setup.

The unit was shipped with filler tubes of three different lengths. While the brewer has the option of choosing the correct length for the bottle size being used, the effort needed to install the tube was dramatic. Also, the rubber stopper that seals the bottle is almost too big. Replacement stoppers are only available from Zahm and Nagel.

### EASE OF OPERATION (10)

Perfect scores are tough to get, but this filler has three. The most outstanding feature is its valves. Both the CO<sub>2</sub> and liquid-feed valves are stainless-steel one-quarter turn plug valves with Teflon coating. They operated perfectly. The CO<sub>2</sub> bleeder needle valve was easy to use and gave us no trouble.

### EFFICIENCY (7)

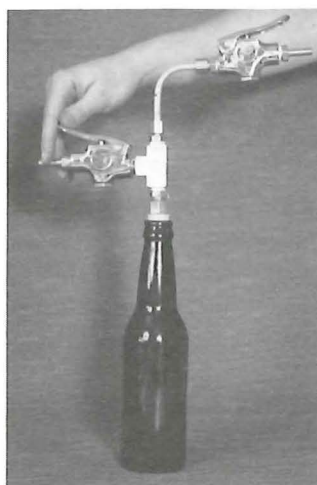
Two points worth mentioning are the stopper size and the volume of CO<sub>2</sub> required to operate this unit. The rubber stopper provided by the supplier was slightly oversized for the bottles we were using. This seemed odd because we were using standard 12-ounce bar bottles, the same kind that nearly every commercial brewery uses. Though a tight seal between bottle and stopper was achieved, there was little room for error. Regarding the volume of CO<sub>2</sub> required during bottling, the instructions call for the CO<sub>2</sub> supply valve to be open during the filling process unlike some of the other fillers we used.

### EFFECTIVENESS

CO<sub>2</sub> retained: 91.25 percent of original volumes.  
Air: 25 percent above recommended levels.

## THE BEVERAGE PEOPLE

840 PINER ROAD #14  
SANTA ROSA, CA 95403  
(707) 544-2520



Retail price:	\$59.95
Application: Home ✓	Commercial
Ready to use: Yes	No ✓

### INSTRUCTIONS (1)

The instructions were clearly written and concise. A helpful list of additional parts is included. The instructions seem flawed in that a release or even a recycling of CO<sub>2</sub> was impossible to achieve. Without the release of CO<sub>2</sub> from the bottle, beer will not flow.

*Editor's Note: Curiosity got the best of us, so we tried using the filler ourselves. After a few unsuccessful attempts and a call to the manufacturer, the AHA staff was able to get the filler to perform as intended. Users should note the operating differences between two- and three-valve fillers.*

### CONSTRUCTION AND MATERIALS (8)

(Two-way trigger valves and stainless-steel beverage path.) A nice design in a clean, simple package. The trigger valves are the best feature of this unit.

### EASE OF SETUP (5)

Like most of the other fillers, additional CO<sub>2</sub> and beer lines are required. An estimated cost of \$5 for extra parts is all you need to make this unit operational.

### EASE OF OPERATION (8)

The unit was by far the easiest to handle. The ergonomics are fantastic, you need only two hands to operate it.

### EFFICIENCY (5)

When following the instructions provided, each time the beer line was opened no beer would flow. Repeated attempts were made to fill bottles and changes were made to the system each time. Different pressures, CO<sub>2</sub> paths, bottle heights and keg heights were used, but all proved ineffective.

Despite the problems with the instructions, we were able to fill bottles using an improvised method. By simply lifting the rubber stopper away from the bottle lip and creating a very small opening for the CO<sub>2</sub> pressure to escape our test bottles were filled very easily. Fortunately, the design of this filler lent itself to this improvisation. On further research we found that several professional brewers used this method when filling bottles with the Zahm and Nagel filler.

### EFFECTIVENESS

CO<sub>2</sub> retained: 93.65 percent of original volumes.  
Air: 8 percent below recommended levels.

## Counterpressure Bottle Filler Parts List

While differences among kegging systems and CPBF exist, the basic design and function of this equipment will be the same. A kegging system must have a pressurized container to hold the beer and a CO<sub>2</sub> source to dispense it. A CPBF allows the user to transfer beer from the pressurized keg to a pressurized bottle. Tying these two pieces of equipment together is not difficult, but it may be a unique fit depending on the equipment you are using. Listed below are the minimum requirements that homebrewers will need to use a CPBF.

At the heart of this enterprise would be a homebrew kegging system. Generally, these systems cost between \$175 and \$250. They should include the following:

- 1 soda keg
- 2 CO<sub>2</sub> cylinder
- 3 CO<sub>2</sub> regulator
- 4 CO<sub>2</sub> quick-disconnect
- 5 liquid quick-disconnect
- 6 pressure-rated tubing and hose clamps
- 7 faucet

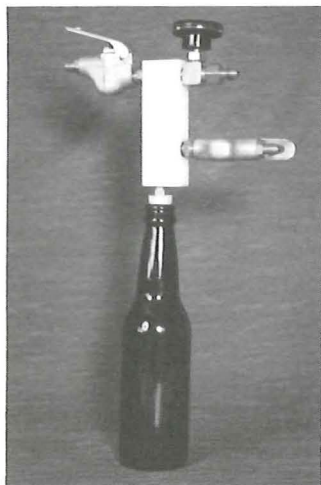
Once assembled and operational, kegging, not bottling, may be your preferred method of packaging. The savings of time, both in filling bottles and waiting for the beer to carbonate, can be worth the expense of the kegging system. However, requests for an occasional bottle and the headache of lugging around all your equipment will eventually create an interest in counterpressure bottle filling. Along with a CPBF you will need:

- 1 extra pressure tubing and clamps
- 2 a hose-barb T (plastic or stainless steel) or a CO<sub>2</sub> regulator manifold
- 3 additional liquid tap quick-disconnect



## BENJAMIN MACHINE PRODUCTS

1121 DOKER DR.  
MODESTO, CA 95351  
(209) 523-8874



Retail price: BFD 3B \$60  
Application: Home ✓ Commercial  
Ready to use: Yes No ✓

### INSTRUCTIONS (6)

Brief but effective, these instructions include interesting and useful facts about sanitation which we applied to all of the fillers used.

### CONSTRUCTION AND MATERIALS (8)

(Plastic body, stainless-steel beverage path.) Perhaps the most unique of all of the fillers we reviewed. Two-way trigger valves are used instead of the ever-present ball and check valves that most fillers use. These valves give greater flow control of liquid and gas, which is a requirement when filling. The

other unique feature about this unit is its one-piece plastic body. Advertised as leak proof and chill proof, the plastic body in fact did not leak, but none of the others did either. As for it being chill proof, which would eliminate the "frozen hand syndrome," only three bottles were filled and our hands felt no different. In fact, none of the fillers froze our hands, so an assessment cannot be made regarding this claim.

### EASE OF SETUP (6)

This unit is ready to receive standard-size one-quarter-inch tubing. An estimated cost of \$5 for tubing clamps and T-fittings is all that is required to get you started.

### EASE OF OPERATION (7)

Though the flow valves on this filler are superior, the pressure-relief needle valve was tougher to use in comparison to the trigger valves. Also, the fill stem was much too short for a standard 12-ounce bottle. The manufacturer says the fill stem length will accommodate any size bottle, "and if proper pressures are used foaming will not occur." We found this to be true. However, filling the bottles took almost twice as long, about two minutes each, because a slower pressure-relief flow rate was required.

### EFFICIENCY (6)

This unit is quite effective and easy to use. The only drawback was the slow fill rate.

### EFFECTIVENESS

CO<sub>2</sub> retained: 88.91 percent of original volumes.  
Air: 27 percent above recommended levels.

## BENJAMIN MACHINE PRODUCTS

1121 DOKER DR.  
MODESTO, CA 95351  
(209) 523-8874



Retail price: BFD 3S \$125  
Application: Home ✓ Commercial ✓  
Ready to use: Yes No ✓

### INSTRUCTIONS (6)

Same as the BFD 3B model.

### CONSTRUCTION AND MATERIALS (8)

Same as the BFD 3B model with the following exceptions: the BFD 3S comes with a pressure gauge mounted on the pressure-relief valve allowing for faster filling by monitoring the bottle pressure, and the pressure-relief needle valve is superior and easier to use.

### EASE OF SETUP (6)

Same as the BFD 3B model.

## Counterpressure Bottle Filling Step-by-Step

Instructions vary. Always follow the manufacturer's suggested procedure.

- 1 Assemble your CPBF (if required).
- 2 Connect a CO<sub>2</sub> line to both the CPBF and to the keg of beer by using a plastic or stainless-steel T.
- 3 Connect a beer line from the keg to the CPBF.
- 4 Insert the CPBF filling tube into the neck of a sanitized and chilled bottle, checking to make sure that the rubber stopper forms a tight seal.
- 5 Purge air from the bottle following manufacturer's instructions. Some fillers may not include this step.
- 6 Fill the bottle with CO<sub>2</sub> and position the CO<sub>2</sub> valve according to the manufacturer's directions.
- 7 Open the beer-line valve. If all has gone well and the keg and bottle are at equal pressure, no beer will flow when the beer-line valve is opened.
- 8 Slowly open the CO<sub>2</sub> pressure-relief valve and start the flow of beer into the bottle. Do not allow the beer to foam.
- 9 Fill the bottle to the manufacturer's recommended level, then turn off pressure-relief, beer and CO<sub>2</sub> valves.
- 10 Remove the filler and cap the bottle.





#### EASE OF OPERATION (7)

Same as the BFD 3B model. The only exception is the improved pressure-relief valve.

#### EFFICIENCY (6)

Same as the BFD 3B model. However, once mastered, the 3S model's pressure-relief gauge and valve may be used to speed the process.

#### EFFECTIVENESS

CO<sub>2</sub> retained: 90.52 percent of original volumes.  
Air: 3 percent below recommended levels.

#### FOXX EQUIPMENT CO.

421 SOUTHWEST BLVD.  
KANSAS CITY, MO 64108  
(816) 421-3600



Retail price: \$40  
Application: Home ✓ Commercial  
Ready to use: Yes No ✓

#### INSTRUCTIONS (8)

The step-by-step instructions were clear, concise and didn't cause any confusion.

#### CONSTRUCTION AND MATERIALS (4)

(Brass valves, stainless-steel and brass beverage path.) Three needle valves, stainless-steel tubing and a rubber stopper were all tied together in an economical package.

#### EASE OF SETUP (6)

This unit is ready to receive standard size tubing onto stems that fit standard homebrew keg systems. An estimated cost of \$5 for tubing clamps and T-fittings is all you need.

Note: The unit we received was greasy and required extra time to clean, and one of the brass fittings was not sufficiently tightened. Two of the authors own Foxx Fillers and never encountered this situation before, so we assume the filler sent for testing slipped by the quality assurance people.

#### EASE OF OPERATION (2)

This filler uses needle valves that have a very rough finish and are quite difficult to turn. The person operating the filler complained of cuts on his thumbs. The sharp edges and numerous turns required to open the liquid and gas lines were cited as the cause of the cuts and a major drawback of the unit.

#### EFFICIENCY (7)

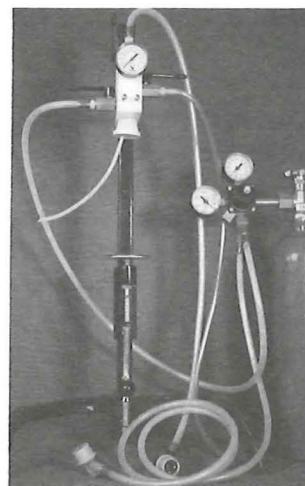
Overall, this unit does what it advertises. It does what a CPBF should do and does it well. Unfortunately, its rough valves make this effective tool uncomfortable to operate.

#### EFFECTIVENESS

CO<sub>2</sub> retained: 89.53 percent of original volumes.  
Air: 12 percent above recommended levels.

#### VINO THEQUE

2142 TRANS CANADA HIGHWAY  
DORVAL, QUEBEC H9P 2N4  
CANADA  
(514) 684-1331; (800) 363-1506



Retail price: Melvico Bottler \$350 (Canadian)  
Application: Home ✓ Commercial ✓  
Ready to use: Yes ✓ No

#### INSTRUCTIONS (6)

The step-by-step instructions given in French and English were complete and all of the basics were covered.

#### CONSTRUCTION AND MATERIALS (9)

(Plastic and stainless-steel beverage path, plastic ball valves and filling head.) Perhaps this unit is overkill for most people, but we found it to be the best and most enjoyable to use. It has a great design with only one small drawback: the adjustable bottle support is not easy to operate.

## TOP 10

### Tips for Trouble-Free Counterpressure Bottle Filling

- 1 Read instructions carefully and follow them completely.
- 2 Chill your beer and bottles to between 34 and 37 degrees F (0 and 3 degrees C).
- 3 Invest in a CO<sub>2</sub> regulator manifold. Multiple CO<sub>2</sub> lines can then be run simultaneously from one regulator to the keg and CPBF, maintaining proper pressure (unless the manufacturer's design prohibits this setup).
- 4 Work with another person, one will bottle and the other will cap.
- 5 Wear old clothing and safety glasses.
- 6 Try your system with water first. No sense wasting good beer.
- 7 Purge air from the bottle. Oxidized beer can be avoided.
- 8 If the beer foams too much, start again.
- 9 Remove the fill tube slowly. Excessive movements will cause the beer to gush.
- 10 Relax, don't worry, have a homebrew.



### EASE OF SETUP (10)

The only things this unit didn't provide were the keg and the CO<sub>2</sub> tank. Complete with a regulator, it is 100 percent homebrew compatible with one-quarter-inch ID hoses. It requires no extra parts. Just hook up the beer lines and the regulator and fill.

### EASE OF OPERATION (9)

The unit is great. You look and feel like a professional when you bottle with it. The two drawbacks are its unstable frame construction (bolt it down and this shouldn't be a problem) and the touchy pressure-relief valve (with practice it becomes easier to use).

### EFFICIENCY (10)

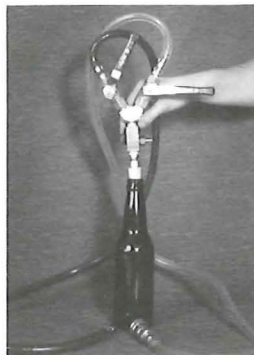
From hookup to cleanup there were no problems. Because the bottle is locked into place, both hands are free to work the valves, which work very well. Purging and filling are done quickly. This unit caused less foaming than the others.

### EFFECTIVENESS

CO<sub>2</sub> retained: 95.94 percent of original volumes.  
Air: 8 percent above recommended levels.

### BRAUKUNST HOMEBREWER'S SYSTEMS

55 LAKEVIEW DR.  
CARLTON, MN 55718-9220  
(218) 384-9844



Retail price: \$44.95  
Application: Home ✓ Commercial  
Ready to use: Yes ✓ No

### INSTRUCTIONS (10)

Complete and easy to read. Though not in a step-by-step format, all of the information, parts lists and helpful hints are included in a well-written two-page document.

### CONSTRUCTION AND MATERIALS (8)

(Stainless-steel and brass beverage path, brass CO<sub>2</sub> and beer ball valves, brass pressure-relief

needle valve.) A complete package with all the parts, from CO<sub>2</sub> to beer hookups. Compatible to homebrew keg systems. One great additional feature is the rubber grips on the ball valves. They provide a solid grip without any slipping.

### EASE OF SETUP (10)

This was the one unit that required no additional equipment to set up. Just clean the unit before use. Braukunst even manufactures a tool for this task (the K-63 hose cleaner retails for \$36.95). Attach their beer line quick-disconnect to your keg and their CO<sub>2</sub> fitting to your regulator then bottle.

### EASE OF OPERATION (6)

The configuration and the use of ball valves makes operation easy and provides a straight path for the beer, which helps prevent foaming. The placement of the ball valves was the only problem we had with this unit. Arranged in a V shape, the ball valves are close together and are awkward to operate.

### EFFICIENCY (10)

One of the most enjoyable units to use. From the ease of setting up to the effective valve operation, no problems were encountered.

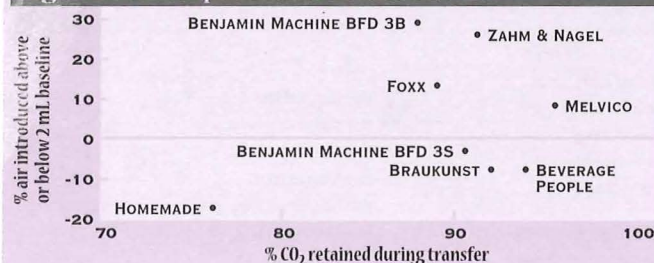
### EFFECTIVENESS

CO<sub>2</sub> retained: 91.98 percent of original volumes.  
Air: 8 percent below recommended levels.

**TABLE 1: Counterpressure Bottle Filler Evaluation Summary**

MODEL	INSTRUCTIONS	CONSTRUCTION/ MATERIAL	EASE OF SETUP	EASE OF OPERATION	EFFICIENCY	EFFECTIVENESS VOLUMES CO <sub>2</sub> * AIR**	MANUFACTURER'S SUGGESTED RETAIL PRICE	HOME USE	COMMERCIAL USE	READY TO USE
ZAHM & NAGEL	10	10	2	10	7	91.25% 25%+	\$370.00	✓	✓	No
BEVERAGE PEOPLE	1	8	5	8	5	93.65% 8%-	\$ 59.95	✓		No
BENJAMIN MACHINE BFD 3B	6	8	6	7	6	88.91% 27%+	\$ 60.00	✓		No
BENJAMIN MACHINE BFD 3S	6	8	6	7	6	90.52% 3%-	\$125.00	✓	✓	No
FOXX	8	4	6	2	7	89.53% 12%+	\$ 40.00	✓		No
MELVICO	6	9	10	9	10	95.94% 8%+	\$350.00 (CAN)	✓	✓	YES
BRAUKUNST	10	8	10	6	10	91.98% 8%-	\$ 44.95	✓		YES
20¢ HOMEMADE FILLER	10	6	10	10	4	76.72% 19%-	\$ 0.20	✓		YES

### EFFECTIVENESS ANALYSIS: Light Counterpressure Bottle Fillers



The first five criteria were rated on a scale of one to 10 by the authors, 10 being the highest score.

The effectiveness of each filler was tested by Dr. Fix with a Zahm and Nagel CO<sub>2</sub>/Air Tester.

\* Volumes of CO<sub>2</sub> are expressed as a percentage of CO<sub>2</sub> retained during transfer from keg to bottle.

\*\* The amount of air picked up during transfer is expressed as a percentage above (+) or below (-) 2 milliliters, the accepted standard for homebrewers.



## HOMEMADE BOTTLE FILLER



Retail price:	20 cents
Application: Home ✓	Commercial
Ready to use: Yes ✓	No

### INSTRUCTIONS (10)

Simply slip a piece of one-quarter-inch inside-diameter tubing into the mouth of your keg's squeeze faucet. Insert the tube into the bottle then squeeze the trigger and fill the bottle.

### CONSTRUCTION AND MATERIALS (6)

(One-quarter-inch inside-diameter plastic tubing.) As simple a design as you can get. No frills, no added expense and no complicated procedures.

### EASE OF SETUP (10)

Beyond putting the plastic tubing into the squeeze faucet, none is required. The same procedures for chilling beer and bottles as with the other fillers must be observed.

### EASE OF OPERATION (10)

If you can serve beer from your keg's squeeze faucet you can use this method to fill bottles.

### EFFICIENCY (4)

While this filler is easy to use and affordable it fails to purge the bottle of oxygen and it does not fill via the counterpressure principles. It was included in this review because of its low cost and ability to put beer into bottles quickly. If you fill with low enough temperatures and pressures, minimal CO<sub>2</sub> will be lost. Regarding the unit's inability to purge the bottle of air, few homebrewers filling bottles via conventional means purge the bottles. It is assumed that the same rate of oxidation will occur. Minimal in a worst-case basis.

### EFFECTIVENESS

CO<sub>2</sub> retained: 76.72 percent of original volumes.  
Air: 19 percent below recommended levels.

The process of putting beer into a keg and then into bottles may not be for everyone. Most brewers would rather take beer from kegs and put it directly into pint glasses. If you are in the market for a CPBF the information presented here and summarized in Table 1 should help you make an


informed purchase. Considering the findings of this project, we believe cost and unit effectiveness should be the most closely scrutinized. You should purchase a unit that will give you the results you need for the money you have to spend. Remember, regardless of the filler you buy, your CO<sub>2</sub> and O<sub>2</sub> effectiveness will improve with practice.

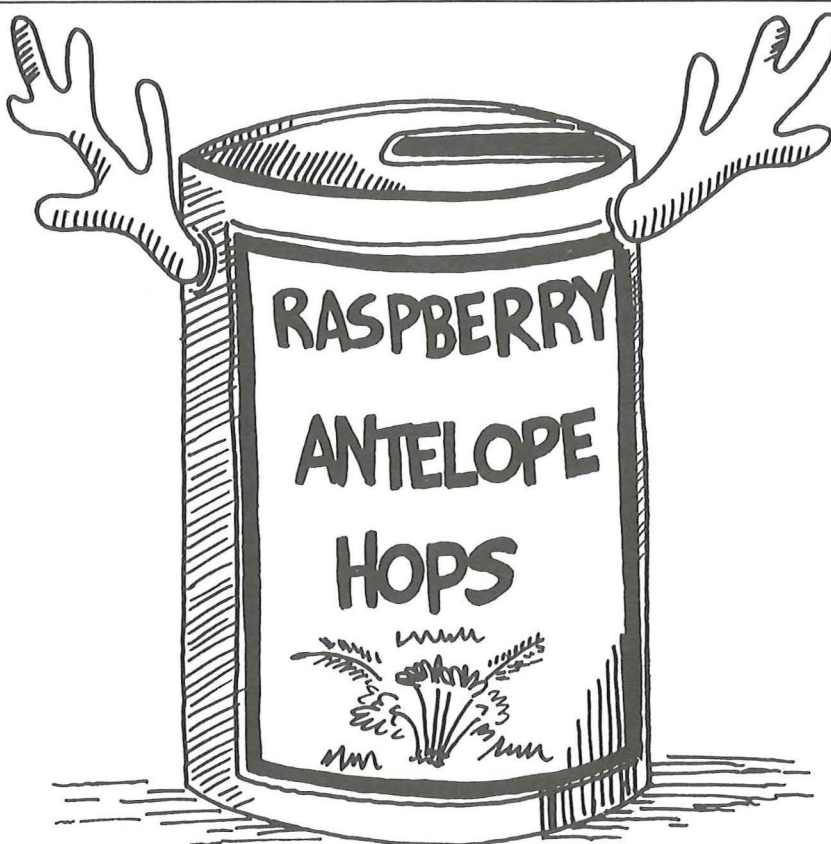
## References

*Beer Packaging*, Master Brewers Association of the Americas, pp. 150-151, 580; 1982.  
*Brewing Science*, Vol. 2, edited by J.R.A. Pollock, Academic Press Inc., 1981.

David Ruggiero has been a homebrewer for 12 years. He owns and operates Barleymalt and Vine, a homebrew supply shop in Boston, Mass. In April 1995 he opened a brew-on-premise at his shop.

Doug Snyder is a videographer/editor and founding member of Echo Bridge Productions. He has been involved in homebrewing since 1980, but didn't brew a batch in his home until 1993.

Jonathan Spillane has been a self-employed carpenter for 12 years and an avid homebrewer since 1993. This year Jonathan installed a 10-gallon grain brewery in his basement, and was involved in the design and building of the Barleymalt and Vine U-Brew. 



**If we don't have it,  
maybe you don't want it.**

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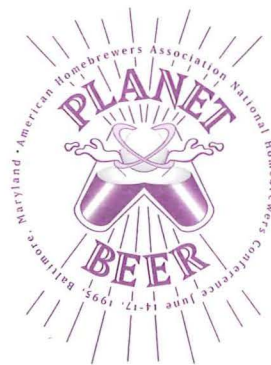
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Westport, Massachusetts 800-999-2440



# Taking Off for Planet Beer



Contrary to early reports, there were no alien abductions on Planet Beer, it was merely a momentary rent in the space-time continuum, a confluence of homebrew's shining stars, a galaxy of stellar brews, an atmosphere of fun and fellowship, an exchange of knowledge with the elders of the homebrew universe.

