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ZYMURGY

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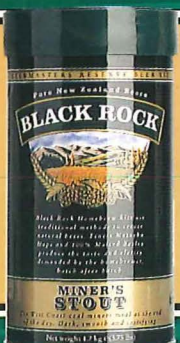
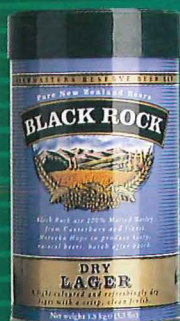


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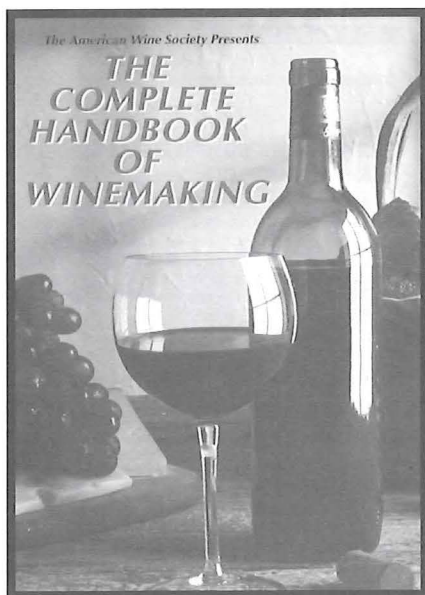
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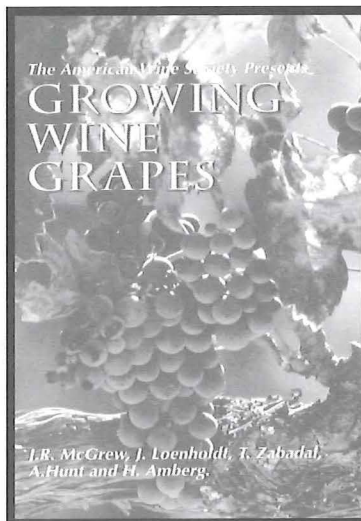
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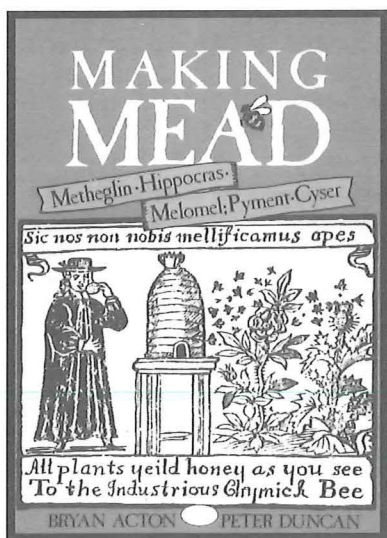
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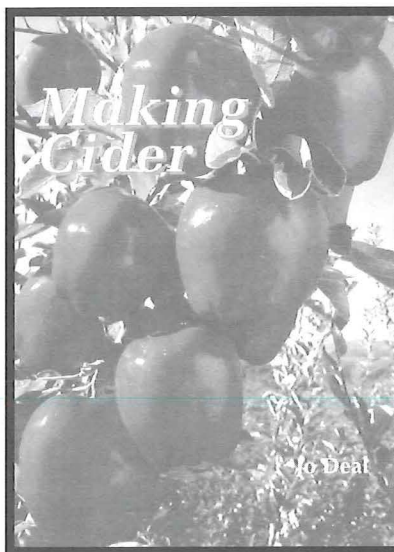


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Journal of the American Homebrewers Association

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

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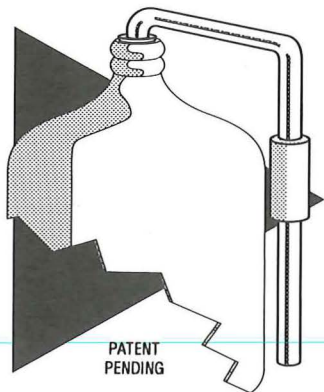
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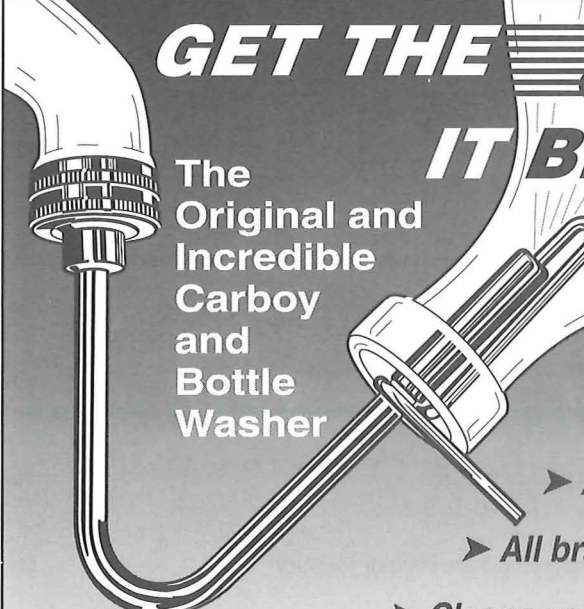
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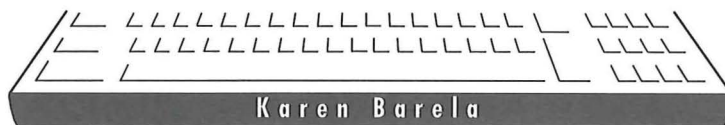
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EDITORIAL



Beer Makes Friends

The scene is Sunday evening at Le Bureau, a Pizzeria and Pub on the Place d'Erlon in Reims, France, a city famous for its Champagne. The bursts of laughter aren't polite, they're real, approaching the edge of uncontrolled. The stories being told are freshly minted, and I imagine they are just for me. The room roar is high, well-suited for the intoxication of talk and the difficult art of listening. It is the local headquarters for conversation. Not bad for just hanging out, either. Just me and my pint, blending in.



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Pils belge

Stella Artois 25 cl

Type Gueuze

Bière de fermentation dite spontanée sans adjonction de levure. Mélange de jeune « Lambic » de 1 an et de vieux « Lambic » de 3 ans.

Bécasse 37 cl (ambrée, mi-forte, bouchon liège)

Mort subite 37 cl (ambrée, 5°, aigrette)

Bellevue 38 cl (lambic ambrée, 5°, aigre douce)

Foudroyante 37 cl

Type Trappiste

Bière de haute, de très forte densité ne méritant cette qualification que si elle est issue d'une abbaye de trappistes cisterciens.

Chimay blanche 33 cl (blonde sur lie, 7°, douce)

Chimay rouge 33 cl (moins forte que la bleue, brune)

Chimay bleue 33 cl (forte 9°, brune, cuivrée)

Westmalle brune (trappiste 8°)

Orval 33 cl (la plus trouble, la Seine sur lie, amère)

Saint-Sixtus 12° (ronde sur lie, sucrée)

Type Abbaye

En Belgique, ce sont des bières hautes, de forte densité, produites dans des abbayes.

Leffe vieille, cuvée 25 cl (très ambrée 8°)

Leffe radieuse 33 cl (brune 9°)

Leffe triple 33 cl (sur lie, forte, 7°, blonde)

Afflighen blonde 33 cl (bière d'abbaye, forte, mi-douce)

Afflighen brune 33 cl (douce 8°)



The door swings open. "You are welcome in France!" Dominique, the pub owner, says in English as he passes me by. How he immediately knew I am American remains a mystery. Did he sense my "Americanness" when he saw me hugging the deep, rich, creamy pint of Guinness? Was he sympathizing with my crazy craving, as a tourist in the Champagne region, for drinking and enjoying the exact opposite of Champagne — a beloved pint of world-famous Guinness?

In one fell swoop, Dominique made me feel comfortable, introduced me to some English-speaking French friends and lifted my awkwardness.

Le Bureau has a great selection of beers from around the world. Finally, I had come across the one and only menu I had zero trouble reading: the beer menu. A selection of 81 beers from 10 countries all described in French words I could truly understand. In the world of beer, language is a small barrier. The language and "foreign country" barriers I had been struggling with broke down immediately. Beer makes instant friends. Suddenly, I was welcome in a foreign place simply because I enjoy beer, too.

Dominique taught me a valuable lesson that evening — something about good hospitality: The key is making your guests feel comfortable.

At the AHA National Homebrewers Conference this past summer we tried to do just that. The Conference has that "foreign country" type of appeal. In fact, it's the easiest, fastest way to get to "another place" without leaving the United States.

Attending the Conference has similarities to walking into Le Bureau, where the language can be different but there is a "welcomeness" about the atmosphere, the real bursts of laughter, the freshly minted stories, the intoxication of education, the fine art of listening. The great thing is, it's about beer and you automatically feel comfortable talking about beer within a community of beer lovers. Sharing beer and enjoying the fine selections of Colorado beers of your choice — from the Champagne of beers to the stout of beers. It was all there. We offered more than 81 commercial beer choices and who knows how many different styles of homebrew were available. We created a common ground where we all could meet and participate in the joy of sipping a fine hand-crafted beer. We offered shared experiences. Each adventure is different, yet the same in one simple but important aspect — we are all friends and we all share the joy homebrewing brings.

I urge you to welcome your friends, neighbors, co-workers, club members and yes, "pint-huggers" you meet in the local pub into your world of beer enjoyment. You never know whom you might meet and where a friendship might take you. It's one of the secrets to a good life. Beer makes friends.

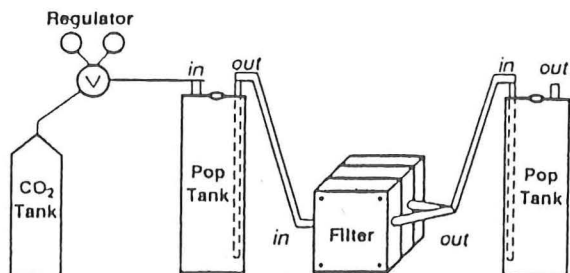
It was wonderful to host the Conference in our own backyard. We were able to offer that extra touch, that extra something special, that "Dominique" appeal.

You are welcome in Colorado!

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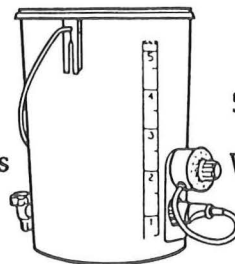
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DEAR

Z Y M U R G Y

Our Readers

Corrections

In "Gas Gossip: Nitrogen vs. Carbon Dioxide in Brewing," *zymurgy* Summer (Vol. 17, No. 2), in the lower half of Table I on page 54 the units in the column detailing comparative solubility of N_2 should be mg/L.

Please see the corrected portions of the Table of Available Yeast Strains, *zymurgy* Summer 1994 (Vol. 17, No. 2) inserted in this issue.

Feedback Loop

Dear *zymurgy*,

I am the developer of Brew Master, one of the programs reviewed in the article, "Scroll Through Brewing Software," in *zymurgy* Spring 1994 (Vol. 17, No. 1). I feel it is necessary to address the issue of stability raised by the authors. The version of software tested was a very early version and is not the version that is currently shipping.

I brew as a hobby but am a MS Windows application developer by profession. I have eight years experience in developing applications for Windows. Though it is hard for a single person to match the resources of a large corporation, I believe that Brew Master has received very thorough testing by myself and other users. To date, I have received no reports of trouble from customers of the software. I and the homebrewers who tested Brew Master use it regularly in our homebrewing efforts and none of us have experienced a single crash or lost any data using the current version. Brew Master is carefully designed to provide maximum data integrity, updating the data base on the hard disk whenever changes are made.

In conclusion, I stand behind every copy of Brew Master I have sold. If any user of the software experiences problems with Brew Master, I will work to rectify the problem. Brew Master also is backed with a money-back guarantee: anyone who purchases Brew Master and is unhappy with the product may return it for a full refund.

Duncan Barbee
Owner
Abita Software Development
duncanb@cruzio.com

Dear *zymurgy*,

While I enjoyed the *zymurgy* Spring 1994 (Vol. 17, No. 1) review of computer software, I was disappointed that my products SUDS and SUDS for Windows were not mentioned considering they offer similar features in a shareware try-before-you-buy format. Both have enjoyed enormous success as shareware offerings via CompuServe Wine/Beer forum, America Online and Internet (sierra.stanford.edu) with more than 1,000 downloads on CompuServe, more than 500 on America Online and hundreds of users who voluntarily registered the program for its \$20 price tag.

Sincerely,
Michael C. Taylor
Bethlehem, Pennsylvania

Incremental Information

Dear *zymurgy*,

Did you know that the way the American Petroleum Institute rates an oil well's output is by barrels of oil per day? The abbreviation



for an oil field barrel is bbl. Why bbl, you ask? Back when oil was first shipped out of the Oil Creek area in Pennsylvania there was a shortage of containers. Beer barrels were pressed into service, hence bbl. By the way, an oil field barrel contains 42 U.S. gallons.

Some more thoughts on "An Ounce Isn't An Ounce" in "*Dear zymurgy*" Winter 1993 (Vol. 16, No. 5). By weight, there are 16 ounces in one pound. If one gallon of fresh water

weighs 8.3 pounds, one gallon of fresh water contains 132.8 ounces by weight. One gallon of any liquid also contains 128 fluid ounces. No matter which way you pour it, an ounce just doesn't measure up.

Sincerely,
A Middle East Brewing Enthusiast

Advice for Advertisers

Dear *zymurgy*,

Why do so many of your advertisers omit their addresses and non-800 numbers? It's quite frustrating for expatriates to be unable to make any kind of contact. FAX numbers also would help.

Jonathan Andrew
Kobe, Japan

All Homebrew Shops are Not Alike

Dear *zymurgy*,

Having just received my *zymurgy* Winter 1993 (Vol. 16, No. 5) I was surprised to read Michael Jackson quoting Eric Clarke's opinion of British homebrew shops.

The reason any British homebrew shop couldn't instantly provide him with the information he required is simple. Neither the retailer nor his wholesaler is given that information by the hop merchant. But all the retailer had to do was ask. It's not top secret! I have been told by one of my suppliers that such details are now given to him and he will be passing them on to customers. In the past he just would have made a phone call and found out.

So please, don't get the wrong impression about the British homebrew trade from the bad experience of one individual. There are good shops here with friendly, knowledgeable retailers who are only too happy to give their customers all the help, advice and information they require even if it means making telephone calls or sending FAXES.

Yours faithfully,
Liz Blades
Chairman, Home Brewing and Wine Making Trade Association (UK)

Wild Carrot Warning!

Dear *zymurgy*,

I recently read an article in the 1993 Special Issue (Vol. 16, No. 4) concerning hop substitutes ("Early British Ale: Bittering, Flavoring and Aroma Ingredients" by Gary Spedding). One of the plants that the author spoke of was wild carrot, also known as Queen Anne's Lace and cow parsnip. The author mentioned that positive identification of the plant is necessary before use. This point must be stressed. Wild carrot is very similar in appearance to a deadly variety of hemlock. One small sprig of this plant is very likely to cause death.

In addition, this plant grows in similar conditions to wild carrot, therefore unless you can be absolutely sure, without a doubt, that you are using the correct plant keep it away from your kettle!

Other than this single point, my compliments to the author on a most informative and interesting article on this unmapped area of the brewing frontier.

Safely yours,
Matthew Letki
Toronto, Ontario, Canada

P.S. I thoroughly recommend hop substitutes: they are responsible for some of my most interesting brews!

Real Ale Tour Guide

Dear *zymurgy*,

The articles in the *zymurgy* 1993 Special Issue (Vol. 16, No. 4) on German, British and American Brewing Methods were excellent. I was especially glad to see the article about the Campaign for Real Ale in Britain. As a frequent traveler to the United Kingdom, I would eagerly encourage any beer lover planning a trip there to order a copy of CAMRA's pub and brewery listing, the *Good Beer*

Guide (published by CAMRA annually). Carry it with you at all times. Walking into a pub with this book in your hand is like a knight of the Round Table brandishing a sword. Pub owners both fear and respect

this publication, and a pub that is not up to par enough to be included will give you 101 reasons why they were overlooked — even when they're not asked. Not only does this guide direct you to best real ale pubs in Britain, but the brief descriptions outlining the flavor profile of almost every real ale in the nation is like being given a lesson in beer studies each time you take a sip. If you forget to order the guide

before your trip, have a look for it in the book stores when you arrive.

Greg Josiak
Stavanger, Norway

You Keep Us Posted

Dear *zymurgy*,

Thank you, *zymurgy* readers, who continue to send the Association of Brewers letters and news clippings about new brewpubs and microbreweries in your area. The AHA always shares this information with the Institute for Brewing Studies, and we really appreciate this help.

There are so many new breweries opening up in almost every nook and cranny of the continent that sometimes we don't find out about them until after they've already been open for six months! We are grateful for your assistance with our effort to keep abreast of this mushrooming industry.

Keep those cards, letters and clippings coming!

Saccharomycerely,
David Edgar
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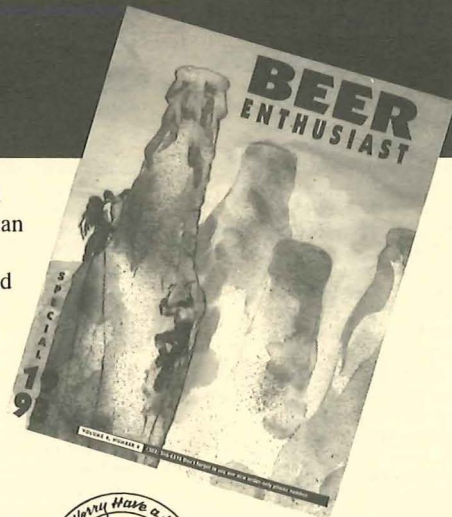
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A S S O C I A T I O N NEWS

← Karen Barela →

Research for Answers

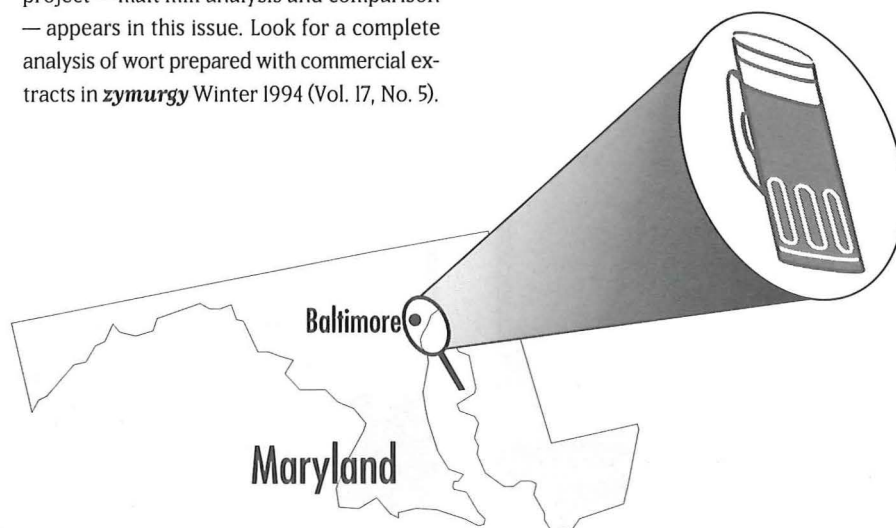


The financial health of the AHA enables us to pursue a new avenue for bringing you high-tech information. The new leadership team of the AHA and *zymurgy* has been working hard to put the pieces together for research projects that will bring you answers to specific questions regarding the art and science of homebrewing. We have embarked on a brewing adventure that brings together questions, theories, research, experimentation and technical analysis. Our first research project — malt mill analysis and comparison — appears in this issue. Look for a complete analysis of wort prepared with commercial extracts in *zymurgy* Winter 1994 (Vol. 17, No. 5).

If you have some ideas that you would like to see explored, let us know. We look forward to bringing you more technical research-oriented projects that will directly benefit your homebrewing.

AHA Changes Maryland Law

The AHA had to get a new law passed in the state of Maryland because of a legal technicality to enable them to bring the AHA 1995 National Homebrewers Conference to Baltimore. The new law allows homebrew judging for educational purposes in a facility holding a liquor license. Many people were instrumental in putting this law on the books, but the power of the homebrewing, beer and brewing industry was the key. We are a strong voice in this country and we all need to protect our right to brew and drink beer as an alcohol-containing beverage. Let this serve as a reminder that our hobby is a privilege and we all need to act responsibly.



The AHA looks forward to seeing you in the summer of 1995 in Baltimore for the 17th annual AHA National Homebrewers Conference. The AHA is interested in your ideas for speakers, topics and events. Potential exhibitors and sponsors are encouraged to contact the AHA for details and information.

Plans are under way to bring the AHA 1996 National Homebrewers Conference to New Orleans. We welcome your input for future locations.

For details about the new Maryland law or information regarding the AHA National Homebrewers Conference contact Karen Barela, AHA president, at PO Box 1679, Boulder, CO 80306-1679.

Get Sanctioned!



American Homebrewers Association
SANCTIONED COMPETITION PROGRAM

Last fall we announced the revision of our AHA Sanctioned Competition Program. One year later the program is steaming ahead. It is healthy, strong and continues to grow. The AHA sanctioned 51 competitions the first half of 1994, (compared to 36 in all of 1990!) with the next six months looking equally strong or stronger. Also on the rise is the number of entries per competition. Overall more and more homebrewers are receiving quality feedback from the judging community, all of which translates into more

information brought straight into the hands of homebrewers. The AHA's mission statement "... to collect and disseminate information on beer and brewing ..." is being fulfilled by those of you who are participating in this great program. We hope to inspire you to send an entry or two off to a local competition or to sponsor one of your own. Check the Calendar of Events in this issue for an AHA Sanctioned Competition near you, or contact the AHA directly. We are happy to provide the information you need to run a successful competition. An application for AHA sanctioning is yours for the asking.

BJCP Update



Marty Velas of Northridge, Calif., a National BJCP judge, member of the Maltese Falcons homebrew club and brewmaster at Southern California Brewing Co., joins the BJCP as associate director representing the HWTBTA. Marty fills the spot vacated by Alberta Rager when she was promoted to AHA co-director. Marty's responsibilities include assisting with the grading of BJCP exams.

One of the largest turnouts ever for a BJCP exam was in Portland during the Institute for Brewing Studies' 1994 National Microbrewers and Pubbrewers Conference and Trade Show. Twenty-seven people took the April exam, including professional brewers from breweries of all sizes, a few of them "major" breweries. By participating in the program, working professional brewers add prestige and support to the finest beer judging program in the world.

For more information about the BJCP contact James Spence, BJCP administrator, at the American Homebrewers Association, PO Box 1679, Boulder, CO 80306-1679.

Join a Club



Hop, Barley and the Ale's of Boulder, Colo., enjoy a stop at the Walnut Brewery during a pub crawl.

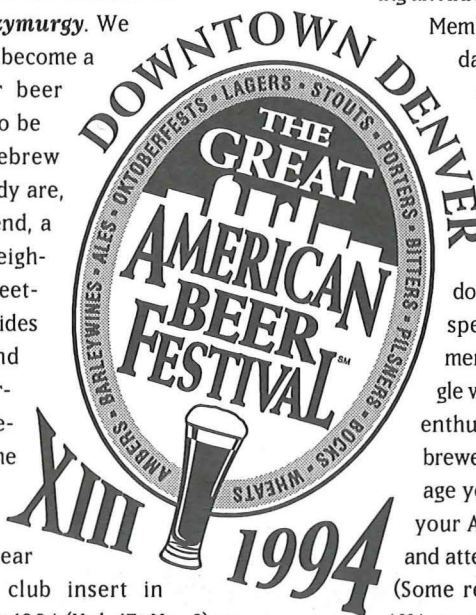
Your local homebrew club is one of your best sources for information about homebrewing and a great place to meet people who share your enthusiasm for beer and brewing. More than 422 clubs are registered with the AHA across North America and a few more are scattered around the world, so there are plenty of beery good friends with which to share your brewing, drinking and brewthinking. AHA registered homebrew club members receive a 15 percent discount on AHA membership, the club receives complimentary issues of *zymurgy* and six informational mailings a year, plus all clubs are eligible and encouraged to participate in the six AHA Club-Only Competitions. Clubs get recognition, ideas and encouragement from the Homebrew Clubs column in *zymurgy*. We encourage you to become a member of your beer community and to be active in a homebrew club. If you already are, great! Bring a friend, a co-worker or a neighbor to the next meeting. The AHA provides the network and channels for information to flow between clubs and the AHA. To find an AHA registered homebrew club near you, check the club insert in *zymurgy* Summer 1994 (Vol. 17, No. 2) or contact the AHA for an up-to-date listing.

Thank a Volunteer

The AHA is taking this opportunity to thank each and every person who has ever volunteered their time, energy and expertise to us. We are a small family of beer enthusiasts who work hard to better our hobby and we rely heavily on you, as our extended family, to provide the support that makes so many of our services possible and highly successful. In particular, the National Homebrew Competition, the Beer Judge Certification Program, *zymurgy* and the AHA Board of Advisers would not exist without the constant and unwavering support of our many volunteers. Thank you for helping us bring together the many necessary elements of these important services and for inspiring us to collect and disseminate more and better homebrewing information. Thank You!