Planet Beer was the 17th Annual American Homebrewers Association National Homebrewers Conference, June 14 through 17 in Baltimore, Md. But the bounds of Planet Beer extend far beyond Baltimore's historic harbors and colorful markets. All of us — enthusiasts, homebrewers and professionals — are citizens of Planet Beer.

Attendance was 712, some 282 more than last year's conference and the largest ever. Beer marshals Bob Pease and Ron Ruhr served an outstanding mix of homebrewed and commercial beer. All in all they tapped 39 five-gallon Cornelius kegs of homebrew, 33 half-barrel kegs and 162 cases of beer — more than a thousand gallons — during the four-day event.

Planet Beer was covered by USA Today, The Baltimore Sun, National Public Radio, Associated Press, five local radio stations, several beer papers and at least three television stations from Washington, D.C., and Baltimore.

Homebrewers attended from the United States, Canada and Europe. Heyo Mennenga of Rostock, Germany, passed the word that obstructions to homebrewing were falling in his country. Richard Leder, who operates

the Sios Homebrew Shop in Zürich, Switzerland, and Rolf Holtkamp of the Swiss Homebrewing Society indicated that homebrewing is on the rise in their country.

On June 14 a dedicated team performed second-round judging and stewarding duties for the National Homebrew Competition. Four hundred homebrews advanced to the second round from the 3,067 entries judged at first-round sites around the United States. Others attended the AHA Apprentice Beer Judge Lab with Charlie Papazian, president of the Association of Brewers. "Why would someone want to judge beer?" Papazian asked his charges. Some judge to detect problems, some to choose a winner and others to improve the quality of a homebrewer's beer. Charlie pitched a few curve balls in the form of a German pale ale and a Belgian stout. Tasting these beers made us realize that we must judge with the desired flavor profile in mind.

Ray Daniels of the Chicago Beer Society asked the question, "What Color is Your Beer?" Daniels is the author of *Designing Great Beers*, to be published in late 1996 by Brewers Publications. He explained how to measure, predict and attain the desired color in homebrew. Attendees received a color guide designed by Dennis Davison. Ray did a masterful job of walking the line between science and application.

Russ Levitt spoke on "Spontaneous Brewing, the Essential Concepts." Head brewer at the Bloomington Brewing Co., Bloomington, Ind., Levitt referred to spontaneity on the part

## BY JIM DORSCH

of the brewer rather than the fermentation. He stressed that quality results are obtained by brewers who understand all the elements that comprise their systems of brewing.

Maribeth Raines-Casselman addressed "Yeast Propagation and Maintenance: Principles and Practices." A Ph.D. biochemist, she discussed yeast growth and methods by which homebrewers can handle and propagate yeast. Those interested in culturing yeast were invited to try their hand at the process and take home a yeast sample.

In his talk on "Brewing Efficiently" Tim Rastetter illustrated time-saving techniques for homebrewers taken from his work as brewmaster of BrewCo, the brewery operation arm of the Liberty Brewing Co. Restaurant in Akron, Ohio.

At the Homebrew Club Rendezvous, representatives of several clubs discussed the operation, promotion and funding of homebrew clubs including how to increase membership, raise money, deal with restrictive laws, find enthusiastic officers and bolster a judging contingent.

Planet Craftbrews were offered from 11 members of the Institute for Brewing Studies, the professional brewing division of the Association of Brewers. Planet Craftbrews were tapped simultaneously on May 6, National Homebrew Day, and were presented at the Conference. Some of the memorable beers sent to honor homebrewing were the Oatmeal Stout from Appleton Brewing Co.,



Appleton, Wis., the Special Old Bitter from Oxford Brewing Co., Linthicum, Md., and the Golden Lager from Boston Beer Co.

As in any gathering of 712 homebrewers, socializing continued "after hours." Informal festivities involved a case or two of lambic, three beer engines, 800 Tootsie Rolls, a guitar, trumpet, African Djembie drum, one jar of pickled garlic cloves and a brick of hops, not necessarily in that order.

At the Celestial Breakfast, starry-eyed homebrewers helped themselves to a buffet of eggs, waffles, meat, potatoes, juices and plenty of coffee. The meal was not beer-free, as the waffles were offered with Beer Syrup, described on page 231 of Candy Schermerhorn's *Great American Beer Cookbook* (Brewers Publications, 1993), prepared with Samuel Adams Scotch Ale.

Clive La Pensée, author of *The Historical Companion to House-Brewing* (Montag Publications, 1990), discussed "Wacky Brews and Surrogates." I knew the session would be exciting when La Pensée started cooking what looked like a large weed in a frying pan. La Pensée, who hails from England, maintained that brewing had changed remarkably little since its origins 5,000 years ago in Egypt and Babylon, and noted that the primary changes in brewing, other than technology, concerned the herbs and spices used to flavor beer. La Pensée served a weissbier with sprigs of dried woodruff and an oat ale made with tansy, a hop predecessor that today is commonly regarded as a weed. Baltimore's Bob Huber of the Cross Street Irregulars homebrew club brewed the beers for La Pensée's talk.

"The Beer Enthusiast Who Lives in all of Us" was the theme of a panel discussion featuring Jim Koch of Boston Beer Co., Pete Slosberg of Pete's Brewing Co. and Carol Stoudt of Stoudt Brewing Co. Homebrewers and craft brewers have always had a common bond, and it was obvious that the audience and speakers felt a deep kinship based on common passion for making and sharing the best possible beer.

In a talk on "The Science of the Art of Beer," Randy Mosher offered a unique viewpoint that "Yeast are our own personal beer slaves." Mosher, author of *The Brewer's Companion* (Alephenalia Publications, 1994), mined a quarter-century of art and design experience and 11 years of homebrewing to illustrate that brewing is an art and science exists to serve it. Mosher, who believes that one element of a great beer is surprise, surprised his audience with a vial of chantrelle mushroom extract. The audience squirted it into their beer, swirled, sniffed and savored while Mosher spoke. While it seemed that Mosher's talk had little to do with beer, it had everything to do with purposefully designing and brewing a distinctive beer.

Jim Busch of Colesville, Md., brewed the Planet Beer 1995 Commemorative homebrew, a Belgian strong ale called "Esprit de Boire." Busch, an electrical engineer for NASA with a custom-designed brewery in his backyard, credited increased exposure to Belgian ales for a rise in the quality of homebrewed versions in his talk on "Brewing Tips for Belgian Ales."

The Commemorative mead was "Fleming's Comet," made from orange blossom hon-

ey by Phil Fleming of Broomfield, Colo. "Fleming's Comet" started out as "White Lightning," the Commemorative mead for the 1994 Brew-Storm in Denver but it hadn't reached its terminal gravity in 1994, so it was bottled a year later for Planet Beer. This writer is going to give it another year before sampling.

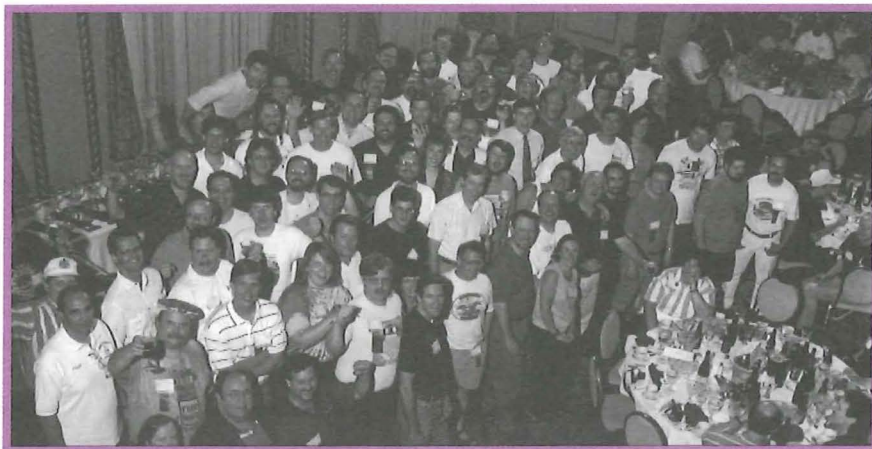
Six area brewers presented beers at an East Coast Beer Tasting. They included Theo DeGroen's Weizen from Baltimore Brewing Co., Drew Schmidt's Special Old Bitter from Oxford Brewing Co., Joe Kalish's India Pale Ale from Olde Towne Tavern and Brewery, Mark Scease's porter from the Wild Goose Brewery, John Pinkerton's Blue Ridge Steeple Stout from Frederick Brewing Co. and Marc Tewey's Big Strong Ale from Brimstone Brewing Co.

It was after the crab feast that the first rumors of alien abductions took root. In this case an earthling, Marc Tewey of the Brimstone Brewing Co., abducted your reporter and drove him north of Baltimore to Racer's Cafe, where the 1994 version of his Big Strong Ale was on tap along with 13 other Maryland beers. I hope to be abducted again soon. Oddly enough, on that same night, Ralph Bucca, 1988 Mead-maker of the Year and my roommate at Planet Beer, was briefly abducted by two men from Wisconsin who shared a room near ours. Strange place, this Planet Beer.

La Pensée challenged the convention with his statement, "I'd like to see all beer judgments banned," drawing a chorus of hisses, but his point was well taken. La Pensée maintained that no one in the room had ever had a true porter. He told how to make the brown malt that is required for such a drink, then asked if the brewers present liked the porters they were currently brewing. Yes? "Then who cares? When it comes to brewing there are no holy cows, just our taste buds," he said.

Klaus Zastrow, D.Agr.Sc., related "The Story of Lager Beer Brewing." Zastrow began brewing in 1949 as an apprentice in a small Berlin brewery and he worked at more than a dozen breweries, retiring from Anheuser-Busch in 1993 after 24 years. Zastrow estimated that lager beer accounts for 86 to 90 percent of the world's beer production. He cited many key dates in the history of lager beer but emphasized, "My talk is not about history. It is about the role of beer in our lives."

At his cider workshop, Paul Correnty, author of *The Art of Cidemaking* (Brewers Publications,



**Second Round judges assembled at the Grand Banquet**





**Klaus Zastrow, General Session speaker (left) and Rhett Rebold, Homebrewer of the Year and Ninkasi award winner (right)**

1995), asked the question, why should you make cider? The answers: it tastes good, it's healthy, it's versatile, it's easy to make and it's America's traditional beverage. Several ciders were available for tasting. Correnty's infectious enthusiasm made everyone eager to try their hand at making this delightful beverage.

Theo DeGroen discussed Pilsener in a workshop on the style. While the audience drank his fabulously bitter DeGroen's Pils,

he stressed that a Pilsener must be brewed with care, since "everything in a Pils is right there."

Bruce Winner, president of the American Brewers Guild, spoke on "Part-Time Business Opportunities for Today's Homebrewer." Winner outlined steps to establish a successful part-time business and examined the startup costs and chances of success in various part-time activities including opening a mail-order supply business, producing and selling a gadget or piece of equipment, writing for brewing publications and teaching people about beer and brewing. He fielded several questions about the increasingly popular brew-on-premise concept.

The Grand Banquet and Awards Ceremony began with a posthumous presentation of the AHA Recognition Award to Dave Line, the British author of *The Big Book of Brewing* (Argus Books Ltd., 1985), who passed away in 1980 and would have been 53 this year.

The Correnty-designed banquet menu featured local produce and incorporated East Coast beer and cider as ingredients and accompaniments. Dinner had barely concluded when the room went dark. A flash of light and puff of smoke heralded the arrival of Professor Surfeit. Clad in a stunning tie-died cap and gown, the good professor answered questions concerning such concepts as aging beer at the speed of light and measuring specific gravity where there is no gravity.

Results of the awards ceremony were reported live by Ralph Colaizzi on the CompuServe Information Service as AHA President Karen Barela announced the winners of the National Competition. The Meadmaker of the Year award, sponsored by the American Mead Association, went to Paddy Giffen of Rohnert Park, Calif. Robert and Renée Mattie of Downingtown, Pa., took the Cidermaker of the Year honors, an award sponsored by Lyon's Brewery of Dublin, Calif. The Sakemaker of the Year award, sponsored by Kohnan Inc., Napa, Calif., was won by Charles Hessom of Redwood Valley, Calif. The Homebrew Club of the Year Award, sponsored by Coopers Brewery, Adelaide, Australia, was won for the 10th straight year by the Sonoma Beerocrats of California.

The Ninkasi Award, sponsored by Pete's Brewing Co., was won by Rhett Rebold of

Burke, Va., for accumulating the most points in all 24 categories of the National Competition. For the first time the Ninkasi Award winner also was the Homebrewer of the Year. Best-of-Show judges Scott Bickham, Steve Dempsey, Steve Hamburg and Maribeth Raines-Casselmann selected Rebold's Munich Helles for top honors. They said their choice was clear. The Homebrewer of the Year Award is sponsored by Munton and Fison and the Great American Beer Festival®.

A member of Brewers United for Real Potables (BURP) of Washington, D.C., the soft-spoken champ confessed that the winning entry had started as a Czech Pilsener, but had stopped fermenting at a gravity of 1.020. Rebold's all-grain brew was cold-conditioned, filtered and counterpressure bottled.

The final day began with the AHA members meeting, at which Karen Barela fielded questions and addressed concerns of members, and ended with the Big Bang, a six-hour Interactive Trade Show and Festival featuring 32 exhibitors and 25 Invitational Planet Homebrews from 25 medal-winning brewers in the 1994 National Homebrew Competition. Each brewer used the same ingredients, except for yeast and up to one pound of additional ingredients. Recipes for all the Planet Homebrews were available during the anonymous tasting. Attendees cast ballots for their personal favorites picking "Liz's Unbridled," brewed with passion fruit by Paul Sullivan, as the overall favorite. Several commercial beers rounded out the offerings at the Big Bang.

The National Homebrewers Conference had something for everyone. Joe Waas of Fernandina Beach, Fla., was attending for the first time. "It's nice to sit down and talk with people who are doing the same thing I'm doing," he said. "Rocket Rod" Romanak of Kona, Hawaii, had been to 10 straight conferences. He said, "Every year it keeps getting better." Romanak and Waas were already thinking about the 1996 conference June 5 through 8 in New Orleans. So was I.

**Jim Dorsch is editor of *American Brewer*. He has written about beer and brewing for *The Washington Post* and was a writer on Michael Jackson's CD-ROM, *The Beer Hunter*. He is a former president of Brewers United for Real Potables, and the club still accepts him as a member.**



**You bet there is beer at this conference! Attendees sampled a wide variety of beer during the four-day event. Beer experts (center) and writers, editors and publishers (bottom) fielded questions during panel discussions.**



# AMERICAN HOMEBREWERS ASSOCIATION 1995 NATIONAL HOMEBREW COMPETITION WINNERS



## BEST OF SHOW

### HOMEBREWER OF THE YEAR

Sponsored by Munton & Fison of England and the Great American Beer Festival®  
Rhett Rebold, Burke, Va.  
Round-trip travel and accommodations have been awarded to the Homebrewer of the Year and a guest to attend the 1995 Great American Beer Festival® XIV in Denver, Colo., Oct. 5, 6 and 7.

### NINKASI AWARD (HIGH-POINT HOMEBREWER)

Sponsored by Pete's Brewing Co.,  
Palo Alto, Calif.

Rhett Rebold, Burke, Va.  
One of the Ninkasi winner's beers will be brewed by Pete's Brewing Co. as Pete's seasonal beer. The Ninkasi winner also receives name recognition on every bottle of Pete's seasonal beer, a two-week course at the Siebel Institute of Technology in Chicago plus travel and accommodations to the inaugural brewing of the seasonal beer.

### MEADMAKER OF THE YEAR

Sponsored by American Mead Association,  
Grand Junction, Colo.  
Paddy Giffen, Rohnert Park, Calif.

### CIDREMAKER OF THE YEAR

Sponsored by Lyon's Brewery of Dublin,  
Dublin, Calif.  
Robert and Renée Mattie, Downingtown, Penn.

### SAKÉMAKER OF THE YEAR

Sponsored by Kohnan Inc., Napa, Calif.  
Charles Hessom, Redwood Valley, Calif.

### HOMEBREW CLUB OF THE YEAR

Sponsored by Coopers Brewery,  
Adelaide, Australia  
1st: Sonoma Beercoats, California  
2nd (tie): Brewers United for Real Potables (BURP), Va.; Foam Rangers, Texas  
3rd: Seattle Brews Brothers, Washington

## WINNERS BY CATEGORY

### ALE

#### 1) Barley Wine — 94 entries

Sponsored by Edme Ltd., Mistley,  
Manningtree, England  
Gold: Gordon Olson, Los Alamos, N.M.,  
"Barley Wine #4"  
Silver: Kevin McCarty, Sicklerville, N.J.,  
"Black Acre Barley Wine"  
Bronze: Michael Knaub, Mt. Wolf, Pa.

#### 2) Belgian and French Ale — 187 entries

Sponsored by Manneken-Brussel Imports  
Inc., Austin, Texas  
Gold: Eric A. Munger, Salem, Ore.,  
"Plato Tonic Tripel"  
Silver: Thomas O'Connor, Rockport, Maine  
"T. Duck's Dubbel"  
Bronze: Paddy Giffen, Rick Larson,  
Brad Brim, Rohnert Park, Calif.

#### 3) Belgian-style Lambic — 54 entries

Sponsored by L.D. Carlson Co., Kent, Ohio  
Gold: Gregg C. Rentko, Madison, N.J.,  
"Cherries Jubilee"  
Silver: Walter Dobrowney, Saskatoon,  
Saskatchewan, Edmonton, Alberta,  
"Break In Brown"  
Bronze: John Isenhour, Urbana, Ill., "Kriekin"

#### 4) Brown Ale — 146 entries

Sponsored by Premier Malt Products,  
Grosse Pointe, Mich.  
Gold: John Sullivan, Jeff Michalski, St.  
Louis, Mo., "Wild Child Mild"  
Silver: Ross I. Hastings, Edmonton, Alberta,  
"Break In Brown"  
Bronze: Dave Shaffer, Lafayette, Colo.,  
"Buffalo Pass Brown Ale"

#### 5) English-style Pale Ale — 157 entries

Sponsored by Wynkoop Brewing Co.,  
Denver, Colo.  
Gold: Dave Shaffer, Lafayette, Colo.,  
"Mullethead Ale"  
Silver: Kelly Mower, Brent Stromness,  
Salt Lake City, Utah, "1492 Ale"  
Bronze: Al Branch, Livermore, Calif.,  
"Heist Meister IPA"

#### 6) American-style Ale — 153 entries

Sponsored by Northwestern Extract Co.,  
Brookfield, Wis.  
Gold: John Arends, Calistoga, Calif.,  
"Ian's Ale"  
Silver: Ken Brown, Fremont, Calif.,  
"Rigewood Pale Ale"  
Bronze: Doug Kahn, Smithtown, N.Y.,  
"American Dream"

#### 7) English Bitter — 120 entries

Sponsored by Alternative Beverage,  
Charlotte, N.C.  
Gold: Rhett Rebold, Burke, Va., "Real Bitter"  
Silver: Brian Bliss, Dallas, Texas,  
"Brian's Bitters"  
Bronze: Chuck Allen, Westminster, Colo.,  
"Rose Blossom Bitter"

#### 8) Scottish Ale — 49 entries

Sponsored by Something's Brewing,  
Burlington, Vt.  
Gold: Dan Gates, Franklin, Vt.,  
"Scottish Export Ale"  
Silver: Robert Douglas, St. Helens, Mont.,  
"McDouglas Export"  
Bronze: Steven Ashton, Indian Hills, Colo.,  
"Gant"

#### 9) Porter — 158 entries

Sponsored by The Cellar, Seattle, Wash.  
Gold: Fred Gibson, Pasadena, Texas,  
"Prehistoric Porter"  
Silver: Rick Larson, Norman Dickenson,  
Santa Rosa, Calif.  
Bronze: Dave Shaffer, Lafayette, Colo.,  
"Storm Peak Porter"

#### 10) English and Scottish Strong Ale — 107 entries

Sponsored by Wine & Hop Shop, Denver,  
Colo.  
Gold: Grant Heath, Huntsville, Ala., "Nessie"  
Silver: Michael Bowe, Mar Vista, Calif.  
Bronze: Ross I. Hastings, Edmonton, Alberta,  
"MacLaren's Argyle Ale"

#### 11) Stout — 220 entries

Sponsored by Alternative Garden Supply,  
Streamwood, Ill.  
Gold: Rob Schutte, Cincinnati, Ohio,  
"Deck-Head Stout"  
Silver: John Arends, Randy Grep,  
Calistoga, Calif.  
Bronze: John J. Gayer, William Orten Carlton,  
Athens, Ga., "The Citizens Impossibly  
Opaque Imperial Stout"

### LAGER

#### 12) Bock — 163 entries

Sponsored by Washington Hop Commission,  
Yakima, Wash.  
Gold: Dennis Davison, Greenfield, Wis.,  
"EKU 27.5"  
Silver: Thomas Altenbach, Tracy, Calif.  
Bronze: Mike Bardall, Allen Park, Mich.,  
"Bock"

#### 13) Bavarian Dark — 80 entries

Sponsored by Crosby & Baker, Westport,  
Mass.  
Gold: Paul Sullivan, Brooklyn, N.Y.,  
"Black Maria"  
Silver: Mike Rivard, Chicago, Ill.,  
"Deep Freeze Dunkel"  
Bronze: Delano DuGarm, Arlington, Va.,  
"Black Heart"

#### 14) German Light Lager — 78 entries

Sponsored by Briess Malting Co., Chilton, Wis.  
Gold: Rhett Rebold, Burke, Va.,  
"Central European Pils"  
Silver: George Fix, Arlington, Texas,  
"High Test"  
Bronze: Keith Weerts, Windsor, Calif.,  
"Dortmund 357"

#### 15) Classic Pilsener — 149 entries

Sponsored by California Concentrates,  
Acampo, Calif.  
Gold: Paul Quasariano, Franklin, Mich.,  
"Czech Mate"  
Silver: Mick Walker, Vi Walker, Fargo, N.D.,  
"Nectar of the Gods Pilsener"  
Bronze: Mike Hahn, Salt Lake City, Utah,  
"Hahn's German Pilsner"

#### 16) American Lager — 74 entries

Sponsored by Pabst Brewing Co.,  
Milwaukee, Wis.  
Gold: Arthur Metzner, Fort Washington, Md.,  
"Sunrise Lager"  
Silver: Ron Brooks, St. Louis, Mo.,  
"Light Lager"  
Bronze: Kevin Stayer, Warminster, Pa.,  
"Kevweiser"

#### 17) Vienna/Okttoberfest/Märzen — 105 entries

Sponsored by F.H. Steinbart, Portland, Ore.  
Gold: Todd Kellenbenz, Houston, Texas,  
"Oktobertexasfest"  
Silver: John Fahrer, Omaha, Neb.,  
"Fahrer Fest-Bier"  
Bronze: Jeff Niggemeyer, Kent, Wash.,  
"Wizard Lager"

### MIXED STYLE (LAGER-ALE)

#### 18) German-style Ale — 124 entries

Sponsored by BRISTOL BREWHOUSE,  
Milwaukee, Wis.  
Gold: Bennett M. Dawson, St. Albans, Vt.,  
"Kolsch #4"  
Silver: Lamar Hill, Delmar, N.Y.,  
"Salisbury Strong Ale"  
Bronze: Carl Eidbo, Fargo, N.D.,  
"Off-Peak Ale"

#### 19) Fruit Beer — 105 entries

Sponsored by The Purple Foot, Milwaukee,  
Wis.  
Gold: Russ Bee, Rockwall, Texas,  
"Susie's Belgian Pechebier"  
Silver: Kim Moody, Greentop, Mo.,  
"Dessert Stout"  
Bronze: Ray Taylor, Fargo, N.D.,  
"Wheat 'n' Berry Ale"

#### 20) Herb Beer — 77 entries

Sponsored by Marin Brewing Co., Larkspur,  
Calif.  
Gold: Thomas Altenbach, Tracy, Calif.  
Silver: Greg Christmas, Indianapolis, Ind.,  
"How High is the Water?"  
Bronze: Carl Laman, Harwich, Mass.,  
"Santa's Little Helper"

#### 21) Specialty Beer — 169 entries

Sponsored by Homebrew Headquarters,  
Dallas, Texas  
Gold: Strom Thacker, Gainesville, Ga.,  
"Xmas Ale 1994"  
Silver: Michael Lentz, College Station, Texas,  
"King Henry's Revenge"  
Bronze: Scott Bickham, Ithaca, N.Y.,  
"Cranberry Lambic"

#### 22) Smoked Beer — 69 entries

Sponsored by Jim's Homebrew Supply,  
Spokane, Wash.  
Gold: Carlos Kelley, Fort Worth, Texas,  
"Smoke This!"  
Silver: Paddy Giffen, Rohnert Park, Calif.,  
Bronze: Robert G. Drouth, Madison, Wis.,  
"Smoky Logger"

#### 23) California Common Beer — 77 entries

Sponsored by Anchor Brewing Co.,  
San Francisco, Calif.  
Gold: Ed Wolfe, Carol Liguori, Iowa City,  
Iowa, "Steam Roller"  
Silver: John Sullivan, Jeff Michalski, St.  
Louis, Mo., "St. Louis Steamer"  
Bronze: Carl Eidbo, Fargo, N.D.,  
"Off Peak Common 2"

#### 24) German-Style Wheat Beer (Ale) — 120 entries

Sponsored by Tabernash Brewing Co.,  
Denver, Colo.  
Gold: Bert Zelten, Kewaunee, Wis.,  
"Ho Wheat Brew"  
Silver: Ed Wolfe, Carol Liguori, Iowa City,  
Iowa, "Toasted Wheat"  
Bronze: Todd Kellenbenz, Houston, Texas,  
"Breakfast Beer"

### MEAD

#### 25) Traditional Mead and Braggot — 56 entries

Sponsored by BEERCRAFTERS INC.,  
Turnersville, N.J.  
Gold: Paddy Giffen, Rohnert Park, Calif.,  
Silver: Sally Ilger, Kellogg, Idaho,  
"Sweet Mesquite"  
Bronze: Drew Griffin, Palm Springs, Fla.,  
"Orange Blossom Delight"

#### 26) Fruit Mead — 95 entries

Sponsored by The National Honey Board,  
Longmont, Colo.  
Gold: Douglas Brown, Hudson, Ma.,  
"Apple Country Cyser"  
Silver: James A. Gebhardt, Fargo, N.D.,  
"Mead"  
Bronze: Dan Goulet, Atascadero, Calif.,  
"Prickly Pear Cactus Fruit Mead"

#### 27) Herb Mead — 33 entries

Sponsored by Madhava's Mountain Gold  
Honey, Lyons, Colo.  
Gold: Gunther Jensen, Pacoima, Calif., "Blue"  
Silver: John Calen, Poughkeepsie, N.Y.,  
"Spicy Irrational (What 'P.' Meant)"  
Bronze: Ross I. Hastings, Edmonton, Alberta,  
"Freja's Tears"  
Honorable Mention: Darrell Simon, Rowlett,  
Texas, "Potent Potion"

### CIDER

#### 28) Cider — 43 entries

Sponsored by Lyon's Brewery of Dublin,  
Dublin, Calif.  
Gold: Robert and Renée Mattie,  
Downingtown, Pa., "Guilford Gold"  
Silver: Scott Christensen, Minneapolis,  
Minn., "Bumble Bee Cider"  
Bronze: Timothy Tierney, Pepperell, Mass.

### SAKÉ

#### 29) Saké — 5 entries

Sponsored by Kohnan Inc., Napa, Calif.  
Gold: Charles Hessom, Redwood Valley,  
Calif., "I'll Bock you Up"  
Silver: Jim Long, Sacramento, Calif.,  
"Simply Sake"  
Bronze: Mike "Elvis" Karnowski, New Orleans,  
La., "Return of End Marijuana  
Prohibition Sake"

**TOTAL NUMBER OF ENTRIES 3,067**



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## 1995 National Homebrew Competition Second Round Brewers

Chuck Allen, Westminster, Colo.  
Thomas Altenbach, Tracy, Calif.  
Bob Alvord & Rick Alvord, Elmwood Park, Ill.  
Brook Anderson, Milton, Vt.  
Tim Andrews & Ken Jones, Flagstaff, Ariz.  
John Arends & Randy Grempe, Calistoga, Calif.  
Steven Ashton, Indian Hills, Colo.  
Don Bacher, Woodstock, Ont.  
Ray Ballard, Nashport, Ohio  
Mike Bardalis, Allen Park, Mich.  
Mark Barlics, Edison, N.J.  
Gregg Battaglia, Reno, Nev.  
Russ Bee, Rockwall, Texas  
Julian Bencomo, Fresno, Calif.  
David H. Berg, Beaverton, Ore.  
Frank J. Berry, Hillsboro, Ore.  
Donna Bersani, Joanne Sagala & John Naegle, Lyndhurst, N.J.  
Scott Bickham, Ithaca, N.Y.  
John Bjork, St. Paul, Minn.  
Andrew Black, Cromwell, Conn.  
Brian Bliss, Dallas, Texas  
Larry Bockelle, Seattle, Wash.  
Jesse Boone, Denver, Colo.  
Shawn Bosch & Joe Bosch, Wading River, N.Y.  
Ron Bouffard, Bowdoinham, Maine  
Michael Bowe, Mar Vista, Calif.  
Al Branch, Livermore, Calif.  
Brad Brim, Santa Rosa, Calif.  
David Brockington & Melinda Brockington, Seattle, Wash.  
Jeff Brooke, Reno, Nev.  
Ron Brooks, St. Louis, Mo.  
Douglas Brown, Hudson, Mass.  
Ken Brown, Fremont, Calif.  
Guy Bruner, Woodstock, Ga.  
Byron Burch, Santa Rosa, Calif.  
Robert Burko, Milwaukee, Wis.  
Bobby Bush, Hickory, N.C.  
Hal Buttermore, Ann Arbor, Mich.  
Tom Cahalane, Staten Island, N.Y.  
John Calen, Poughkeepsie, N.Y.  
Rick C. Calley, Lewisville, Texas  
J. Greg Cannon, Kent, Wash.  
Joseph A. Carulli Jr., Taylor, Mich.  
M. B. Casselman & Steve Casselman, Reseda, Calif.  
Glen Chandler, Rosamond, Calif.  
Thomas A. Chenock, Willoughby, Ohio  
Tim Chilcott & Chris Cook, Fort Smith, Ark.  
Greg Christmas, Indianapolis, Ind.  
Joseph Cione, Garner, N.C.  
Bill Class, Egg Harbor, N.J.  
Loren Claypool, Scott Depot, W.Va.  
Richard Coats, Palo Alto, Calif.  
Mike Cobb, Mtn. View, Calif.  
Charles Cook, Jim Schachtschneider & Matt Isbell, Houston, Texas  
Bill Cosdon, Meridan, Idaho  
Grant Coverdale, San Diego, Calif.  
Matthew M. Covington, Augusta, Ga.  
Phil Crane, Yakima, Wa.  
Jeff Cyert, Waco, Texas  
Jerry Dahl & Tom Finan, Kirkwood, Mo.  
John Dalton, Oak Forest, Ill.  
Timothy J. Dalton, North Reading, Mass.  
Steve Daniel & Tina Daniel, League City, Texas  
Dennis Davison, Greenfield, Wis.  
Bennett M. Dawson, St. Albans, Vt.  
Steve Dempsey, Beaverton, Ore.  
Kregg Dickerson, Folsom, Calif.  
Walter Dobrowney, Saskatoon, Sask.  
Wolfram Donalies, Elgin, Ill.  
Robert Douglas, St. Helens, Mont.  
Robert G. Drouth, Madison, Wis.  
Dave Drummer, New Tripoli, Pa.  
Delano DuGarn, Arlington, Va.  
Bruce Dunwoodie, Everett, Wash.  
D.W. Nial Eastman, New Haven, Conn.  
Paul Edwards, Indianapolis, Ind.  
Carl Eidbo, Fargo, N.D.  
Robert Eldredge, Redwood City, Calif.  
Kirk Ellern, Reno, Nev.  
Richard Ellis, Sacramento, Calif.  
John Fahrner, Omaha, Neb.  
Gerard Fillicko, Centerville, Va.  
R.A. Fishel, Denver, Colo.  
George Fix, Arlington, Texas  
John Francisco, Tucson, Ariz.  
Fred T. Frazier, Englewood, Colo.  
Ross Frederiksen, Loomis, Calif.  
Michael L. French, Garfield Heights, Ohio  
Jon Gamm, Haymarket, Va.  
Peter Garofalo, Syracuse, N.Y.  
Rex Garoutte, San Carlos, Calif.  
Dan Gates, Franklin, Vt.  
John J. Gayer, Athens, Ga.  
James A. Gebhardt, Fargo, N.D.  
Gregg Gelbach, Steve Ford, Shannon Scott & Dick Weiss, Olathe, Kan.  
Harrison Gibbs & Roland Armstorff, Los Angeles, Calif.  
Fred Gibson, Pasadena, Texas  
Paddy Giffen, Rohnert Park, Calif.

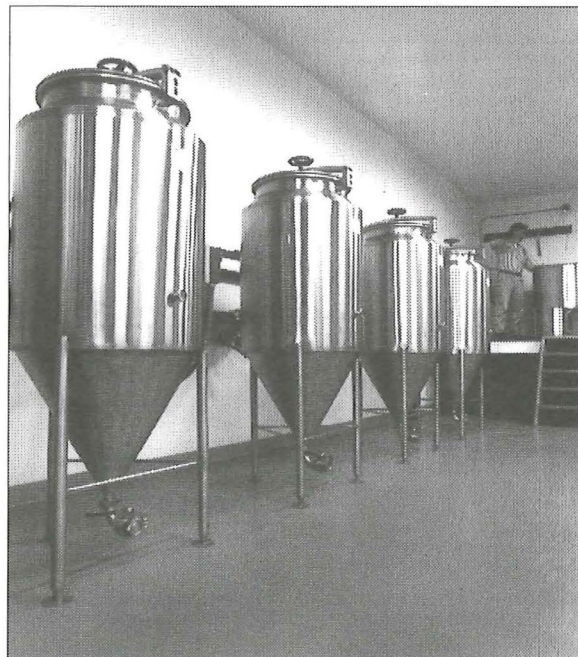
Keith Gill, Chicago, Ill.  
Steve Goggins, Dave Grabert & Rick Grabert, Boyertown, Pa.  
Marc L. Goldfarb, Cleveland, Ohio  
George Gorecki & Stef Wiecek, Niles II Dan Goulet, Atascadero, Calif.  
Charles J. Grasser, Ijamsville, Md.  
Drew Griffin, Palm Springs, Fla.  
John Griffith & Bob Beach, Boring, Ore.  
John R. Griffiths, Fayetteville, Ark.  
Mike Hahn, Salt Lake City, Utah  
Paul Hale, Burlington, Vt.  
Robert Hall, Athens, Ga.  
John Hanley & Charlie Patton, Seattle, Wash.  
Darwin Harting, Pekin, Ind.  
Ross I. Hastings, Edmonton, Alberta  
Grant Heath, Huntsville, Ala.  
David Hefka, Buffalo, N.Y.  
James Helmich & Joann Helmich, Sacramento, Calif.  
Tom Henderson, Richardson, Texas  
Charles Hessom, Redwood Valley, Calif.  
Lamar Hill, Delmar, N.Y.  
Harve Holmes, New Brighton, Minn.  
Keith Houck, Chapel Hill, N.C.  
Randy Hudson, Nantucket, Mass.  
Mike Hufnagel, Cincinnati, Ohio  
Richard Humbert, Lake Arrowhead, Calif.  
Sally Ilger, Kellogg, Idaho  
John Isenhour, Urbana, Ill.  
Ben Jankowski, Larry Herzman & Casey Carney, Oyster Bay, N.Y.  
William L. Jenkins, Tampa, Fla.  
Gunther Jensen, Pacoima, Calif.  
Kevin Johnson, Pescadero, Calif.  
Rob Johnson, Coogan Station, Pa.  
Miles Johnston, Lake City, Minn.  
Ted Johnston, Phoenixville, Pa.  
Andrew Jones, Bloomfield, N.Y.  
Ken Jones & Tim Andrews Flagstaff, Ariz.  
Mark Jones, Beaverton, Ore.  
Doug Kahn, Smithtown, N.Y.  
Mike "Elvis" Karnowski, New Orleans, La.  
Todd Kellenbenz, Houston, Texas  
Carlos Kelley, Fort Worth, Texas  
William Kendrick, Cocoa, Fla.  
Scott Keohane, Littleton, Mass.  
Paul Kerchefske, Manitowoc, Wis.  
Ron Kloth, Scottsdale, Ariz.  
Richard Klug, Wellesley, Mass.  
Michael Knaub, Mt. Wolf, Pa.  
Christian Knoebel, Trenton, N.J.  
Michael Knop, Cannon Beach, Ore.  
Al Korzonas, Palos Hills, Ill.  
Bill Kowalski, Houston, Texas  
Stephen Kurpiewski, Pittsburg, Pa.  
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Dave Manley, Limestone, N.Y.  
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Tim Mathews, Hood River, Ore.  
Kevin McCarty, Sicklerville, N.J.  
Daniel McConnell, Ann Arbor, Mich.  
Arthur Metzner, Fort Washington, Md.  
Frank Miller, Libertyville, Ill.  
Kenneth Miller, Andover, Mass.  
Mike Montgomery, Plainfield, Ill.  
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Bill Murphy, Brookline, Mass.  
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Everett Newton, Manchester, Conn.  
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Vince Oliverio, Ellipticville, N.Y.  
Gordon Olson, Los Alamos, N.M.  
Greg Ozgar, Piscataway, N.J.  
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Lance Patterson, North Bend, Wash.  
Michael Pattison, Warren Mich  
Randy Pearce, Bandon, Ore.  
Steve Peeler, Gaffney SC  
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Steve Prentice, Skokie, Ill.  
George Proper, Albany, Calif.  
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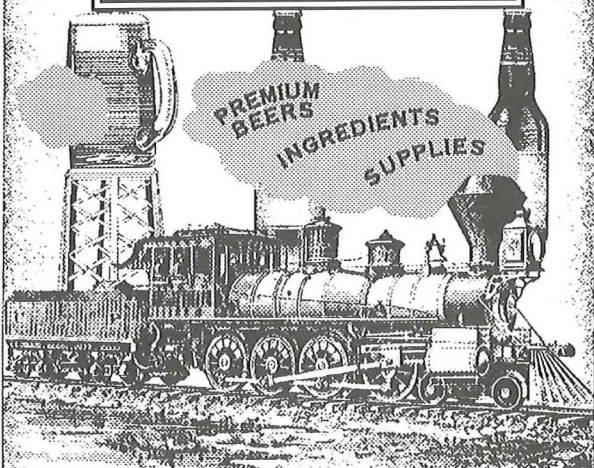


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- \* Scots Brown Ale
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- \* Barleywine

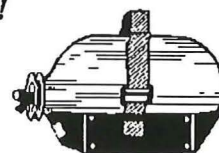
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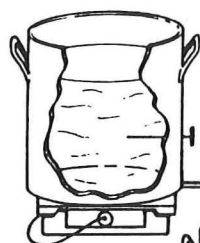
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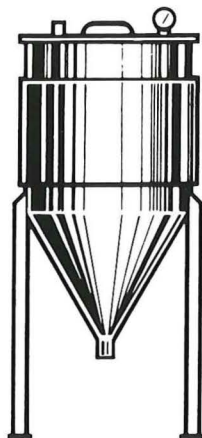
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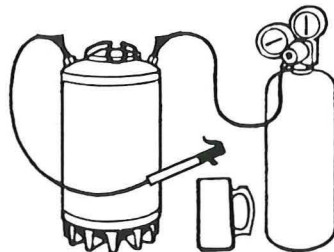
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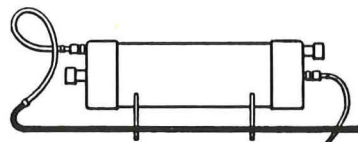
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# FOR THE BEGINNER

Bill McKinless

## Brewing as a Hobby

**W**hy do we homebrew? I've sold quite a few beginner kits and have found the general reasons fall into one of two categories: people are looking for a new hobby or a gift for someone who needs a new hobby. I fell into the latter category when my wife bought me a kit as a birthday present some years ago. She knew I enjoyed cooking and beer, so why wouldn't I enjoy the combination? She was also hoping I'd find a hobby to help relieve the stress of my career as a CPA.

A hobby is defined as "an activity or interest pursued outside one's regular occupation and engaged in primarily for pleasure." If homebrewing is a hobby, and a hobby is engaged in for pleasure, then homebrewing should be fun. As a homebrew shop owner I consider myself in the business of helping people have fun. As a beginning brewer you are encouraged to approach homebrewing with a good and relaxed attitude.

As beginners you can set the tone of your brewing hobby. Brewing can offer a diversion from our stressful "I-need-that-yesterday" work pace. You're using the same age-old ingredients — water, malt, hops and yeast — that brewers have used for years. The fermentation cycle is completed by natural forces, some of which are beyond control. Remember that a hobby is supposed to be pleasurable, not something you want to rush.

To make your brewing hobby as pleasurable as possible plan ahead before brew day and be sure to allocate enough time. I find an extract brew takes between three and four hours and an all-grain batch between six and eight

hours. Be sure you have all the ingredients and equipment you'll need while the homebrew supply store is open. Before beginning, learn the function of each piece of equipment in your kit. Always clean up no matter how late it may be when you finish. Spilled malt extract and dirty brewpots are killers to clean if left overnight.

After you've finished the brewing and have pitched your yeast, nature takes over. Many beginning brewers get nervous if they don't see signs of fermentation within a few hours. Relax, as long as you didn't pitch the yeast while the wort was too hot (hotter than 80 degrees F or 27 degrees C) it will be OK. Allow the yeast to do its job. After about five days, when you see no signs of fermentation (no bubbling in the airlock), take a hydrometer reading to make sure fermentation is complete.

Bottling can sometimes befuddle beginners. If you plan ahead and have enough sanitized bottles and caps before you begin and make sure they fit your capper, bottling will be a

breeze. Siphoning can be tricky, so you may want to practice with water so you'll know what to expect with the beer. I've had quite a few beginners who have tried using the racking cane as a bottler and the bottler as a racking cane.

You should brew *with* style, not *to* style. Brewing is an art, and like other arts you will develop your own style. Yes, there are some generally accepted brewing principles that should be followed: sanitation, basic equipment, sanitation, quality ingredients, sanitation, proper techniques and sanitation. Actually, we could debate each of these principles. Do you sanitize with bleach or iodine-based products? Do you use extracts or grain? Whole hops or pellets? Dry yeast or liquid cultures? Counterflow or immersion chiller? Boil all five gallons or partial batches? Keg or bottle? The point is, remember why you got involved with homebrewing — primarily for pleasure. Find gadgets and techniques that work for you. Create your own recipes that taste good to you and

### HAVE FUN!

It is the brewing freedom that attracts many homebrewers to the hobby. If you need inspiration, here are some ideas to get you brewing:

Brew the same recipe as a brewing buddy and compare your results.

Brew a "kitchen sink beer" by using your leftover ingredient inventory.

Brew a specialty beer with fresh herbs and spices from your garden.

Split a six-gallon batch and ferment the half batches with different yeast.

Have a blind homebrew tasting with friends and see if you can identify the beer style and brewer of each sample.

Include a box of breakfast cereal in your next batch. The Chicago Beer Society's 1995 Invitational Brew Off instructed brewers to do so and the results were "magically delicious."

Brew a year's worth of "World of Worts" recipes. If you are ambitious, brew them all.



enjoy the beer. Your attitude and brewhouse, whether it's kitchen or basement, will set the parameters of your brewing style. Develop your own style and have fun! Don't be too intimidated by other brewers or what you read. If it works for you then it works!

Brewing as a hobby doesn't need to be rigid. Experiment with as many ingredients as you can! I've been brewing for seven years and don't think I've ever followed the exact same recipe twice. Many beginners return to our store after reading Charlie Papazian's *The New Complete Joy of Home Brewing* (Avon, 1991) and decide they want to make one of Charlie's recipes. The recipe might call for a particular malt that we don't carry or is no longer available, so we'll suggest a substitute. Some customers will protest, "But the recipe calls for such and such." Well, since Charlie created this situation we try to use his words to solve it — relax, don't worry, blah blah blah. Many of the recipes in print were developed around what ingredients the brewer had on hand at the time.

Sometimes your best success is the result

**At the very least your brewing procedure should include:**

- (1)  
sanitizing all equipment that comes  
in contact with the cooled wort,
- (2)  
boiling the ingredients (not the yeast!),
- (3)  
cooling the wort as quickly as possible,
- (4)  
pitching a healthy yeast starter,
- (5)  
fermenting at the proper  
temperature for the yeast and
- (6)  
bottling with a minimum of splashing and foaming.

of experimentation. When we first opened our store we got in a malt I had never used before, victory malt. I figured I should brew with it to see how it tasted so I made up a recipe using 95 percent victory malt in the mash. I used a decoction mash technique and ended up with a lower yield than I anticipated. The color was a bit dark, but everything else seemed OK. I lagered it and decided it fit the

Schwarzbier style. I liked the beer, and my partner thought it was one of my better beers. I later found out victory malt is usually used only as an adjunct grain. Had I known that, I never would have brewed a beer I thoroughly enjoyed.

Don't be afraid to ask questions no matter how dumb or simple you think they are. Most shop owners won't mind spending the time with you so your brewing experience is fun and rewarding. Most problems you encounter have happened before, and there may be a simple solution that the shop owner can suggest. Generally, though, homebrewers are creative, ingenious individuals who tend to try to reinvent the wheel.

One of our customers was having a problem with his racking tube shifting during siphoning so he came up with this solution. He drilled a hole the diameter of the racking tube through a piece of a brick, slid the tube through, put the cap back on the end of the racking tube. When he siphons he drops the brick and racking tube in his bucket. Voilà, he solved his problem. I told him we sold a nifty little clip that





attaches to the side of the bucket and holds the racking tube in place and would be a lot more sanitary than a brick. He said he didn't need it because his brick setup worked great, didn't cost him anything, and besides, he's never had a sanitation problem.

We had another customer who said the best way to cool down his boiling wort was with frozen cans of beer. He puts a six-pack of cans in his freezer the day before brewing. After pouring his boiling wort into the fermenter he adds the frozen cans that, he says, cool the wort down within an hour. Incredulous, I asked about cans bursting when frozen. And what about sanitation concerns? He swears he's never had a problem. I tried to explain about the benefits of a wort chiller, but he argued that his method worked just fine for him.

We also have a husband-and-wife brewing team who just bought their first house so their money is tight. They would rather spend the money that a large brewpot costs on another batch of ingredients, so they use four saucepans for boiling. I can only imagine the fun of avoiding boilovers! We have several old-time brewers who see no point to boiling at all. They just add the ingredients to warm water, pitch the yeast and have beer that makes them happy.

One of our customers recently gave us a call because she accidentally pushed the rubber stopper inside her secondary carboy. She wanted to know if the batch was ruined and should she dump the beer. We convinced her not to worry, let the beer finish and bottle to see how it tasted at that point. She entered the beer into the AHA National Competition, made it to the second round of judging and received a silver certificate.

Believe me, I am not advocating any of the above methods. In fact, I try to steer beginners toward following the generally accepted brewing procedures. You'll enjoy the hobby more if your results are worth your efforts. The fact that you are reading this publication is a step toward educating yourself about beer and the art of brewing and your beers will benefit from the information. At the very least your brewing procedure should include: (1) sanitizing all equipment that comes in contact with the cooled wort, (2) boiling the ingredients (not the yeast!), (3) cooling the wort as quickly as possible, (4) pitching a healthy yeast starter, (5) fermenting at the proper temperature for the

yeast and (6) bottling with a minimum of splashing and foaming.

My point remains that homebrewing is a hobby, and you must pursue the hobby at your own level. Don't be intimidated; no one can tell you what you're doing is wrong if you're enjoying yourself and are happy with your results. Perhaps you enjoy working with the ingredients, or the gadgets and equipment, or the biochemical reactions of fermentation, or the challenge of brewing a particular style of beer. It doesn't matter why homebrewing appeals to you, the result should be the same — pleasure.

Whether that approach is sugar brewing, extract brewing, partial mash or all-grain brewing, we're all hobbyists with a common interest in beer. I am frequently asked, "who are better brewers?" The real question is, "Who are better hobbyists?" The answer is easy — those having the most fun!