Membership Benefit
GABFSM
Members-Only
Tasting

The 13th annual Great American Beer FestivalSM is scheduled for Oct. 21 and 22 in Denver, Colo. One of the great benefits of being an AHA member is access to the Members-Only Tasting Saturday, Oct. 22, from 12:30 to 4:30 p.m. This exclusive tasting is open *only* to members of the AHA, IBS and/or participating GABFSM breweries. The general public does not have access to this special event, allowing members to roam and mingle with other hard-core beer enthusiasts and professional brewers. We urge and encourage you to take advantage of your AHA membership status and attend this awesome event. (Some restrictions apply: Your AHA membership must be active during the festival dates, you must have pur-



chased a ticket to either night of the GABFSM and you must have a pass to get into the Members-Only Tasting. Passes are free and available by contacting the Association of Brewers.) The GABFSM hosts the largest gathering of American craft-brewed beers. No other festival compares to the beer selection and excitement offered at the GABFSM.

The GABFSM is a division of the Association of Brewers. For details and information contact the Association of Brewers, PO Box 1679, Boulder, CO 80306-1679.

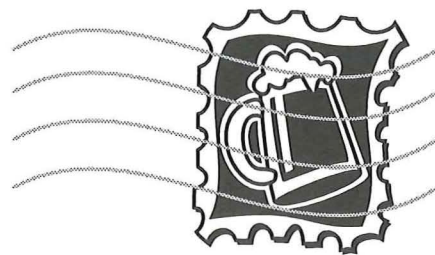
TIPS for AOB Staff

One of the goals of the Association of Brewers is to TIPS train all of its staff members. TIPS, Training Intervention Procedures for Servers of Alcohol, is a program run by Health Communications Inc. and partially funded by Anheuser-Busch. TIPS training is great for the AOB staff because it reinforces the ideas of individual responsibility for consuming alcohol-containing beverages, including beer. TIPS outlines several com-

mon-sense approaches to provide the proper setting for serving alcoholic beverages, including steps to help prevent high intoxication levels of guests whether in a bar, restaurant, conference, festival or private party. It offers guidelines on how to deal with a guest who becomes intoxicated. Approximately 75 percent of the AOB staff has been TIPS trained and we offer several training sessions throughout the year to train both new staff and to update anyone whose training has expired. (TIPS training should be repeated every three years.) We also train many of the Great American Beer FestivalSM volunteers. Karen Barela, AHA president, has been a certified TIPS trainer since 1991. TIPS training is a great idea for clubs, festivals and anyone interested in serving alcohol responsibly. For more information on TIPS contact Health Communications Inc. at (800) GET-TIPS.

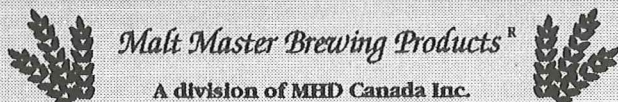
Write to Us

The AHA welcomes comments about your AHA membership and/or any of



our services. **zymurgy** welcomes ideas, outlines, proposals, or manuscripts covering all levels of brewing from beginner and intermediate to advanced/technical on the subjects of beer, mead, cider, saké and brewing. Author guidelines are available to interested beer writers. Also, please send us your beer news. We are interested in any news items on beer that appear in your local media. Direct AHA comments to Karen Barela, AHA president; **zymurgy** inquires to Dena Nishek, **zymurgy** managing editor; media information to Lori Tullberg-Kelly, Association of Brewers marketing director, at the American Homebrewers Association, PO Box 1679, Boulder, CO 80306-1679.

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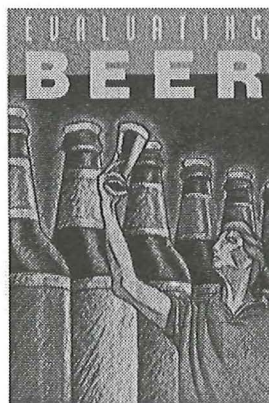
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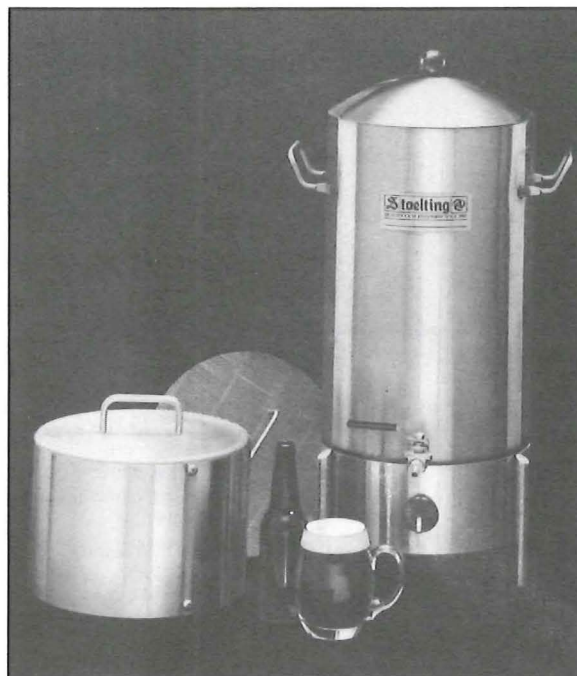
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CALENDAR



1994

JULY

- 30** Central Ohio Brewfest 1994, **AHA SCP**, Columbus, Ohio. Entries due July 23. Contact Sean McGee at (614) 856-5566.

AUGUST

- 2-6** Great British Beer Festival 1994, London, U.K. Call CAMRA at 0727 867201, FAX: 0727 867670.

- 5-6** North Texas State Fair Homebrewed Beer Competition, **AHA SCP**, Denton, Texas. Entries due July 23-30. Contact Johnny Morrison at (817) 383-4399.

- 8** Weiss is Nice Club-Only Competition, **AHA SCP**. Entries due Aug. 8. Contact James Spence at (303) 447-0816.

- 12** Mazer Cup Mead Competition, **AHA SCP**, Ann Arbor, Mich. Entries due July 28-Aug. 6. Contact Ken Schramm at (810) 816-1592.

- 13** Josephine County Fair Amateur Beers Competition, **AHA SCP**, Grants Pass, Ore. Entries due Aug. 11. Contact Hubert Smith at (503) 597-2142.

- 14** California State Fair Homebrew Competition, **AHA SCP**, Sacramento, Calif. Entries due July 23. Contact Donna Bettencourt at (916) 381-1300.

- 19** Second Annual Made in the Shade Beer Festival, **AHA SCP**, Flagstaff, Ariz. Contact Ken Jones at (602) 774-5300.

- 20 BJCP EXAM**, Fort Mitchell, Ky. Contact Ed Westemeier at (513) 576-2872.

- 20** The Eighth Annual Great Taste of the Midwest, Madison, Wis. Contact Bob Paulino at (608) 249-7126.

- 20** German-American Festival, **AHA SCP**, Oregon, Ohio. Entries due Aug. 13. Contact Mel Arnot at (419) 472-7459.

- 20-21** Second Annual Peach State Brew-Off, **AHA SCP**, Atlanta, Ga. Entries due Aug. 2-16. Contact Rick Lubrant at (404) 636-2308.

- 22** Alaska State Fair Homebrew Competition, **AHA SCP**, Palmer, Alaska. Entries due Aug. 19-20. Contact Rick Levinson at (907) 265-1530.

- 28** Puget Sound Amateur Wine & Beer Makers Club Beer Competition, Western Washington Fair, **AHA SCP**, Puyallup, Wash. Entries due Aug. 19-20. Contact Grace Nilsson at (206) 845-9791.

SEPTEMBER

- 1** Brewfest '94 at South Lake Tahoe, **AHA SCP**, South Lake Tahoe, Calif. Entries due Sept. 1. Call Emerald Isle Brewing/Harvey's Casino at (916) 541-6879.

- 3** W.D.T. Deaf Summer Brews Competition, **AHA SCP**, Stayton, Ore. Entries due Aug. 20. Call the Grateful Deaf Homebrew Society at (503) 775-8685.

- 5** Central Illinois Brewers Association First Homebrew Competition, **AHA SCP**, Springfield, Ill. Entries due Aug. 29. Contact Roger Meridith at (217) 428-7022.

- 16 BJCP EXAM**, Chapel Hill, N.C. Contact Mike Lelivelt at (919) 966-2637.

- 17** Sixth Annual TRUB Open, **AHA SCP**, Durham, N.C. Contact Scott Oglesby at (919) 361-2286.

- 24** Second Annual Emerald Coast Brewfest 94, **AHA SCP**, Fort Walton Beach, Florida. Entries due Sept. 18. Contact William Fitzgerald at (904) 678-4883.

- 24** The Greater Topeka Hall of Foamers' Heartland Homebrew Competition, **AHA SCP**, Topeka, Kan. Entries due Sept. 18. Contact Bernadine Lloyd at (913) 286-1775.

- 24 BJCP EXAM**, Rochester, N.Y., Contact Turk Thomas at (716) 637-9441.

- 24-Oct. 1** Minnesota Brewfest '94, **AHA SCP**, Minneapolis, Minn. Entries due Sept. 12-18. Contact John Desharnais at (612) 227-2216.

- 25** Renaissance Pleasure Faire Homebrewing Competition, Novato, Calif. Entries due Sept. 10-17. Call (415) 892-0937.



OCTOBER

- 1** Grand Old Portsmouth Fall Brewer's Fest, Portsmouth, N.H. Contact Kathleen Shea at (603) 433-1100.

- 1** Rhode Island International Beer Exposition, Providence, R.I. Call (401) 274-3234.

- 3** Best of Fest Club-Only Competition, **AHA SCP**. Entries due Oct. 3. Contact James Spence at (303) 447-0816.

- 9** First Annual State Fair of Texas Homebrew Competition, **AHA SCP**, Dallas, Texas. Entries due Sept. 17. Contact Ken Haycock at (214) 381-3770.

- 14-16** 1994 Dixie Cup, **AHA SCP**, Houston, Texas. Contact Steve Moore at (713) 923-2412.

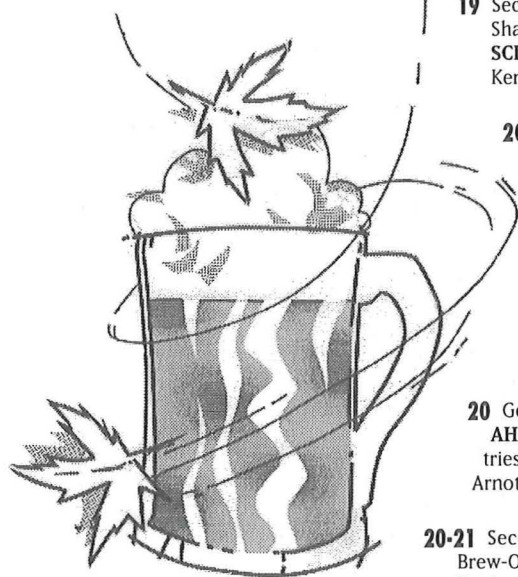
- 21** "The Taste of the Great Lakes™," **AHA SCP**, Frankenmuth, Mich. Entries due Oct. 14. Contact John Geyer at (517) 652-9081.

- 21-22** Great American Beer Festival™ XIII, Denver Colo. Call the Association of Brewers at (303) 447-0816.

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

- 23 BJCP EXAM**, Pittsburgh, Pa., Contact Greg Walz at (412) 331-5645.

- 30-Oct. 1** Homebrew Shootout, **AHA SCP**, Denver Colo. Entries due Sept. 26. Contact Mark Groshek at (303) 757-8394.



- 6** 1994 Oregon State Fair, **AHA SCP**, Portland, Ore. Entries due July 19. Contact Doug Henderson at (503) 236-5802.

- 6** Third Annual Central Illinois Homebrew Competition, **AHA SCP**, Normal, Ill. Entries due July 31. Contact Tony McCauley at (309) 452-1084.

NOVEMBER

4-5 Sixth Annual Reggae and Dreadhop, **AHA SCP**, Boulder, Colo. Entries due Oct. 28. Contact Dan Brainard at (303) 989-7080.

5 1994 Capitol District Open, **AHA SCP**, Washington, D.C. Entries due Oct. 31. Contact Fred C. Hardy at (703) 378-0329.

5 November Fest '94, **AHA SCP**, Seattle, Wash. Entries due Oct. 10-31 and Nov. 1-4. Contact JoAnne Collier at (206) 754-1669.

5 Tennessee Valley Homebrew Competition, **AHA SCP**, Knoxville, Tenn. Entries due Nov. 1. Contact Jeff Colfer at (615) 539-6614.

6 Northwest Pilsener Competition, **AHA SCP**, Portland, Ore. Entries due Nov. 5. Contact Alan Sprints at (503) 232-6585.

12 Northern New England Regional Homebrew Competition, **AHA SCP**, Richmond, Maine. Entries due Nov. 5. Contact William Giffin at (207) 737-2015.

12 Spirit of Belgium, **AHA SCP**, Arlington, Va. Entries due Nov. 4. Contact Phillip Seitz at (703) 553-9681.

12 Second Annual Salt City Brew Club Competition, **AHA SCP**, Syracuse, New York. Entries due Nov. 4. Contact Peter Garofalo at (315) 428-0952.

DECEMBER

5 Specialty Quest Club-Only Competition, **AHA SCP** Entries due Dec. 5. Contact James Spence at (303) 447-0816.

10 Happy Holidays Homebrew Competition, **AHA SCP**, St. Louis, Mo. Entries due Nov. 29. Contact Ginger Wotring (314) 773-7867.

10 Oregon Lager Jam — Lagers-Only Competition, **AHA SCP**, Corvallis, Ore. Entries due Dec. 9. Contact Dean Bautz at (503) 752-8142.

1995

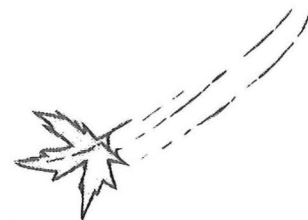
JANUARY

21 BJCP EXAM, Brattleboro, Vt. Contact Pat Baker at (603) 355-3359.

28 Second National Deaf Homebrew Competition, **AHA SCP**, Portland, Ore. Entries due Jan. 14. Call the Grateful Deaf Homebrew Society at (503) 775-8685.

FEBRUARY

11 BJCP EXAM, Brighton, Mich. Contact Bill Pfeiffer at (313) 946-6573.



MARCH

31-Apr. 1 Ninth Annual Bluebonnet Brew Off, **AHA SCP**, Irving, Texas. Entries due March 18. Contact Pat Morrison at (817) 383-4399.

APRIL

23-26 Institute for Brewing Studies National Microbrewers and Pubbrewers Conference and Trade Show, Austin, Texas. Call the IBS at (303) 447-0816.

MAY

11-14 Home Wine and Beer Trade Association Conference. Contact Dee Roberson at (813) 685-4261.

JUNE

TBA American Homebrewers Association National Homebrewers Conference, Baltimore, Md.



AHA SCP = American Homebrewers Association Sanctioned Competition Program

To list events, send information to **zymurgy** Calendar of Events. To be listed in **zymurgy** Winter 1994, information must be received by Oct. 14, 1994. Competition organizers wishing to apply for AHA Sanctioning must do so at least two months before the event. Contact James Spence at (303) 447-0816, FAX (303) 447-2825, PO Box 1679, Boulder, CO 80306-1679.

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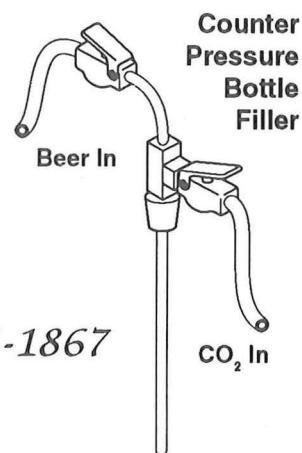
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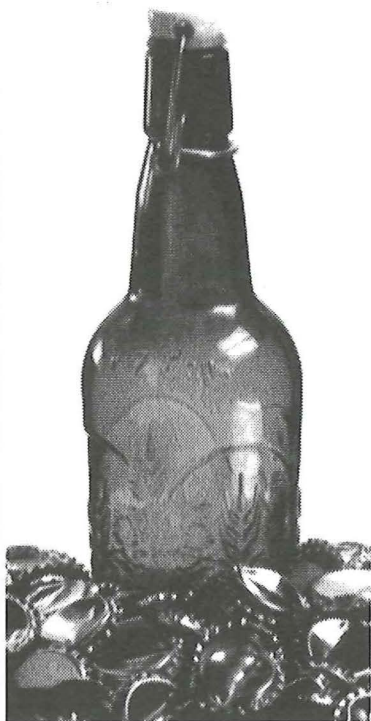
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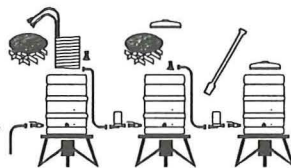
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BREW NEWS

James Spence

HEAD LINES



Studies Analyze Alcohol and Health

Results of recent studies suggest that moderate consumption of alcohol extends life spans and contributes to overall health. In most cases, however, the amount of alcohol consumption that defines moderate has been ambiguous at best. For example, moderate drinking in Britain is defined as 10 1/2 pints of beer a week for men and seven for women (an imperial pint is 20 U.S. ounces). These amounts are slightly less than twice the level considered moderate in the United States. Two recent studies, however, say that these rules of thumb may be underestimating the amount of alcohol consumption that can be deemed moderate.

Researchers from the United States and the United Kingdom monitored 400 male and female adults for one year in a study funded by both governments. Those subjects who drank occasionally were 30 percent less likely to catch a cold than were non-drinkers.

Those who consumed one to two drinks a day benefited by 65 percent, and those who drank two to three times daily had an 85 percent less chance of succumbing to five strains of the common cold virus. The positive effects of alcohol consumption were negated in subjects who both smoked and drank.

Experts at the University of Copenhagen and Copenhagen Municipal Hospital recently published the findings of their 10-year, 13,000-subject study in the *British Medical Journal*. People who drank one to six alcoholic beverages a week had the lowest risk of dying, lower than the subjects who abstained from alcohol. Those drinking more than 70 beverages a week had the highest risk of dying. According to the Jan. 28 Reuter news report, the study found that the risk of dying significantly increased only among the subjects who drank more than 42 beverages a week — about one bottle of wine, six beers or six shots of spirits a day. (Reuters, Jan. 28, 1994)

Kirin Eyes Tiny Tubers

Using jointly developed Japanese and American biotechnology, Japan's largest brewer has developed miniature potatoes that are five times cheaper to produce than seed potatoes. The microtubers are cultured from potato tissues in broth, and were developed by Kirin Brewery's barley and hop agricultural research subsidiaries. The tubers can grow into potatoes if they weigh at least 0.5 grams, 30 times less than the viable size of seed potatoes. The brewery's efforts mark the first time minitubers have sprouted on a commercial basis. (UPI)

Hops Now Raw Product

For years, the Environmental Protection Agency (EPA) has classified hops as a processed agricultural product rather than a raw product. The classification meant hop growers could not be given approval to use safe and effective pesticides for growing healthy and affordable crops. Grass-roots lobbying of the Veterans Affairs and House and Urban Development Departments by The Beer Institute and U.S. brewers has succeeded in getting hops reclassified as a raw product despite the objections of the EPA, thus allowing the hop industry access to agricultural chemicals. (*Brewing Industry News*, Jan. 24, 1994, Vol. 15, Issue 23)



Keg Smelters Nabbed in U.K.

During the last three years, the Joint Brewers Reward scheme has helped arrest and prosecute dozens of people for smelting stolen kegs and has closed down more than 20 illegal smelting operations. Keg thieves

steal the kegs for scrap, costing the U.K. brewing industry £10 million a year. The scheme offers rewards of up to £10,000 for information leading to the arrest and conviction of keg nappers. Some of the closed smelting and scrap operations have been highly sophisticated — one was a "smelter on wheels" for mobile keg napping. Each keg stolen and destroyed costs about £50 to replace. (*What's Brewing*, Feb. 1994)

Brits Counting Heads Froth at the Mouth

In *zymurgy* Summer 1992 (Vol. 15, No. 2) we reported the passage of a new British regulation stipulating that the head on a beer did not count as the part of the pint volume. The regulation was due to take effect in April 1994. After considerable debate about the costs of replacing glassware in pubs, or installing metering devices, Parliament decided not to implement the law, saying that consumer benefit was not enough to outweigh the costs. In response, the Brewers' Society, which did not favor the law, outlined its guidelines for a reasonable pint of beer. First, the total liquid in a pint with a head should be at least 95 percent of the pint measure; and second, bartenders would be expected to cheerfully top up a pint if the liquid level does not meet the customer's approval. The Brewers' Society guideline is expected to be admissible in court if necessary. The decision not to implement the regulation has angered consumer groups like the Campaign for Real Ale (CAMRA). (*Beverage and Distilling*, Dec. 1993, Vol. 24, No. 12)

BATF Clarifies Strength in Ads

Responding to recent ads for the new "ice" beers, the Bureau of Alcohol, Tobacco and Firearms has issued a statement that clarifies its interpretation of recent court decisions (see "Brew News," *zymurgy* Spring 1994, Vol. 17, No. 1) allowing brewers to display alcohol content on beer packaging. The statement, given to the National Beer Whole-

salers Association with the request that it inform NBWA members of the policy, says in part: "ATF now permits advertising which illustrates an approved beer label showing the actual content. It also allows advertisers to use a picture of an actual bottle or can of that product, where the alcohol content can be read. ATF, however, takes the position that the statement of the alcohol content in these ads must appear in the same size and proportion as it does on the actual labels. ATF can and will take enforcement action whenever beer advertising gives more prominence to the alcoholic content, but may not promote it, and attempt to sell the beer on the basis of its alcoholic strength." The BATF hopes the brewing industry follows the new guidelines voluntarily and "behaves responsibly." (*NBWA Beer Perspectives*, March 14, 1994, Vol. 11, No. 7)

Nile Brew Reaches Fruition

Britain's Scottish & Newcastle brewery says it has made ale from a 4,000-year-old recipe developed from artifacts obtained from excavations it sponsored in Armana, Egypt. Earlier this year archaeologists reported they had discovered a huge brewery, allegedly constructed by Queen Nefertiti on the banks of the Nile south of Cairo. A spokesperson for Scottish & Newcastle says the brew tastes very different from modern beverages because palm dates and olives were used in the recipe. The researchers dubbed the brew "Tutankhamun's Tipple." Queen Nefertiti was the stepmother of the famous boy pharaoh. (Reuters, March 22, 1994)

California Registers Kegs

On Jan. 1, 1994, California passed a law requiring all beer retailers to place an identification tag on each beer keg sold, and keep a record of the purchaser's drivers license or other personal identification. The law is aimed at curtailing underage drinking by allowing authorities to trace the purchaser of the keg if the beer is found to have been furnished

to minors. For the purposes of the law, a keg is defined as a "brewery-sealed, individual container of beer having a liquid capacity of six gallons or more." (*Celebrator*, Feb./March 1994, Vol. 7, No. 1)

TECHNOTES

Bioreactors Make Alcohol-free Beer

The latest technology for making alcohol-free beer uses yeast immobilized on a substrate material called Spezyme GDC. The material is composed of non-compressible granular cellulose with a positive charge. The positive charge attracts the negatively charged yeast cells, immobilizing the yeast. Wort is pressed through this bioreactor, allowing the alcohol content, production of aldehydes, ketones and fatty acids to be controlled. The substrate can be used for several years, and the yeast lasts six to 12 months on the material. Along with allowing tight control over fermentation, the process produces no wasteful biomass. In addition, the bioreactor operates continuously for months at a time without breakdowns. (*Brauwelt*, 1993/v, p. 480-482)

New High-Alpha Hop

In six years of observation (1982 through 1989) the hop cultivar RRL(H)82 was found to contain 13.4 to 16.8 percent alpha acids, and 6.6 to 8.8 percent beta acids. Essential oils are comparable to normal aroma hops and ranged from 1.3 to 1.8 milliliters per 100 grams, and contained a high percentage of humulone, the substance believed to be responsible for pleasant hop aroma. Under ambient conditions, the hop lost only 1.0 to 1.7 percent of its alpha acids after eight months in storage. The hop was raised from a cross of the Hybrid-2 variety (female) and an Australian male plant developed from Cluster and Pride of Ringwood hop varieties. (*Journal of The American Society of Brewing Chemists* 52 (1) 35-36, 1994)

Present and Future Fermentation Processes

Optimal fermentation configurations in a brewery build up yeast populations for the best rate and range of fermentation without compromising flavor and without wasting raw materials in the form of wort nutrients. Cur-

rent systems use fermenter shapes to give the best gas-lift agitation (agitation caused by the generation and movement of CO₂). While agitation is enhanced with increasing fermenter depth, too much agitation causes flavor problems, and larger tanks can be too difficult and expensive to cool properly. The solution to these and other problems associated with expanding brewery size while maintaining production quality may be in continuous brew-

ing processes using immobilized yeast bioreactors now used for making alcohol-free beer. [*Journal of The American Society of Brewing Chemists* 52 (1) 28-35, 1994]

Trans Iso- α -acids for Bittering Beer

One of the principal bittering components of beer comes from the isomerization of hop alpha acids during wort boiling. Alpha-acid bittering compounds are inherently unstable, however, especially with regard to the development of the light-struck flavor in beer. The flavor results when certain isohumulones (isomerized alpha acids) activated by ultraviolet or high intensity light break down into radicals that combine with thiol in the beer, forming 3-methyl-2-butene-1-thiol (isoprenyl thiol) and dehydrohumulinic acid, a gushing agent. The flavor threshold of thiol is less than 1 part per billion, making it a potent beer spoilage substance. Riboflavin may also contribute to the reaction, as well as colored compounds like polyphenols, which means that dark beer is more susceptible to the light-struck reaction than light-colored beer. Hop extracts created by reducing the light-sensitive chemical structures in the isohumulones with sodium borohydride, however, create *trans* iso- α -acids that are not susceptible to photolysis. Beers bittered with these compounds can be stored in clear glass bottles with no adverse effects on beer flavor. (*Cerevisia and Biotechnology*, No. 4 - 1993)

Effects of Non-isohumulone Bitter Compounds

When using aroma hops or aged hops the content of non-isohumulone bitter compounds (NIBC) in beer increases. Further tests, however, indicated that NIBC is very weak in bittering potential and that the quality of their bitter flavor is not better than pure isohumulones. In fact, researchers found that despite an EBC level of 55 to 58 bitterness units, beer produced with NIBC hop extract had no bitter flavor at all. (*Brauwelt*, 1993/III, p. 202-205.)

MICRO AND PUBBWERIES

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

OPENINGS UNITED STATES

Microbreweries

Colorado: Avery Brewing Co., Boulder; Broadway Brewing Co., Denver; Silver Plume Brewing Co., Silver Plume
Maine: Casco Bay Brewing Co., Brunswick; Sugarloaf Brewing Co., Carrabassett Valley
Massachusetts: Atlantic Coast Brewing, Ltd., Boston
Montana: Lang Creek Brewery, Marion
New Hampshire: Smuttynose Brewing Co., Portsmouth (formerly Frank Jones Brewery)
Oregon: Multnomah Brewery, Portland; Hair of the Dog, Portland
Tennessee: Smoky Mountain Brewing Co., Knoxville
Utah: Bandon Brewing Co., Salt Lake City; Uinta Brewing Co., Salt Lake City
Virginia: Virginia Legend Brewing Co., Richmond; Richbrau Brewing Co., Richmond
Washington: Northern Lights Brewing Co., Airway Heights

Brewpubs

Alabama: Port City Brewery, Mobile
Arizona: Beaver Street Brewery and Whistlestop Cafe, Flagstaff; Flagstaff Brewing Co., Flagstaff
Colorado: Casa de Colorado, Fort Collins; Old Colorado Brewing Co., Fort Collins

(reopened), Phantom Canyon Brewing Co., Colorado Springs

Florida: Riverwalk Brewery/Boca Beer Works, Fort Lauderdale (reopened)

Idaho: McCall Brewing Co., McCall

Illinois: Blue Cat Brewing Co., Rock Island; Capitol City Brewing Co., Springfield

Kentucky: Oertel Brewery/Pegasus Bar and Grill, Louisville

Missouri: Flat Branch Brewing Co., Columbia; The Weathervane, Springfield (formerly White River Mining Co.)

New Hampshire: The Seven-Barrel Brewery, West Lebanon

North Carolina: The Spur Steakhouse and Ale/Toisnot Brewing Co., Wilson

Oregon: Golden Valley Brewery and Pub, McMinnville

Tennessee: Smoky Mountain Brewing Co., Knoxville

Texas: Yegua Creek Brewing Co., Dallas

Virginia: Legend Brewery, Richmond

Wisconsin: Gray Brewing Co., Janesville; Randy's Supper Club, Whitewater

CANADA

Microbreweries

Ontario: Trafalgar Brewing Co., Oakville

Brewpubs

British Columbia: Sailor Hagar's Pub, Vancouver

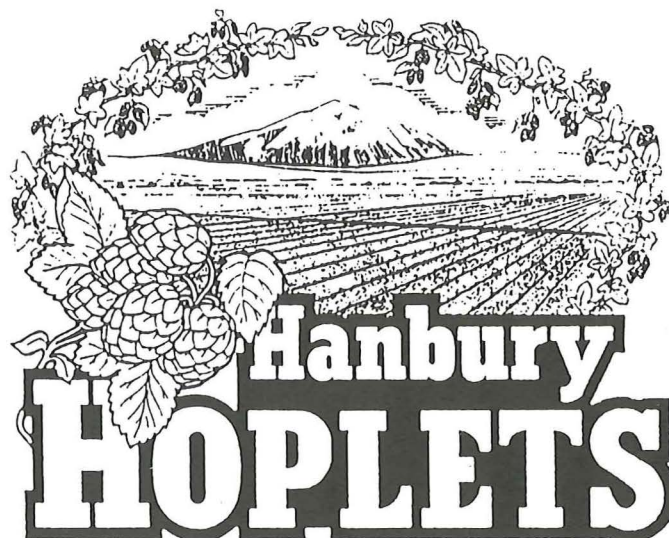
Quebec: LaTaverne Du Sergeant Recruteur, Montreal

CLOSINGS

UNITED STATES

California: Brewhouse Grill, Manhattan Beach; Monterey Brewing Co., Monterey; Okie Girl Brewery, Lebec; Woodland Brewing Co., Woodland

Missouri: White River Mining Co., Springfield



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Michael Jackson



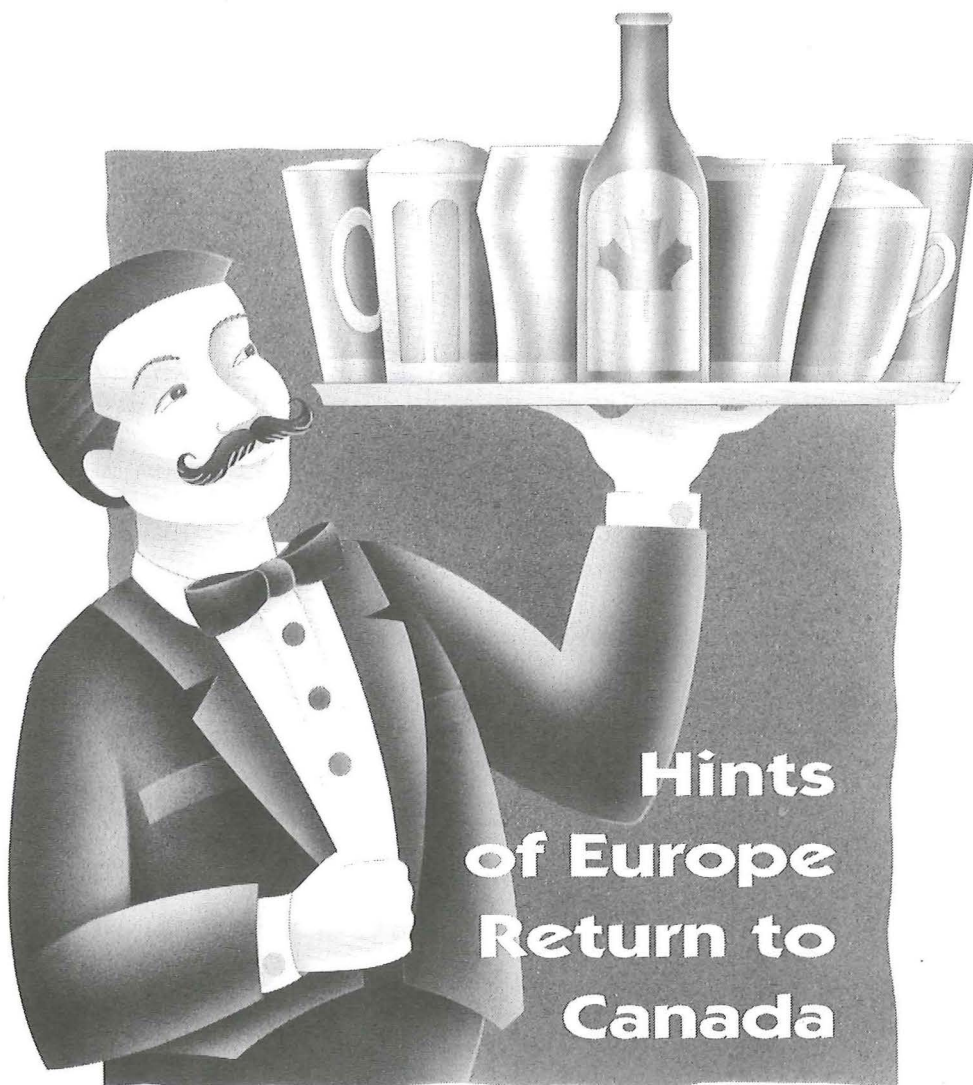
After years of producing ever lighter-tasting beers, the Canadian giant Molson has just launched a range of flavorful, all-malt brews under the rubric "Signature Series." I sampled the first two new beers in prototype form at the Molson brewery in Toronto.

Not only was there a full-bodied, slightly chewy amber lager of 5.3 percent alcohol by volume, but also a top-fermenting bronze "cream" ale of 5.1 percent, with a good dash of fruitiness and some hop in the finish. There can be little doubt that such essays are inspired by the success of microbreweries and brewpubs in Canada.

While in Toronto I visited the newish Granite brewpub, run by Ron Keefe, whose brother Kevin has for some years fired kettles under the same name in Halifax, Nova Scotia.

The Toronto brewpub brews a golden Summer Ale with a touch of wheat and a good dry-hopped bouquet and palate. They also have an amber, malt-accented Best Bitter, a more aromatic version of this brew dry-hopped with American Fuggles and a relatively light-bodied but soft and fruity old ale of 5.6 percent, called Peculiar.

In a tasting at The Granite I also sampled a well-balanced but hop-accented pale ale from the city's Upper Canada microbrewery. There was also a sweetish but perfumy Amber Ale from the Hart microbrewery in the Ottawa Valley. I revisited the Growler's brewpub which is run in consultation with the colorful German brewer Prince Luitpold of Bavaria. There I sampled a Weizenbier full of bananalike fruitiness, a golden, malty-winy Spezial lager (5.4 percent alcohol by volume), a bronze malty-fruity Märzenbier



and a reddish-brown sweetish Royal Dunkel. Only the Spezial was filtered.

In Montreal I visited the microbrewery of Peter McAuslan and Ellen Bounsell, whose fruity, hoppy, fresh-tasting St. Ambroise pale ale I have long enjoyed. The McAuslan brewery is in the style originally devised by British microbrewing pioneer Peter Austin. Brewster Ellen has added a Bière Blonde (golden, hoppy, well-bal-

anced), a Brune (deep amber with a very good, aromatic malt character), both under the name Griffon, and a Noire (a smooth, dry oatmeal stout), the latter retaining the St. Ambroise brand.

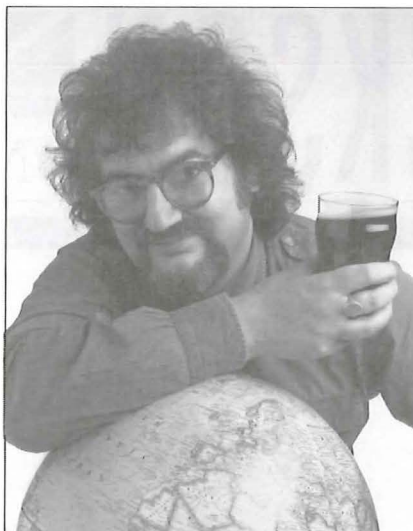
The brewery is on St. Ambroise Street, which is named after a monk who is said to have been an early brewmaker in the city. It is near Griffon Town, which provides the secondary brand name, although Gallicized in spelling.

If the Griffin reminds you of Fuller's London Pride, so might an excellent well-balanced draft ale called Lion's Pride. This is served as the house bitter at L'Île Noir that tries to offer every microbrewed beer in the province of Quebec. Lion's Pride is brewed some miles outside the city at The Golden Lion in Lennoxville.

A more Belgian flavor is provided by the new microbrewery, Unibroue, in the Montreal suburb of Chambly. A Belgian-style white beer, Blanche de Chambly (pale, cloudy and candyish) is produced in consultation with Riva of Dentergem. A fruity, spicy (ginger), medicinal strong ale (8 percent alcohol by volume) is called Maudite which means damned. A yet stronger, sweeter, honeyish brew (8.5 percent alcohol by volume) is called La Fin du Monde (the end of the world).

At a tasting organized by CAMRA Canada, I also sampled the somewhat syrupy medicinal Boreale Rousse (5 percent alcohol by volume) and its companion Noire, deliciously creamy and coffeelike (5.5 percent alcohol by volume), from Les Brasseurs du Nord of St. Jerome.

Among other beers in the tasting were the



well-balanced lager Hopps Brau (4.5 percent alcohol by volume) and the rich, malty, prune-tasting Brasal Bock (7.8 percent alcohol by volume), both from Brasserie Allemande of Montreal.


Several of these brews were available at a beer lunch that was the first meal ever served at the brewpub LaTaverne Du Sergeant Recruteur. At the time the café's own brew-

ery was not yet in operation, but I hear it has since produced a very hoppy ale.

At the brewpub La Cervoise I tasted a crisp lager called La Futée, a sweetish, grainy, nutty amber ale called La Main, a fruitier, hoppy example called Good Dog Ale and the light-bodied but smooth and tasty Obelix Stout.

At the brewpub Le Cheval Blanc I sampled a fruity, dryish cloudy Weissbier, a chocolate-tinged L'ambree and a coffeeish La Brune. The beers from this brewery are reputed to be variable, and I preferred the bottled examples I was given to try later. These included Tord Vis (a Quebecois exclamation), made with maple syrup and exhibiting touches of smokiness and herbal notes, and a toffeeish fruity Scotch Ale.

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Michael Jackson is internationally the best-known writer 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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HOMEBREW COOKING

WITH THE BREWGAL GOURMET

Candy Schermerhorn

A Festive Fall Menu

Fall's earthiness compels many of us to dust off treasured heirloom recipes and get back to our cooking "roots." Be it roasting game using grandmother's cursory notes, fogging up the windows with a pot of soup or baking fragrant loaves, we long to recreate the spell of cheerful hearth and kitchen.

Needless to say, beer can weave a ribbon of continuity through this culinary scenario. From soup and bread to meat and potatoes, meals prepared and served with homebrew will have their own distinctive signature.

To create a meal for the harvest months, you might want to begin with a cup of russet-hued pumpkin soup aided by the nutty flavor of amber lager. Roasting the nuts, onions and garlic before puréeing them with the pumpkin adds a richness to this soup. To keep expectations high, pass a basket of tender rolls made with crushed crystal malt, English brown ale and tangy buttermilk and serve with flutes of Weissbier. This is a perfect pause before the main course



— a feast of succulent, roasted game (anything from rabbit and fowl to venison, antelope, elk and commercial buffalo) and spicy potatoes served with Scottish ale.

Modern "farming" techniques have provided a revival of game in the American kitchen. Game benefits from beer, and not just from the tenderizing qualities. Because of the meat's stronger flavor, game recipes are often heavy-handed in calling for potent herbs that can overwhelm the meat's flavor. Using the full, malty flavor of bock in a moderately seasoned beer marinade is the perfect way to balance the game's intense character without destroying its essence.

Of course, it is vital to understand how to cook game, a critical factor that is too often overlooked. Most game is very lean and if overcooked will become extremely dry and tough. It lacks the internal basting qualities found in marbled meat. Once the juices have been cooked out, you have nothing more than varying stages of parched toughness. Game should only

be cooked to a reddish-pink or slightly pink stage for prime eating (an internal temperature of 120 to 130 degrees F or 49 to 54 degrees C when roasting venison, for example). Marinating in an oil-rich marinade, rubbing with additional oil and basting also help retain full succulence.

To complement this old-world meal, spicy roasted potatoes are a must. Here the beer is used in an innovative way that also complements root vegetables (onions, carrots, turnips, beets). A full-bodied ale is simmered with spicy crab boil until deeply flavored. The liquid is strained and the potato wedges are simmered in it before being roasted to golden perfection. If desired, you can refrigerate the broth to use again.

Embellish the evening with a salad of mixed greens and a platter of ripe fruit and you have a meal that reaches into the past for its hearty nature and leaves us with a modern appreciation for the fine beer and food that have molded our heritage.

Pumpkin Soup

Serves six.

- 1 medium brown or yellow onion, unpeeled
- 6 cloves garlic, unpeeled
- 2/3 cup shelled pecans or walnuts (optional), toasted
- 1/4 teaspoon ginger
- 1/4 teaspoon allspice
- 2 cups chicken or vegetable stock*
- 1 cup amber lager
- 1 1/2 cups canned pumpkin
- 1 cup sour cream
- 1/2 cup milk
- 1 extra large egg, beaten
- salt and pepper to taste

(1) In a microwave oven, bake the unpeeled onion for about six minutes on high until softened like a baked potato. Or bake at 350 degrees F (177 degrees C) for 40 minutes. Cool thoroughly before peeling.

(2) In a 350-degree-F (177-degree-C) oven, bake the unpeeled garlic and nuts on a cookie sheet for 15 minutes. Cool and peel garlic.

(3) Combine onion, garlic, nuts, ginger and

allspice in a food processor and process until fairly smooth.

(4) Heat stock, lager and pumpkin. When hot, add puréed mixture and stir until combined. Simmer slowly for 15 minutes.

(5) Stir in sour cream. Beat egg and milk together and pour slowly into pumpkin mixture while stirring constantly. Cook for 10 minutes but do not boil. Season to taste and serve hot.

* Make a rich broth with chicken or vegetables and reduce by half.

Crystal Malt Dinner Rolls

Makes about 24 rolls.

- 1 cup brown ale
- 1 cup buttermilk
- 2 tablespoons dried bakers yeast
- 1/2 cup honey (or unhopped malt extract)
- 2 large eggs
- 1 tablespoon salt
- 2 cups crushed crystal malt
- 5 to 6 cups bread flour
- parchment
- 1 egg white beaten with 1 tablespoon warmed honey

(1) Warm beer and milk until lukewarm (150 degrees F or 66 degrees C). In a large bowl, whisk together the yeast and 1 cup of flour. Add warmed liquid and whisk thoroughly. Allow the mixture to stand in a warm place until foamy (about 15 minutes).

(2) Beat in the honey, eggs, salt and crystal malt. Add 3 cups of the flour and stir until stiff.

(3) Add the remaining flour, 1 cup at a time. When the dough is firm and no longer sticky, stop adding flour and knead for 10 minutes, adding just enough flour to keep the dough from sticking.

(4) When the dough is elastic and smooth, place in a lightly oiled large bowl, turning once to coat with oil. Cover with plastic wrap and leave in a warm place until doubled in bulk.

(5) Punch down dough and divide in half. Divide each half into 10 to 12 rolls and place

on a parchment-covered baking sheet. Cover with a cloth and allow to rise until doubled in bulk.

(6) Brush rolls with egg white and honey mixture and bake in a preheated 350-degree-F (177-degree-C) oven for about 20 minutes or until golden.

Marinated Game

This recipe works well with many types of game including venison, elk and antelope. Makes five cups of marinade, enough for a 10-pound roast that will serve eight to 12.



- 1 hind or saddle cut (6 to 10 pounds)
- 3 cups bock
- 1 cup virgin olive oil
- 2/3 to 1 cup quality malt vinegar (imported brands are typically of high quality)
- 4 to 6 cloves garlic, crushed and mashed with 1 tablespoon salt
- 1 small yellow onion, thinly sliced
- 1 tablespoon dried parsley
- 1 tablespoon dried crushed thyme
- 2 teaspoons dried crushed rosemary
- 2 teaspoons orange zest, finely chopped
- 2 teaspoons whole black peppercorns
- 1 teaspoon tarragon
- 1 teaspoon marjoram
- 1 teaspoon juniper berries (optional), lightly bruised with the back of a spoon

(1) Combine all marinade ingredients and let stand for one hour at room temperature.

(2) Cover meat with marinade and refrigerate 24 to 36 hours, turning three or four times. Remove and strain marinade, reserving the liquid to baste the meat.

(3) Roast meat at 425 degrees F (218 degrees C) for 15 minutes for boneless tied roasts or 25 minutes for large bone-in roasts. Lower heat to 350 degrees F (177 degrees C), baste and roast until an internal thermometer reads 120 degrees F (49 degrees C) for rare or 130 degrees F (54 degrees C) for medium rare. Baste every 10 minutes.

(4) When done, remove from oven and cover with foil. Allow to rest for 15 minutes before carving. Serve with pan juices, if desired.

Spicy Roasted Potatoes

Serves six.

- 6 cups water
- 1 1/2 cups brown ale
- 1/4 cup crab boil
- 1 1/2 tablespoons salt
- 6 large Idaho or Russet baking potatoes
- olive oil or melted butter for brushing
- kosher salt and freshly ground black pepper
- parchment

(1) Bring the water, ale, crab boil and salt to a boil and simmer for 45 minutes, covered. Strain, discard spices and bring liquid back to a boil.

(2) Meanwhile, quarter potatoes lengthwise. Split each quarter in half, add to the simmering seasoned liquid and cook just until tender (about 10 minutes). Drain and place on a parchment-covered baking sheet.

(3) Brush the potatoes lightly with oil and sprinkle with salt and pepper. Bake at 450 degrees F (232 degrees C) oven until golden crisp outside, moist and tender inside. Serve hot.

Candy Schermerhorn is a culinary consultant and televised cooking personality in the Phoenix, Ariz., area. Candy takes great joy in educating the public about beer and its culinary potential through her classes. She is author of the *Great American Beer Cookbook* (Brewers Publications, 1993).



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TIPS & GADGETS

Charlie H. Stackhouse

Aroma Hop Back

Have you ever wished the heavenly aroma of hops rising in steam from your brew kettle could be more effectively captured in the finished beer? It can. The basic problem is that aroma properties are lost between the kettle and fermenter. Aroma is lost during fermentation as well, but if we could trap more of those constituents in the hot wort to start with we would be well on our way to a hoppier aroma in our finished brew.

An inexpensive and efficient method to trap those wonderful vapors is the aroma hop back. It is made of heat-resistant, food-grade schedule #40 PVC, is compact, unbreakable, easy to clean and adaptable to many homebrewing setups.

The idea behind this device is to siphon the nearly boiling wort through whole leaf hops on the way to the wort chiller where the hop aroma is trapped in the chilled wort. To do this, the device is positioned between the racking tube or drain valve and the wort chiller with plastic tubing and small aereoseal (or standard tubing) clamps that prevent leaks and impromptu disconnects. The shorter the tubing the better.

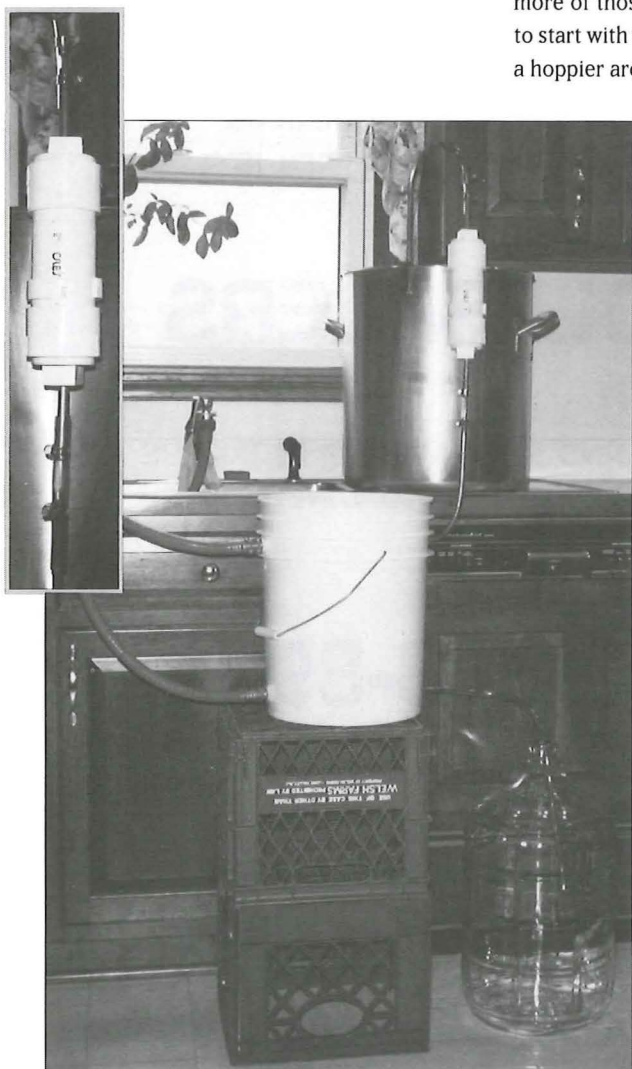
Whole or compressed leaf hops in a bag are placed in the body of the aroma hop back. The end cap plugs are sealed with Teflon tape and

snugly screwed in, the tubing clamped and the siphon started. The result: nearly boiling wort is siphoned through the hops on the way to the chiller where the aroma is trapped in the chilled wort. You might call this red-hot dry hopping. Start with one-half ounce of loose or compressed hops (not pellets) and work up for more aroma.