Bill McKinless is a partner in The Home Brewery, a homebrew shop in Bogota, N.J., and a self-employed CPA who would rather brew than do taxes. "I still haven't found a hobby as enjoyable as homebrewing since I turned my hobby into a business," he says.



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# WINNERS

## C I R C L E

James Spence

**T**his is the final installment of award-winning recipes from the 1994 AHA National Homebrew Competition. Keep these on file until early fall so you can begin planning for carboy space and longer fermentation times — particularly for the barley wine brewed by the North Dakota fellows (note the long boil time). Contrary to some beliefs, it isn't necessary to use wine or Champagne yeasts to ferment a high-gravity barley wine — just start with a good healthy starter of

an attenuative beer yeast (pitch at least a quart — a half gallon is better), and be prepared to repitch with the same yeast if you find fermentation slowing to a standstill.

Remember, homebrewing is more than just calculating numbers from recipes — some of these recipes simply may not reflect common brewing procedures. If you feel you need to adjust these recipes for your own brewery and brewing style, do it.

### SMOKED BEER



**BRONZE MEDAL**  
**AHA 1994 NATIONAL HOMEBREW COMPETITION**  
**Tom Altenbach**  
**Tracy, California**  
**Bamberg-style Rauchbier**

#### Ingredients for 10 gal (37.8 L)

- 4 lb pale malt (1.8 kg)
- 8 lb smoked pale malt (3.6 kg)
- 2 lb dextrin malt (0.9 kg)
- 5 lb smoked Munich malt (2.3 kg)
- 1 lb light crystal malt (0.45 kg)
- 1 1/2 lb amber crystal malt (0.68 kg)
- 1/2 lb brown malt (0.23 kg)
- 3/4 oz Perle hops, 9.1% alpha acid (21 g) (60 min.)
- 1/2 oz Perle hops, 9.1% alpha acid (14 g) (30 min.)
- 1/4 oz Hallertauer hops, 5.2% alpha acid (7 g) (10 min.)
- 1 oz Hallertauer hops, 5.2% alpha acid (28 g) (end of boil)
- Wyeast No. 2308 liquid yeast culture
- 3/4 cup corn sugar per 5 gal (177 mL) (to prime)

- Original specific gravity: 1.068
- Final specific gravity: 1.017
- Boiling time: 120 min.
- Primary fermentation: 12 days at 50 degrees F (10 degrees C) in glass
- Secondary fermentation: 13 days at 50 degrees F (10 degrees C) in glass
- Age when judged (since bottling): six months

#### Brewer's specifics

Smoke pale and Munich malt for one-half hour over hickory chips. Mash grains at 155 degrees F (68.3 degrees C) for 90 minutes.

#### Judges' comments

"Alcoholic. Strong smoke-bacon flavor. Some sourness on sides of tongue, but not overpowering. Some fruitiness. This is a good drinkable beer. A classic Bamberg style would use alder or beechwood, not hickory."

"Clean beer, good finish. Slight bitterness. Sulfury, ashtraylike aftertaste."

"Smooth malty-smoky initial taste, with the aftertaste turning slightly sour/metallic. Ashy taste coating the tongue. Smooth beer with only slight problems in the finish. Level of smoke is quite nice."

### STOUT



**SILVER MEDAL**  
**AHA 1994 NATIONAL HOMEBREW COMPETITION**  
**Robert Burko**  
**Milwaukee, Wisconsin**  
**Cream City Imperial Stout**  
**Imperial Stout**

#### Ingredients for 5 gal (19 L)

- 12 lb Munton and Fison Old Ale kit (5.4 kg)
- 6 oz Briess 40 °L caramel malt (170 g)
- 6 oz Belgian 78 °L CaraMunich malt (170 g)
- 12 oz Hugh Baird unmalted roasted barley (340 g)
- 12 oz Briess black patent malt (340 g)



- 1 oz Olympic hops, 11% alpha acid (28g) (60 min.)  
 Wyeast No. 1028 liquid yeast culture  
 4 1/2 oz cane sugar (128 g) (to prime)

- Original specific gravity: 1.088
- Final specific gravity: 1.022
- Boiling time: 60 min.
- Primary fermentation: 14 days at 60 degrees F (15.6 degrees C) in glass
- Age when judged (since bottling): 16 months

### Brewer's specifics

Steep grains until boil.

### Judges' comments

"Husky-grainy and slightly astringent. Good roast flavor. Lots of malt and lots of alcohol. Nice imperial stout."

"Slight winy flavor — pay attention to siphoning and exposure to air. Fruity, slightly grape flavor. Watch sparging pH and temperature to lower astringency. Slight oxidation may have caused wine-like flavors."

## SCOTTISH ALE



**SILVER MEDAL**  
**AHA 1994 NATIONAL HOMEBREW COMPETITION**  
**Carl Hinsman**  
**Yarmouth, Maine**  
**MacLeoud's Revenge**  
**Scottish Heavy**

### Ingredients for 5 1/4 gal (19.9 L)

- 14 lb two-row Hugh Baird malt (6.4 kg)  
 1 1/8 lb 50 °L crystal malt (0.5 kg)  
 2 oz roasted barley (57 g)  
 1 oz Kent Goldings hops, 4.6% alpha acid (28 g) (60 min.)  
 1/2 oz Kent Goldings hops, 4.6% alpha acid (14 g) (45 min.)  
 1/2 oz Kent Goldings hops, 4.6% alpha acid (14 g) (1 min.)  
 Wyeast No. 1728 liquid yeast culture  
 3/4 cup dextrose (177 mL) (to prime)

- Original specific gravity: 1.088
- Final specific gravity: 1.019
- Boiling time: 135 min.
- Primary fermentation: eight days at 64 degrees F (17.8 degrees C) in plastic
- Secondary fermentation: nine days at 64 degrees F (17.8 degrees C) in glass
- Age when judged (since bottling): three months

### Brewer's specifics

Mash grains at 152 degrees F (66.7 degrees C) for 75 minutes.

### Judges' comments

"An obviously excellent recipe formulation with fine fermentation aspects. Continues clean and full as it warms. Conforms well to style parameters."

"Astringent. Malt tries to come through and does finally. Alcohol OK. A lot of possibilities, but astringency is close to overwhelming."

"Sweet malt flavor. Very low hop bittering and flavor. Alcoholic. A bit too heavy on the conditioning. Very good beer."

## BELGIAN-STYLE LAMBIC



**SILVER MEDAL**  
**AHA 1994 NATIONAL HOMEBREW COMPETITION**  
**Douglas Faynor**  
**Woodburn, Oregon**  
**Kripple Kriek**  
**Fruit (framboise, kriek)**

### Ingredients for 5 to 6 gal (18.9 to 22.7 L)

- 3 lb U.S. pale malt (1.4 kg)  
 3 lb German Pils malt (1.4 kg)  
 3 lb U.S. wheat malt (1.4 kg)  
 1/2 oz aged Hallertauer hops (28 g) (60 min.)  
 1/2 oz aged Saaz hops (28 g) (60 min.)  
 5 lb Montmorency cherries (2.3 kg)  
 10 lb Viola dark sweet cherries (4.5 kg)  
 2 cups Kerr sour cherry concentrate (473 mL)  
 Wyeast No. 1056 liquid yeast culture (primary fermentation)  
*Brettanomyces bruxellensis* yeast culture (secondary fermentation)  
*Brettanomyces lambicus* yeast culture (secondary fermentation)  
 1 cup corn sugar (237 mL) (to prime)

- Original specific gravity: 1.055
- Final specific gravity: 1.011
- Boiling time: 90 min.
- Primary fermentation: five days at 70 to 75 degrees F (21.1 to 23.9 degrees C) in glass
- Secondary fermentation: 21 days at 68 to 75 degrees F (20 to 23.9 degrees C) in glass
- Tertiary fermentation: five months in glass
- Age when judged (since bottling): 17 months

### Brewer's specifics

Sour mash technique: Mash grains at 153 degrees F (67.2 degrees C) for 45 minutes. Allow to cool to between 130 and 125 degrees F (54.4 and 51.7 degrees C). Inoculate with one handful raw barley malt. Cover tightly with plastic wrap and maintain 125 to 130 degrees F (51.7 to 54.4 degrees C) for about 48 hours. Sparge grain, boil wort and pitch yeast as usual. Rack into secondary after five days in the primary and add cherries (not the concentrate) and one



pint each of the *Brettanomyces* cultures. Add sour cherry concentrate after about four months in the secondary. Bottle about one month later.

#### Judges' comments

"Decent acidity. Fruit flavor a little light, but good quality. Perhaps a little young. Pretty good effort. Could use more intense, complex, wild character and more cherries."

"There are cherries in the taste. More of the wet dog flavors should balance. More cherries would give better acidic and fruity character. Needs more cherries and more cultures to give complexity."

## BARLEY WINE

### BRONZE MEDAL

#### AHA 1994 NATIONAL HOMEBREW COMPETITION

Carl Eidbo, Ray Taylor, Jim Gebhardt  
 Fargo, North Dakota

North Dakota Farmer's All-Grain

Barley Wine

Barley Wine



#### Ingredients for 4 1/2 gal (17 L)

- 17 lb six-row pale malt (7.7 kg)
- 2 lb two-row toasted malt (0.9 kg)
- 3 lb 40 °L crystal malt (1.4 kg)
- 3 oz Chinook hops, 13.6% alpha acid (85 g) (240 min.)
- 2 oz Kent Goldings hops, 5% alpha acid (57 g) (10 min.)
- 1/2 oz Kent Goldings hops, 5% alpha acid (14 g) (dry)
- Wyeast No. 1098 liquid yeast culture
- force carbonated in keg

- Original specific gravity: 1.113
- Final specific gravity: 1.040
- Boiling time: 240 min.
- Primary fermentation: seven days at 62 degrees F (16.7 degrees C) in glass
- Secondary fermentation: three months at 70 degrees F (21.1 degrees C) in glass
- Age when judged (since bottling): 14 months

#### Brewers' specifics

Mash grains at 158 degrees F (70 degrees C) for 60 minutes. Boil 14 gallons (53 L) of wort down to 4 1/2 gallons (17 L) of wort over four hours.

#### Judges' comments

"Good balance. High hop level balances nicely with malt and alcohol. Excellent brew."

"Comes on strong then turns sour-salty. Dry, astringent finish. Good hop flavor, mildly bitter. Some oxidized-cardboard notes, but great overall profile. Not a perfect example, but pretty darn good."

## HAIL TO ALE CLUB-ONLY COMPETITION WINNER



### Jack Hagens

North Bend, Washington

Representing the Brews Brothers

Hoppy-Hoppy-Joy-Joy

American Pale Ale

#### Ingredients for 5 1/2 gal (20.8 L)

- 10 lb Crisp/Maris Otter two-row malt (4.5 kg)
- 2 lb Gambrinus malt (0.9 kg)
- 1 lb wheat malt (0.45 kg)
- 4 oz Chinook hops, 12% alpha acid (113 g) (70 min.)
- 2 oz Cascade hops, 4.5% alpha acid (57 g) (40 min.)
- 1 oz Chinook hops, 12% alpha acid (28 g) (40 min.)
- 1 1/2 tsp Irish moss (7.4 mL) (30 min.)
- 2 oz Cascade hops, 4.5% alpha acid (56 g) (20 min.)
- 1/8 oz Cascade hops (3.5 g) (dry 1 month)
- 1/3 cup oak chips (78.9 mL)
- Wyeast No. 1028 liquid yeast culture
- 2/3 cup corn sugar (157.7 mL) (to prime)

- Original specific gravity: 1.060
- Final specific gravity: 1.020
- Boiling time: 70 minutes
- Primary fermentation: nine days at 70 degrees F (21.1 degrees C) in glass
- Secondary fermentation: 21 days at 70 degrees F (21.1 degrees C) in glass
- Age when judged (since bottling): two months

#### Brewer's specifics

Mash grains at 135 to 140 degrees F (57.2 to 60 degrees C) for 60 minutes. Raise to 150 to 160 degrees F (65.6 to 71.1 degrees C) for 60 minutes. Raise to 170 degrees F (76.7 degrees C) for 10 minutes. Add oak chips to secondary fermenter.

#### Judges' comments

"Nice hop-floral flavor. Excellent balance and complexity. Very nice beer. Balance and complexity are outstanding."

"Balance is a little on the hop side. Lots of fresh hops."

Every gold-medal winning recipe from the  
 AHA 1994 National Homebrew Competition  
 was printed in *Zymurgy* Special Issue 1994  
 (Vol. 17, No. 4) "Winners Circle."

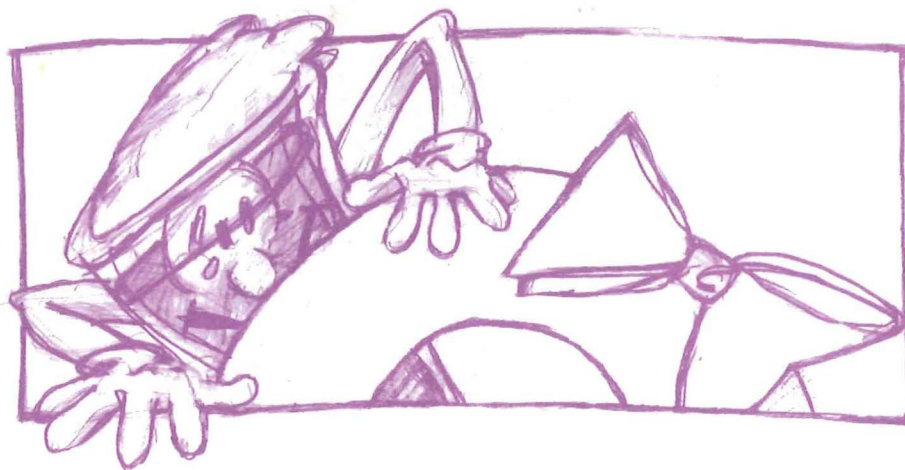




# WORLD OF WORTS

Charlie Papazian

## Ginger Dinger — Ahead of its Time



**W**ith the cool weather coming and the holiday season looming on time's horizon, we all know that hundreds of breweries all around the world are formulating recipes for their seasonal winter beer. And I know there are hundreds of thousands of homebrewers doing the same thing. All manner of spices, herbs and fruits will be sacrificed to gravities high and low in the name of celebrating the joys of the season.

Ginger Dinger — Ahead of its Time is the result of a half dozen fertile minds concocting a brew that would suit all palates for last year's Association of Brewers holiday party. It wanted to be dark. It wanted a German

lager character with bitterness on the low side (with one dissenting vote). But it needed something to be remembered by — a spice that we could all live with. And it needed to be simply made and simply the best. Ginger Dinger combines the mellowness of a German dunkel (dark) and malty lager with the full flavor of ginger and a floral hint of crushed coriander seed. Teresa persisted with, "hops, hops, it wants more hops ..." so we compromised with a good infusion of finishing aroma hops. Six weeks after it was brewed the keg was consumed down to the very last drop. I think 'twas good.

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

### Malt-extract recipe for 5 gal (19 L)

- 1 lb crushed English crystal malt (0.45 kg)
- 1/3 lb crushed Belgian Special "B" malt (150 g)
- 1/3 lb crushed chocolate malt (150 g)

### Add to the specialty malt extract liquor runoff

- 6 3/5 lbs Ireks Light Munich malt extract (3 kg)
- 1 lb extra light dried malt extract (0.45 kg)

### And boil with:

- 7 to 8 Homebrew Bittering Units hops (I used 1 3/4 oz or 50 g of 4.7% alpha acid American-grown whole Crystal hops)
- 8 oz freshly grated ginger root (0.23 kg) (10 min.)
- 1/4 oz freshly crushed coriander seed (7 gm) (10 min.)
- 1/4 tsp Irish moss (1.2 mL) (10 min.)
- 1 oz Tettnanger whole hops for late aroma (28 g) (2 min.)
- ale or lager yeast of your choice
- 3/4 cup corn sugar (177 mL) (to prime)

- Original specific gravity: 1.048 to 1.052 (12 to 13 °B)



- **Final specific gravity:**  
1.016 to 1.020 (4 to 5 °B)
- **IBUs:** 23

Add the crushed grains to 1 1/2 gallons (5.7 L) of water and heat to about 150 degrees F (66 degrees C). Hold for 20 to 30 minutes then strain out grains. Rinse grains with 1/2 gallon (1.9 L) of 150-degree-F (66-degree-C) water. Discard grains.

Add the malt extract syrup, dried malt extract and boiling hops to the specialty malt extract liquor. Boil for 60 to 90 minutes. Add

the grated ginger root, ground coriander seed and Irish moss during the final 10 minutes, and during the final one to two minutes add the aroma hops.

Strain wort into a sanitized fermenter to which you've added 2 gallons (7.6 L) of water. It helps to prechill (33 degrees F or 1 degree C) the water added to the fermenter rather than simply adding warmer tap water.

IBU bitterness of about 23 was calculated for this recipe by making the following assumptions: (1) whole hops were used, (2) the wort boil was concentrated

with about 4 pounds of extract per gallon (0.5 kg/L) of liquid boiled and (3) 20 percent utilization was assumed for 60 minutes of boiling. Beginning and intermediate brewers should relax, don't worry and have a homebrew.

Primary ferment at temperatures best suited for your yeast and your circumstances. Prime with sugar and bottle when fermentation is complete.

Relax. Don't worry. Have a homebrewed Ginger Dinger (it will be ready) ahead of its time.

## Bittering Units

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

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

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

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

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

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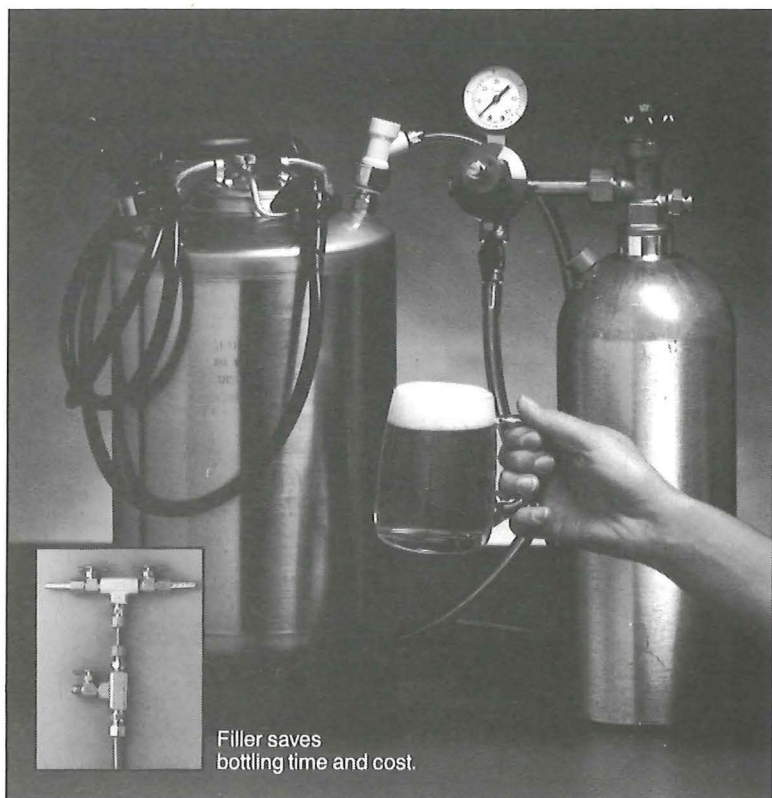


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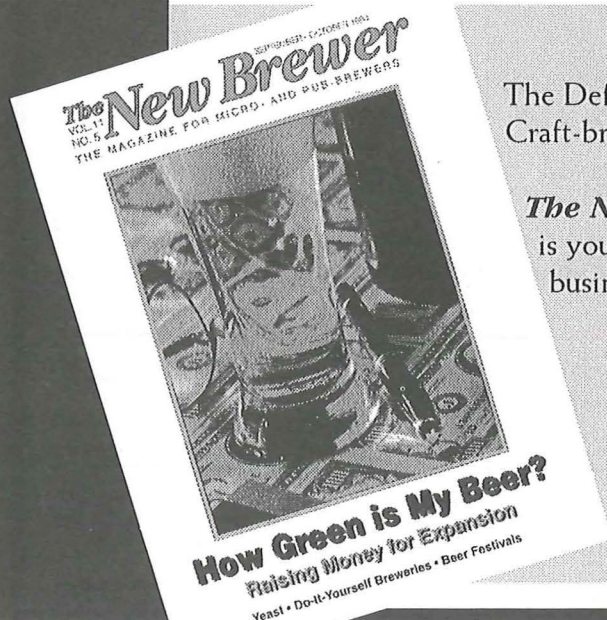


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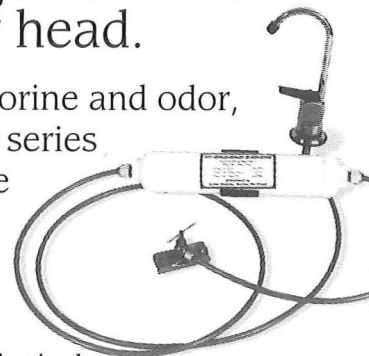
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Professor Surfeit

# DEAR

P R O F E S S O R

## Elevated Brewing

Dear Professor,

Considering that water boils here in Flagstaff, Ariz., (elevation 7,000 feet) at 198 degrees F (92 degrees C), should I adjust mash and sparge temperatures or boiling time? I get workable yields: 32 points per pound per gallon (approximately 150-degree-F or 65.5-degree-C infusion mash of two-row pale grain sparged at 170 degrees F or 76.5 degrees C and boiled for 1 1/2 hours) but I was going to make a Scotch ale and wondered if I could get more out of the grain.

Blessing of your heart, you brew good ale,  
(The Two Gentlemen of Verona, Act III,  
Scene II)

Steven Robert White  
Flagstaff, Arizona

Dear Steven,

*Relax. Don't Worry. Have another home-brew. No need to do any adjusting with mash or sparge temperatures, but you may want to boil your wort 30 or 50 percent longer to get better hop bitterness utilization. Don't adjust anything for flavor or aroma.*

*Keeping high on brew,  
The Professor, Hb.D.*

## Sweet Cyser!

Dear Professor,

I have a five-gallon batch of cyser made with 12 pounds of clover honey, two gallons of apple cider, three teaspoons each of acid blend and yeast nutrient and fermented with a liquid Champagne yeast. In the first 30 days of fermentation at 78 degrees F (25.5 degrees C) the specific gravity dropped from 1.112 to 1.022 and during the next 30 days no change occurred. The cyser has totally cleared so I

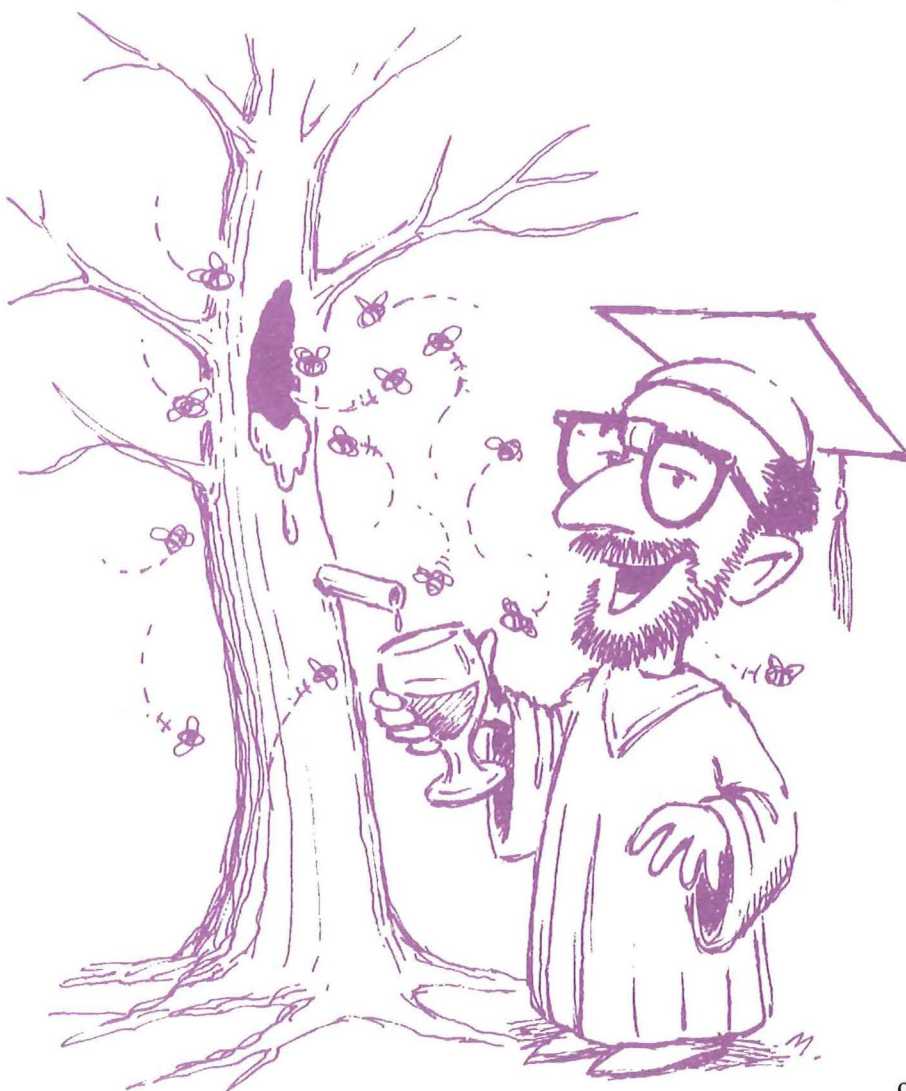
think it's done. However, when I've made this recipe before it finished close to 1.000 both times. I don't really like the sweetness of this batch and would like it to ferment further. Is there any way I can get the fermentation going again? Would oxygenation at this point result in oxidized flavors and would the yeast even respond? Can I add new yeast and would I have to oxygenate? One

other solution I've thought of is to add 20 percent boiled water. In a sample this dropped the specific gravity to 1.016 and I suppose it would drop the original gravity 20 percent. If I did this could I add a little acid blend to the boiled water to counter the sweetness?