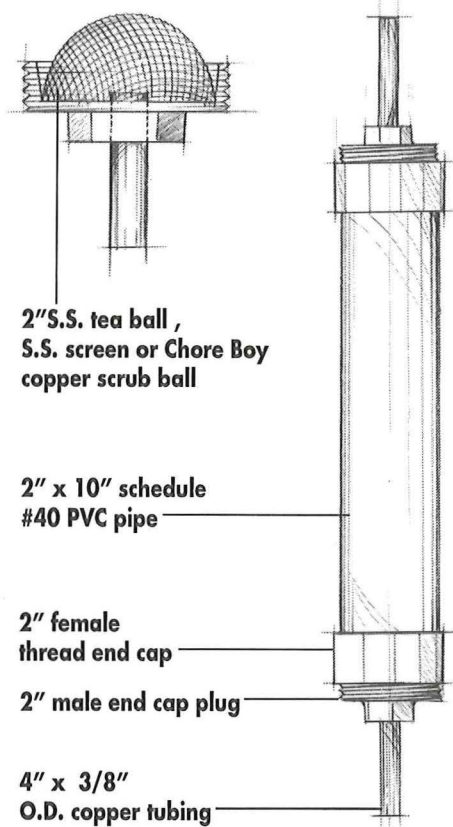
The hop back is inexpensive and easy to make, requiring only a saw, a drill with five-sixteenths-inch bit and a hammer or mallet.

Materials List

- PVC cement
 - Teflon tape
 - 1 2-inch by 10-inch schedule #40 PVC pipe (comes in various lengths and is available in stores that sell plumbing supplies)
 - 2 2-inch threaded end caps (female)
 - 2 2-inch end-cap plugs (male)
 - 2 4-inch lengths of 3/8-inch outside-diameter copper tubing
 - 1 2-inch stainless-steel tea ball (available in the housewares department) ground to fit the 2-inch male end-cap plug, or save yourself some work and use a copper or nylon mesh scrub pad or ball. This is just a filter to keep the outlet tube from clogging with hops.
 - 1 3/4-inch split ring of schedule #40 PVC (to attach hanging device)
 - 1 10-inch length of wire (a piece of coat hanger will work)
- You'll be hanging your hop back off your kettle with this.



END CAP AND HOP BACK DETAIL



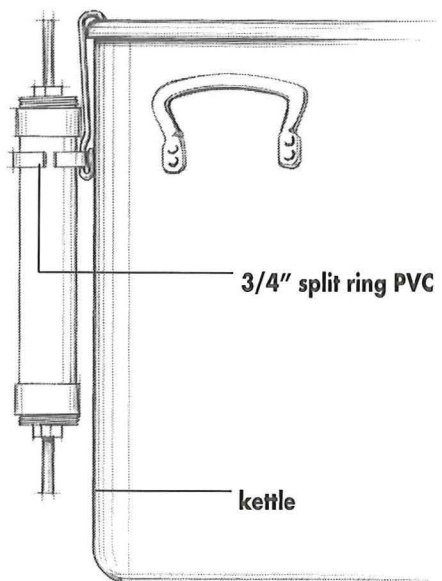
To Assemble

Cement the end caps to the pipe with all-purpose PVC cement. Make sure the cement is thoroughly dry before using the hop back. Drill a 5/16-inch hole in the center of the end plugs. Carefully drive the 4-inch by 3/8-inch outside-diameter copper tube into the end plug so 1/2 inch penetrates inside. The copper tubing can be held in a wooden-jawed vice and forced into the end plug for a tight fit.

If you are using a tea ball as your filter, separate the two halves and grind or file to fit the end plug. This takes careful fitting. If you are using a copper or nylon mesh scrub ball, wrap Teflon tape around one of the end plugs and screw it into the end cap snugly. Stuff in the copper or nylon scrub ball.

Cut a 3/4-inch length of schedule #40 PVC, then cut a slit in it lengthwise so you can open it and snap it around the hop back to attach it with the hanger wire to your kettle.

You are now ready to place the hop bag of leaf hops into the body of the hop back. Seal the other end plug with Teflon tape, snugly screw the end plug into the end cap and install the loaded hop back between the racking tube and the wort



HANGER DETAIL

chiller. Place the screened end closest to the wort chiller. I hang mine on the side of the kettle.

Charlie first brewed in the 1950s with Blue Ribbon malt extract. Enough said. In the 1980s he was the owner-winemaker of a 10,000-gallon Pennsylvania winery. Through his suppliers, who also carried beer-making supplies, he became familiar with quality brewing ingredients. He decided to give brewing another try and has been at it ever since.



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Roll Out the MILLS



By Bob Gorman,
Steve Stroud and
Mike Fertsch

In recent years there have been many advances in homebrewing technology. One such advance has occurred in the equipment used for crushing malt. The recent introduction of several reasonably priced roller mills makes it possible for the brewer to produce a high-quality malt crush at home.

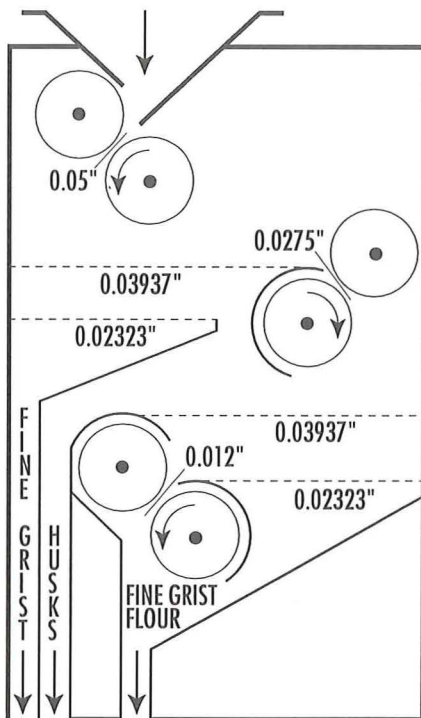


FIGURE 1. Six-Roller Malt Mill (Noonan)

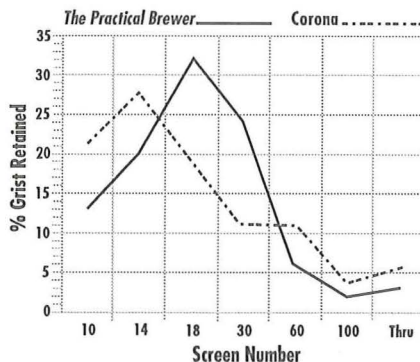


FIGURE 2

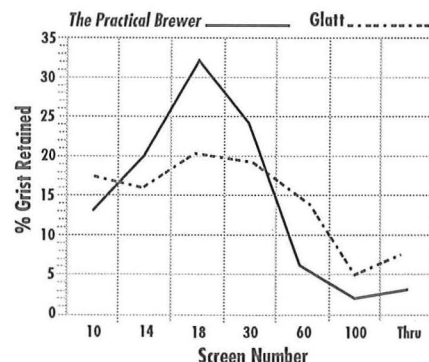


FIGURE 3

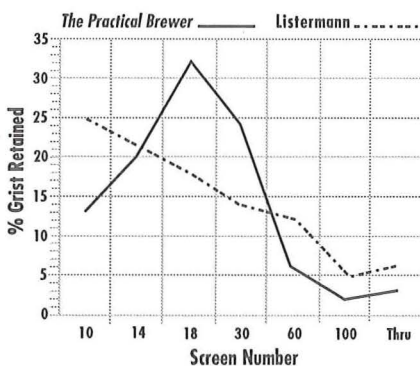


FIGURE 4

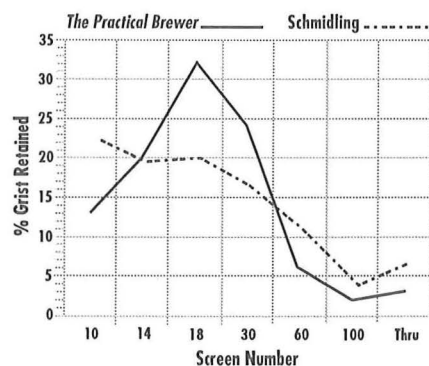


FIGURE 5

We worked with the American Homebrewers Association and Siebel Institute of Technology to analyze the malt crush from three of the adjustable roller mills on the market today: (1) the Glatt Malt Mill from Glatt Manufacturing, (2) the Maltmill from Jack Schmidling Productions and (3) the Philmill from Listermann Manufacturing Co. (See accompanying box for manufacturers' information.) To this end the mills were set up and a series of crushes were run at different settings, providing several grist samples from each mill that were then submitted for sieve analysis.

For each mill the design and materials used in construction were noted. The roller assemblies were inspected and a series of simple measurements taken for presentation here.

The mills were assembled, mounted and put through a sequence of crushes. Each mill was tested for ease of adjustment and ease

of setting the roller gap to a specific spacing by means of a universal gapping tool.

Four different roller spacings were chosen for each mill in 0.005-inch increments.



Corona Flour Mill

The smallest spacing was chosen to provide too fine a crush and the largest spacing was chosen to provide too coarse a crush. The two intermediate settings provided crushes that a homebrewer would typically use.

A 500-gram sample of Hugh Baird Pale Ale malt was run through the mills at each setting. The Hugh Baird malt was chosen because of its high quality and high degree of modification. The mills were hand-cranked at a constant speed of one revolution per second and the crushed malt collected. The samples were then sent to the Siebel Institute of Technology in Chicago for sieve analysis.

The analysis consisted of sifting the crushed malt through a set of U.S. standard mesh screens. The results from Siebel indicated a percentage of grist by weight held on each screen. From the results of the sieve tests one can determine which mill setting will produce a crush closest to a known standard. The most common standard used today is described in

The Practical Brewer (Master Brewers Association of the Americas, 1977) which gives a theoretical screen analysis for a commercial six-roller mill. This is presented in Table 1.

In addition to the three mills described, two others were included in the crush comparison, a Corona flour mill from Landers and Co. and a non-adjustable version of the Schmidling Maltmill. Because the non-adjustable Maltmill came with the roller spacing factory-set at 0.055 inches, an additional sample was passed through the mill twice.

In order for a grist to approach the optimum percentage breakdown as presented in *The Practical Brewer* it is necessary to employ a high-quality six-roller commercial mill. Such a mill, as shown in Figure 1, employs a series of intermediate screens to sort and convey different sized particles to the proper set of chutes and rollers. The references used indicated a simple two-roller mill will not compare favorably with respect to the uniformity of grist produced by a six-roller mill.

Because the malt on a two-roller mill passes through the rollers only once, a compromise must be reached between husk integrity and the crush of the endosperm. If the mill is adjusted to produce mostly fine grist then some of the husks will be overcrushed and shredded. On the other hand, if the mill is adjusted to produce a coarser grist then some of the kernels and endosperm will remain largely intact.

Nonetheless, the roller mills discussed here are a great improvement over the flour mills and coffee grinders of yesteryear and will provide a high-quality crush in comparison. The main advantage of these new roller mills is that they do a much better job at keeping the husk intact, producing less flour with better uniformity of the grist. Any homebrewer who uses a roller mill will certainly be pleased with the improvement of the grist

over a Corona-style mill. In addition, because of the increase in the quality of the crush, it is typical for the homebrewer to experience an increase in extract efficiency.

The complete sieve analysis is shown in Table 2. Four samples were analyzed from each of the adjustable mills and the Corona. In addition, two samples were analyzed for the non-

adjustable Schmidling Maltmill as previously described. Each sample is listed with the specific roller gap used. For convenience this information has been distilled to a more manageable format, presented in Table 3, and also is graphically displayed in Figures 2 through 5. Here the sieve data for the best crush from each of the mills are presented. These sam-

TABLE 2. Sieve Analysis

	Gap ¹	#10 2.000	#14 1.410	#18 1.000	#30 0.590	#60 0.250	#100 0.149	Thru
<i>The Practical Brewer</i>	—	13%	20%	32%	24%	6%	2%	3%
Corona	0.040	6.0%	22.8%	26.8%	17.9%	13.2%	5.0%	8.3%
Corona	0.045	21.2%	28.4%	18.8%	11.3%	10.5%	3.9%	5.9%
Corona	0.050	35.4%	25.6%	13.5%	9.3%	8.7%	3.2%	4.3%
Corona	0.055	48.1%	20.8%	10.2%	7.4%	7.0%	2.7%	3.8%
Glatt	0.045	12.3%	13.7%	20.4%	21.7%	15.9%	6.3%	9.7%
Glatt	0.050	18.0%	16.0%	20.0%	19.0%	14.0%	5.0%	8.0%
Glatt	0.055	27.8%	17.3%	18.5%	15.6%	11.3%	4.1%	5.4%
Glatt	0.060	37.8%	15.0%	16.1%	12.9%	9.6%	3.5%	5.1%
Listermann	1 0'	16.3%	18.1%	19.4%	16.2%	14.1%	5.9%	10.0%
Listermann	11 0'	24.5%	21.3%	18.1%	14.0%	11.7%	4.6%	5.8%
Listermann	9 0'	33.4%	20.3%	16.7%	11.7%	9.6%	3.5%	4.8%
Listermann	7 0'	47.1%	15.5%	11.9%	9.5%	8.3%	3.2%	4.5%
Schmidling	0.040	10.7%	16.5%	20.9%	21.2%	15.8%	6.4%	8.5%
Schmidling	0.045	22.0%	19.0%	20.0%	17.0%	11.0%	4.0%	7.0%
Schmidling	0.050	27.8%	18.6%	18.5%	15.1%	10.8%	4.0%	5.2%
Schmidling	0.055	38.7%	16.4%	16.4%	12.2%	8.5%	3.3%	4.5%
Schmidling/Fixed ²	0.055	28.4%	17.7%	18.0%	14.0%	11.5%	4.5%	5.9%
Schmidling/Fixed ³	0.055	17.2%	25.1%	21.5%	15.2%	11.6%	4.4%	5.0%

Bold type indicates crush results summarized in Figures 2 through 6 and Tables 3 and 4.

¹Roller gap is presented in inches, except for the Listermann mill which is presented in o'clock notation.

²Single pass of malt through the non-adjustable Maltmill.

³Double pass of malt through the non-adjustable Maltmill.

TABLE 3. Analysis Summary

	Gap	#10 2.000	#14 1.410	#18 1.000	#30 0.590	#60 0.250	#100 0.149	Thru	Large ¹	Med ²	Small ³
<i>The Practical Brewer</i>	—	13%	20%	32%	24%	6%	2%	3%	13%	76%	11%
Corona	0.045	21%	28%	19%	11%	11%	4%	6%	21%	59%	20%
Glatt	0.050	18%	16%	20%	19%	14%	5%	8%	18%	55%	27%
Listermann	11 0'	25%	21%	18%	14%	12%	5%	6%	25%	53%	22%
Schmidling	0.045	22%	19%	20%	17%	11%	4%	7%	22%	56%	22%

¹Percentage of grist held on screen #10; husks and large particles.

²Percentage of grist held on screen #14, #18 and #30; coarse grist.

³Percentage of grist held on screen #60, #100 and passing through; fine grist and flour.

TABLE 4. Analysis Summary

	Gap	#10 2.000	#14 1.410	#18 1.000	#30 0.590	#60 0.250	#100 0.149	Thru	Large	Med	Small
<i>The Practical Brewer</i>	—	13%	20%	32%	24%	6%	2%	3%	13%	76%	11%
Single Pass Schmidling/Fixed	0.055	28%	18%	18%	14%	12%	5%	6%	28%	50%	22%
Double Pass Schmidling/Fixed	0.055	17%	25%	22%	15%	12%	4%	5%	17%	62%	21%

Screen Number	Mesh Width	Percent Retained
10	2.000 mm	13%
14	1.410 mm	20%
18	1.000 mm	32%
30	0.590 mm	24%
60	0.250 mm	6%
100	0.149 mm	2%
Thru	—	3%

TABLE 5.
Mill
Throughput Summary

	Gap	Time in seconds ¹
Corona	0.045	100
Glatt	0.050	96
Listermann	11 0'	75
Schmidling	0.045	51

¹500-gram sample crushed at one revolution per second.

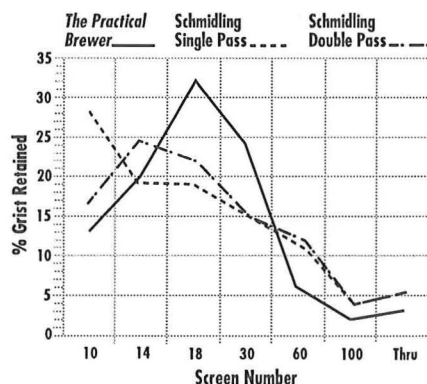


FIGURE 6

ples were determined to contain the highest portion of properly sized grist as compared to the standards set in *The Practical Brewer*.

The last three columns in Table 3 further summarize the variations in particle size. The first of these columns represents the percentage of large particles and husks held on the first screen (large); the second column represents that percentage of coarse grist held on the third through fifth screens (medium); and the third column represents the percentage of fine grist and flour held on the last two screens and passed through (small).

It is interesting to note that if one just looks at the numbers from the sieve tests, the Corona mill looks as good or better than the roller mills. However, the sieve analysis does not indicate the integrity of the grain husks. During the crush tests it was observed that the Corona mill consistently sheared the husks into multiple pieces. Others have made the observation that this is undesirable, since overcrushing of grain husks can lead to slow runoffs, poor extract yields and rougher, less rounded malt flavors in the finished beer. All

three of the roller mills tested in this article performed substantially better than the Corona mill at maintaining husk integrity.

Another interesting observation is the improvement between a single pass and a double pass of the malt through a roller mill, in effect emulating a four-roller mill. For comparison, a summary of the sieve analysis between a single pass and a double pass through the Schmidling non-adjustable Maltmill is given in Table 4 and is graphically displayed in Figure 6. Notice there is no increase in small particle size; instead, large particles are more thoroughly separated from the husks and are turned into coarse grist leaving a crush that is closer in composition to the standards set in *The Practical Brewer*. A double crush with any of the roller mills described here should yield similar results.

For each of the samples crushed the mills were hand-cranked at a speed of one revolution per second. A list of the times it took to crush a 500-gram sample in each of the mills is listed in Table 5. Even though there is variation among the mills they all were determined to have acceptable throughput.

The Mills

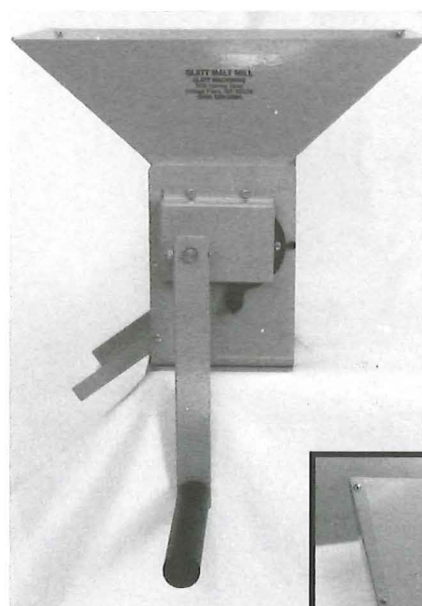
Glatt Malt Mill

The 1993 Glatt Malt Mill is mostly constructed of sheet metal and formed steel plates and weighs about 10 pounds. All metal parts are finished with a bright yellow enamel paint. The hopper measures six inches wide by 11 3/8 inches long by 5 1/2 inches deep and has a capacity of about three pounds of malt. The roller assembly consists of two rollers mounted in acetal resin bushings (a durable plastic engineered for bushings) in a one-eighth-inch-thick formed metal chassis that measures 4 1/4 inches wide by 4 1/4 inches long by 7 1/8 inches deep. The rollers are made of cold-finished steel, measure four inches in length, 1 1/4 inches in diameter and are finished with a fine knurl. The second roller is gear-driven off of the first by gears made of acetal resin. The roller spacing is adjustable at both ends of the secondary roller via independent adjustment arms that are held in place with locking screws. The adjustment arms have a series of calibration marks that make fine adjustments and reproduction of specific settings easy.

Assembly consists of attaching the hopper, exit chute and hand crank, and mounting the unit to a board or table. Crushed grain falls from the exit chute into a container the user provides. The mill is designed to be mounted to a table with two three-eighths-inch bolts, or to a board and the board clamped securely to a table if permanent installation is not desired.

The mill was well-built. In operation it was easy to adjust and easy to crank. Out of the three mills it had the lowest throughput, though still acceptable and faster than the Corona mill.

The Glatt Malt Mill comes with a 90-day guarantee against defects in workmanship and materials.



Glatt Malt Mill



Glatt Malt Mill top view

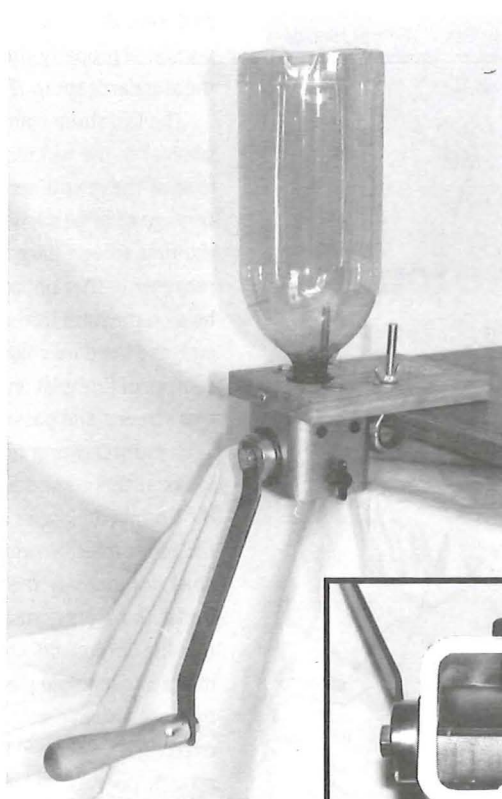
Listermann Philmill

The 1994 Listermann Philmill is mostly constructed of electroless-nickel-plated steel with a red-oak mounting board and weighs about five pounds. The nickel-plating process is said to prevent rust and wear. The hopper, supplied by the user, is a plastic two-liter soda bottle that typically measures 4 1/4 inches in diameter and nine inches deep and has a capacity of about 2 1/4 pounds of malt. The roller assembly consists of a single roller mounted in phosphor-bronze bushings in a steel chassis with five-sixteenths-inch-thick walls and measures three inches wide by three inches long by 2 1/2 inches deep. The roller is made of case-hardened steel, measures 2 3/8 inches in length, 1 1/2 inches in diameter and is finished with a medium knurl. The roller is driven directly by the crank against a hardened curved steel plate opposite the roller. The roller spacing is adjustable via a centered thumbscrew with a plastic knob that adjusts the spacing between the plate and the roller. Although the Philmill was very easy to adjust, the design of the mill inhibited the use of the gapping tool.

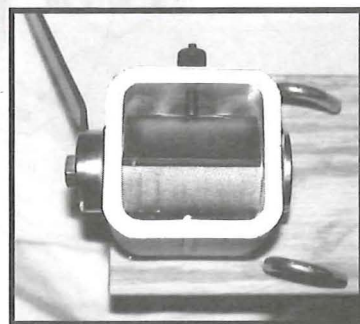
Assembly consists of attaching the hand crank and soda-bottle grain hopper. The mill is designed to be clamped to a table with two hook-bolts that are included with the mill. Crushed grain falls from the mill into a container supplied by the user.

The mill was easy to assemble and mount. In operation it was very easy to adjust and had good throughput. Out of the three mills it was the stiffest to crank.

Listermann Manufacturing Co. does not have a written warranty, but promises free repair or replacement if the mill is returned for inspection.



Listermann Philmill



Listermann Philmill
roller view

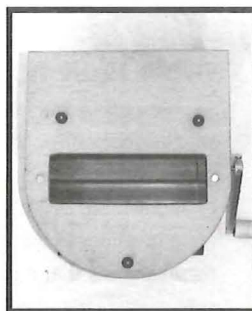
Schmidling Maltmill

The 1993 Schmidling Maltmill has a high density particle board base and masonite grain hopper and weighs about 16 pounds. The roller assembly consists of two cold-finished steel rollers mounted in oil-impregnated bronze bearings in a chassis with one-half-inch thick highly polished aluminum end plates and measures 3 1/2 inches wide by 11 inches long by three inches deep. The rollers measure 10 inches in length and 1 1/2 inches in diameter. The first roller is finished with a very coarse knurl and the second with fine lengthwise grooves. The first roller is driven directly by the crank and the second is passive, turned by the friction of passing malt. The first roller is fixed at one end and is adjustable at the other end via an eccentric shaft retainer held in place by a locking bolt. The hopper measures 8 1/2 inches wide by nine inches long by four inches deep with a capacity of about three pounds of malt.

Assembly consists of attaching the baseboard and hand crank. The mill is designed to fit on top of a standard five-gallon plastic bucket the user provides to catch the grain and contain any grain dust produced.

The mill was solidly constructed and easy to assemble and mount. In operation it was easy to crank and had the highest throughput of the three mills.

The Schmidling Maltmill comes with a lifetime warranty.



Schmidling Maltmill
roller view



Schmidling
Maltmill

Summary

All of the roller mills reviewed were found to be capable of producing a good-quality crush and were superior to the Corona mill at maintaining husk integrity. With the exception of the fixed Maltmill, all the mills allow for a wide range of crush setting, giving the homebrewer the ability to control the degree to which the malt is crushed.

During the tests the mills were hand cranked, but all of them reportedly can be motorized with a standard household electric drill. It is worth noting that the manufacturers are continuously upgrading and improving the designs and materials used in constructing the mills. In the future expect to see even better mills than those described here. For current prices, warranties and specifications, contact the manufacturers directly.

The mills described in this article are available through local homebrew supply retailers at reasonable prices (ranging from \$70 to \$130). Check with the homebrew retailer nearest you for availability.

Glatt Manufacturing Inc.

920 Stanley Dr.
College Place, WA 99324
(509) 629-2672
Product: Glatt Malt Mill

Jack Schmidling Productions

4501 Moody St.
Chicago, IL 60630
(312) 685-1878
Product: MALTMILL™

Listermann Manufacturing Co.

1776 Mentor Ave.
Norwood, OH 45212
(513) 731-1130
Product: Philmill

References

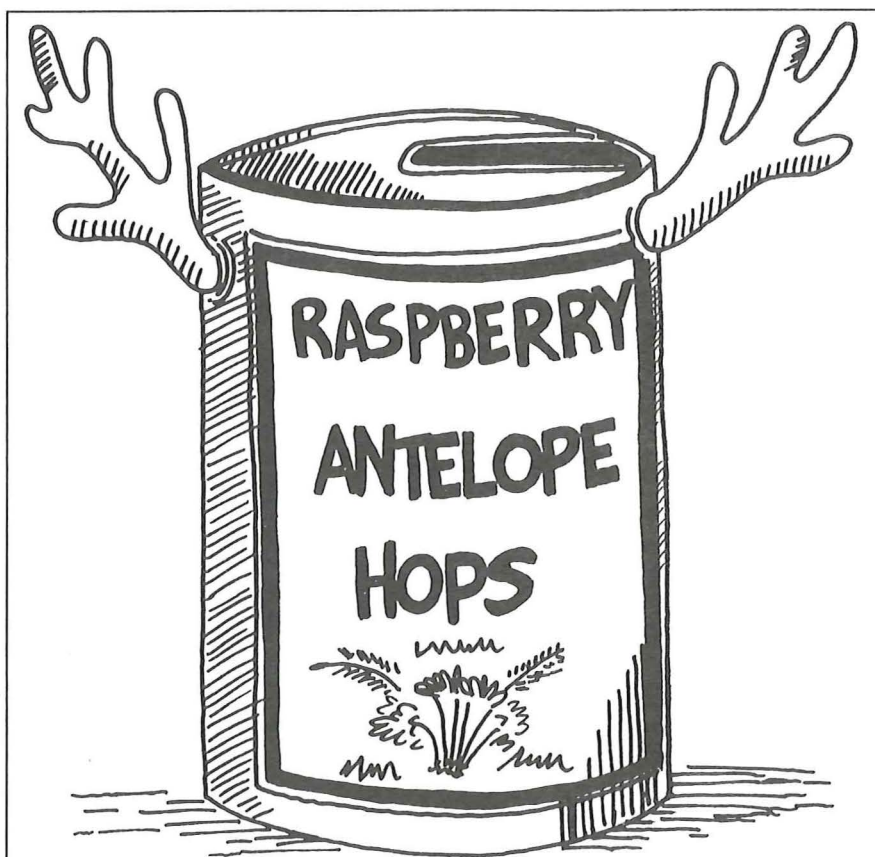
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Bob Gorman, a member of the Boston Wort Processors and the current vice president, has been homebrewing since 1989. He is a National BJCP judge and frequently participates in the organization of homebrew competitions and beer-related events in New England.

Steve Stroud has been homebrewing since 1983 and is a founding member of the Boston Wort Processors. He has been an associate co-director of the BJCP since 1991.

When not brewing or judging he is a chemist for Polaroid Corp.

Mike Fertsch has been homebrewing since 1983. He is a longtime member of the Boston Wort Processors, having held every club office including editor of *Brewprint*, the newsletter. He is club treasurer, and plans to abscond with the treasury to Munich for Oktoberfest. A Master judge in the BJCP, Mike prefers to brew and drink German-style lagers.



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

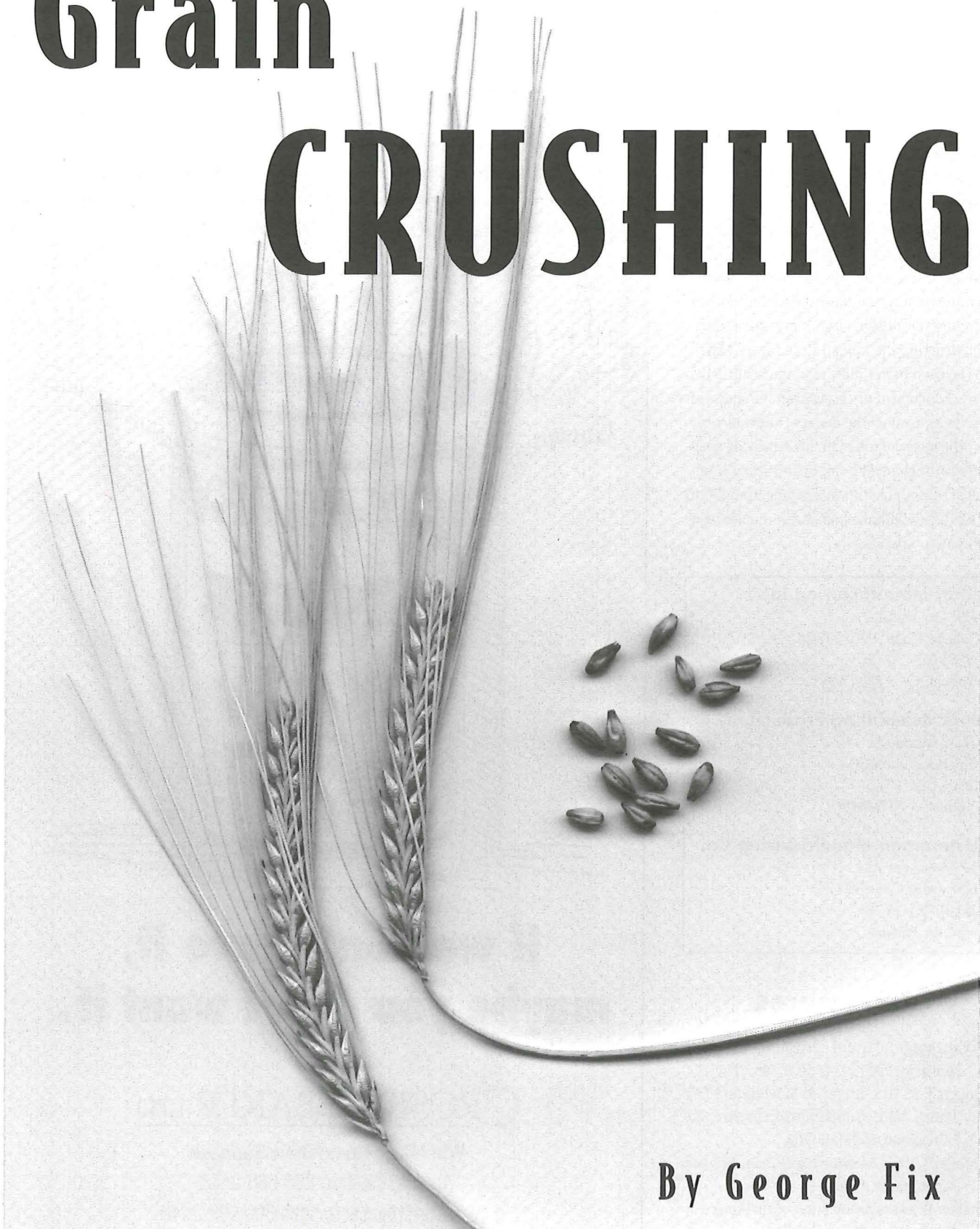
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Grain CRUSHING

A black and white photograph of two stalks of grain, possibly wheat or barley, with long, thin awns. The stalks are positioned diagonally across the frame. To the right of the stalks, there is a small, loose pile of dark, oval-shaped grains, likely the same type of grain as the stalks. The background is a light, textured surface.

By George Fix

Criteria

In an excellent article on wort production in *The Practical Brewer* (Master Brewers Association of the Americas, 1977) Joseph Dougherty made the following observation: "Although the words grinding and milling are often used, the term crushing is more descriptive of what should take place. Unfortunately, this early step does not receive the attention which it deserves." Dougherty's comments were directed at commercial brewers, but they are highly relevant to homebrewers as well.

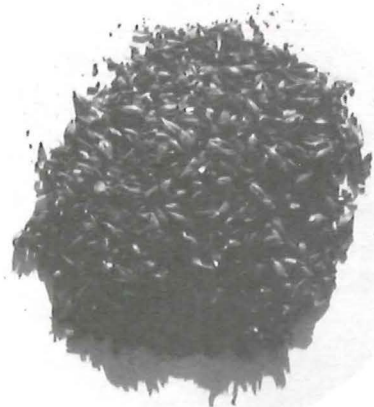
This area was long neglected until recent years. Then came Jack Schmidling Production's Maltmill, followed by the Philmill from Listermann Manufacturing and the Malt Mill from the Glatt Machine Co. All homebrewers, regardless of which version they prefer, are in debt to each of the individuals responsible for designing these mills. Their introduction, and the lively debate that followed concerning which is best, has had the positive effect of bringing the crush quality issue to the attention of homebrewers.



40 °L crystal malt before crush



40 °L crystal malt regular crush



40 °L crystal malt overcrush

Choice Crush Characteristics

In his classic *A Textbook of Brewing* (Chapman and Hall, 1958), Jean deClerck cites two important attributes of a proper crush: (1) The malt should be crushed between the rollers so a minimum amount of damage is done to the husks and (2) the starchy endosperm should be reduced to a flour.

The first is relevant to lautering. Husks form an important part of the grain's filter bed. If a high fraction of grains is overcrushed, then slow runoffs tend to occur with a large amount of extract being left in the grains. In my experience it is easier to extract undesirable husk phenols and tannins from damaged husks. This has a tendency to give rougher, less rounded malt flavors in the finished beer.

DeClerck's second criterion is relevant to

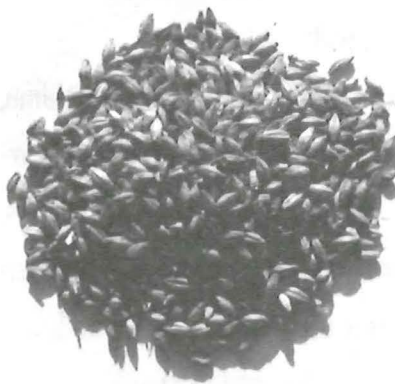
brew house yield. Uncrushed or coarsely milled endosperm tends to retain its starchy interiors making it difficult to dissolve these constituents in the mash.

In addition to DeClerck's criteria it is important to include malt quality. In particular, uniform corn size is of great relevance. Even an ideal mill with ideal roller spacing would not be able to do a very good job if this were not the case, for the obvious reason that large kernels would be overcrushed and small kernels would be undercrushed. Fortunately, high-quality malt is available to small-scale brewers today. In my experience maltsters using the top barley varieties and traditional malting procedures (floor malting for example) always seem to hit the target in this area. An extra plus for high-quality malt is that the fine grind/coarse grind extract difference is typically small, usually less than 2.2 percent. What this means in practical terms is that we

as brewers will have some margin for error with respect to DeClerck's second criterion.

Crush Consequences

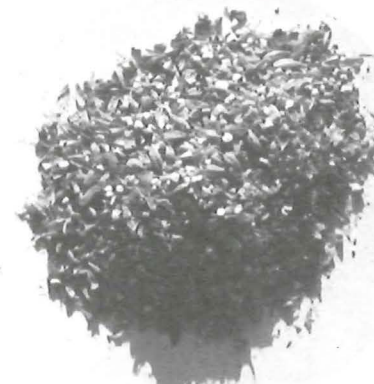
For most brewers the most discernible effect of the malt crush is seen in runoff times and yield. And as mentioned, flavor and clarity of the finished beer also are affected. I get a better malt flavor in the finished beer with shorter rather than longer runoff times. I generally brew 13.3-gallon (50-liter) batches and clarify the wort by recirculation. I generally shoot for a runoff of no more than 20 to 30 minutes after recirculation. In these brews typically nine gallons (34 liters) of water are used in the mash with the same amount used for sparging. I have heard of some homebrewers requiring more than twice that time with smaller batch sizes. This could be caused by a vari-



American two-row malt before crush



American two-row malt regular crush



American two-row malt overcrush

ety of reasons including grain bill, mashing and sparging equipment and setup or by an improper crush. The improper crush may be caused by poor malt quality (for example, non-uniform kernel size). It is true that unshredded husks lead to a smooth flowing runoff.

Commercial brewers tend to use percent extract, or degrees Plato, to express the carbohydrate content of wort. In that context, yield is defined as the fraction of a grain's weight that goes into extract. Many homebrewers, on the other hand, tend to prefer specific gravity. With this choice, yield is usually defined as the number of gravity points that are achieved per malt rate in pounds per gallon. Note that this is not dimensionless, and has the units of

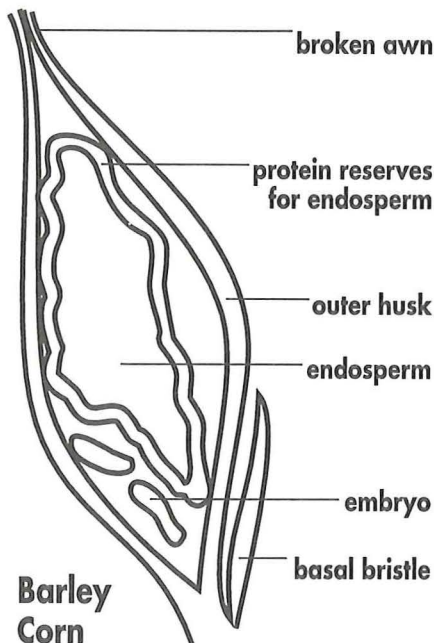
$$\frac{(\text{gravity points} \times \text{gallons})}{\text{pounds of grain.}}$$

These two ways of expressing yield are approximately related by the factor 0.46; for example, a 65 percent yield is the same as

$$65 \times 0.46 = \frac{(29.9 \text{ gravity points} \times \text{gallons})}{\text{pounds of grain.}}$$

The best pale malts available today will typically have potential (fine grind) yields around 78 to 81 percent (35 to 36 gravity points \times gallons \div pounds of grain). It should be emphasized that this yield is measured in a congress mash (see glossary), and does not take into account inevitable losses in lautering and later wort processing. It has been my experience that we should get fairly close to the potential yield as it is measured in the mash tun, and it is useful to periodically check this as a way to monitor crush and malt quality. To cite a specific example, suppose our mash consisted of eight gallons (30 liters) of water and 23 pounds (10 kilograms) of pale malt. Then a 76 percent yield (35 points \times gallons per pound) would mean there are $0.76 \times 23 = 17.48$ pounds extract in the mash. This amounts to a density of $17.48 \div 8 = 2.185$ pounds extract per gallon or what is the same as 26.2 grams extract per 100 milliliters. Extract tables (for example see DeClerck's book, *A Textbook of Brewing*) show this is equivalent to a specific gravity of 1.1005 (usually rounded to 1.101) and a percent extract (degrees Plato) of

$$\frac{26.2}{1.1005} = 23.8 \text{ grams extract per 100 grams.}$$



Barley Corn

In checking our own mashes it is important for the sample to be representative. In most mash tuns there is a carbohydrate gradient with the upper part being more dilute than the bottom.

While we will likely be below the potential yield, with a good malt and proper crush we shouldn't be much more than 10 percent off the potential. Thus in the above example we may not achieve an extract of 23.8 °Plato (1.101), but we should not be below 21.4 °Plato. Instead of a yield of 35 gravity points per gallon per pound in the mash, we may be as low as 34 gravity points per gallon per pound. If it is lower than this, then the crush and/or malt quality are likely culprits.

On the other hand, the yield as measured in the finished wort is another matter altogether. As noted above, these will be in-

evitable losses because of the extract left behind in the spent grains as well as volume (and hence extract) loss in wort transfers. While one obviously wants to avoid waste from sloppy practice, trying to achieve a zero loss of extract in post-mash processing is not desirable either. For example, by using excessive amounts of sparge water at near boiling temperatures one can leach just about all of the residual sugars out of the grains. In my system, this would seriously compromise beer quality because after a certain point phenols and tannins are being extracted. Homebrewers who are getting final yields in the range of 28 to 32 points \times gallons per pound should, in my opinion, not worry about their efficiency. Having said this, it must also be said that final yields in the low to mid-20s is a good signal that something is amiss. As with long lautering times, inferior crushes and/or malt quality are the likely culprits.

Physical examination of the quality of the crush can be done with screens mounted on shakers. The American Society of Brewing Chemists has defined the following six screens as the standard:

Screen No.	Mesh width
10	2.000 mm
14	1.410 mm
18	1.000 mm
30	0.590 mm
60	0.250 mm
100	0.149 mm

Dougherty in *The Practical Brewer* cites the following as typical of a six-roll commercial mill:

Screen No.	Percent of crush retained
10	13%
14	20%
18	32%
30	24%
60	6%
100	2%
Thru	3%

I have never been able to match this profile with a two-roll mill with a single pass. Assuming one has a reasonable roller spacing, a single pass with a two-roll mill appears to



Sieve

be adequate in small-scale brewing. Most micro and pubbrewers use two-roll mills.

A final point concerns grain dust and the importance of preventing it from contaminating other brewing equipment. Brewers now widely recognize this as the major avenue by which acid-forming bacteria can gain entry to a brewing area. It is therefore of crucial importance that grain milling take place in a location isolated from the other parts of the brewery.

Conclusion

Malt quality and actual brew house performance emerge as the two major factors by which we can evaluate the quality of our crushes. No mill can be faulted for a poor crush of a grain that is poorly malted. The achievements of reasonably short runoff times and acceptable yields complete the story. A final note in passing. As someone who has been brewing since the 1970s, I can say with full confidence that never before have any of us had it so good with respect to top-flight malt and well-designed mills. Perhaps this is one reason the ranks of homebrewers are increasing!


Glossary

Congress mash — A 150-degree-F (66-degree-C), single-stage mash. Extract is measured in the unsparged mash so there are no losses in processing.

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A native Texan, George Fix lives with his wife Laurie in Arlington. He is chairman of the mathematics department at the University of Texas at Arlington and the senior consultant for Diversified Metal Engineering. George is on the AHA board of advisers and is a technical editor for *zymurgy*. He is author of *Principles of Brewing Science* (Brewers Publications, 1989) and co-author of *Vienna, Märzen, Oktoberfest* (Brewers Publications, 1992), and has won more than 60 brewing awards. 

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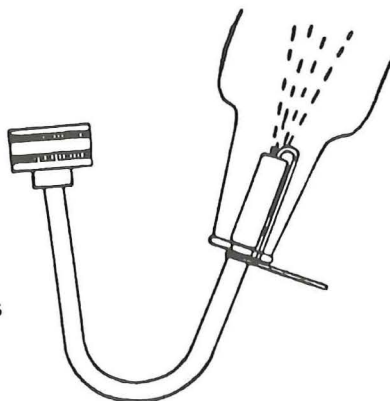
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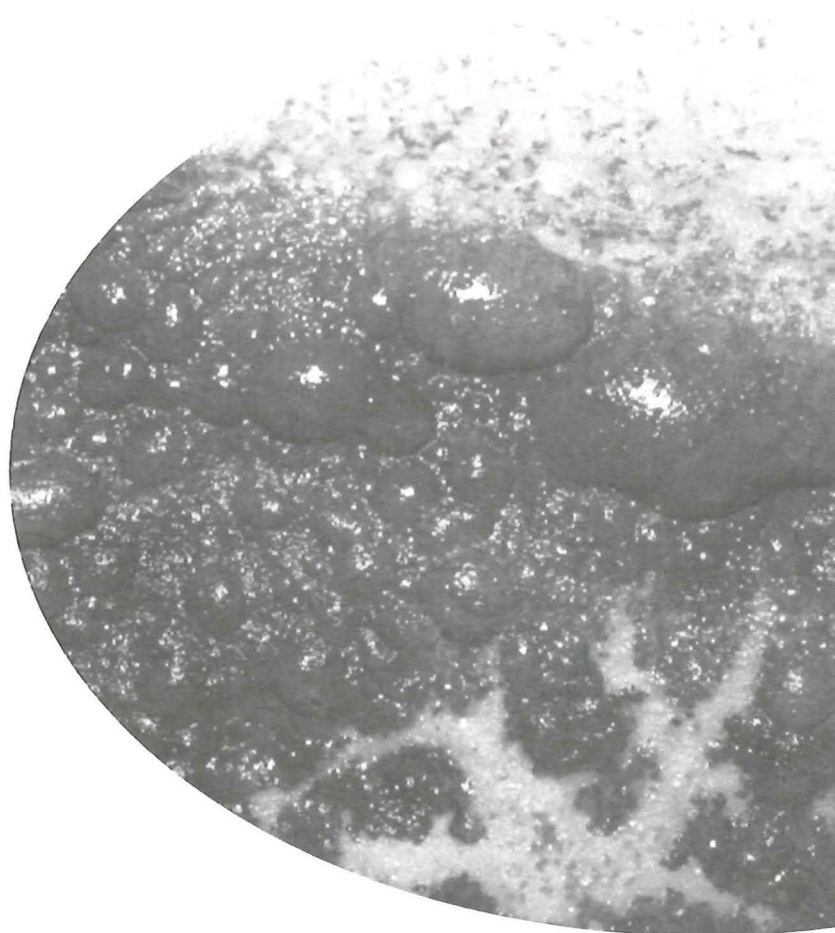
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Open Fermentation Alternatives

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TO LEAVE

THE LID UP



The debate about open vs. closed fermentation will no doubt continue as long as there are interested brewers to debate. I will present some of my feelings, opinions and experiences with using open fermenters, and point out some of the inherent pros and cons of using this technique. I want to emphasize one thing about this, though: the choice of fermenters is not going to be the deciding factor in your finished product. Many other factors play a more important part in the character of your beer — malt choices, mashing programs, and above all, yeast strain, viability and cleanliness. Having said this, there are instances when brewers who changed from open fermenters to closed unitanks have noted distinct changes in the perceived quality of the beers when judged by experienced tasters.

BY JIM BUSCH

Open fermentation is a concept that most homebrewers think is a sure route to infected beer or as something to be used in some dark cellar in an old European brewery. Nonsense! Think about some of the best world-class beers, then think how many are made using open fermenters: Sierra Nevada, Anchor, Pilsner Urquell, numerous English, Belgian and yes, even German brewers. It is common in Bavaria to see a brewer mucking around in the thick krausen on top of the open fermenter collecting samples, skimming yeast and generally doing things that homebrewers are told to avoid. Eric Warner noted in his excellent book, *German Wheat Beer* (Brewers Publications, 1993), that open fermenters are the preferred method of German Weizen production, and when open fermenters are used the yeast can be repitched for many more generations than when closed fermenters are used.

So what is an open fermenter? At the simplest, it is a vessel with an open top. Depending on the size, it is often covered by some form of lid. The bigger versions are truly open, large, shallow vessels, some lined with stainless steel or enamellike coating, that are usually used over a concrete block foundation. Often the fermenters are just large stainless-steel cylinders. Most, but not all, have some form of temperature control device to combat fluctuations during ferment. This

can be in the form of exterior jacketing or metal piping immersed in the wort to circulate cold water or glycol to cool the ferment. Probably the most classic open fermenters are the Yorkshire Squares used at the Samuel Smith brewery in Tadcaster, England. These are made of flat slate walls, sealed together, with a collecting tank where the excess krausen is contained.