Sincerely,

Greg Emes

McCall, Idaho





Dear Greg,

*Nothing sounds too unusual to me. Your fermentation is well within reason. Your comment about how fermentation was different the last time is a valid one. Different honey, different yeast, different celestial events make the brewing of mead a very unpredictable art sometimes.*

*I'd suggest three different ways to go about reducing the sweetness of your cyser. The first you've already mentioned: dilute it with deaerated water, but be careful and let the cyser set for another couple of months to see if the dilution promotes refermentation.*

*A second option would be to make another batch of cyser with an original gravity of about 1.090. That would surely go down to 1.000, or very close. When done, blend the two batches and let set to make sure fermentation doesn't start anew. It probably will. If so, just let it ferment out until complete.*

*A final option would be to add another yeast strain along with about one-quarter teaspoon of yeast hulls in hopes that the different yeast strain is more tolerant of alcohol. The yeast hulls can help unstuck a stuck fermentation if it is indeed stuck. The best yeast choice for this situation is a Champagne yeast. Pitch a big healthy starter.*

*Sighing over cyser,  
The Professor, Hb.D.*

## **Belgian Ale, Hallelujah**

Dear Professor,

Belgian beer is somewhat of a religion for me. Unfortunately I live a long way from "The Holy Land" so at least one Sunday a month I devote to all-grain brewing one of my many favorite styles of Belgian beer. Pierre Rajotte's *Belgian Ale* (Brewers Publications, 1992) has been a godsend and my version is as well-worn as a preacher's Bible. I want to make my beers as authentic as possible so I was hoping you might help me with the name of a supplier for some ingredients I'm having a hard time finding. White beers and lambics are both made using raw wheat; we don't have wheat farms here in Connecticut and none of the homebrew shops I've called seem to carry it. Do you know of a supplier of raw wheat or wheat flakes?

Candi sugar is another problem ingredient. It imparts a very characteristic flavor and

aroma to the Trappist beers that I can't seem to duplicate. Any ideas there?

Last, I heard of a new microbrewery while I was visiting Colorado Springs, Colo. Do you have any information on the New Belgium Brewery and its whereabouts?

Praying for answers,  
Brad Guarino  
Pawcatuck, Connecticut

Dear Brad,

*Your homebrew supplier can certainly order wheat flakes from his or her distributor. If for some reason he or she is unable to carry it, check out your local health-food store. They'll have all kinds of flaked grains and certainly raw wheat. You also can use bulgur wheat, which will be somewhat similar to wheat flakes.*

*Light candi sugar is pure sucrose and is basically the same as table sugar. Dark candi sugar, what you are looking for, is a bit caramelized. I've used honey as a successful, though not authentic, substitute. Many homebrew suppliers are now carrying the Belgian beer ingredients you've mentioned. Check Zymurgy's advertisers and see "Brewing Better Belgian Ales" by Phillip Seitz in Zymurgy Spring 1995 (Vol. 18, No. 1).*

*New Belgium Brewery is in Fort Collins, Colo. They've recently expanded and are doing well.*

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

## **Not in the Books**

Dear Professor,

I have a couple of questions I've not been able to answer even after reading everything I can get my hands on.

First, for the small-time homebrewer what is the threshold point of hot-side aeration? For example, does pouring from mash tun to sparge tun or pouring 150- to 160-degree-F (66- to 71-degree-C) collected wort back to the boiling vessel constitute hot-side aeration?

Second, can you boil wort too hard and cause overcaramelization or is just maintaining a rolling boil enough?

Third, can you please discuss the differences between oxygen-based and iodine-based sanitizers?

David Detmer  
Hilliard, Ohio

Dear David,

*Well, if I could answer I would, but my question is how do you measure hot-side aeration thresholds as a homebrewer? We don't have the technical means to consistently measure whatever it is we should be measuring. So the real threshold is kind of empirical, isn't it? It's the final taste of the beer. Hundreds of thousands of brewers for centuries and, up until recently, both pros and amateurs never took hot-side aeration into account. And you know the beer was excellent. Mine was. And so was a lot of commercial beer I've had where I saw the runoff from the mash splash through a neat-looking copper grant. So "threshold" would beg a lot of qualifying questions, wouldn't you agree? Many homebrewers have chosen 80 degrees F (27 degrees C) as the threshold temperature to cool wort below before aerating.*

*You can't boil a wort too hard (unless of course it jumps out of the kettle), but you can boil it too hot. For example red-hot electric coils can scorch the wort and caramelize it to a great degree. You should shoot for a good rolling boil.*

*There are pros and cons to each type of sanitizer. Iodine-based sanitizers don't require rinsing if the equipment is air-dried. Chlorine-based sanitizers are inexpensive but will pit stainless steel. I could go on, but James Liddil and John Palmer answer a lot of questions about cleaners and sanitizers in this issue. Take a look.*

*Not a simmer,  
The Professor, Hb.D.*

## **Light Control**

Dear Professor,

Will using clear glass bottles vs. brown or green put my homebrew at risk of off-flavors or any other negative effects?

While waiting for your reply I'll relax, not worry and have a homebrew (or two).

Bob Gionet  
Mayville, Wisconsin

Dear Bob,

*A little risk, but in general the answer is nahhh! If you've got complete control of the beer from bottling to boxing to fridge to glass, then you're absolutely OK. It's when the beer is exposed to light that problems arise. So don't expose beer in clear bottles to light for more than a few minutes between bottling to box to cellar to refrigerator to pitcher to glass. If you are*



*entering your homebrew in competitions your beer may suffer. And from my experience tasting clear-bottled beers in competitions, they usually did suffer.*

*Clearly no problem in your home,  
The Professor, HB.D.*

The AHA doesn't allow clear bottles in the National Homebrew Competition. —Ed.

## Adventurous Brewing

Dear Professor,

I have a question about beans. While not a grain, beans are available worldwide and are a good source of carbohydrates and starch. Has anyone ever used beans in brewing? I have been toying with the idea of using beans to stretch my malt, especially overseas where one has to hand carry all the brewing ingredients. Is there a way to use a percentage of beans in the same way as wheat or rice?

It is my understanding that if one can brew a good lambic, that person has reached nirvana. True or not, set that aside for a moment. Now, my family really likes homemade bread. While in the Marine Corps I spent a year in Monterey, Calif., where my wife and I enjoyed the sourdough breads. (Bear with me and I will eventually tie all this together.) In order to make my brewing more socially acceptable, I have started making sourdough bread. I have patiently explained to my mother and my wife how brewing, breadmaking and the study of yeast are all historically linked. On my trips I have discovered Bruggeman instant yeast, a product of Belgium. I haven't brewed with it yet but it makes real good bread. The price is good: 450 grams for less than \$2. Question: Is this yeast related to the stuff used in making lambic? Can it be used in making a lambic or any other beer? Is this a good find or not?

Louis A. Lancaster  
Jonesboro, Arkansas

Dear Louis,

*Beans, beans, beans. Actually, if you look at some of the more antique German beer recipes they used things like "field beans" as an ingredient. I know that commercial breweries have experimented with soybeans as an adjunct. From what I recall, they said one would end up with a very estery beer. I reckon, though, that beans could be malted, that is to say, sprouted and dried, but they'd have very little if any enzyme*

*activity. Now I know there is probably volumes of scientific research on beans, but I'm not really a bean scientist. A good resource would be Texas A&M University or Colorado State University.*

*Actually, if I were you, and I'm not, I'd experiment by cooking up some beans and mashing them with enzyme-rich malts. Easy does it. Don't overdo it the first time and if things get rude, back off. Start off with an experimental 5 percent and go with the wind (pun intended).*

*Bruggeman yeast? At that price it is*

*probably a good hearty bread yeast. I've never heard of it, but in a pinch it'd probably make some passable beer if no, and I repeat, no access to quality beer yeast were available. Lambics are complex beers resulting from a wide variety of airborne microorganisms including yeast and bacteria. Your Bruggeman yeast is probably a lot cleaner than the culture you'd need for a lambic.*

*I like your way of thinking, though, high adventure!*

*Brew it and they will drink,  
The Professor, Hb.D.*



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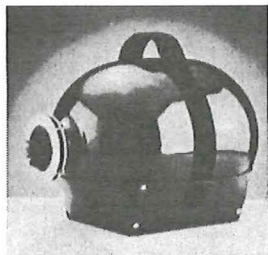
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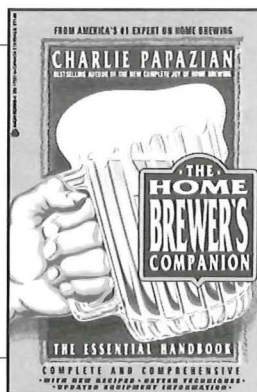


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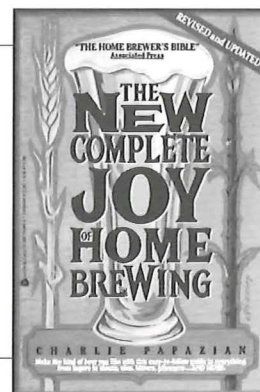
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# T H E B E S T F R O M KITS

Terry Boyles

## Which Direction to a Good and Easy Stout?



A kit is something that comes in a box with directions for assembly. Its essence is simplicity and consistency. If you have to add too many more ingredients to make a good beer, pretty soon it's a recipe. Although the three beers I brewed are all stouts, the kits themselves pretty much span the spectrum of what can be termed kits (unless there's an all-grain kit I don't know about). One thing about kits, and one reason for this column, is you don't know what is in them and how they'll turn out until you make one and taste it. I tried to use the kits as they would be used in the real world by the type of brewers targeted by each.

The first kit is strictly for the uninitiated (no special equipment is required), perhaps as a gift for someone who has a vague interest in brewing. I followed the directions as closely as possible. The second is a classic British wort concentrate that just begged to be adjusted. The third is a boxed kit for intermediate brewers and, because it came complete with fresh grains and hops, I saw no need to tamper with its design.

### F.M. Brewers Supply Irish Stout Kit

The Irish Stout kit from F.M. Brewers Supply (66 Chipaway Road E., Freetown, MA 02717; (508) 763-3328) is shrewdly aimed at stout lovers, the hardest of hardcore beer lovers, and therefore the ones most likely to take up homebrewing. Everything you need except caps and bottles is provided to make about a gallon of beer. The instruction sheet is of particular importance to a new brewer. It can mean the difference between success and disaster. I enjoyed the folksy tone of F.M.'s instructions as they briefly explained the principles of brewing. They assume no knowledge of brewing and are written in plain English in a style that

makes the endeavor sound like fun, not the intimidating task it can be for the first timer.

A fermentation lock and a number 6 1/2 stopper are provided for any sanitized gallon jug that will serve as the fermenter. This is truly brewing on a shoestring. F.M. cleverly suggests you use your coffee maker to make "barley coffee" with the roasted grain provided. I had a non-brewing friend make the batch using only normal kitchen supplies. We only departed from the directions when it came time to bottle. We did use a bottle filler and capper instead of the funnel and recycled wine cooler bottles suggested. I can recommend this kit as an introduction to brewing because, unlike canned kits, the components come in separate packages for grain, extract, hops and yeast. A 45-minute boil is required. Despite

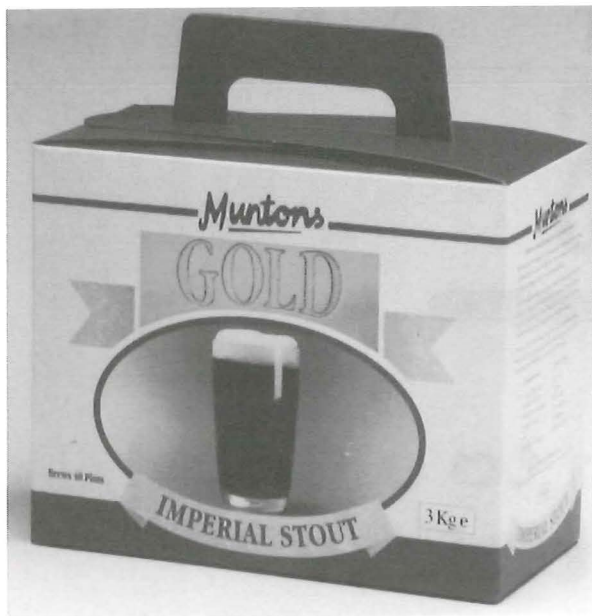
its diminutive size, it utilizes good brewing techniques. F.M. might explain somewhere in the directions that it's not much more work to make two cases than it is to make the two six-packs you get with this kit.

The meager amount of roast grain (one ounce) and light dry malt extract (about a pound) assured a pallid stout. Though the kit didn't yield a presentable stout, I ended up with a pretty decent southern brown ale. The brew was clean and balanced. It had no hop aroma, but a nice maltness. The hint of banana might be from the Red Star ale yeast.

Stout is the espresso of dark beers, so enough roasted grains (perhaps an additional ounce or two of black patent and chocolate malt) should have been provided to yield a pot of very strong "coffee." Or F.M. could switch to a dark extract if they wish to get a reasonable facsimile of stout. The stout lover may be disappointed with the results, but if it means the neophyte brewer gets his feet wet and first taste of his own homemade beer, it just might send him in search of more supplies and information.







## Muntons Gold Imperial Stout Kit

Munton and Fison has always had top quality extracts, and with the introduction of their Gold line has finally recognized that American kit brewers are interested in brewing fine beers that can pass the *Reinheitsgebot*. To this end the Munton and Fison puts two cans in a box and says "no sugar required."

According to the instructions, I could expect an original gravity of 1.039 to 1.045. Now most homebrewers know that this is in the ballpark for a classic dry stout. But imperial stout is by definition a big beer. The AHA style guidelines suggest 1.075 to 1.095 for imperial stout original gravities. Imperials are assertively hopped, use aggressive amounts of roasted grains and have a ton of malt and are higher in alcohol. I found it quite ironic that while your typical pale ale would be spoiled by the addition of much sugar, here was a mighty stout extract that actually could have benefited from a pile of the sugar that wasn't "required." I considered making three gallons instead of five to do the style justice but once I got a taste of M & F's big black syrup I decided to do what I would do with an old-fashioned sugar-required kit: I doubled the malt. I added another three kilograms of pale malt extract to push the gravity up to 1.095. After all, im-

perial is the barley wine of stouts. Maybe it's called "imperial" because you practically have to be royalty to afford it.

To be sure the brew would still be balanced I tossed in another 8 HBUs of hops in the 45-minute boil. An imperial is nothing if not complex, so I finished with one ounce of Kent Goldings hops. I pitched a quart starter of Wyeast No. 1028 London ale yeast (instead of the dry ale yeast provided), and after 12 hours I pitched two packets of dry Pasteur Champagne yeast because someone once suggested high-gravity ales could use it. An unseasonably warm spell ensued (90 degrees F or 32 degrees C in February is hot even for Southern California) that pushed the ambient temperature to 75 degrees F (24 degrees C) and I witnessed a most volcanic ferment. The gravity hit 1.030 after a mere four days and the beer was transferred to a glass secondary for a week. I bottled with four ounces of Grandma's Unsulfured Molasses for some added interest in the sniffer.

## Imperial Stout

- 6 3/5 lb Munton and Fison Imperial Stout (2 cans included in boxed kit) (3 kg)
- 6 3/5 lb Munton and Fison light unhopped malt extract or equivalent (3 kg)
- 8 to 10 Homebrew Bittering Units bittering hops (45 min.) (I used Cluster.)
- 1 oz Kent Goldings hops, 5% alpha acid (28 g) (finish)
- Wyeast No. 1028 London Ale (prepare a 2-qt starter)
- Champagne yeast (optional)
- 4 oz molasses (113 g) (to prime)
- Original specific gravity: 1.095
- Final specific gravity: 1.030

While this beer won't really hit its stride until it has been in the bottle for a few months (my 1994 Stout Bout Club-Only Competition winner was 16 months old), my initial impression was very positive. A blast of sweetness and warming alcohol flavors up front balanced with a nice bitter chocolate bite at the back. This is the kind of beer meant to be shared after dessert. It is an extremely satisfying brew, but mine was a tad on the estery side. If I brew it again I will pitch a much larger volume of ale yeast (at least a two-quart starter), watch my fermentation temperature closer (keep it down to about 65 degrees F or 18 degrees C) and forget about the Champagne yeast. Munton's extract has plenty of what it takes to power a big beer. It is well-hopped and has lots of chocolate, black patent and roasted unmalted barley tang. I would wager that this kit could be used with the addition of a single can (1 1/2 kilograms) of hopped malt extract for a very nice foreign-style stout.

## The Home Brewery Irish Stout Kit



I was impressed with The Home Brewery's (P.O. Box 730, Ozark, MO 65721; (800) 321-BREW) well-honed, no-nonsense instruction sheet. Sam Wammack has been making beer kits and rewriting his directions until they shine. The instructions are technical without being intimidating. There is no long-winded dissertation here; just the facts and a polite suggestion at the end to refer to Charlie Papazian's *The New Complete Joy of Home Brewing* (Avon, 1991) for a more in-depth treatise on homebrewing.

Each of the ingredients is clearly marked not only identifying the contents but also



with instructions for their use. This kit is clearly aimed at the beginning brewer ready to start using specialty grains and unhopped extracts, but it's also just fine for the more advanced brewer in a hurry.

The kit comes with about 5 1/2 pounds (2.49 kg) of dark dry extract in a plastic bucket premixed with maltodextrin and bittering hops. Also provided is about a half pound (0.23 kg) of a proprietary mixture of dark crystal malt, roasted barley and black patent, plus a cheesecloth grain bag in which to steep the grains. Aroma and flavoring hops (nice touch) are provided. They even provide premeasured priming sugar. Unlike some British-style kits that assume you have nothing but a plastic bucket and a large teapot, The Home Brewery's kit provides a complete list of required and optional equipment (how about a priming bucket?). I took the liberty of substituting Wyeast No. 1084 Irish ale for the two packets of sure-fire Doric dry yeast provided. I didn't think Sam would mind.

The Home Brewery's rendition of Irish stout is indeed a credible Guinness clone. Its high final gravity of 1.016, despite a relatively low original gravity of 1.048, translated to a creamy rich ale with low alcohol. The additional roasted grains complement the chocolate in the dark extract. Unlike most homebrewers' stouts, which tend to be overpowering, this one has the easy-drinking balance of the real McCoy.

The Home Brewery's kits are notorious for helping beginners beat more advanced brewers in competitions. For me half the fun of brewing is designing the recipe and measuring the ingredients, with a margin of human error, and that special joy and surprise at the result. But if you want to make consistently great beer using time-tested recipes without the bother and waste involved gathering the individual ingredients, it's hard to beat a Home Brewery kit.

Terry Boyles is past president and present newsletter editor for the Inland Empire Brewers in San Bernardino, Calif. He enjoys home-made music as well as homemade beer (his six-year-old's favorite dad-tune: "The Brewer's Blues"). Although he repairs computers for a living he has little use for them otherwise, at least until they can come up with "virtual homebrew."



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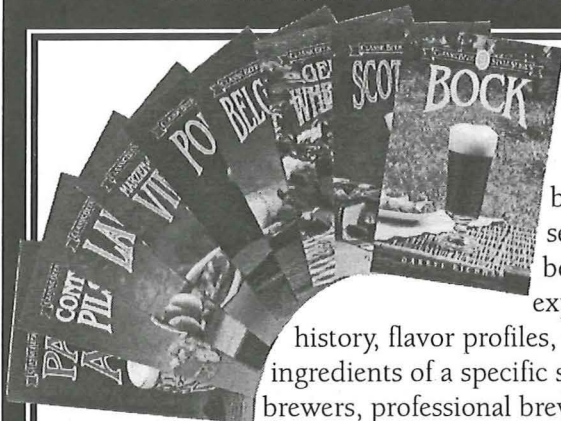
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zym18



# REVIEWS

**T**he opinions of individual reviewers do not necessarily represent the opinions of the American Homebrewers Association or *Zymurgy*.

## Fermtech Double Blast Bottle Washer

Convincing my wife that the dirty beer bottles on the kitchen counter were part of a scientific experiment with far-reaching implications was the biggest hurdle in testing the Fermtech Double Blast Bottle Washer. Other hurdles included instructions in French and a helpful dog that decided to perform her own tests in the backyard. Happily, English instructions were on the flip side and the washer isn't particularly tasty.

The Double Blast Bottle Washer is constructed of rigid (no tooth marks) plastic and PVC and connects to a standard laundry faucet with a reinforced plastic hose. The primary feature of this unit is the ability to rinse two bottles simultaneously. Additional features include interchangeable spray nozzles for carboys or bottles that are purported by the manufacturer to eliminate pipe-hammer and conserve water. The larger carboy nozzle is designed to connect to a siphon hose for rinsing "awkward racking tubes or flushing filter pads." Because the washer actually rests on the bottom of a sink, the faucet doesn't bear weight, particularly when rinsing carboys.

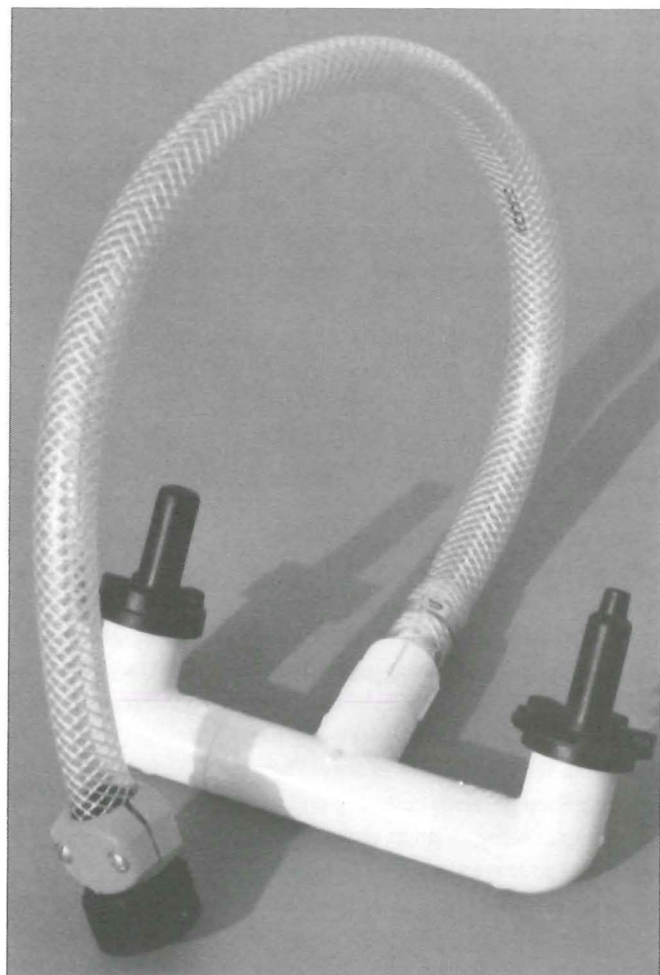
Testing was carried out with a collection of bottles and carboys with varying degrees of grunge. Following the manufacturer's instructions (the English version), I assembled the unit to fit the dimensions of my laundry sink. (Note: Using the same adapter as required by other bottle washers, this unit can

be used in any sink.) On bottles and carboys that have been recently emptied, the Double Blaster is effective and would appear to conserve water as the stream of water is smaller and more concentrated than conventional washers. On bottles and carboys with dried-on deposits, this washer takes a little time to erode the sediment so water conservation seems minimal. The larger nozzle provided for carboys works well on hard or 'impossible to reach deposits in tubing that might result from use as a blowoff tube. The only noise this washer makes is the sound of the fine spray striking the bottom of the bottle.