OK, so you might think open fermentation only works in big breweries because they are filtering the air, keeping the whole room under positive pressure and nobody is allowed in. Yes and no. Sure, lots of breweries go to the extreme of maintaining a separate room with filtered air. Lots more don't do anything to the air. Certainly the breweries I visited in England never went to the extreme of filtered air, nor did the breweries in Bavaria or Belgium. Belgian methods of brewing may seem strange, but the dominant flavor profiles found in Belgian beers are a result of the choice of yeast strains that create high levels of higher alcohols and esters and rarely result from some infection in the fermenter. (Even though this is the way to produce lambics, the word infection is misused in this context.) Certainly the Bavarian brewmasters would recoil in horror if any foreign bacteria or wild yeast were to be found in the open fermenter, and in practice, these are not a problem.



Jim Busch is harvesting a yeast sample from an enormous copper open fermenter at Liefmans Brewery in Oudenaarde, Belgium. This shot was taken two days after the yeast was pitched. The day after the trub is run off, the brewer harvests the clean yeast for subsequent pitchings. Note the open fermenter where the trub is being run off: Wooden boards are placed over the end when the fermenter is not being skimmed.

I didn't always use open fermenters. The first hundred or so of my beers were made with a "closed" carboy system. I put the word in quotes because the carboy can be fitted with a blowoff tube resulting in a kind of hybrid closed/open fermenter. Since fall 1992, I have been using an open fermenter exclusively, and I am a devoted fan of the concept. My fermenter is a stainless-steel cylinder, roughly equal in height and width, with a heavy lid. If you brew with a 10- or 15-gallon stainless-steel kettle, this can double as your fermenter once you remove the hot break. Some brewers employ modified half-barrel Sankey kegs for boiling, and these make excellent open fermenters as well. I have read about brewers modifying Golden Gate kegs and using these as fermenters.

The least desirable, but easiest to start with, is the plain plastic bucket. The reason I say least desirable is because cleaning plastic is more difficult than cleaning stainless steel, and the inevitable scratches in the plastic can be hard to sanitize. Even so, I know an award-winning homebrewer who ferments in food-grade plastic trash cans, and another two-barrel brewpub that ferments in large High Density Polyethylene (HDPE) containers. I have found that as you increase the brew length (volume of beer produced), it is easier if you fabricate some sort of fermenter to hold

the entire batch. This way you will be limiting the number of vessels to sanitize and clean. It is easier and far less expensive to fabricate or modify a container to be an open fermenter than to make a closed one, particularly as the volume increases. An important consideration when sizing the fermenter is to account for a large amount of krausen that can develop during the ferment. Head space of 30 percent is optimum, but less can be used. Less headspace can result in some possible loss of product (which also occurs with the blowoff carboy method).

Of course, there are some limitations to using open fermenters. Although I believe they are no more prone to infections than using carboys with stoppers or blowoff tubes, there is an increased chance for infection while the lid is off if one has numerous fruit flies or animals around the open fermenter. Probably the biggest limitation is that of time. I don't advise leaving the beer in the fermenter for more than two weeks. Of course, any ferment should be racked by the second week, so maybe this is not such a limitation after all. The reason time is more important in open fermenters is not so much the proximity of the still beer to dead yeast, but the danger of oxidation reactions occurring as the beer sits. In a closed system oxidation will not be a problem. As long as the beer is moved in a timely manner, the CO₂ produced during open fermentation will protect the beer by forming a layer between the beer and air.

Another important factor to consider is the overall cleanliness of the fermentation area. The fermentation area need not be sterile, but

a reasonable degree of cleanliness is in order, particularly for fermentation in a refrigerator. If you use an open fermenter inside a refrigerator, be sure to clean all obvious sources of contamination and general dirt. You may even want to sponge the interior with a mild sanitizer, such as a chlorine and water mix. At the very least, remove all spilled trub, yeast and wort. Household pets should be kept from crawling into the fermenting beer — they may like the results too much! My fermenter is located in the basement, a few feet off the ground, away from large drafts and any sources of debris.

Here is a summary of how I use my open fermenter. In order to

avoid corrosion, I don't use a chlorine-based sanitizer in my stainless-steel fermenter. I prepare a few gallons of an iodine-based sanitizer solution at a concentration of 12.5 ppm (one ounce in 10 gallons of cool water). Using rubber gloves, I sponge the sanitizer over the sides of the fermenter, let it run out the drain and back over the sides. I run iodine-based sanitizer solution through my wort chiller into the fermenter followed by a hot-water rinse. Once the hot water is drained, the vessel is ready for cast-out wort. I fill the fermenter from the wort chiller, oxygenate and add yeast slurry. As in any fermentation there is no substitute for pitching enough viable clean



Large open fermenters at the Feldschlösschen Brewery, Switzerland. Feldschlösschen actually brews using very large unitanks holding thousands of barrels of beer, but they also use the older open fermenters for test batches.

yeast. The key to success with any fermenter (open or closed) is a sanitized vessel and an adequate amount of pitching yeast. Remember to use significantly more yeast if the original gravity of the wort is higher than 1.060. With enough yeast, visible fermentation will be evident within 12 hours (ale wort fermented between 60 and 70 degrees F or 16 to 21 degrees C). As soon as the fermenter is full and the yeast is pitched, replace the lid.

Once the fermentation is generating a thick krausen, leave the lid partially cracked, allowing space for the large amounts of CO₂ to vent. With the ferment in high krausen, the classic, dense, rocky head will form. At this stage, trub is scrubbed from the ferment and rises to the surface, along with other solid matter that was carried over into the fermenter. This can be skimmed off with a sanitized spoon. I leave a long-handled stainless-steel spoon in some iodine-based sanitizer solution and just rinse it off when needed. The ability to skim the trub and yeast that rise to the top of the fermenter is one of the main advantages to open fermentation. Don't overdo it, but about once a day or every other day, depending on the rate of ferment, skim the top. Many ale yeasts tend to collect at the surface as the ferment diminishes. This yeast is excellent to skim and store in a sanitized container in a cold fridge as close to 32 degrees F (0 degrees C) as possible. When choosing yeast to save and reuse for another batch, be sure to wait a few days into the ferment so the trub is scrubbed away and the harvested yeast is clean. Store harvested yeast in a sanitized container in a cold (32-degree-F or 0-degree-C) refrigerator. Ale yeast can

be kept for about seven days without food. If you keep the yeast for longer periods of time, you'll need to feed the yeast periodically. As the ferment dies down, keep the lid over the vessel.

Another great plus of open fermenting is the ease of dry hopping. I let the main fermentation subside and when the yeast clumps at the surface, skim off as much as possible, then add the loose whole hops. I find that whole hops give better aroma and are easier to use with an open fermenter. Allow at least three days for the dry hopping to take effect. I avoid leaving the beer in the primary for longer than two weeks and aim for 10 days when dry hopping, and five days otherwise. These are optimum figures for ale ferments. Often homebrewers experience longer fermentation times primarily caused by inadequate oxygenation of the cast-out wort and/or insufficient yeast cell densities/viabilities. To rack off the hops, use a sanitized copper, brass or stainless-steel wound wire scrubber held over the racking cane with a piece of copper wire. Alternatively, the hops can be removed with a sanitized strainer, providing minimal amounts of air are introduced to the still beer.

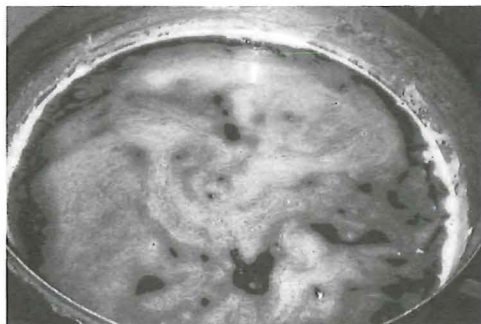
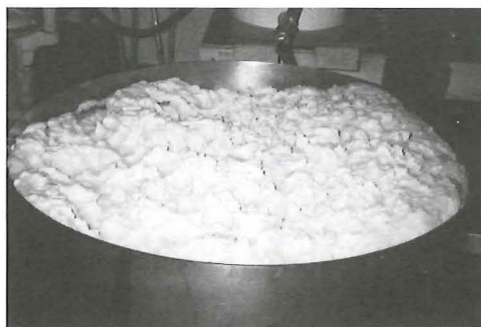
IMPORTANT POINTS TO REMEMBER

Pitch plenty of healthy yeast slurry — between one-half and one ounce per gallon of wort, or at least one quart of yeast starter per five gallons of wort. Professional pitching rates are on the order of one-half to one pound of slurry per barrel of wort.

If you have a way to increase the dissolved oxygen levels of the wort, do so. At the least, splash the cooled wort when filling the fermenter. Using an airstone, an aquarium air dispersion device, for the first few hours is even better.

Keep the lid on most of the time. This helps trap the CO₂, and because the finished still beer will have about one volume of dissolved CO₂ in solution, there will be a thin blanket of CO₂ over the beer, protecting it from detrimental oxidation reactions. Once the ferment is producing large quantities of krausen, it is good to leave the lid cracked.

This series of photos shows the progression of a single-batch ferment. The open fermenter at high krausen sports a layer of thick, clean white foam. The darker foam, which is important to skim off, is trub being scrubbed out of solution. All is calm when primary fermentation is complete — clean yeast has been skimmed and saved for another batch and then dry hops added.



As soon as the krausen begins to subside, keep it covered.

Fining agents, such as isinglass, can be added directly to the primary fermenter, provided the desired degree of attenuation has been achieved. Polyclar, or PVPP, can be added directly to the fermenter and left to settle for a day, then the beer racked off the sediment.

Fermenting in an open vessel can be an effective and convenient method of beer production and yeast harvesting, especially when brewing ales. It is an easy way to skim trub and reusable yeast that rise to the surface of the ferment and can be a cost-effective method to increase batch sizes.

GLOSSARY

Airstone — An aquarium air dispersion device. For brewing, use one made of silica or a stainless-steel sintered stone made of fused stainless-steel chips.

Finings — Pronounced "fine-ings." Ingredients added to the brewing process to help clarification by causing suspended matter to coagulate and precipitate to the bottom of the fermenter. Fining agents attract suspended matter by the use of their molecular electrical charge. Examples include isinglass, gelatin, Irish moss (used in the boil) and polyclar.

Krausen — Pronounced "kroisen." The rocky head of foam appearing on the surface of wort during the first few days of fermentation.

Trub — Pronounced "troob." Suspended particles caused by the precipitation of protein, hop oils and tannins during the boiling and cooling stages of wort preparation.

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Jim Busch is an electrical engineer developing real-time systems for NASA. He has been an all-grain brewer and beer traveler since 1988. When he is not beer hunting, he can be found on the Internet at busch@daacdev1.stx.com.



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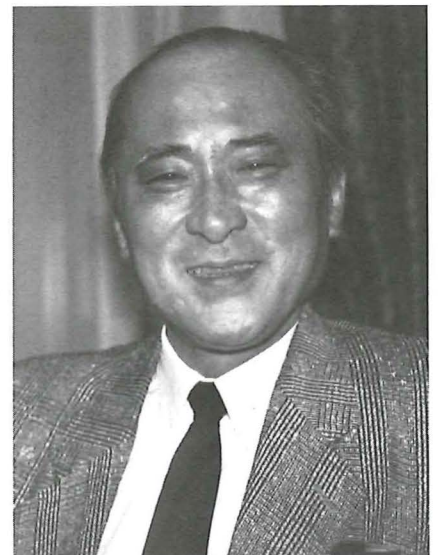
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Sadahiro (Sadat) Yamanaka

Japanese law currently prohibits homebrewing, but enthusiasm for changing both the law and the antiquated political attitudes toward brewing and small business ran high at Japan's first Microbrewery Seminar. Since the laws are changing to accommodate microbrewing, more than 150 Japanese entrepreneurs, journalists, beer distributors, retailers, homebrewers and beer enthusiasts gathered in Tokyo on Dec. 7, 1993, to inaugurate an attack on current home-

brewing laws in Japan. In his keynote address Charlie Papazian reviewed the dramatic evolution of homebrewing and microbrewing in the United States.

Japanese entrepreneurs have looked toward Charlie and the American Homebrewers Association as models they wish to mirror in their own country. Why choose Charlie? Because the Japanese want to emulate his stylish scruffy black curls, snazzy shirts and cigars hanging out of a smile? Not exactly. The Japanese look toward Charlie and the AHA for their own success in the promotion of homebrewing as a hobby and in consumer education. "They want to follow in our

footsteps in developing an appreciation of beer through homebrewing," says Charlie.

Dawning Era of Beer Education

Although importing supplies and equipment can meet most brewing needs in Japan, America is seen as having cutting-edge brewing technology Japan has yet to develop. Dur-

ground company, NB Japan. The importer of brewing kits and promoter of homebrewing at monthly meetings held all across Japan, Sadat looks forward to deregulation of homebrewing with mugs ready.

The beer they brew with the imported kits is called "B" and a Japanese pun says, "You have to listen with your 'ear' to make 'beer.'" Labels and literature on the kits carefully instruct homebrewers to mix one part completely fermented "B" with four parts water

FREEDOM in Japan

ing the seminar, Sadahiro (Sadat) Yamanaka, president of NB Japan Co. Ltd., emphasized that, "America's small brewing evolution is important to learn from because it best suits the coming creative spirit of free enterprise and consumer interest in Japan." He visualizes Japan as one day succeeding in consumer education and technological advancements in the beer and brewing industry and establishing Japan as a self-reliant country in the beer market for goods and services.

Sadat is Japan's closest counterpart to Charlie as a leader in the homebrewing movement. He came to the Japanese homebrewing forefront through his somewhat under-

to achieve a legal 1 percent alcohol. This rule also applies to the traditional Japanese rice wine, saké, that is otherwise illegal to brew at home. Sadat contends, however, that homebrewed beer parties are held locally every month and entail hearty consumption, as is customary in Japan.

Sadat first sought homebrewing's potential after a visit to America in 1983 that landed him at the American Homebrewers Association National Homebrewers Conference in Boulder, Colo. The event coincided with the second Great American Beer FestivalSM. Sadat is remembered today as "the Japanese guy who had an outrageously good time."



The Japanese are serious about diversity. A beer tasting was conducted after the seminar featuring Sierra Nevada 1992 Celebration Ale and Porter, Belgian Mort Subite Kriek, Samuel Smith's Oatmeal Stout, Oberdorfer Weissbier, Hermosa Beach Brew-on-Premises Strong Ale and various kegs of "imported" homebrew (a bitter, pale ale and stout). The beer was served with food: sushi, sashimi, tempura, curries and various other Japanese fare.

His outrageously good time led him to an outrageous idea — a homebrewers association in Japan. He founded the Japan Homebrewing Promotion Association (JHPA) and began importing malt and brewing kits from England by working with Richard Holt of Edme, a connection he made at the Conference in Boulder. His first kit order arrived labeled simply "NB Japan." Sadat stood staring quizzically at his packages, unsure as to what the "NB" meant. Fellow members of his company also were puzzled but decided to call the kits, and their company, "Not Beer, Japan," with a laugh.

The imported kits include one 2 1/2-pound can of malt extract, yeast, brewing instructions, siphon hose, bottle caps and a bottle capper. The cost runs about ¥8000 (roughly \$80 if ¥100 = \$1 US). Although this sounds expensive by American standards, homebrewing costs about one-third less than commercial beer in Japan. A 17- to 25-ounce (500- to 750-milliliter) bottle of beer costs anywhere from \$5 to \$10, with nearly half the cost being tax.

Currently NB Japan is only importing lager and bitter kits, but Sadat says homebrewing as a hobby allows you to experiment with flavors that are otherwise unavailable in Japan. The majority of commercial beer in Japan is

lager, but some microbrewed brands are available in Tokyo and other large cities.

"B" brewers try to emulate American, English and German beer styles. Charlie remembers the homebrewed "B" he tasted in Japan at the seminar as being typical of "good-quality American homebrew." To create a truly distinguishable beer, many Japanese homebrewers alter flavors by experimenting with herbs and fruits. According to Charlie, using banana and passion fruit is equivalent to the popular raspberry trend in America.



Sadat Yamanaka and Charlie Papazian

The JHPA has a mission to branch out and recruit more homebrewers throughout Japan. There are about 2,000 JHPA members, a handful of whom also are American Homebrewers Association members. Charlie says JHPA members typically mirror an AHA member profile in all but one respect, they are "college educated, have a youthful mind-set, are mostly male, some female, with money to spend, but unlike American homebrewers, most are without facial hair."

Several homebrewers Charlie met at the seminar proudly used their red "Relax, Don't Worry, Have a Homebrew" bottle caps and AHA openers. One seminar attendee, Yoshiaki Tsukada, has been an AHA member for more than five years and has an expansive collection of at least 500 beer books in both English and Japanese.

Lobbyists Push for Brewing Rights

Interest in promoting homebrewing primarily lies in developing the educated consumer already in the homebrewing market to enhance the development of the micro- and pubbrewing market. In September 1993, the former Prime Minister Morihiro Hosokawa announced that steps would be taken to legalize microbrewing in Japan. In February 1994, the minister of finance announced the minimum annual production would be reduced from 20,000 kiloliters to 60 kiloliters.

The bill is expected to pass in the next ordinary session of the Diet (parliament).


Sadat and the JHPA will continue to assertively lobby the Japanese Diet for the legalization of homebrewing and removal of legal barriers to small businesses and small breweries. The core of the push toward change is freedom of consumer choice, free competition and gradual assimilation of the economic and political attitudes of the rest of the world.



Five-year AHA member Yoshiki Tsukada of Nagano, Japan, and Charlie Papazian. Yoshiki specializes in collecting beer books. He has more than 500 in his collection.

An open market will be warmly welcomed by thousands of interested Japanese homebrewers and craft brewers. When homebrewing is legalized, business opportunities are expected to explode. In addition to new brewpubs, microbreweries and brew-on-premises facilities, homebrew supply shops may offer very viable business outlets in Japan. Profits seem imminent because the hobby is widespread and eagerly pursued even while the practice is illegal. As the status of microbrewing in Japan waivers in the Diet, Sadat seems quite sure that underground homebrewing will continue and the variety and quality of "B" will evolve.

All the while, covert homebrew-appreciation parties abound, the promotion of homebrewing as an art, hobby and business perseveres and Japan awaits a *tsunami* of great brew!

Ellen Custer has been with the Association of Brewers marketing department since August 1993. At home she enjoys writing, relaxing with her two cats, Snickers and Mutz, and of course, drinking homebrew. 



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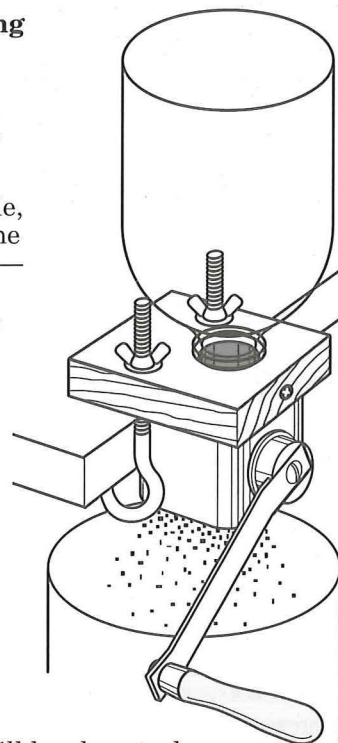
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Homebrewing Enthusiasts Gather in Denver for

BrewStorm '94

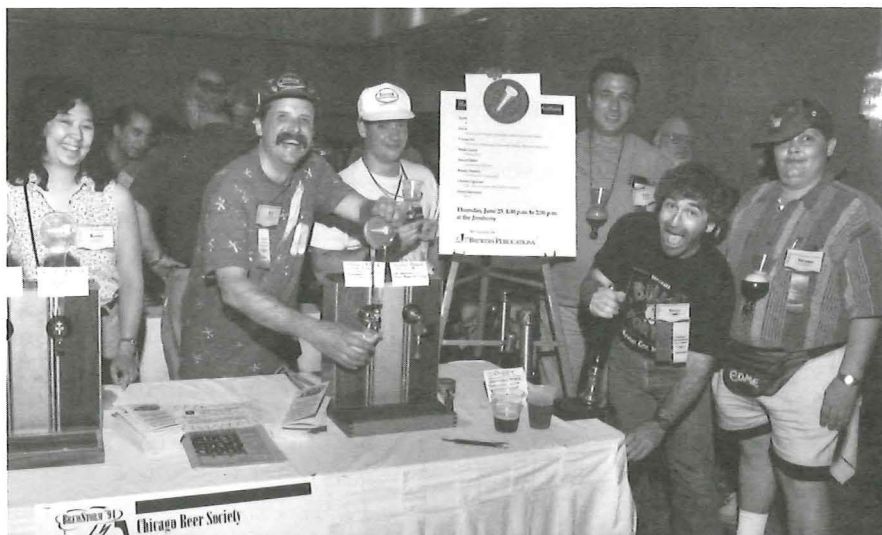


Ominous clouds, sudden downpours and occasional high winds gave credence to the name of this year's National AHA Home-

brewers Conference, BrewStorm '94. The weather in Denver, Colo., for most of the Conference, however, was as sunny and warm as the dispositions of those attending the event.

Homebrewers from all regions of the United States, including Hawaii and Alaska, Canada and beyond poured into Denver eager to listen, taste and learn from knowledgeable and prestigious experts on the art and science of brewing. Given the tremendous advancement in brewing science, this edition of the AHA's annual gathering reflected a new balance achieved through appreciation and dedication to the art of brewing. AHA founder and homebrew pioneer Charlie Papazian stressed this point in his address sketching the history and development of the hobby.

Denver was a natural choice for hosting the AHA Conference. It is only one-half hour from Boulder, home of the Association of Brewers, the AHA's parent organization. Plus, Colorado boasts 42 microbreweries and brewpubs, one of the highest concentrations of brewing activity in the country.



Chicago Beer Society pours homebrew for an appreciative Jambeery crowd.

The Conference began with second-round judging of the AHA National Homebrew Competition. Some 396 homebrews that advanced through the regional first-round judgments from a total of 3,060 entries were evaluated. The best-of-show judging included some of the top-ranked Beer Judge Certification Program

judges in the nation. Jim Homer, National; Steve Stroud, Honorary Master; Darryl Richman, National; and Dave Miller, National; evaluated the beers while Alberta Rager, Honorary Master; Phil Fleming, Master; Bob Gorman, National; and Gordon Olson, National; judged best-of-show meads.

Conference attendees had an opportunity to take the BJCP exam co-sponsored by the AHA and the Home Wine and Beer Trade Association.

By Tom Daldorf



Brewers learn the fine art of tasting.

For those new to the challenge of judging, Charlie Papazian hosted a "palate calibration" tasting designed to take the mystery out of evaluating beer. It familiarized homebrewers with the AHA score sheet and the various attributes of appearance, flavor, body and aroma used to identify and evaluate beer in competition.

Technical sessions were given by Rodney Morris, inventor of the Recirculating Infusion Mash System; Andy Tveekrem, brewer at Great Lakes Brewing Co.; Bob Jones, a veteran award-winning homebrewer and a member of The Draught Board; and Jeff Lebesch, brewer at New Belgium Brewing Co.

Homebrewing trade shows, Jambeery I and II, featured the latest in brewing gear and gadgets, equipment, ingredients, software, club information, brewing publications and more. Commercial and homebrewed beers were available in bottles and on draft making the trade show floor a natural meeting place.

Thursday morning began with a hearty breakfast featuring beer recipes from Candy Schermerhorn's *Great American Beer Cookbook* (Brewers Publications, 1993). In Charlie's opening remarks he praised the pro-active stance of domestic homebrewers and their supportive posture toward microbrewers. "We are not competitive with commercial brewers," he observed, but are all interested in advancing the art and science of brewing.

William Coors gave a delightfully anecdotal anthology of alcohol issues that occasionally had the assembled brewers rolling with laughter. The issues are quite serious, however, and he reminded everyone that

brewing is a privilege that can be lost without eternal vigilance. He addressed our government's strategy on dealing with substance abuse by continually attacking the supply side rather than dealing with the demand side. He also discussed and recommended the book *The French Paradox* that documents the health benefits of



Dan McConnell and Ken Schramm, the mead guys, shared the results of years of meadmaking experiments with mead lovers.

moderate alcohol use in the cholesterol-rich French diet. Solomon Katz, Ph.D., professor of physical anthropology at the University of Pennsylvania, gave a lively and enlightening keynote address tracing the history of brewing from earliest times. Solomon, a leading specialist on the evolution of the human diet and the role of brewing in developing cultures, is a voice of reason in the controversy over the role of moderate alcohol use in society. He provided the research for the Anchor Brewing Co.'s experiment in brewing Ninkasi — a beer made from traditional ingredients and procedures derived from historical research on ancient brewing practices in the cradle of civilization.

Author George Fix, Ph.D., chairman of the mathematics department at the University of Texas at Arlington and one of the most thoroughly grounded homebrewers in the principles of brewing science, gave an impassioned talk on the intangibles inherent in the appreciation of brewing art. A dazzling array of concepts, information, techniques and theories was offered along with the affirmation that instinct, integrity and passion are fundamental to achieving the highest possible quality in homebrewing. He suggests that "science is the means to an end — it helps us get

where we're going." "Brewing," he concludes, "is an art — our values are reflected in the beers we make."

Additional sessions included "Confessions of Two Bitter Men" with Tony Babinec and Steve Hamburg, addressing their passion for brewing English bitter, and Byron Burch, veteran award-winning homebrewer, author and proprietor of *The Beverage People*, on the next level in homebrewing.

A panel of Colorado's best-known brewers led a discussion/tasting focusing on the region's prized ales, including beers from New Belgium, Hub Cap, Rock Bottom, Wynkoop and Oasis.

The truly decadent event was the optional "beer and cigar tasting" at a local restaurant. An exquisite four-course gourmet dinner was designed to showcase several distinctive beers and five different cigars, including Avo, Licenciados and Arturo Fuente brands, to smoke, compare and contrast with the food and brew.

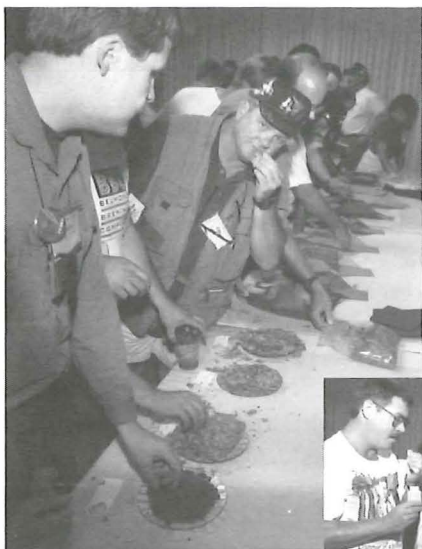
Friday's sessions began with an inspired, almost evangelical, pep talk by Charlie to renew the quest for advanced brewing knowledge. Techniques of malting were discussed by Tom Flores and Ashton Lewis of the University of California at Davis; Ed Busch, a sales representative in the diatomaceous earth filtration industry and a National BJCP judge, addressed the sensitive issue of filtering your beer; and the Brewbird of Hoppiness, Mark Garetz, led a lively discussion on hops and bittering. Mark owns HopTech, a company specializing in hops sales, is brewing arts editor of the *Celebrator Beer News*, and recently published a book called *Using Hops* (HopTech, 1994).

Veteran homebrewer and Master BJCP judge Phil Fleming offered a plethora of brewing paraphernalia — gadgets, gizmos and beer gear to amaze and delight, and occasionally make the brewing and consuming process easier for the resourceful homebrewer.

In addition to the standard ingredients of barley, hops, water and yeast, author and commercial brewer Dave Miller spotlighted the "Fifth Ingredient" to making great beer — sanitation. Dave's work at the St. Louis Brewery taught him that



Solomon Katz, keynote speaker.



Hop lovers taste, touch and smell a hurricane of hops.

"brewing is 90 percent janitorial." "The fifth ingredient," he insists, "is something you would have in your beer if you didn't do it." Dave urges brewers to look at brewing from the bug's point of view. "Getting rid of an infection is harder than preventing it in the first place."

Meadmasters Dan McConnell (Yeast Lab and G.W. Kent) and Ken Schramm gave a rigorous tasting lecture on the effects of various yeasts on varietal honey based on experiments that they have conducted over several years. Some 13 meads were offered for tasting by an efficient if somewhat harried volunteer staff of pourers. The opportunity to taste the results of their extensive brewing research was invaluable to any budding meadmakers.

Paul Farnsworth set up an entire laboratory with microscopes, slides, inoculating loops, growth media and yeast slants to give those who paid the extra fee a chance to go back to college. "Yeast Lab 301" featured Paul's hilarious approach to a subject rarified with culture. His background includes teaching fermentation science at the University of Texas at San Antonio and those who attended got a high level of hands-on instruction.

Homebrew club members had a chance to compare notes on issues of mutual concern with a seven-member panel of long-time

homebrew-club members and organizers, and to taste examples of club-brewed beers at the Mile High Homebrew Club Rendezvous.

By Friday night, the group that gathered in the ballroom of the Hyatt Regency Hotel for the concluding Grand Banquet was one that had shared an informational, cultural and social experience that would last well beyond the five days in Denver. Seated together were homebrewers, speakers, exhibitors, staff of the sponsoring AHA and Association of Brew-

ers and media representatives from around the country. An assortment of commercial beers was available for tasting prior to and after the dinner courtesy of the many breweries, large and small, that generously contributed to the event.

About the time the last course was being savored, the lights went out, thunder roared and lightning struck

throughout the vast ballroom. Then, just as everyone was thinking that the spit had hit the flan, in rode a zany character on a mountain bike in a bright orange rain poncho looking suspiciously like Professor Surfeit in Bacchus garb. Zeus, the god of thunder, (or some such mythical figure) arrived to introduce AHA President Karen Barela who announced the National Homebrew Competition Awards.

The evening got into a party groove when a local band, Sponge Kingdom featuring AOB



Malt munchers remember flavor characteristics for recipe formulation later.



Zeus sets the stage for the 1994 AHA National Homebrew Competition awards at the Grand Banquet.



Homebrewers practice streaking yeast in Paul Farnsworth's yeast lab.

Advertising Assistant Bob Stephan, kicked into gear. Homebrewer dancing styles ranged from enthusiastic to hilarious with Charlie eventually winding up dancing with a hapless potted plant.

The Siebel Institute offered its short course in brewing on Saturday morning and buses took those interested to Fort Collins for the Colorado Brewers Festival.

Driving back to Denver's airport, I reflected on the week's events and the many earnest and eager brewers I met. The community of homebrewing is a dedicated and passionate bunch with an eye (and palate) always toward quality and enjoyment.

Darryl Richman, National BJCP judge, author of *Bock* (Brewers Publications, 1994), and software designer thought the technical content for the Conference was

higher and that socializing and partying not as obvious as in the past. He pointed out the difficulties in dealing with the high quality of beer being judged when the best-of-show panel couldn't narrow the field to fewer than seven beers to choose a winner. He fondly remembered his first Conference in 1988 where he met homebrewers who have become close friends, and eagerly looked forward to the next Conference.

I think we can expect the judge's job to be even more difficult next year when all the information from this year's Conference manifests itself in future homebrew. Be sure to save a week in June 1995 for the AHA National Homebrewers Conference in Baltimore.

Tom Dalldorf is an AHA member, editor and publisher of the *Celebrator Beer News*, director of the Alameda County Fair Homebrew Competition for nine years and a member of the Draught Board homebrew club in the San Francisco East Bay.

Editors Note: Transcripts from 10 of the 18 presentations are available for \$20. Supply is limited; call the Association of Brewers at (303) 546-6514.

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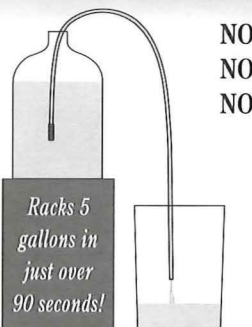
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ILLUSTRATION BY GREG DYE

Dear Readers,

We goofed and we're sorry. Turn the page over for the corrected portions of the Table of Available Yeast Strains from "Become Saccharomyces Savvy" (pages 50 and 51) Summer 1994 (Vol. 17, No. 2).

You can clip the chart apart and paste as indicated over the incorrect version.

Cheers,
zymurgy

Strains	Characteristics and Styles ¹	Attenuation ²	Flocculation ²	Notes
BrewTek CL-620 American Megabrewery	Leaves a light, crisp, almost dry finish to lagers.	—	—	A strong fermenter.
BrewTek CL-640 American Microbrewery	A clean, full-flavored, malty finish.	—	—	A strong fermenter.
BrewTek CL-660 North German Lager	German Pilseners, Mexican and Canadian lagers. Exhibits a clean, crisp, traditional lager character.	High	—	A clean, crisp traditional lager. A strong fermenting and forgiving yeast.
BrewTek CL-680 East European Lager	Imparts a smooth, rich, almost creamy character, emphasizing a big malt flavor and clean finish.	—	—	—
BrewTek CL-690 California Esteem	Steam®-style beers. Leaves a slightly estery, well-attenuated finish.	—	—	Use to create "California common beers."
Wyeast 2007 Pilsen Lager Yeast	Specific for Pilsener-style beers. Ferments dry, crisp, clean and light.	71-75%	Medium	Optimum fermentation temperature: 52 degrees F (11 degrees C). Leaves some residual green-apple notes. (It is worth mentioning that this yeast strain is reportedly used quite a bit in St. Louis, if you know what I mean.)
Wyeast 2035 American Lager Yeast	Unlike American Pilsener styles. It is bold, complex and woody. Produces slight diacetyl.	73-77%	Medium	Optimum fermentation temperature: 50 degrees F (10 degrees C).
Wyeast 2042 Danish Lager Yeast	Rich, yet crisp and dry. Soft, light profile that accentuates hop characteristics.	73-77%	Low	Optimum fermentation temperature: 48 degrees F (9 degrees C).
Wyeast 2112 California Lager Yeast	Steam®-style beers. Malty profile.	72-76%	High	Warm fermenting bottom cropping strain, ferments well up to 60 degrees F (16 degrees C) while keeping lager characteristics.
Wyeast 2124 Bohemian Lager Yeast	Ferments clean and malty.	69-73%	Medium	Optimum fermentation temperature: 48 degrees F (9 degrees C).
Wyeast 2178 Wyeast Lager Blend	Supposed to make a good clean lager.	—	—	Yeast blends are created to ensure a quick start, good flavor and good flocculation. (They come in the new 80-gram packages.)
Wyeast 2206 Bavarian Lager Yeast	Rich flavor, full-bodied, malty and clean. Bocks, lagers.	73-77%	Medium	Lager yeast strain used by many German breweries. Optimum fermentation temperature: 48 degrees F (9 degrees C). It is reported to be a slow starter. Weihenstephan 206.
Wyeast 2278 Czech Pils Yeast	Pilseners and bock beer. Classic dry finish with rich maltiness.	—	Very Low	Sulfur produced during fermentation dissipates with conditioning. (My recommendation, and that of a commercial brewer using it: use some sort of mechanism for clearing the beer. The commercial brewer said they always use finings with this strain.)
Wyeast 2308 Munich Lager Yeast	Smooth, soft, well-rounded and full-bodied.	73-77%	Medium	Optimum fermentation temperature: 50 degrees F (10 degrees C). More likely to bring out hop flavor than Wyeast 2206. Weihenstephan 308.
Yeast Culture Kit L09	American dark lager, American lager, Bavarian dark, Doppelbock, Dortmund/Export, Eisbock, German Bock, German Lagers, German Schwarzbier, Hellesbock, Munich Helles, Märzen/Octoberfest, Pilsener.	—	—	From Bavaria, Germany. That long list is the distributor's suggested uses.
Yeast Culture Kit L17	American lagers, Bohemian Pilsener.	—	—	From Plzeň, Czechoslovakia.
Yeast Lab L31 Pilsener Lager Yeast	Ferments dry and clean.	73%	Medium	—
Yeast Lab L32 Bavarian Lager Yeast	Rich in flavor with a clean, malty sweetness. Medium-bodied lagers and bocks, Vienna and Märzen styles.	75%	Medium	—
Yeast Lab L33 Munich Lager Yeast	Medium-bodied lagers and bocks. Wissenschaftliche strain with subtle and complex flavors.	75%	Medium	A hint of sulfur when fresh.
Yeast Lab L34 St. Louis Lager Yeast	American style lagers. Produces a round, very crisp and clean fruity flavor with medium body.	74-76%	Medium to High	—
Yeast Lab L35 California Lager Yeast	"California common beer" strain. Malty with a sweet woody flavor and subtle fruitiness.	74-75%	Medium	—

Paste at top of p. 50 in *zymurgy* Summer 1994.



Strains	Characteristics and Styles ¹	Attenuation ²	Flocculation ²	Notes
Wyeast 3056 Bavarian Weissen Yeast	Produces a South German-style wheat beer with cloying sweetness when the beer is fresh.	73-77%	Medium	A 50/50 blend of <i>S. cerevisiae</i> and <i>delbrueckii</i> . Problematic to get the right flavor, often produces relatively unattenuated beer without the clovelike aroma/flavor.
Wyeast 3068 Weihenstephan Wheat Yeast	Bavarian Weizen. Very consistent with clean cloviness.	—	—	<i>Saccharomyces delbrueckii</i> single strain for German wheat beers (especially Bavarian Weizen).
Wyeast 3273 <i>Brettanomyces bruxellensis</i>	Rich, earthy, odiferous character.	—	—	<i>B. bruxellensis</i> is the dominant <i>Brettanomyces</i> strain in the Brussels area.
Wyeast 3944 Belgian White Beer Yeast	Belgian ales, wit beers, Grand Cru, abbey biers. A very estery strain without the usual battering of bananas.	—	High	Rich, phenolic character for classic Belgian styles.
Yeast Culture Kit M01	American wheat, Dunkel Weizen, German Weizen, Weizenbock.	—	—	From Bavaria. Although the vendor lists American wheat as a suggested style, it appears to produce too much clove taste for that; however, that does make it excellent for the Bavarian Weizens! After all, it is a Bavarian yeast.
Yeast Lab W51 Bavarian Weizen	Moderately high, spicy phenolic overtones reminiscent of cloves.	Medium	Medium to Low	This strain produces a classic German-style wheat beer.
Yeast Lab M61 Dry Mead	Ferments dry, fruity and clean, yet leaves noticeable honey flavor and aroma.	Tolerance to 14-15%	Medium to Low	Very alcohol tolerant.
Yeast Lab M62 Sweet Mead	A very fruity, sweet mead with tremendous honey aromas.	Tolerance to 12-13%	Medium to Low	This strain has reduced alcohol tolerance.

Paste at top of p. 51 in *zymurgy* Summer 1994.

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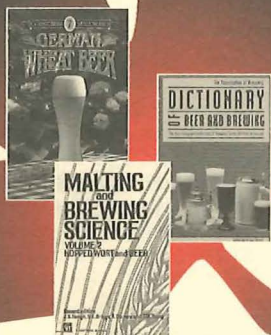
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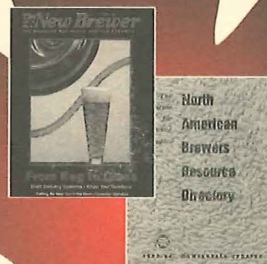
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From brewpubs to microbrewers – what you need to know.
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Pages 17-20



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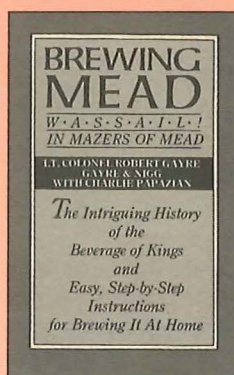
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BREWERS PUBLICATIONS, THE LARGEST PUBLISHING HOUSE DEVOTED EXCLUSIVELY TO BOOKS ON BEER AND BREWING, HAS MORE THAN 30 BOOKS CURRENTLY IN PRINT. IN OPERATION SINCE 1986, BREWERS PUBLICATIONS IS A NON-PROFIT EDUCATIONAL ASSOCIATION DEDICATED TO PUBLISHING QUALITY BOOKS FOR THE HOMEBREWER, PROFESSIONAL BREWER AND BEER ENTHUSIAST.

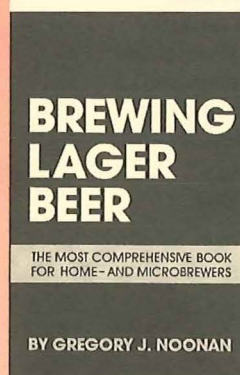


BREWING MEAD

BY LT. COLONEL ROBERT GAYRE
WITH CHARLIE PAPAZIAN

Trace the history and discover the smooth, subtle secrets of mead. Learn how to brew this age-old drink with your basic homebrew equipment by following easy directions from Charlie Papazian. 5 1/2 x 8 1/2, 202 pp., Brewers Publications, 1986.

#461 SHIPPING CODE: A \$11.95

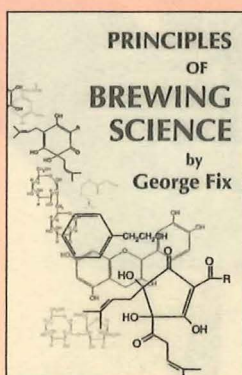


BREWING LAGER BEER

BY GREG NOONAN

Discover exactly what goes into producing high-quality lager beer, and learn how you can make the best lager every time you brew. Greg Noonan guides you through seven select classic lager beers using thorough descriptions and easy-to-read tables. This advanced all-grain reference book is recommended for intermediate, advanced and professional small-scale brewers. 5 1/2 x 8 1/2, 314 pp., Brewers Publications, 1986.

#460 SHIPPING CODE: A \$14.95

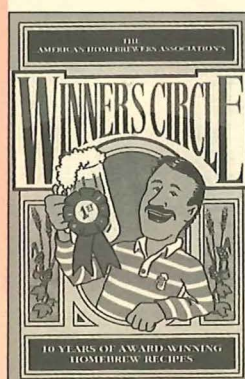


PRINCIPLES OF BREWING SCIENCE

BY GEORGE FIX

This technical book thoroughly explains the fundamental chemistry and biochemistry of brewing great beer. Compounds, reactions, fermentation and bacterial metabolism are a few of the comprehensively discussed and fully indexed topics. 5 1/2 x 8 1/2, 250 pp., Brewers Publications, 1989.

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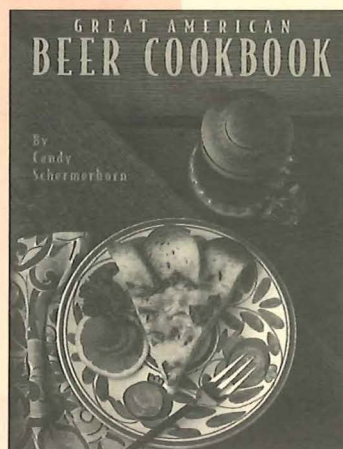


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10 YEARS OF AWARD-WINNING HOMEBREW RECIPES

Brew like a winner! This fun collection of 126 original, award-winning homebrew recipes was selected from winners of the AHA National Homebrew Competition and includes recipes for 21 major beer styles of lager, ale and mead. 5 1/2 x 8 1/2, 199 pp., Brewers Publications, 1989.

#464 SHIPPING CODE: A \$11.95
#464M AHA MEMBER DISCOUNT \$9.95



GREAT AMERICAN BEER COOKBOOK

BY CANDY SCHERMERHORN

From Brewers Publications comes a cookbook like no other! All recipes use beer to enhance flavor potential, giving food an added culinary dimension. The *Great American Beer Cookbook* by the Brewgal Gourmet features mouth-watering recipes that are chic (Lobster and Brie Soup with Weissbier), exotic (Apple and Ham Pie with Curry Sauce using India Pale Ale), down-home (Potent Portered Beer Ribs) and sinful (Chocolate Stout Cake) — 217 recipes in all! 7 x 10, 291 pp., Brewers Publications, 1993.

#466 SHIPPING CODE: B \$24.95

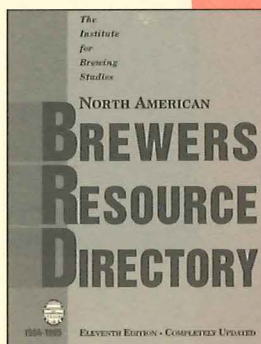
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#504 SHIPPING CODE: B \$80.00
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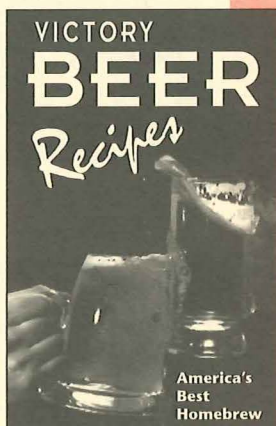


VICTORY BEER RECIPES

AMERICA'S BEST HOMEBREW

From the creators of the homebrewer's hit *Winner's Circle* (Brewers Publications, 1989) comes *Victory Beer Recipes*. Brew and enjoy 128 new award-winning recipes from the AHA National Homebrew Competition, 1989 to 1993. 5 1/2 x 8 1/2, 210 pp., Brewers Publications, 1994.

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#467M AHA MEMBER DISCOUNT \$10.15



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BY DARRYL RICHMAN

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#409 SHIPPING CODE: A \$11.95

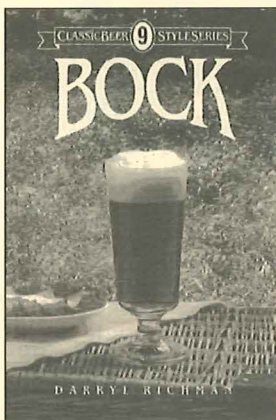


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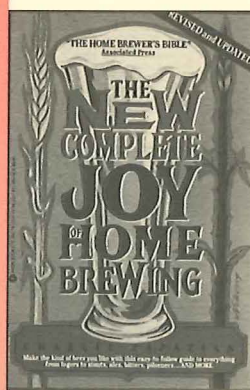
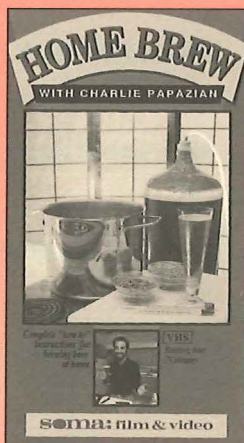
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HOMEBREW WITH CHARLIE PAPAZIAN

It's hard to beat the taste of a great homebrew. This 79-minute video is a complete "how-to" with highly acclaimed homebrewer Charlie Papazian as your guide. President of the Association of Brewers and author of *The New Complete Joy of Home Brewing* (Avon, 1991), Papazian reveals his secrets for equipment, ingredients, brewing techniques and measuring Specific Gravity, so you too can create competition-class beers with ease. Soma Film and Video, 1990.

#200 SHIPPING CODE: A \$29.95



THE NEW COMPLETE JOY OF HOME BREWING

BY CHARLIE PAPAZIAN

The "bible" of homebrewing has been rewritten with updated information and expanded sections, including mead, specialty mashes and the long-awaited index. Written in an inimitable relaxed style, this comprehensive book details the theory and history of homebrew while concentrating on practical recipes with how-to charts, graphs and tables. Every book sold through the *Beer Enthusiast Catalog* will be signed by the author — a great gift. 5 1/2 x 8 1/2, 352 pp., Avon Books, 1991.

#300 SHIPPING CODE: A \$11.00

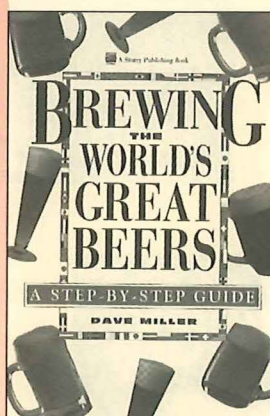
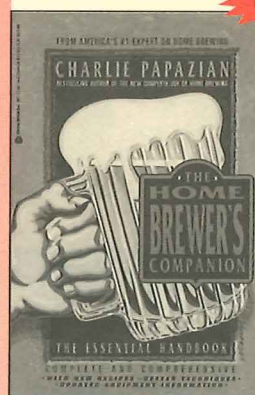
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BY CHARLIE PAPAZIAN

The guru of homebrew has done it again. A compliment to *The New Complete Joy of Home Brewing* (Avon, 1991), this new book provides in-depth information on all aspects of the brewing process. New recipes, taste-evaluation tips, world beer styles and common concerns are all addressed in this notable new volume. 5 1/4 x 8, 416 pp., Avon Books, 1994.

#301 SHIPPING CODE: A \$11.00



BREWING THE WORLD'S GREAT BEERS

BY DAVID MILLER

Please yourself, your family and your friends by brewing outstanding international beers at home. The author of *Continental Pilsener* (Brewers Publications, 1990) and *The Complete Handbook of Homebrewing* (Storey Communications, 1988), David Miller takes you step-by-step through the brewing processes of British ales and stouts, Belgian ales, American specialties and German lagers and ales. 6 x 9, 160 pp., Storey Publishing, 1992.

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GRAPHICS/PRODUCTION DIRECTOR

Tim is the visual captain of ship AOB, responsible for the aesthetic and visual presentation of more than 300 projects that will go through the Graphics/Production department this year. He schedules and traffics all of the jobs, takes care of the printing, supervises four in-house designers and myriad freelance designers, all the while providing guidance and creative inspiration. Tim and his department are constantly charting new waters that take the AOB and all of its divisions to new horizons and beyond. After a day at sea, this east-coast transplant enjoys snowboarding, fly fishing, backpacking and, of course, homebrewing.



CLASSIC BEER STYLE SERIES

PUBLISHED BY BREWERS PUBLICATIONS, THIS CLASSIC LIBRARY OF BOOKS ON TRADITIONAL BEER STYLES CONTINUES TO SET THE STANDARD. EACH BOOK IS RESEARCHED BY EXPERTS AND DETAILS THE HISTORY, FLAVOR PROFILES, METHODS, RECIPES AND INGREDIENTS OF THAT PARTICULAR STYLE OF BEER. NO BEER ENTHUSIAST'S LIBRARY SHOULD BE WITHOUT THE ENTIRE LOT.