The only potential drawback to this product is the possibility of losing the nozzles that are not permanently attached to the washer. This may not be a problem for brewers who are organized, put their equipment where it belongs and have helpers without tails.

Manufacturer's suggested retail price for the Fermtech Double Blast Bottle Washer is about \$13. This product is available at your local homebrew shop or you can contact Fermtech at 81 Avondale Ave. S., Waterloo, Ont., Canada N2L 2C1; (519) 570-2163 for the closest distributor.

*Reviewed by Tom Hail, an award-winning homebrewer who is now the assistant brewer at Sandlot Brewery at Coors' Field in Denver, Colo.*





## The Art of Cidermaking

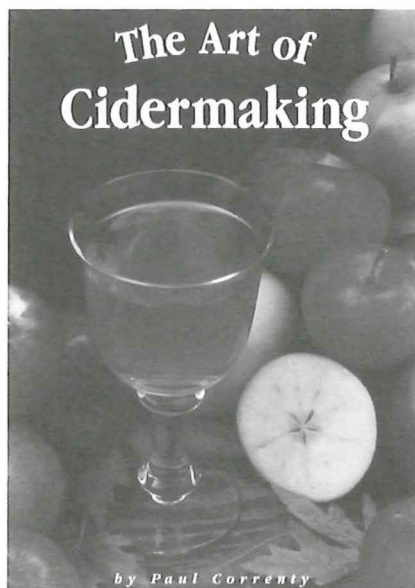
I found *The Art of Cidermaking* by Paul Correnty (Brewers Publications, 1995) to be a useful addition to the relatively sparse literature on home cidermaking, particularly for the beginner with little or no experience with homebrewing. It contains all the usual components of a homebrewing book including ingredients, equipment, sanitation, fermentation, aging, bottling, recipes and the importance of record keeping. As such, it would be a useful resource for the beginner, it is interesting and easy to read.

Paul acquired his thirst for cider while traveling in England and France where the term applies only to the fermented beverage. Hard cider, with a 300-year-old tradition in the United States, was almost forgotten but is being revived largely by homebrewers. He points out that making cider is ridiculously easy compared to making beer or wine — no boiling, no straining, no pressing, no sweat and the supplies are relatively inexpensive. This obviously assumes that you will start with purchased sweet cider, not with fresh apples.

The book is divided into three sections. The first covers an interesting history of cidermaking and the relationship of apples and cider to mythology, religion, the occult and the Bible.

The second section covers the basics of home cidermaking for the beginner, including a basic "Eight Steps to Great Cider" recipe. This makes cidermaking look somewhat rustic (which it is) and similar to making lambic.

The third section, for "Seasoned Pros," is the largest with considerable information on the art of blending juices from different apple categories and varieties to balance flavor, acid, aroma and astringency. He discusses the use of different types of sugar that will not only increase the cider's original gravity but will also modify its taste. There is information on yeast culturing and the possibility of using different yeasts (wine, lager, ale) to leave their own imprint on the finished cider. I found no reference, however, to using the natural apple yeast bloom or to modifying its character, other



than by overwhelming it with a large active yeast culture.

This section finishes with 14 recipes using fruit adjuncts to make cider, cyser, apple beer and good old-fashioned New England-style cider. Before the usual glossary, acknowledgments and advertisements for other brewing publications, there is a chapter on cider judging and evaluation that I have not seen in any other home cidermaking books.

Paul has summarized a lot of useful, interesting information, particularly for the beginner, in an easily read style. It will nicely complement the relatively scarce home cidermaking literature but may be a little simple and basic for advanced, experienced homebrewers.

*The Art of Cidermaking* by Paul Correnty, Brewers Publications, 1995, publisher's suggested retail price \$9.95.

*Reviewed by Martin Stokes, a native of Burton-on-Trent, England, who has been fermenting beer, wine, cider, mead, sauerkraut and silage for almost 25 years. A certified BJCP judge and the AHA 1994 Cidermaker of the Year.*

## Brewtek Ferm Temp Thermostat

As a longtime lager brewer I've learned that refrigerators and chest freezers are ideal for lager brewing, but only when used

with a precise temperature regulator. Until now, choices have been limited to designing your own (as I did), the Hunter A/C unit (no longer made) or the Williams analog unit (which gives good cooling control but requires an additional thermometer to verify internal temperatures).

The Brewtek Ferm Temp unit from Brewers Resource is the first commercial digital temperature controller designed from scratch for the homebrewer. With a working temperature range of 25 to 85 degrees F (-4 to 29.5 degrees C), the unit is unique because it can control both heating and cooling. It can control a heater mounted in your refrigerator to allow you to brew ales when your cellar is cold, for example. The unit is housed in an attractive blue three-inch by 5 1/2-inch by two-inch metal box and comes with a five-foot grounded power cord and a detachable waterproof temperature probe on a six-foot cord. Construction and finish are of high quality. The front has a single dial to set the temperature, a two-digit readout for both set point and actual temperature, and a two-position slide switch (read/set). Two grounded outlets, one for heating and one for cooling, are mounted on the side, as is a replaceable fuse. A high-reliability solid-state switch (Triac) is used instead of a relay to drive the fridge or heater.

To test the unit I installed it on one of my fermentation/lagering refrigerators as per directions, plugging the refrigerator into the "cool" outlet and suspending the probe in the air inside the fridge. I tied the unit's temperature probe to the probe on the recording digital maximum/minimum thermometer on my homemade temperature control and the probe on my Fluke Model 51 laboratory thermometer. Week-long tests were run both with the fridge empty and with three full carboys inside. I next immersed the probe in a jar of water (as per instructions) and tested the response. Finally, I mounted a heating element (red light bulb) in the fridge and tested the heating control.

The temperature probe is "dampened" against rapid temperature fluctuation, which is desirable, and read within a degree of my lab thermometer when stabilized. The differential between turn-on and turn-off is four degrees. Unlike the Hunter unit there is no "time delay" overlay — the unit reacts



strictly to temperature. Immersing the probe in a jar of water greatly increases the dampening, perhaps too much under certain conditions.

My tests revealed the following: You must turn off or disconnect your refrigerator before turning the switch to "set" or adjusting the temperature dial to adjust the temperature or you risk burning out the refrigerator's compressor through excessive cycling. Nowhere in the instructions I received does it say this, although at the time of this writing *Brewers Resource* was revising the instructions to include this warning.

Nowhere in the instructions did it say that the temperature you set is the low point (turn-off for cooling), not the average temperature. This is true both for heating and cooling. A setting of 30 degrees F (-1 degrees C) gave me a spread of 28 to 36 degrees F (-2 to 2 degrees C), or an average of 32 degrees F (0 degrees C). For heating, a setting of 78 degrees F (26 degrees C) gave a range of 77.8 to 84.2 degrees F

(25 to 29 degrees C), or an average of 80 degrees F (27 degrees C). It's normal for the temperature to go slightly below the low set point, but full carboys see only the average temperature.

Don't immerse the probe in a jar of water unless you prechill the water. Leave the jar in the fridge overnight with the probe in the air before immersing the probe whenever you're changing the temperature. Don't immerse the probe until the water has stabilized at the desired temperature. A wide variation in water-jar temperature compared to refrigerator temperature could cause a big temperature swing. If the water temperature is warm, the probe will signal the fridge to run in an attempt to cool the jar which might over-cool the fridge contents.

Don't use the unit to control a fridge that you are constantly opening and closing unless you immerse the probe in water. Opening the door lets out cool air and causes large temperature swings. Placing the probe in water makes it register as beer

would, averaging the temperature swings.

If you use a red light bulb for heating, use two of them and check them often. Light bulbs have a short life when used this way. It would be better to use a low-wattage heating element.

Overall, the unit performed very well. A few minor difficulties were encountered, but this is normal for a new design. *Brewers Resource* is aware of these difficulties and by the time you read this all should be corrected. All in all, I highly recommend this unit.

Manufacturer's suggested retail price is \$89.90. For information contact *Brewers Resource*, 409 Calle San Pablo #104, Camarillo, CA 93012; (800) 827-3983.

*Reviewed by Greg Walz, a member of the Three Rivers Alliance of Serious Homebrewers (TRASH) in Pittsburgh, Pa., an electrical engineer and National BJCP judge who has been brewing since 1984.*

## Homebrew Favorites

*Homebrew Favorites* (Storey Communications, 1994) is a collection of more than 240 beer recipes from homebrewers in the United States and Canada. Authors Karl F. Lutzen and Mark Stevens solicited homebrew clubs and homebrewers to send their recipes. The recipes were put into categories such as pale ales, brown ales, regional ales, porters, stouts, European lagers, American lagers, specialty styles, flavored beers and meads. There is also a general discussion on recipe formulation and some useful appendices with information on metric conversions, brewing associations and suggested readings.

*Homebrew Favorites* is good for homebrewers who are looking for inspiration. You won't find out how to brew beer, nor will you learn the particulars of recipe formulation, as the authors warn in their chapter on the subject. "The information that we present here is a sort of extract of the recipe formulation process — just the essence of formulating a recipe."

Most of the recipes are extract based, and more than half are ales, covering nearly 50 pages. Each recipe is listed with its ingredients, brewing and fermentation



PHOTO COURTESY OF BREWERS RESOURCE



# HOMEBREW FAVORITES

*A Coast-to-Coast  
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Stormbrew Hooch • Down-N-Out Stout  
Bullhead Fury Pale Ale • Little Red Pils  
Brother Ray's Bald Monk Belgian

Karl F. Lutzen &  
Mark Stevens

instructions and specific gravities. Almost all have a message from the brewer who created it giving the brewer's intentions or history. Many recipes are regional award winners.

This book looks into homebrewers' kitchens. You'll find the brewers using the same techniques and ingredients you do, and some who brew quite differently. For example, there are traditional beers like "Bohemian Rhapsody Pils." This Pilsener brewed by Neil C. Gudmestad, of Fargo, N.D., is a "medium-bodied, crisp Pilsener with assertive hop flavor and aroma." The brewer may have been onto something, as "Bohemian Rhapsody Pils" won an award at a recent Midwest Homebrew Festival competition.

In contrast to the traditional are beers like "Caffeine Ale." This pale ale brewed by Paul Fitzpatrick of Cambridge, Mass., is made with caffeine tablets. Besides giving a kick to your nervous system, the brewer writes, "The caffeine adds a slight extra bitterness which is distinct from the hop bitterness." Some of the flavored beers are on the wild side too, using flavorings such as tea, rose petals or valerian root.

Noticeably missing are hop and bitterness specifications. About two-thirds of the recipes list hop additions by weight only (no alpha-acid percentages given) and there is no mention of bitterness unless a brewer included it in the ingredients list. It is

unfortunate because alpha-acid content can vary by region, year and packaging. There are also some headings without recipes to suit the style. For example, the Dortmund and Munich Helles section does not have a Dortmund recipe.

*Homebrew Favorites* is good for homebrewers who like to brew from recipes. It's also good for homebrewers who study other recipes before creating their own. Looking at the variety homebrewers bring to their brewing makes this well-written,

pleasantly laid out book interesting to read.




*Homebrew Favorites: A Coast-to-Coast Collection of More Than 240 Beer and Ale Recipes* by Karl F. Lutzen and Mark Stevens, published by Storey Communications, 1994, 250 pages. Publisher's suggested retail price is \$12.95. Reviewed by Christian Knoebel, an environmental engineer and homebrewer living in Trenton, N.J., the infamous home of Champagne.

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### DRAFT KEGGING SYSTEM PARTS

#### KEG TOP FITTINGS

U.S. SANKE.....		\$24.60
EUROPEAN SANKE.....		26.70
HOFF STEVENS.....		28.00

Above require beverage nut and stem.  
1.72 Each

#### THRU WALL BEER TAPS

4 INCH SHANK.....		\$26.47
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Above require beverage nut and stem.  
1.72 Each

#### TUBING

5/16" x 9/16" GAS.....		ft. \$32
3/16" x 7/16" BEV.....		ft. \$32

#### SPLITTERS

TWO WAY.....		\$24.00
THREE WAY.....		30.84
FOUR WAY.....		42.60

#### B.E.S.T. IODINE BASED SANITIZER

\$1.27

#### CORNELIUS DISCONNECTS

Please Specify Pin or Ball Lock and Barbed or Threaded End.

1/4" NUT & 3/8" STEM		2.78
1/4" NUT & 1/4" STEM		2.28
FLARE WASHERS.....	Ea.	12

#### REGULATORS

With Check Valves		
SINGLE GAUGE.....		\$32.85
TWO GAUGE.....		41.40

#### CO. TANKS

5 LB.....		\$60.00
15 LB.....		101.70

#### COLD PLATES

8 x 12 SINGLE.....		\$57.30
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#### GROSH GASKETS

3.75 Pkg. of 100

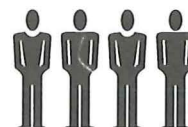
#### Chrome Plated BRASS STANDARD

Tower Height 9-1/2" from Spout to Flange		\$65.55
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# HOMEBREW CLUBS



Caroline Duncker and Shawn Steele

## Get Caught in the

**H**omebrew clubs around the world have another venue for communication in addition to monthly meetings, newsletters and computer bulletin boards. It's called the World Wide Web. Also known as WWW, or the Web, it is a network of thousands of computers around the world that maintain information in the form of "pages" on virtually every subject imaginable including beer and brewing. Web pages generally cover one topic and include connections, called links, to other related pages. Clubs can create "home pages," a table of contents listing what the club has to offer on the Web. People then access these to find information about the clubs and their activities.

Of the more than 500 AHA registered clubs, at least 11 are currently active on

## Homebrew Web

computer networks. They are the Maltose Falcons and the Barley Bandits, both of California; Brewers United for Real Potables (BURP), of Virginia; CRAZY Homebrewers (Cedar Rapids Association of Zymurgy, Yeastology), of Iowa; Boston Brew-Ins, Boston Wort Processors and the Worry Worts, of Massachusetts; Brew Free or Die of New Hampshire; HAZE (Hangtown Association of Zymurgy Enthusiasts) of California; the Chicago Beer Society of Illinois; and HOPS (Homebrewers of Philadelphia and Suburbs) of Pennsylvania. At least two international clubs, Metabisulphite Club of Aberdeen, Scotland, and the Finnish Homebrewers As-

sociation of Helsinki, Finland, are on-line as well. These clubs share one common motivation: they want to spread the word about the social and educational benefits of being part of a homebrew club.

We spoke to four clubs that maintain a home page on the Web and asked them questions about how to get a club up and running on-line and if they had seen any tangible benefits for their club. All club spokespersons agreed that setting up a home page was easy. First the club subscribes to World Wide Web access through a local Internet service provider.

When looking for a provider, make sure they know your club would like to create a Web home page, not just look at other Web pages. Internet service providers usually operate locally and you can probably find them listed in the phone book under "computers, networking." Access usually will cost from \$15 to \$30 per month, so shop around. A good access provider will be able to assist your club by answering other questions. If you cannot find a provider listed in the phone book, ask local computer clubs, the computer department at your place of employment or a university for help.

Club members who have Internet access through their workplace or university may be able to create a home page for their club by using office equipment at no extra cost to their employer. Of the four clubs interviewed,



ILLUSTRATION BY VICKI HOPEWELL



**If your club is interested in going on-line follow these steps:**  
**Establish computer World Wide Web access and elect an officer to administer the club page; determine what information your club home page will contain; create your home page and let everyone know your club's Web address (URL) so they can find you. Ask other Webmasters for help if you need it, the wealth of information is there for the taking.**

each had an officer with a Web service provided through their place of business. If your club chooses this method, make certain that the employer or other provider does not have rules prohibiting the use of their computers by you and your club. Keep in mind that your club may have to find another Internet service provider should your access member get a new job, graduate or if the rules change.

Once access is established, the club decides what information it wants on-line. Most clubs include information for club members

and non-members alike, such as a description of the club; when it started; its purpose; number of members, and dates, locations and topics of upcoming meetings. Anyone with World Wide Web access can tap into club home pages and see what a certain club has to offer. Access is not restricted to club members like newsletters tend to be. However, much of the information available on-line is similar to what would be found in a newsletter, including information on events, competitions and homebrewing articles. In

fact, most of the information for home pages comes from club newsletters. A lot of club "Webmasters" also are the club secretaries, which makes it even less time-consuming to maintain the club home page.

Once the home page is developed with the information the club wants to share with its membership, prospective members, beer enthusiasts and other Web users need to know where to find it or they could spend days looking for your club's home page. Therefore, each page has its own address, known as a URL (Uniform Resource Locator). General indexes of these addresses exist on the Web; however, the Association of Brewers, The Brewery and Spencer's Beer Page are places on the Web that maintain information specifically about beer and brewing. Most indexes will be willing to list your home page if you ask their Webmaster to do so. A method of contacting the index Webmaster is usually listed in the index's

## Glossary

### Home Page (a.k.a. "Web site"):

The first page of a club or other information provider's area on the Web. From the club's home page, the reader may choose links that branch off to other related pages.

### Information Provider:

A person or organization with the time and resources to make information available to web users.

### Link (a.k.a. "Hyperlink"):

A connection from one Web page to another. By choosing the links that they want to follow, the user can request more information on selected topics.

### URL:

Uniform Resource Locator, the "address" for a WWW page.

### WWW access:

Ability to connect to the WWW, sometimes, but not necessarily, including the ability to create your own Web pages.

### Web Page:

A section containing information, much like an article in a magazine.

### Webmaster:

The person responsible for maintaining a World Wide Web site.

### World Wide Web:

(a.k.a. "the Web," "WWW"): A computerized collection of information in the form of "pages." This information is maintained by a large number of organizations on thousands of computers throughout the world. WWW information is interlinked so that users may access information from any linked computer.



June 25, 1994

**ORANGE COUNTY FAIR  
HOMEMADE BEER CONTEST**  
Orange, Calif., 117 entries.  
John Eichman of Yucaipa, Calif., won best of show.

July 9, 1994

**WISCONSIN STATE FAIR  
AMATEUR BREWERS**  
West Allis, Wis., 178 entries.  
Art Steinhoff of Burlington, Wis., won best of show.

July 15, 1994

**SMALL BREWERS FESTIVAL  
OF CALIFORNIA AMATEUR  
BREWING COMPETITION**  
Mountain View, Calif., 126 entries.  
Russell Pencil of Mountain View, Calif., won best of show.

Aug. 6, 1994

**1994 OREGON STATE FAIR**  
Portland, Ore., 132 entries.  
Martin Wilde of Aloha, Ore., won best of show.

Aug. 20, 1994

**GERMAN-AMERICAN FESTIVAL**  
Toledo, Ohio, 24 entries.  
Thomas Anderson of Toledo, Ohio, won best of show.

Aug. 21, 1994

**BENTON-FRANKLIN COUNTY FAIR**  
Kennewick, Wash., 18 entries.  
Ted Venetz of Kennewick, Wash., won best of show.

## AHA SANCTIONED COMPETITION

*Kudos*

Sept. 24, 1994

**HEARTLAND  
HOMEBREW COMPETITION**  
Topeka, Kan., 90 entries.  
David Strange of Kansas City, Mo., won best of show.

Sept. 25, 1994

**RENAISSANCE PLEASURE FAIRE  
HOME BREWING COMPETITION**  
Novato, Calif., 99 entries.  
Russ Wigglesworth of Petaluma, Calif., won best of show.

Oct. 15, 1994

**ARIZONA STATE FAIR**  
Phoenix, Ariz., 90 entries.  
Ken Jones of Flagstaff, Ariz., won best of show.

Nov. 6, 1994

**NORTHWEST  
PILSENER COMPETITION**  
Portland, Ore., 9 entries.  
Bob McCracken of Portland, Ore., won best of show.

Dec. 3, 1994

**NEW ENGLAND FALL REGIONAL  
HOMEMADE BEER COMPETITION**  
Deerfield, Mass., 153 entries.  
Bruce Stevens of East Winthrop, Maine, won best of show.

Dec. 10, 1994

**OREGON LAGER JAM**  
Corvallis, Ore., 40 entries.  
Tony Shires and Dean Bautz of Corvallis, Ore., won best of show.

Jan. 21, 1995

**BAY AREA BREWOFF**  
Dublin, Calif., 110 entries.  
Tom Altenbach of Tracy, Calif., is the competition winner.

Jan. 21, 1995

**BEERS OF WINTER**  
Flagstaff, Ariz., 87 entries.  
Eddie Kuenhe of Tucson, Ariz., won best of show.

Jan. 22, 1995

**LAS VEGAS WINTERFEST '95**  
Las Vegas, Nev., 236 entries.  
Harry Finch of Temecula, Calif., won best of show.

Jan. 28, 1995

**SECOND NATIONAL DEAF  
HOMEBREW COMPETITION**  
Portland, Ore., 19 entries.  
Tim Finnigan of Antioch, Calif., won best of show.

Feb. 17, 1995

**KANSAS CITY BIER  
MEISTERS' 12TH ANNUAL  
HOMEBREW COMPETITION**  
Kansas City, Mo., 376 entries.  
Todd Taylor of Independence, Kan., won best of show.

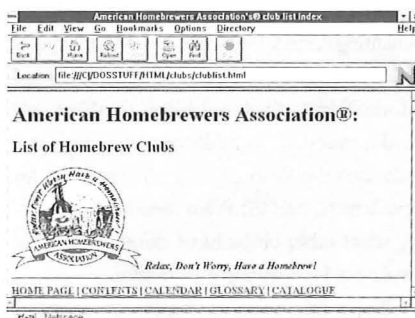
Feb. 18, 1995

**COMMANDER SAAZ'S INTERPLAN-  
ETARY HOMEBREW BLASTOFF**  
Cape Canaveral, Fla., 106 entries.  
Billy Kendrick of Cocoa, Fla., won best of show.



home page. The AOB and The Brewery both maintain lists of known homebrew clubs, including World Wide Web home pages and e-mail addresses, when available.

Karen Toast-Conger, a computer consultant and volunteer for The Brewery, says that the Web has been a real benefit for her club, HOPS of Philadelphia. The HOPS home page gives information on what the club does, how to get in touch with officers and how to become a member. The page is set up to link to other pages on club events. Karen says the club is gaining new membership and the current members are pleased with the on-line service. One of the biggest benefits to members and non-members interested in the club's activities is that



A sample of the AHA's WWW page.

the page is set up to automatically send entry forms for upcoming competitions – a savings in time and postage.

Mike Snyder of the CRAZY Homebrewers in Iowa agrees. "The club home page has

been instrumental in competition organizing for sending out entry forms and listing the competition results on-line," he said. In addition, the club has gained three new members in a month's time from their home page. Mike recommends other clubs go on-line.

If no one in the club has World Wide Web access, the club can solicit a corporate sponsor to alleviate costs. It helps to have a current officer become a Web administrator or elect a new officer for this position. There is a bit of technical jargon and software to become familiar with and finding an appropriate Internet access provider can be confusing, so it is useful to have some computer background.

Rich Lenihan of the Worly Worts in Boston says his club's home page has creat-

## NEW AHA REGISTERED HOMEBREW CLUBS

For a complete list of AHA Registered Homebrew Clubs, contact the AHA. If you want to register your homebrew club with the AHA, send a brief letter about your club including the same kind of information you see here to AHA Administrator James Spence, PO Box 1679, Boulder, CO 80306-1679; (303) 447-0816, ext. 121; FAX (303) 447-2825; CompuServe 70740,1107; Internet james@aob.org.

This list reflects club registrations received through March 17, 1995. Club registrations received after that date will appear in *Zymurgy* Winter 1995 (Vol. 18, No. 5).

### CANADA

#### BRITISH COLUMBIA

Royal Canadian Malted Patrol, c/o Jim Cave, 828 E. 17th Ave., North Vancouver, BC V7L 2X1; (604) 987-8262.

The U.B.C. Carboys and Girls, c/o Stuart Cole, 3673 W. 17th Ave., Vancouver, BC V6S 1A3; (604) 228-8788; sw-cole@unix.ubc.ca.

### ONTARIO

Golden Horseshoe Amateur Brewer's Association (GHABA), c/o Craig Pinhey, 351 Charlton Ave. W., Hamilton, ON L8P 2E6; CPINHEY@DHC.DOFASCO.CA.

### SASKATCHEWAN

Saskatoon Berry Brewers, c/o Robert Schultz, 326 Brunst Crescent, Saskatoon, SK S7N 3S8; (306) 966-7822.

### SWEDEN

"Triple-W," c/o Steven van den Berg, Willemweg 110, 6531, DN Nijmegen; 080-562952.

### SWITZERLAND

Association des Buveurs d'Orges (ABO), c/o A. Schmid, Case Postale 2, 1800 Vevey 1.

### UNITED STATES CALIFORNIA

Pacific Gravity, c/o Culver City Home Brewing Supply, 4358 1/2 Sepulveda Blvd., Culver City, CA 90230; (310) 397-3453.

Frantic Fermenters, c/o Bob Christopher, 351 Second Ave., Redwood City, CA 94063-3709.

Riverside Homebrew Crew, c/o John Walker, 6212 Tarragona Dr., Riverside, CA 92509; (909) 683-5050.

### COLORADO

The TRIBE, c/o Bob Dillon, 809 Vivian, Longmont, CO 80501; (303) 651-9164.

### CONNECTICUT

Sanderflohansontappanberg Brew Club, c/o Mark Floberg, 27 Bonita Dr., Huntington, CT 06484.

Whale of an Ale Brewers Association, c/o Samira Hakki, 68 Ridge Hill Rd., Oakdale, CT 06370.

Virtual Village Home Brew Society, c/o Roy Klein, 40 Sleepy Hill Rd., Southbury, CT 06488; CompuServe 72456,2530.

### FLORIDA

The Home Brewery Firehouse Brewers, c/o The Home Brewery, 1313 E. 8th Ave., Tampa, FL 33605, (813) 241-2739.

### HAWAII

Haleakala Homebrew Hui, c/o John Andrews, 108 Mikalee Pl., Kula, HI 96790; (808) 878-6516.

### IDAHO

Panhandle U Brew Society (PUBS), c/o Linda Hetrick, 2116 James Crowe Dr., Coeur d'Alene, ID 83814; (208) 772-7019.

### ILLINOIS

Mississippi Unquenchable Grail Zymurgists (MUGZ), c/o Jeff Grillo, 1422 32nd St., Rock Island, IL 61201; (309) 786-2546; CompuServe 72064, 1256.

### KENTUCKY

Hillbilly Brewers, c/o Hatfield & McCoy, PO Box 10211, Bowling Green, KY 42102-7211; (502) 842-7419.

Kentucky Brewing Society, c/o Ira Proctor, 451 Southland Dr., Lexington, KY 40503; (606) 277-8090.

### LOUISIANA

Mystic Krewe of Brew, c/o John LaBarbera, 763 Rue Calais, Mandeville, LA 70471-1203; (504) 561-3363/626-0962.

### MAINE

The Down Yeasters, c/o Mike Woodard, Norway Dr., Bar Harbor, ME 04609; (207) 288-8181; jbm@aretha.jax.org.

### MARYLAND

Libation Association of Northern Maryland, c/o Jason Hardebeck, 1214 Brighton Lane, Bel Air, MD 21014; (410) 893-5916.

Suds & Ciphers, c/o Eric Marzewski, 1463 Graham Farm Circle, Severn, MD 21144.

### MICHIGAN

Upper Peninsula Brewer's Guild (UPBG), c/o Brian Murphy, 111 White St., Hancock, MI 49930; (906) 482-4708; brmu-phy@mtu.edu.

No Restraints Brew Club, c/o Ronald Rucins, 54218 Folklore Dr., Shelby Township, MI 48316.

### MISSOURI

Missouri Association of Serious Homebrewers (MASH), c/o Micheal Muller, 1316 Eastwood, Rolla, MO 65401; (314) 364-6422.

### NEBRASKA

OmaHOPS, c/o Steve Nasr, 2412 S. 153rd St., Omaha, NE 68144; (402) 333-0668.

### NEW MEXICO

The Grainful Heads, c/o Alewife Homebrew Supply, 1314 Rufina Circle, Suite A6, Santa Fe, NM 87505; (505) 474-8046.

### PENNSYLVANIA

Northeast Pennswoods Homebrewers Guild, c/o Steve Nash, 305 Mary St., Mountaintop, PA 18707; (717) 474-6668.

### VIRGINIA

Herndon Hard Times Wort Hogs, c/o Lindsey Smith, 3213 Kinross Circle, Herndon, VA 22071-3319; (703) 689-3264.

### WASHINGTON

Homebrewers of Puget Sound, c/o Cascade Brewing Supplies, 224 Puyallup Ave., Tacoma, WA 98421; (206) 383-8980.

Puget Sound Beerkrafters, c/o Richard Kvalheim, 6122 Motor Ave. S.W., Tacoma, WA 98499; (206) 589-2739.

### WISCONSIN

Brew City Brewzlers, c/o Ricky Engstrom, 3600 N. 60 St., Milwaukee, WI 53216; (414) 442-0190.

First Draft Brewclub, c/o Steve Potter, 5475 Marie Rd., Oregon, WI 53575; (608) 835-3007.



## WORLD WIDE WEB HOME PAGE URLS:

### BREWING INFORMATION:

**Association of Brewers**  
<http://www.aob.org/aob>

**The Brewery**  
<http://alpha.rollanet.org/>

**Internet Beer Resources**  
<http://www.mindspring.com/~jlock/beerdocs.html>

**Real Beer Page**  
<http://and.com/RealBeer/rbp.tunnels.html>

**Spencer's Beer Page**  
<http://guraldi.itn.med.umich.edu/Beer/>

**Meadmakers Page**  
<http://www.atd.ucar.edu/rdp/gfc/m>

### GENERAL INDEXES:

**Yahoo**  
<http://akebono.stanford.edu/yahoo>

**Webcrawler**  
<http://webcrawler.cs.washington.edu/WebCrawler>

**W3 Search Engines**  
<http://cuiwww.unige.ch/meta-index.html>

### HOME BREW CLUBS:

**Ann Arbor Brewers Guild**  
<http://guraldi.hgp.med.umich.edu:80/Beer/AABG/>

**Barley Bandits**  
<http://www.gordian.com/users/scott/brewstuff/bandits.html>

**Boston Brew-ins**  
<http://www.mit.edu:8001/people/cmklein/brew-ins.html>

**Boston Wort Processors**  
<http://krl.krl.com/wort.html>

**Brew Free or Die**  
<http://www.msccg.com/BFD/>

**BURP**  
<http://www.btg.com/~rgarvin/burp.html>

**Chicago Beer Society**  
<http://www.mcs.com/~shamburg/cbs/cbshome.html>

**CRAZY Homebrewers**  
<http://www.infonet.net/showcase/spsbeer/crazy/>

**Hangtown Association  
of Zymurgy Enthusiasts**  
<http://spider.lloyd.com/~sandler>

**HOPS**  
<http://www.netaxs.com/~ktoast/hops.html>


**Maltose Falcons**  
<http://mashtun.jpl.nasa.gov/beer/club/falcons.html>

**Worry Worts**  
<http://www.lil.net/users/rich/worry-worts.html>

ed another medium for club exposure while benefiting current members. The Worry Worts on-line newsletter provides a forum to spread information to those members unable to attend a meeting. In addition, Rich says the club uses the Web to gather information for newsletters, find ideas for meetings by reading what other clubs have done and locate resources for brewing information.

There has been an explosion of interest on the Internet and clubs can become part of it.

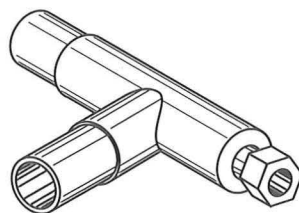
If you have questions about the Web resources listed, contact them by e-mail: Spencer Thomas ([spencer@med.umich.edu](mailto:spencer@med.umich.edu)) for the Spencer Beer Page; Carl Lutzen ([lutzen@alpha.rollanet.org](mailto:lutzen@alpha.rollanet.org)) and Karen Toast-Conger ([ktoast@alpha.rollanet.org](mailto:ktoast@alpha.rollanet.org)) for The Brewery; and Shawn Steele ([shawn@aob.org](mailto:shawn@aob.org)) for the Association of Brewers. Enjoy!

Caroline Duncker is the AHA assistant and Shawn Steele is the Association of Brewers information systems administrator. 

I N T R O D U C I N G

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Build your own counterflow wort chiller. You supply the copper tube and garden hose, we supply the hard part—the fittings. No soldering is required for assembly. Get your beer fermenting faster!

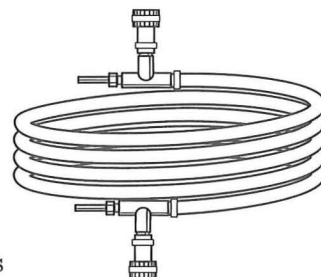


**You get:**

2 Fittings

4 Hose  
Clamps

Complete  
Instructions



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**Phil's Sparger & Phalse Bottom** — Make your own Phil's Lauter Tun with these components. Three sizes available.

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6915 Lorton Lane  
Flagstaff, AZ 86004  
(602) 526-8374

**Brewmeisters Supply Co.**  
3522 W. Calavar Rd.  
Phoenix, AZ 85023  
(602) 843-4337

**GunnBrew Supply Co.**  
16627 N. Cave Creek Rd.  
Phoenix, AZ 85032  
(602) 788-8811

## ARKANSAS

**C.J.'s "Old Time Depot"**  
373 CC 607  
Rt. 3, Box 712  
Jonesboro, AR 72410  
(501) 935-3857

## CALIFORNIA

**Barley and Wine  
Home Fermentation Supply**  
1907 Central Ave.  
Ceres, CA 95307  
(209) 538-BREW; (800) 500-BREW

**Bencomo's Homebrew Supply**  
1544 N. Palm  
Fresno, CA 93728  
(209) 237-5823

**The Beverage People**  
840 Piner Rd. #14  
Santa Rosa, CA 95403  
(707) 544-2520; (800) 544-1867

**Bliss Brewing Co.**  
PO Box 179  
Yucca Valley, CA 92286  
(619) 365-1082; (800) 470-BREW

**Brew Mart**  
1630 F St.  
Eureka, CA 95501  
(707) 445-4677 (HOPS);  
(800) 286-2739 (BREW)

**Brimhall Brew Barn**  
1852 A St.  
Antioch, CA 94509  
(800) 414-8359;  
FAX (510) 778-HOPS

**Bucket of Suds**  
317-A Old County Rd.  
Belmont, CA 94002  
(415) 637-9844

**Doc's Cellar**  
470 Price St.  
Pismo Beach, CA 93449  
(805) 773-3151

**Double Spring Homebrew Supply**  
4697 Double Springs Rd.  
Valley Springs, CA 95252  
(209) 754-3217

**Fermentation Frenzy**  
991 N. San Antonio Rd.  
Los Altos, CA 94022  
(415) 941-9289

**Great Fermentations of Marin**  
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San Rafael, CA 94901  
(415) 459-2520; (800) 570-BEER

**Home Brew Mart**  
5401 Linda Vista Rd., Suite 406  
San Diego, CA 92110  
(619) 295-2337

**The Home Brewery**  
24723 Redlands Blvd. #F  
San Bernardino, CA 92408  
(909) 796-0699; (800) 622-7393

**HopTech**  
3015 Hopyard Rd., Suite E  
Pleasanton, CA 94588  
(510) 426-1450; (800) DRY-HOPS;  
FAX (510) 736-7950

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Upland, CA 91786  
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(707) 255-6372; (800) 242-8585

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Berkeley, CA 94702  
(510) 849-0400

**Portable Potables**  
1011 41st Ave.  
Santa Cruz, CA 95062  
(408) 476-5444

**R & R Home  
Fermentation Supplies**  
8385 Jackson Rd.  
Sacramento, CA 95826  
(916) 383-7702

**Ruud-Rick's Homebrew Supply**  
7273 Murray Dr. #17  
Stockton, CA 95210  
(209) 957-4549

**San Francisco Brewcraft**  
1555 Clement St.  
San Francisco, CA 94118  
(415) 751-9338

**Santa Cruz Homebrew**  
616 California St.  
Santa Cruz, CA 95060  
(408) 459-0178

**South Bay Homebrew Supply**  
PO Box 3798  
Torrance, CA 90510  
(310) 517-1841; (800) 608-BREW

**Stein Fillers**  
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Long Beach, CA 90808  
(310) 425-0588

## COLORADO

**The BREW-IT Co.**  
120 W. Olive St.  
Fort Collins, CO 80524  
(800) 748-2226; (303) 484-9813

**Doc's Brew Shop**  
3150-B1 S. Peoria  
Aurora, CO 80014  
(303) 750-6382

**Front Range Bierhaus**  
3117 N. Hancock Ave.  
Colorado Springs, CO 80907  
(719) 473-3776

**Highlander Home Brew Inc.**  
151 W. Mineral Ave., Suite 113  
Littleton, CO 80120  
(303) 794-3923; (800) 388-3923

**The Homebrew Hut**  
555 I Hwy. 287  
Broomfield, CO 80020  
(303) 460-1776

**Liquor Mart Inc.**  
1750 15th St.  
Boulder, CO 80302  
(303) 449-3374; (800) 597-4440

**North Denver Cellar**  
3475 W. 32nd Ave.  
Denver, CO 80211  
(303) 433-5998

**Old West Homebrew Supply**  
301 B E. Pikes Peak Ave.  
Colorado Springs, CO 80903  
(719) 635-2443; (800) ILV-BREW

**Rocky Mountain Homebrew**  
7292 N. Federal Blvd.  
Westminster, CO 80030  
(303) 427-5076

**Silverthorne  
Homebrewers Supply**  
301 Lagoon Lane  
PO Box 978  
Silverthorne, CO 80498-0978  
(303) 468-8330; (800) 235-8330

**What's Brewin'**  
1980 8th St.  
Boulder, CO 80302  
(303) 444-9433

**Wine & Hop Shop**  
705 E. 6th Ave.  
Denver, CO 80203  
(303) 831-7229

**The Wine Works**  
5175 W. Alameda Ave.  
Denver, CO 80219  
(303) 936-4422

## CONNECTICUT

**Brother Logan  
Home Brewing Supplies**  
60 Jerry Daniels Rd.  
Marlborough, CT 06447  
(203) 295-8620

**Great American Home Brew  
Supplies at Geremia Gardens**  
1720 West St.  
Southington, CT 06489  
(203) 620-0332; (800) 94-UBREW

**Just Brew It, LLC**  
946 Hope St., Suite 156  
Stamford, CT 06907  
(203) 329-8668; (800) 953-BREW

**The Mad Capper**  
PO Box 161  
Glastonbury, CT 06033  
(203) 659-8588

**S.E.C.T. Brewing Supply**  
c/o SIMTAC  
20 Attawan Rd.  
Niantic, CT 06357  
(203) 739-3609

**Wine and Beer Art  
of Smith Tompkins**  
1501 E. Main St., Route 202  
Torrington, CT 06790  
(203) 489-4560

## DELAWARE

**Wine Hobby USA**  
2306 W. Newport Pike  
Stanton, DE 19804  
(302) 998-8303; (800) 847-HOPS

## FLORIDA

**Brew Shack**  
4025 W. Waters Ave.  
(Waterside Plaza)  
Tampa, FL 33614  
(813) 889-9495; (800) 646-BREW

**BrewCrafters**  
6621 Gateway Ave.  
Sarasota, FL 34231  
(813) 925-9499; (800) HOT-WORT

**The Home Brewery**  
416 S. Broad St.  
PO Box 575  
Brooksville, FL 34601  
(904) 799-3004; (800) 245-BREW

**Worm's Way Florida**  
4402 N. 56th St.  
Tampa, FL 33610  
(813) 621-1792; (800) 283-9676

## GEORGIA

**Brew Your Own Beverages Inc.**  
20 E. Andrews Dr. N.W.  
Atlanta, GA 30305  
(404) 365-0420; (800) 477-BYOB

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

## ILLINOIS

**Beer In A Box**  
27W460 Beecher St.  
Winfield, IL 60190  
(708) 690-8150; (800) 506-BREW

**Bev Art Homebrew  
& Wine Making Supply**  
10035 S. Western Ave.  
Chicago, IL 60643  
(312) 233-7579; (312) BEER579



**The Brewer's Coop**  
1010 N. Washington St.  
Naperville, IL 60563  
(800) 451-6348

**Chicago Indoor Garden Supply**  
297 N. Barrington Rd.  
Streamwood, IL 60107  
(708) 885-8282; (800) 444-2837

**Chicago Homebrew Supplies**  
1444 W. Chicago Ave.  
Chicago, IL 60622  
(800) 213-BEER

**Chicagoland Winemakers Inc.**  
689 W. North Ave.  
Elmhurst, IL 60126-2132  
(708) 834-0507; (800) 226-BREW

**Crystal Lake Health Food Store**  
25 E. Crystal Lake Ave.  
Crystal Lake, IL 60014  
(815) 459-7942

**CZ Tech**  
333 S. Cross St.  
Wheaton, IL 60187-5405  
(708) 688-7886

**Evanston First Liquors**  
**Homebrewing**  
1019 W. Davis St.  
Evanston, IL 60201  
(708) 328-9651

**Fleming's Winery**  
RR 2 Box 1  
Oakwood, IL 61858  
(217) 354-4555; (800) 832-4292

**Home Brewing**  
**& Wine Making Emporium**  
28 W. 685 Rogers Ave.  
Warrenville, IL 60555  
(708) 393-2337; (800) 455-BREW

**Home Brew Shop**  
307 W. Main St.  
St. Charles, IL 60174  
(708) 377-1338

**Koski Home Brew Fixen's Ltd.**  
1415 5th Ave.  
Moline, IL 61265  
(309) 797-2130; (800) 788-BREW

**Lil' Olde Winemaking Shoppe**  
4 S. 245 Wiltshire Lane  
Sugar Grove, IL 60554  
(708) 557-2523

**Old Town Liquors**  
514 S. Illinois Ave.  
Carbondale, IL 62901  
(618) 457-3513

**Rock River Brewing Supply**  
PO Box 6242  
Rockford, IL 61108  
(815) 227-HOPS

**Sheaf and Vine Brewing Supply**  
Inside Mainstreet Deli and Liquors  
5425 S. La Grange Rd.  
Countryside, IL 60525  
(708) 430-HOPS

**You-Brew**  
**Country Food & Liquor**  
19454 S. Route 45  
Mokena, IL 60448  
(708) 479-290

## INDIANA

**Worm's Way Indiana**  
3151 South Hwy. 446  
Bloomington, IN 47401  
(812) 331-0300; (800) 274-9676

## KANSAS

**Bacchus & Barleycorn Ltd.**  
8725 Johnson Dr.  
Merriam, KS 66202-2150  
(913) 262-4243

## KENTUCKY

**The Home Brewery**  
114 N. 3rd St.  
Bardstown, KY 40004  
(502) 349-1001; (800) 992-BREW

**Nuts N Stuff Inc., Bulk Foods**  
2022 Preston St.  
Louisville, KY 40217  
(502) 634-0508; (800) 867-NUTS

**Winemakers**  
**Supply & Pipe Shop**  
9477 Westport Rd.  
Westport Plaza  
Louisville, KY 40241  
(502) 425-1692; (800) 641-1692

## MAINE

**The Purple Foot Downeast**  
116 Main St., Dept. Z  
Waldoboro, ME 04572  
(207) 832-6286

## MARYLAND

**Brew N' Kettle**  
1017 Light St.  
Baltimore, MD 21230  
(410) 783-1258

**Brew Masters Ltd.**  
12266 Wilkins Ave.  
Rockville, MD 20852  
(301) 984-9557; (800) 466-9557

**Cellar Works**  
at Fullerton Liquors  
7542 Belair Rd.  
Baltimore, MD 21236  
(410) 665-2900

**Chesapeake Homebrew**  
14 Aventura Ct.  
Randallstown, MD 21133  
(800) 948-9776

**The Flying Barrel**  
111 S. Carroll St.  
Fredrick, MD 21701  
(301) 663-4491

**Happy Homebrewing Supply Co.**  
Old Salisbury Mall  
351 Civic Ave.  
Salisbury, MD 21801  
(410) 543-9616

**Maryland Homebrew**  
9009-D Mendenhall Ct.  
Columbia, MD 21045  
(410) 290-FROTH

## MASSACHUSETTS

**Barleymalt and Vine**  
26 Elliot St.  
Newton, MA 02161  
(800) 666-7026

**Beer and Wine Hobby**  
180 New Boston St.  
Woburn, MA 01801  
(617) 933-8818; (800) 523-5423

**Boston Brewers Supply Co.**  
48 South St.  
Jamaica Plain, MA 02130  
(617) 983-1710

**Dutch Treat**  
739 N. Main St.  
West Bridgewater, MA 02379  
(508) 583-6670

**The Hoppy Brewer Supply Co.**  
550 Central Ave.  
Seekonk, MA 02771  
(508) 761-6615

**The Keg & Vine**  
697 Main St.  
Holden, MA 01520  
(508) 829-6717

**Luke's Super Liquor Stores**  
511 Rte. 28  
West Yarmouth, MA 02673  
(508) 775-6364; (508) 775-2979;  
FAX (508) 778-4668

**The Modern Brewer Co.**  
2304 Massachusetts Ave.  
Cambridge, MA 02140  
(617) 868-5580; 800-Send-Ale

**Stella Brew Homebrew Supply**  
16 State Rd., Rt. 20  
Charlton City, MA 01508  
(508) 248-6823; (800) 248-6823

**Stella Brew Homebrew Supply**  
197 Main St.  
Marlboro, MA 01752  
(508) 460-5050; (800) 248-6823

**The Vineyard — Home Brewers**  
**and Vintners Supply Shop**  
123 Glen Ave.  
PO Box 80  
Upton, MA 01568  
(508) 529-6014; (800) 626-2371

**Worm's Way Massachusetts**  
1200 Millbury St.  
Worcester, MA 01607  
(508) 797-1156; (800) 284-967

## MICHIGAN

**Brew & Grow**  
33523 W. 8 Mile, #F-5  
Livonia, MI 48152  
(313) 442-7939

**Lake Superior Brewing Co.**  
7206 Rix St.  
Ada, MI 49301-9189  
(616) 682-0091

**Wine Barrel Plus**  
30303 Plymouth Rd.  
Livonia, MI 48150  
(313) 522-9463

## MINNESOTA

**America Brews**  
9925 Lyndale Ave. S.  
Bloomington, MN 55420  
(612) 884-2039

**Brew-N-Grow**  
8179 University Ave. N.E.  
Fridley, MN 55432  
(612) 780-8191

**WindRiver Brewing Co. Inc.**  
7212 Washington Ave. S.  
Eden Prairie, MN 55344  
(612) 942-0589; (800) 266-HOPS;  
FAX (612) 942-0635

## MISSOURI

**Cool Stuff**  
120 S. Ninth St.  
Columbia, MO 65201  
(314) 875-7912

**The Home Brewery**  
S. Old Highway 65  
PO Box 730  
Ozark, MO 65721  
(417) 485-0963; (800) 321-BREW

**Johnny Brew-Meister's**  
Crossroads West Shopping Center  
2101 W. Broadway  
Columbia, MO 65203  
(314) 446-8030;  
FAX (314) 446-8031

**St. Louis Wine & Beermaking**  
251 Lamp & Lantern Village  
Chesterfield, MO 63017  
(314) 230-8277

**St. Louis Wine & Beermaking**  
9971 LinFerry Dr. (South County)  
St. Louis, MO 63123  
(314) 843-9463

**Stout Marketing**  
**Custom Signage**  
6425 W. Florissant  
St. Louis, MO 63136  
(800) 325-8530

**Third Fork**  
690 Walnut  
Union Star, MO 64494  
(816) 593-2357

**Winemaker's Market**  
4349 N. Essex Ave.  
Springfield, MO 65803  
(417) 833-4145

**Witt Wort Works**  
1032 S. Bishop Ave.  
Rolla, MO 65401  
(314) 341-3311

**Worm's Way Missouri**  
2063 Concourse  
St. Louis, MO 63146  
(314) 994-3900; (800) 285-9676

## NEVADA

**The Home Brewery**  
4300 N. Pecos Rd., #13  
North Las Vegas, NV 89115  
(702) 644-7002; (800) 288-DARK

## NEW HAMPSHIRE

**Amber Waves Homebrew Supply**  
5 Central Ave.  
Rochester, NH 03867  
(603) 335-4707; (800) 813-4707

**Beer Essentials**  
611 Front St.  
Manchester, NH 03102  
(603) 624-1080; (800) 608-BEER

**Brewer & Associates/  
Maine Hopper**  
112 State St./PO Box 6555  
Portsmouth, NH 03801  
(603) 436-5918

**The Seven Barrel Brewery Shop**  
Rt. 12-A at Exit 20, Interstate 89  
West Lebanon, NH 03784  
(603) 298-5566

**The Stout House**  
Eastern Slope Plaza  
North Conway, NH 03860  
(603) 356-5290; (800) 842-BREW

## NEW JERSEY

**The Barnegat Bay Brewing Co.**  
215 Route 37 W.  
Toms River, NJ 08755  
(800) HOP-ON-IT

**BEERCRAFTERS Inc.**  
110A Greentree Rd.  
Turnersville, NJ 08012  
(609) 2 BREW IT



**The Brewer's & Vintner's Supply Co.**  
290 Cassville Rd.  
Jackson, NJ 08527  
(908) 928-4045; (800) 293-5816

**The Brewmeister**  
115 N. Union Ave.  
Cranford, NJ 07016  
(908) 709-9295; (800) 322-3020

**Coffee Thyme 'N More**  
201 N. Broadway  
Gloucester, NJ 08030  
(609) 456-8833

**The Home Brewery**  
56 W. Main St.  
Bogota, NJ 07603  
(201) 525-1833; (800) 426-BREW

**Homebrew Unlimited  
(inside Frames Unlimited)**  
2663 Nottigham Way  
Trenton, NJ 08619  
(609) 586-7837

**Hop & Vine**  
11 DeHart St.  
Morristown, NJ 07960  
(201) 993-3191

**Hunterdon Homebrew Shoppe**  
10 Bridge St.  
Frenchtown, NJ 08825  
(908) 996-6008

**Red Bank Brewing Supply**  
67 Monmouth St.  
Red Bank, NJ 07701  
(908) 842-7507; (800) 779-7507

**Richland General Store**  
Route 40, PO Box 185  
Richland, NJ 08350  
(609) 697-1720

**Tully's Brew-N-Barrel**  
476B Bloomfield Ave.  
Verona, NJ 07044  
(201) 857-5199

**U-Brew Co.**  
319 1/2 Millburn Ave.  
Millburn, NJ 07041  
(201) 376-0973

**Wine Rack**  
293 Route 206  
Flanders, NJ 07836  
(201) 584-0333

**NEW YORK**  
**Arbor Wine & Beermaking  
Supplies Inc.**  
74 W. Main St.  
East Islip, NY 11730  
(516) 277-3004; FAX (516) 277-3027

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

**Brew By You Inc.**  
119 Rockland Center, Suite 293  
Nanuet, NY 10954  
(800) 9-TO-BREW;  
FAX (914) 732-8213

**Brewers Den**  
24 Bellemeade Ave.  
Smithtown, NY 11787  
(516) 979-3438; (800) 499-BREW

**The Brewery**  
11 Market St.  
Potsdam, NY 13676  
(315) 265-0422; (800) 762-2560

**The Brews Brothers at KEDCO -  
Beer & Wine Supply Store**  
564 Smith St.  
Farmingdale L.I., NY 11735-1168  
(516) 454-7800; (800) 654-9988  
(outside N.Y. only);  
FAX (516) 454-4876

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

**E. J. Wren Homebrewer Inc.**  
Ponderosa Plaza (behind Heids)  
209 Oswego St.  
Liverpool, NY 13088  
(315) 457-2282

**East Coast Brewing Supply**  
124 Jacques Ave.  
PO Box 060904  
Staten Island, NY 10306  
(718) 667-4459;  
FAX (718) 987-3942

**Great Lakes Brew Supply**  
310 Adams Ave.  
Endicott, NY 13760  
(607) 785-4233; (800) 859-GLBS

**Hop, Skip & A Brew**  
58-07 Metropolitan Ave.  
Ridgewood, NY 11385  
(718) 821-6022

**Lager 'N Suds Homebrew Supply**  
RD 3 Box 253 Burlingham Rd.  
Bloomingsburg, NY 12721  
(914) 733-1093

**Little Shop of Hops  
Home Brewing Supply Co.**  
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New York, NY 10018  
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FAX (212) 704-9611

**Mountain Malt and Hop Shoppe**  
54 Leggs Mills Rd.  
Lake Katrine, NY 12449  
(800) 295-MALT; (914) 336-7688

**The New York Homebrewer**  
221 Old Country Rd.  
Carle Place, NY 11514  
(800) YOO-BREW;  
FAX (516) 294-1872

**Niagara Tradition  
Homebrewing Supplies**  
7703 Niagara Falls Blvd.  
Niagara Falls, NY 14304  
(716) 283-4418; (800) 283-4418

**Party Creations**  
RD 2 Box 35 Rokeby Rd.  
Red Hook, NY 12571  
(914) 758-0661

**NORTH CAROLINA**  
**Alternative Beverage**  
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Charlotte, NC 28217  
(704) 527-9643; (800) 365-BREW

**American Brewmaster**  
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Raleigh, NC 27604  
(919) 850-0095

**Assembly Required**  
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Hendersonville, NC 28739  
(704) 692-9677; (800) 486-2592

**Brew Better Supply**  
103 Covington Square Dr.  
Cary, NC 27513  
(919) 467-8934

**NORTH DAKOTA**  
**The Home Brewery  
at Happy Harry's Bottle Shop**  
2151 32nd Ave. S.  
Grand Forks, ND 58201  
(701) 780-0902; (800) 367-BREW

**OHIO**  
**The Grape and Granary**  
1302 E. Tallmadge Ave.  
Akron, OH 44310  
(216) 633-7223

**OKLAHOMA**  
**Bob's Brewhaus**  
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Stillwater, OK 74075  
(405) 372-4477  
**Professional Brewers LLC**  
10902 N. Pennsylvania  
Oklahoma City, OK 73120  
(405) 752-7380

**OREGON**  
**Aycock Knives & Beer Supply**  
120 Columbia St. N.E.  
Salem, OR 97303  
(503) 378-0774

**F.H. Steinbart Co.**  
234 S.E. 12th St.  
Portland, OR 97214  
(503) 232-8793

**Home Fermenter Center**  
123 Monroe St.  
Eugene, OR 97402  
(503) 485-6238

**Homebrew Heaven**  
1292 12th St. S.E.  
Salem, OR 97302  
(503) 375-3521

**PENNSYLVANIA**  
**Beer Unlimited**  
515 Fayette St.  
Conshohocken, PA 19428  
(610) 397-0666

**Beer Unlimited**  
Routes 30 and 401,  
Great Valley Shopping Center  
Malvern, PA 19355  
(215) 889-0905

**BREW by YOU**  
3504 Cottman Ave.  
Philadelphia, PA 19149  
(215) 335-BREW

**Country Wines**  
3333 Babcock Blvd.  
Pittsburgh, PA 15237-2421  
(412) 366-0151

**Home Sweet Homebrew**  
2008 Sansom St.  
Philadelphia, PA 19103  
(215) 569-9469; FAX (215) 569-4633

**Homebrewer's Outlet**  
10 Lincoln Circle  
Fairless Hills, PA 19030  
(215) 943-8569

**Keystone Homebrew Supply**  
New Montgomeryville Mart  
Route 63 between Rts. 202 & 309  
Montgomeryville, PA 18936  
(215) 641-HOPS

**Mr. Steve's Homebrew Supplies**  
4342 N. George St.  
Manchester, PA 17345  
(717) 266-5954

**Neibert's Spielgrund  
Wine & Gift Shop**  
3528 E. Market St.  
York, PA 17402  
(717) 755-3384

**The BREWSMITH Ltd.**  
323 E. Main St.  
Collegeville, PA 19426  
(610) 489-8986

**RHODE ISLAND**  
**Basement Brew-Hah Inc.**  
PO Box 7574  
Warwick, RI 02887  
(401) 727-1150; (800) 213-BREW

**Brew Horizons**  
884 Tiogue Ave.  
Coventry, RI 02816  
(401) 826-3500; (800) 589-BREW

**SOUTH CAROLINA**  
**Carolina Wine and Cheese**  
54 1/2 Wentworth St.  
Charleston, SC 29401  
(803) 577-6144

**TENNESSEE**  
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4111 Martin Mill Pike  
Knoxville, TN 37920  
(615) 577-2430; (800) 873-6258

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Memphis, TN 38104  
(901) 278-2682

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Dallas, TX 75228  
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Paris, TX 75462  
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**DeFalco's Home Wine  
& Beer Supplies**  
5611 Morningside Dr., Dept. Z  
Houston, TX 77005  
(713) 523-8154; FAX (713) 523-5284

**Homebrew Supply of Dallas**  
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Suite 1-P  
Richardson, TX 75080  
(214) 234-5922

**Homebrew Headquarters**  
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Dallas, TX 75206  
(214) 821-7444; Order lines: (800)  
966-4144, (800) 862-7474

**Homebrew Headquarters — North**  
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Suite 449  
Dallas, TX 75243  
(214) 234-4411; (800) 966-4144

**Homebrew Headquarters — West**  
900 E. Copeland, Suite 120  
Arlington, TX 76011  
(817) 792-3940; (800) 862-7474

**St. Patrick's of Texas  
Brewers Supply**  
12922 Staton Dr.  
Austin, TX 78727  
(512) 832-9045; (800) 448-4224



5356 W. Vickery  
Fort Worth, TX 76107  
(817) 377-4488; (800) IT BREWS;  
FAX (817) 732-4327

**The Beer Nut Inc.**  
1200 S. State  
Salt Lake City, UT 84111  
(801) 531-8182; (800) 626-2739

**Something's Brewing**  
196 Battery St.  
Burlington, VT 05401  
(802) 660-9007

20 Susie Wilson Rd.  
Essex, VT 05451  
(802) 879-2920; (800) 456-BREW

**Brew America**  
138 Church St. N.E., Suite F  
Vienna, VA 22180  
(703) 938-4805

1215G George Washington  
Memorial Hwy.  
Yorktown, VA 23693  
(804) 595-HOPS

2602 W. Main St.  
Richmond, VA 23220  
(804) 353-5006

1313 S. Main St.  
Blacksburg, VA 24060  
(703) 953-CORK; (800) 672-WINE

**Brewmasters**  
6122 Motor Ave. S.W.  
Tacoma/Lakewood, WA 98499  
(206) 589-BREW

4520 Union Bay Place N.E.  
Seattle, WA 98105  
(206) 527-5047

224 Puyallup Ave.  
Tacoma, WA 98421  
(206) 383-8980

14411 Greenwood N.  
Seattle, WA 98133  
(206) 365-7660; (800) 342-1871

12121 N.E. Northup Way, Suite 210  
Bellevue, WA 98005  
(800) 789-BREW; (206) 882-9929

7526 Olympic View Dr., Suite F  
Edmonds, WA 98026  
(206) 776-2237

N. 2619 Division St.  
Spokane, WA 99207  
(509) 328-4850; (800) 326-7769

1419 First Ave.  
Seattle, WA 98101  
(206) 622-1880; FAX (206) 622-6648

1319 S. 38th St.  
Tacoma, WA 98408  
(206) 473-1771

915 6th St.  
Anacortes, WA 98221  
(800) 460-7095;  
FAX (360) 293-4904

E. 3811 Hwy. 3  
Shelton, WA 98584  
(800) 298-BREW; (360) 427-5129

**The Brewing Station**  
405 Fairview Dr.  
Charleston, WV 25302  
(304) 343-0350; (304) 343-0439

Rt. 1, Box 39 BB  
Cairo, WV 26337  
(800) 718-2718; (304) 628-3172

RD 1, Box 218  
Colliers, WV 26035  
(304) 527-3916; (800) 336-2915

**Bristol Brewhouse**  
818 E. Chambers St.  
Milwaukee, WI 53212  
(414) 264-BEER

1035 Main St.  
Green Bay, WI 54301  
(414) 432-7399

103 N. Main St.  
Waupaca, WI 54981  
(715) 258-9160

14835 W. Lisbon Rd.  
Brookfield, WI 53005-1510  
(414) 783-5233

7625 Sheridan Rd.  
Kenosha, WI 53143  
(414) 654-2211

9009 S. 29th St.  
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(414) 761-1018

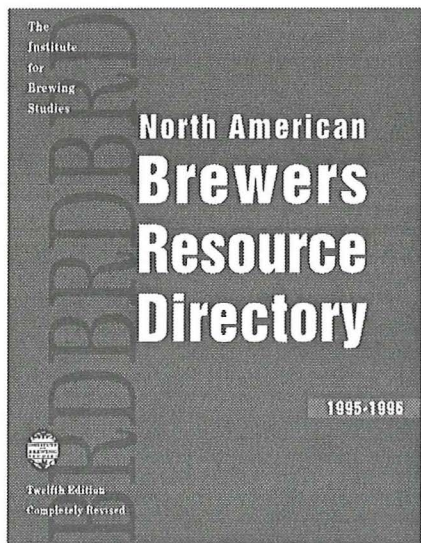
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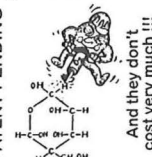
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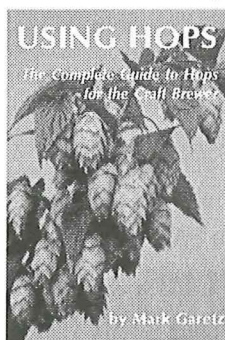
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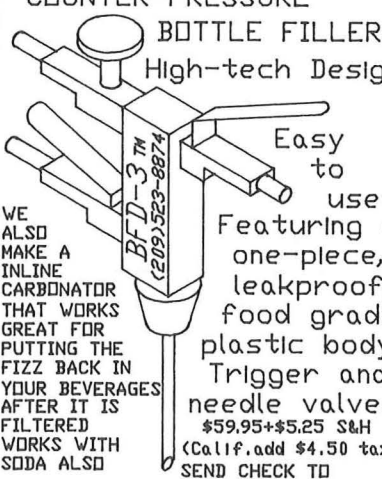
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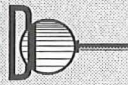
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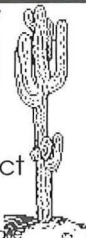


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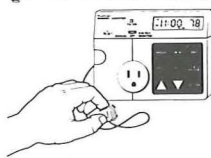
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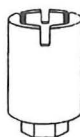
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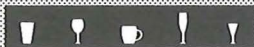
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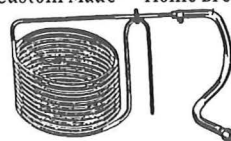
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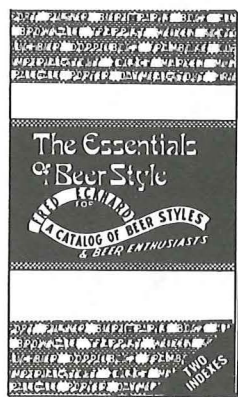
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If you've ever pulled bottles out of other people's recycling bins.



If you've ever put the kids to bed dirty because the tub was full of soaking bottles.



If every T-shirt you own is from a brewpub or microbrewery.

If you've ever tried to improve a Budweiser by stirring in a crumbled hop pellet.

If you have a hose adapter permanently attached to your kitchen faucet.

If you wanted to name the puppy "Fuggles."

If you own a sterile trash can.

If you have more than 10 gallons of beer in your home right now.

If you measure beer in gallons.

If you don't think that 10 gallons of beer is a lot.

If you've ever used a mop on a ceiling.

If all party invitations you receive say "bring a keg."

If you have a large stove pot that no one else is allowed to use.

If you've ever driven your car in winter with the windows down and the heat off because you were afraid the cooler in the back seat was getting warm.

If you've ever stumped the tour guide on a megabrewery tour, deliberately.

If you have a glass that you wash by hand instead of in the dishwasher.

If you've ever said any of these phrases:  
"in a not-frosted glass, please"  
"probably dirty hoses"  
"what kind of beer is it supposed to be?"  
"by weight or volume?"  
"my yeast is ready"  
"Aw crap, twist-offs"

If there is a bottle in your refrigerator with an airlock on it.

If you've ever butted into the conversation of total strangers because you overheard the word "sparge."

If you can't remember the last time you popped open a flip-top beer can.

If your favorite character on Bonanza reruns is Hop Sing.

If you've ever cut a hole in a refrigerator door.

If you've ever gone to a redemption center to buy bottles.

If your 10-year-old critiques the clarity and head retention of her root beer.

If the owner of the beer store doesn't remember your name anymore.

If a waitress has said you're the first person to ever send a beer back.

If your kid entered the science fair with a demonstration of fermentation.

If you've ever bought a six-pack of beer just because you liked the empties.

If walking across the kitchen floor sounds like Velcro®.

If you've even thought about adding hop oil to unscented love oil.

Dean Booth, a homebrewer for six years, is president of the Attleboro (Massachusetts) Suds Suckers. His cartoon "Yeast Culture" won the 1993 AHA cartoon contest (*Zymurgy*, Winter 1993 Vol. 16, No. 5). Reach Dean via CompuServe at 73517,2505. ☺



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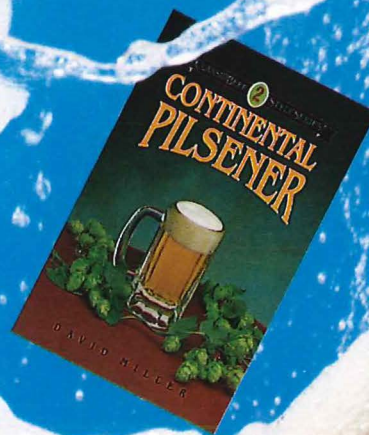
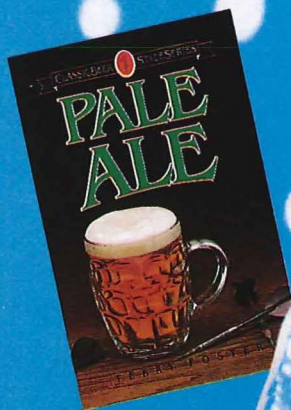
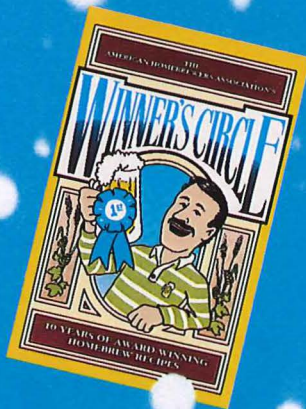
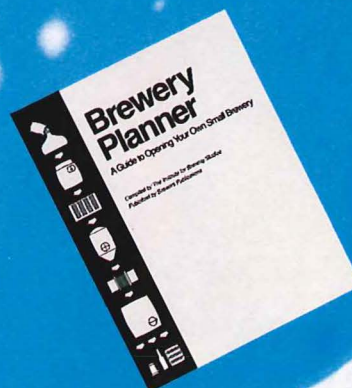
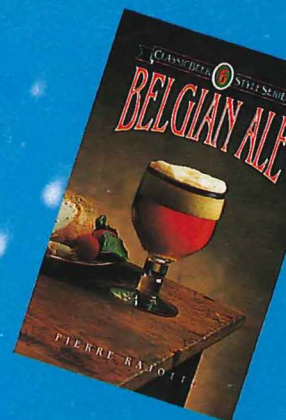
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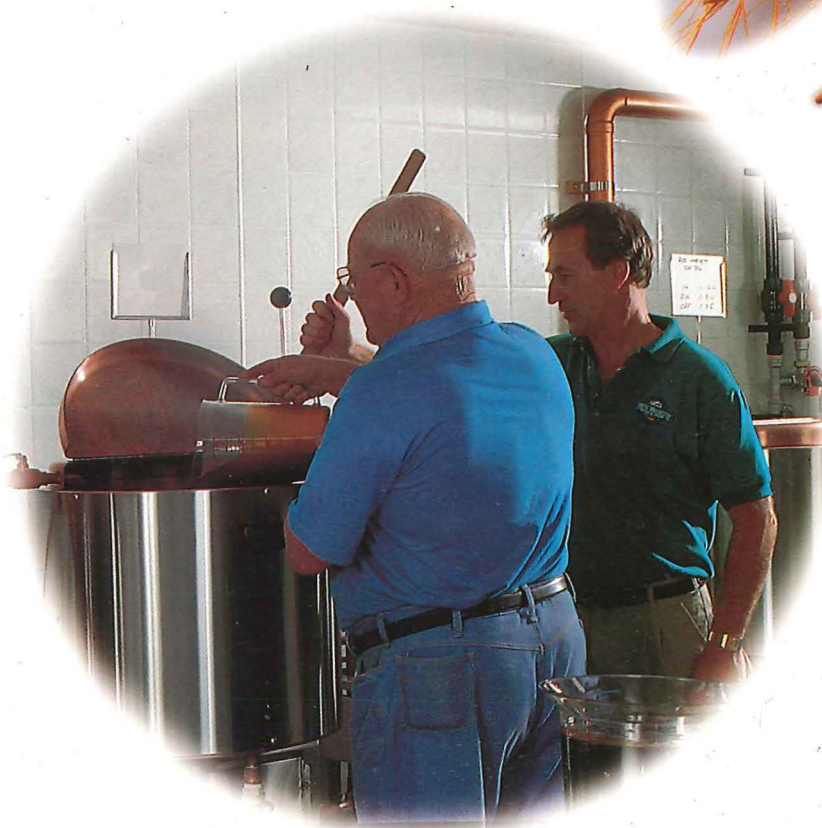
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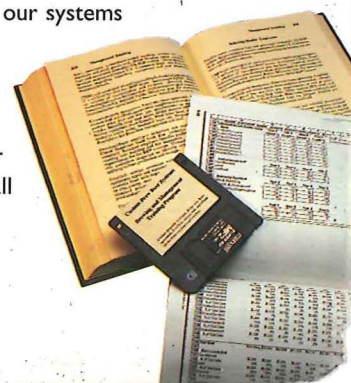
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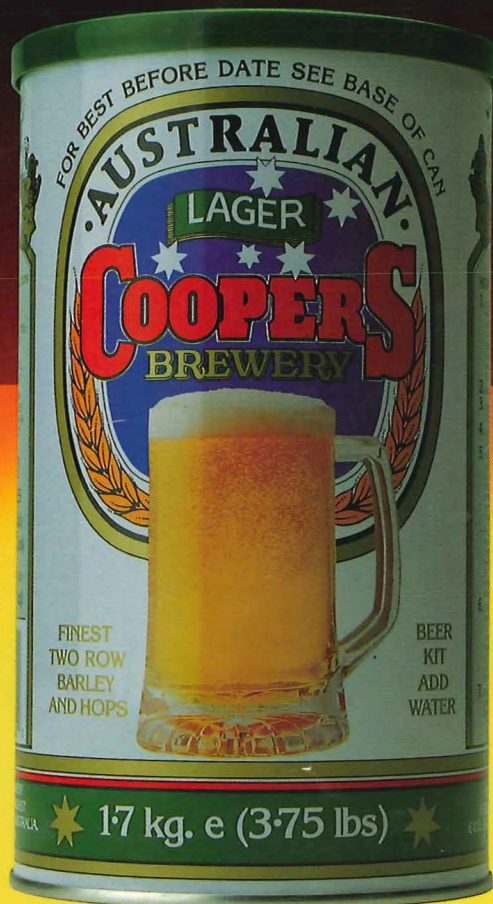
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