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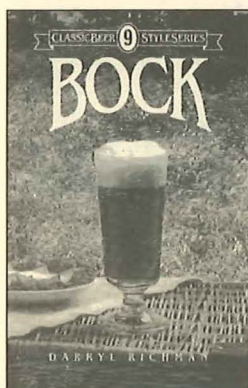
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Bock is the newest release from Brewers Publications and ninth title in the critically acclaimed Classic Beer Style Series. A comprehensive look at this once-forgotten beer style, *Bock* covers the history, style profiles, procedures and recipes of this family of beers. You'll find everything you need to understand, appreciate and brew Bock in this book. 5 1/2 x 8 1/2, 172 pp., Brewers Publications, 1994.

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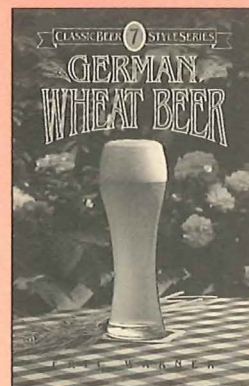


GERMAN WHEAT BEER

BY ERIC WARNER

This thoroughly researched book provides the history, tradition and techniques of brewing German wheat beers. A graduate of the prestigious Weihenstephan school of brewing in Germany and brewmaster at Colorado's Tabernash Brewing Co., Eric Warner's German-style Weizen placed first in the wheat beer category at the 1992 AHA National Homebrew Competition. In *German Wheat Beer*, Eric Warner taps years of personal experience to profile this truly unique beer style. 5 1/2 x 8 1/2, 162 pp., Brewers Publications, 1992.

#407 SHIPPING CODE: A \$11.95

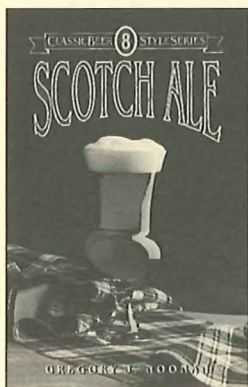


SCOTCH ALE

BY GREG NOONAN

Brewmaster and owner of the Vermont Pub and Brewery of Burlington, Greg Noonan spent years researching the techniques and history of this legendary ale. In *Scotch Ale*, he presents his keen insights into yeast, hops, malts, water and brewing conditions that will help you achieve a superior batch of Scotch ale. 5 1/2 x 8 1/2, 198 pp., Brewers Publications, 1993.

#408 SHIPPING CODE: A \$11.95

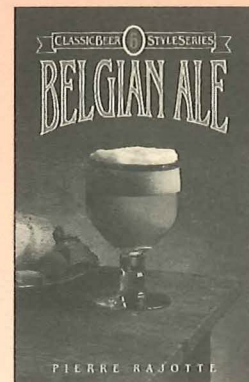


BELGIAN ALE

BY PIERRE RAJOTTE

Rajotte has traveled the globe in search of the ultimate brew and found that Belgian ale is the pinnacle of artistic brewing complexity. Discover the importance of sugar, top-fermenting yeasts and Belgian hops to the success of this intricate, traditional ale when you read *Belgian Ale*. 5 1/2 x 8 1/2, 176 pp., Brewers Publications, 1992.

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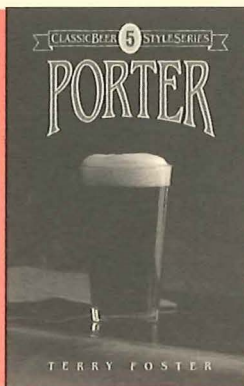
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PORTER

BY TERRY FOSTER

A brewing veteran and renowned expert on British beers, Terry Foster has written the only in-depth book on brewing this classic style with modern ingredients and equipment. *Porter* reviews the history of George Washington's favorite beer and teaches you how to create this rich, full-bodied beer for your own enjoyment. 5 1/2 x 8 1/2, 142 pp., Brewers Publications, 1991.

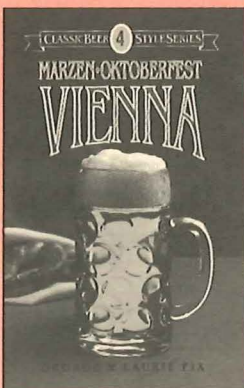
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**VIENNA, MÄRZEN, OKTOBERFEST**

BY GEORGE AND LAURIE FIX

A product of the German Brewing Revolution, Vienna is a sweet, malty lager and a satisfying brew. George Fix, outstanding brewer and author of *Principles of Brewing Science* (Brewers Publications, 1989), and Laurie Fix, an active homebrewer and brewing competition judge, have written this well-researched profile of an enjoyable beer style to both drink and brew. 5 1/2 x 8 1/2, 117 pp., Brewers Publications, 1992.

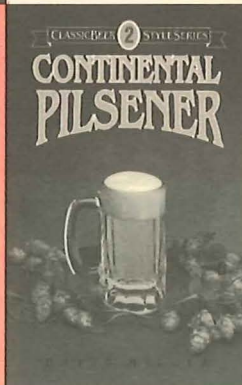
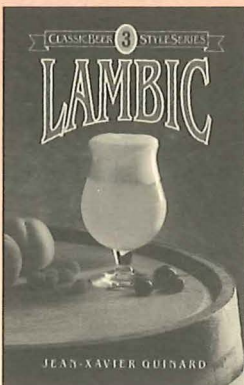
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**LAMBIC**

BY JEAN-XAVIER GUINARD

Uncover the mystery of the world's most elusive beer style in *Lambic*. After studying this unusual, fruity beer style extensively in Belgium and at the UC-Davis Department of Fermentation Studies, Jean-Xavier Guinard presents his findings to you with detail and historical intrigue. A directory of Belgian lambic breweries is included. 5 1/2 x 8 1/2, 160 pp., Brewers Publications, 1990.

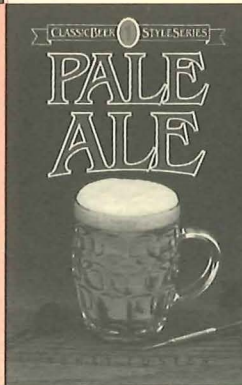
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**CONTINENTAL PILSENER**

BY DAVID MILLER

Considered the father of all lagers, continental pilsener changed the course of brewing around the world. Noted author and award-winning homebrewer David Miller examines each country's version of pilsener, including ingredients and brewing stages. Recipes in *Continental Pilsener* are designed for both beginners and advanced brewers, making this book an excellent reference for anyone. 5 1/2 x 8 1/2, 102 pp., Brewers Publications, 1990.

#402 SHIPPING CODE: A \$11.95

**PALE ALE**

BY TERRY FOSTER

In *Pale Ale*, Terry Foster writes an entertaining, in-depth examination of the world's most popular beer style. He traces its remarkable history, reviews leading commercial examples and provides recipes in English and metric units. Knowledgeable and passionate about his beer, Foster created this lively, technical masterpiece for everyone who enjoys pale ale. 5 1/2 x 8 1/2, 140 pp., Brewers Publications, 1990.

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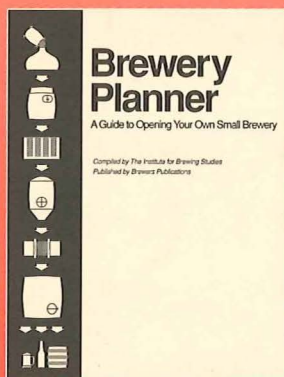
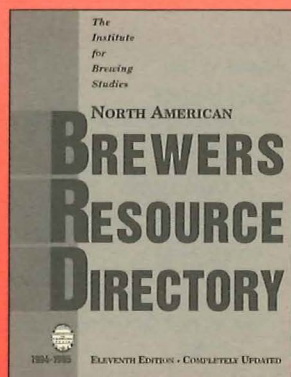
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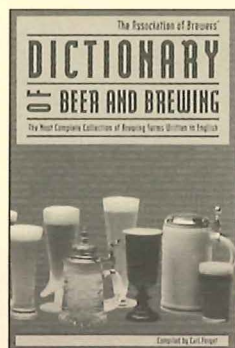
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DICTIONARY OF BEER AND BREWING

BY CARL FORGET

For the first time, English-speaking brewers have a point of reference — a common language. Carl Forget has compiled 1,929 essential definitions used in beermaking, plus conversion tables for temperatures, alcohol percentages, weights and volumes. 5 1/2 x 8 1/2, 186 pp., Brewers Publications, 1988.

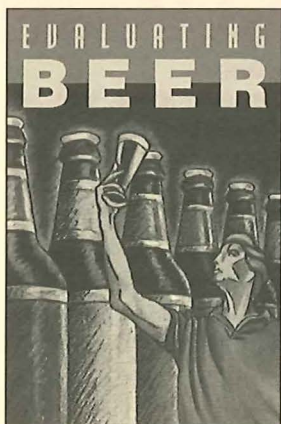
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EVALUATING BEER

BY BREWERS PUBLICATIONS

From defining off-flavors to analyzing competition-winning beers, *Evaluating Beer* will help you develop your tasting and evaluating skills. Chapters are by recognized beer experts including Jim Koch, Charlie Papazian, Greg Noonan, George Fix and a host of others. From diacetyl and DMS to sulfur and yeast bite, discover what it takes to perform exacting beer evaluations. *Evaluating Beer* is perfect for beer judges, advanced homebrewers and brewing professionals. 5 1/2 x 8 1/2, 244 pp., Brewers Publications, 1993.

#465 SHIPPING CODE: A \$25.95



VICKI HOPEWELL

AOB EMPLOYEE SINCE JANUARY 1992
ZYMURGY ART DIRECTOR

Beginning with the 1994 Spring Issue, Vicki is the new *zymurgy* art director. At the artistic helm of the American Homebrewers Association's magazine, Vicki is responsible for the design and layout of *zymurgy* from cover to cover, ensuring that all photos, illustrations and images convey the editorial spirit of each issue. Between *zymurgy* swells, Vicki works on book covers, image ads and keeping things shipshape when Tim is out of the office. When Vicki is not on deck, she is a ferocious skier and mountain biker.

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VOLUME 8, 1988

Topics include:

- Sensory Evaluation for Brewers
- Issues in All-grain Brewing
- Aroma Identification
- Improved Record Keeping
- Hop Flavor in Beer
- Beer Formulation

5 1/2 x 8 1/2, 229 pp., Brewers Publications, 1988.

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BEER AND BREWING

VOLUME 10, 1990

Topics include:

- Making Quality Homebrew
- Recipe Formulation: Experimenting with Munich Malt
- Simplified Quality Control
- Essentials of Step-Infusion Mashing
- Building an Incubator and Home Lab Culturing
- A Great System for Draft Beers

5 1/2 x 8 1/2, 198 pp., Brewers Publications, 1990.

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#450M AHA MEMBERS \$18.95

BREW FREE OR DIE! BEER AND BREWING

VOLUME 11, 1991

Topics Include:

- Water Workshop
- Yeast Quality and Fermentation Conditions
- Scratch Brewing the Belgian Way
- Fermentation and Beyond: Gadgets for the Homebrewer
- The Triple-bucket Mashing System

5 1/2 x 8 1/2, 240 pp., Brewers Publications, 1991.

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VOLUME 12, 1992

Topics Include:

- Breaking out of Beginning Brewing
- Breathing New Life into Your Homebrew Club
- Beer Filtration for Homebrewers
- Oxygen: Friend or Foe?
- Bock Talk

5 1/2 x 8 1/2, 269 pp., Brewers Publications, 1992.

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5 1/2 x 8 1/2, 218 pp., Brewers Publications, 1988.

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5 1/2 x 8 1/2, 217 pp., Brewers Publications, 1990.

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BREWERY OPERATIONS, VOL. 7

1990, DENVER, COLO.

Highlights include:

- Trademark Licensing and Premium Promotion
- Brewpub Menu Design
- Insurance for the Brewery

5 1/2 x 8 1/2, 226 pp., Brewers Publications, 1991.

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#537M IBS MEMBERS \$19.50

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1991, BUFFALO, N.Y.

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5 1/2 x 8 1/2, 248 pp., Brewers Publications, 1992.

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1992, MILWAUKEE, WIS.

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5 1/2 x 8 1/2, 330 pp., Brewers Publications, 1992.

#539 SHIPPING CODE: A \$25.95

#539M IBS MEMBERS \$19.50

MALTING AND BREWING SCIENCE

This two-volume work comprehensively explores biological, biochemical and chemical aspects of malting and brewing. Worldwide practices, scientific background, historical developments and economic conditions all interplay in the brewing industry and are captured in *Malting and Brewing Science*. Volume 1 covers malt and sweet wort. Volume 2 covers hopped wort and beer. 5 1/2 x 8 1/2, 914 pp., hardcover, second edition, Chapman and Hall, 1982.

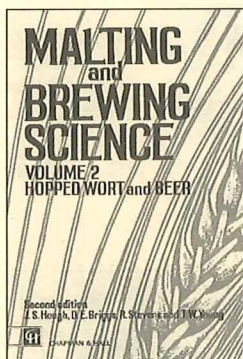
#340 SET SHIPPING CODE: C \$210.00

VOLUME 1

#341 SHIPPING CODE: B \$115.00

VOLUME 2

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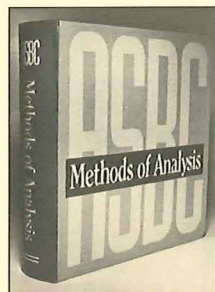
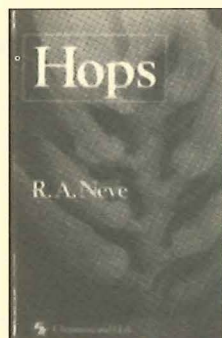


HOPS

BY R.A. NEVE

Not only are hops an important international crop, but they are also an essential beer ingredient. In *Hops*, R.A. Neve writes from the forefront of recent scientific developments and research on hops to inform you of their biological features, history, use in brewing, production methods and disease resistance. This book will be of great use to plant scientists, growers, traders and brewers. 6 x 9, 266 pp., illus., hardcover, first edition, Chapman and Hall, 1991.

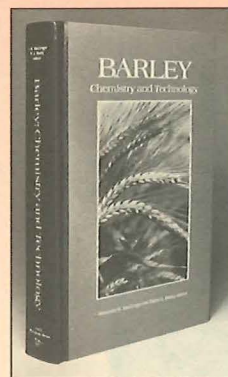
#330 SHIPPING CODE: B \$79.95



ASBC METHODS OF ANALYSIS

The American Society of Brewing Chemists has compiled this indispensable reference volume offering more than 200 brewing methods with complete preparation and set-up information, easy to follow procedures, appropriate precautions and pertinent references, so you can perform analytical procedures with greater speed and accuracy. 8 1/2 x 11, hardcover, 5 ring binder, American Society of Brewing Chemists, 1992.

#335 SHIPPING CODE: B \$400



BARLEY: CHEMISTRY AND TECHNOLOGY

Published by the American Society of Cereal Chemists, this is the first book to cover all aspects of barley, including malting. This book is a compilation of chapters written by recognized experts in the subject area, and chapter content has been carefully selected to provide the most complete and comprehensive review available. 6 x 9, 774 pp., hardcover, American Society of Cereal Chemists, 1985.

#336 SHIPPING CODE: B \$175

The Practical Brewer



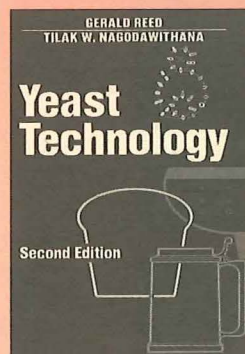
Master Brewers Association of the Americas

THE PRACTICAL BREWER

THE MASTER BREWERS ASSOCIATION OF THE AMERICAS

This technical book provides a basic source of information on the art and practice of brewing. Each chapter is written by an MBAA member and builds a solid foundation for brewers to expand upon with their own creativity and experience. This is a terrific manual for brewing experts or beginners. 5 1/2 x 8 1/2, 475 pp., hardcover, Master Brewers Association of the Americas, 1977.

#333 SHIPPING CODE: B \$49.95



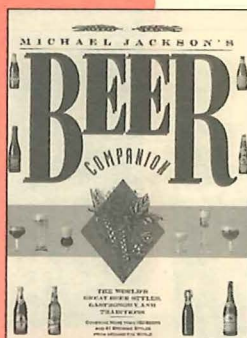
YEAST TECHNOLOGY

BY GERALD REED AND TILAK W. NAGODAWITHANA

This complete reference examines industrial use of yeast and microbiological aspects of the fermentation process. Beginning with four introductory chapters on yeast basics taxonomy, biology, biochemistry and genetics, this edition also studies the latest advances in genetic modification and developments in wine-making, brewing and baking. 6 x 9, 454 pp., illus., hardcover, second edition, Van Nostrand Reinhold, 1991.

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BEER COMPANION

BY MICHAEL JACKSON

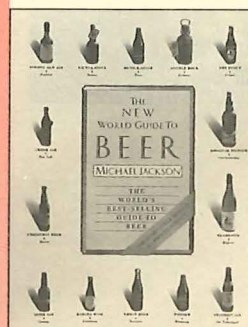
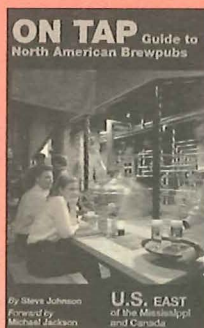
One of the world's leading beer writers created this new, yet already classic volume covering more than 150 world beers and 41 brewing styles. Illustrated with more than 200 rich color photographs, you can sit down and have a beer while touring the world! 8 x 10, 288 pp., hardcover, Running Press, 1993.

#355 SHIPPING CODE: B \$39.95

ON TAP: GUIDE TO NORTH AMERICAN BREWPUBS

If you love to drink beer at the source, this set is for you. Each book covers beer styles, vocabulary, alcohol issues, a history of the American beer revival and nearly 200 fun brewpub listings including addresses, phone numbers, beers and pub atmosphere. 5 1/2 x 8 1/2, WBR Publications, 1993.

- #351 VOLUME 1: CANADA AND THE U.S. EAST OF THE MISSISSIPPI
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- #352 VOLUME 2: THE U.S. WEST OF THE MISSISSIPPI
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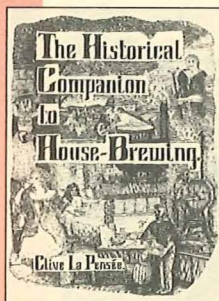


THE NEW WORLD GUIDE TO BEER

BY MICHAEL JACKSON

In his continuing pursuit to inspire and chronicle the brewing renaissance, Michael Jackson writes with detail and flair in this wonderfully illustrated text about beers from around the world. 8 1/2 x 11, 256 pp., hardcover, Running Press, 1988.

#357 SHIPPING CODE: B \$19.98



THE HISTORICAL COMPANION TO HOUSE-BREWING

BY CLIVE LA PENSEE

This unusual source contains a wealth of historical information on European beers, complimented by imaginative recipes from the 15th and 16th centuries. Novice brewers can learn to adapt old techniques and brewing methods into the modern kitchen. 5 1/2 x 8 1/2, 156 pp., Montag Publications, 1990.

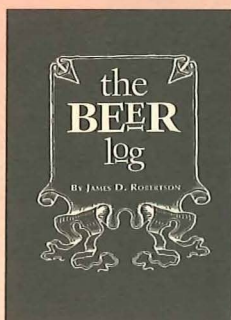
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THE BEER LOG

BY JAMES D. ROBERTSON

Benefit from James Robertson's 16-year worldwide beer quest with this compilation of nearly 2,500 different beers. This reference provides beer descriptions, ratings and profiles from Europe to South America to the Orient. 11 1/2 x 10 1/2, Bosak Publishing, 1993.

#356 SHIPPING CODE: B \$37.50



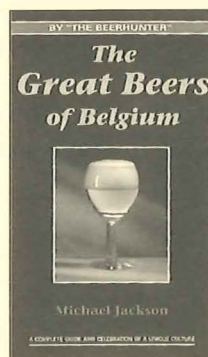
THE BEER DRINKER'S GUIDE TO MUNICH

BY LARRY HAWTHORNE

Enjoy Munich like a Münchner! Read all about the beer, customs, colorful histories, fun and havoc in this guide to forty of the city's best beer gardens, halls and pubs. 5 1/2 x 8 1/2, 160 pp., Freizeit Publishers, 1991.

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THE GREAT BEERS OF BELGIUM

BY MICHAEL JACKSON

The "Beerhunter," Michael Jackson, has written this complete guide and celebration of a unique culture and its diverse beers. This guide is chock-full of color photos, illustrations and maps that make it fun to read. 6 x 10, 271 pp., MM Communications, 1991.

#359 SHIPPING CODE: A \$24.95

THE ESSENTIALS OF BEER STYLE

BY FRED ECKHARDT

Fred Eckhardt brings his brewing expertise home to you in this complete compilation. With three major parts that include the basics of brewing, descriptions of great world beer styles, and a guide to beer tasting and evaluation, *The Essentials of Beer Style* is like getting three books for the price of one. 4 1/4 x 7, 224 pp., Fred Eckhardt Associates Inc., 1989.

#311 SHIPPING CODE: A \$14.95

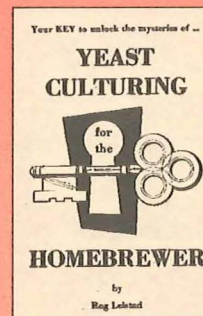


YEAST CULTURING FOR THE HOMEBREWER

BY ROGER LEISTAD

Culture and grow yeast at home with this concise booklet written specifically for homebrewers by well-known beer writer and brewer Roger Leistad. 5 1/2 x 8 1/2, 40 pp., G.W. Kent Inc., 1983.

#316 SHIPPING CODE: A \$4.25

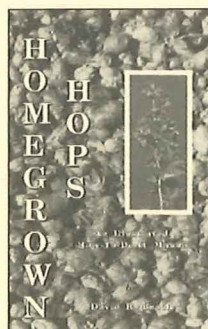


SAKE (U.S.A.)

BY FRED ECKHARDT

Fred Eckhardt has thoroughly researched this unique Asian beverage and now brings you an in-depth study of saké in the United States and abroad, at home and in the brewery. 5 1/2 x 8 1/2, 214 pp., Fred Eckhardt Communications, 1992.

#380 SHIPPING CODE: A \$14.95



HOMEGROWN HOPS

BY DAVID R. BEACH

This illustrated, how-to manual tells you everything you need to know about growing hops at home. In addition to practical chapters on propagation, maintenance, pest and disease control and harvesting, *Homegrown Hops* also shows you how to make hopvine wreaths and hop driers. 5 1/3 x 8 1/2, 103 pp., David R. Beach, 1988.

#315 SHIPPING CODE: A \$7.95

WENDY RODGERS

AOB EMPLOYEE SINCE JUNE 1993
GRAPHIC DESIGNER

Wendy is the resident advertising navigator, charting the course and designing all ads for the AOB's four divisions, numerous conferences and events, while managing all client ads and *zymurgy* classifieds. Wendy also lends her talents to the interior design of Brewers Publications books and all visual conference materials for both the National Microbrewers and Pubbrewers Conference and Trade Show and the AHA National Homebrewers Conference. Wendy enjoys golf, horseback riding and aerobics when she is ashore.



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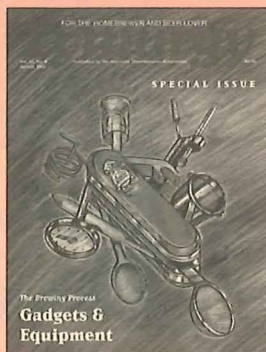
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SPECIAL ISSUE 1992

Read up on the latest and most inventive brewing equipment and gadgets in the industry in this special issue. All articles are written by homebrewing experts and inventors who give profound validity to all of the information provided. Also included in this issue are 26 award-winning recipes you can brew. 8 1/2 x 11, 120 pp., magazine.

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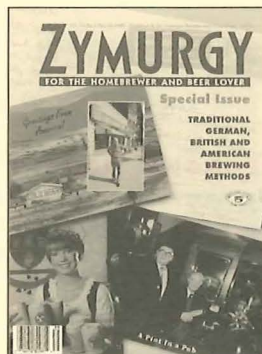


BEER STYLES

SPECIAL ISSUE 1991

With each of the 26 chapters written by a beer virtuoso, this Special Issue covers 72 different beer styles with historical and contemporary brewing tips. Also included is a beer kit reference chart. 8 1/2 x 11, 92 pp., magazine.

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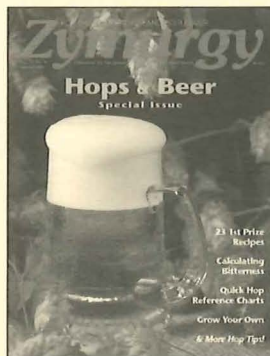


TRADITIONAL BREWING METHODS

SPECIAL ISSUE 1993

Delve into the history, culture and processes of traditional German, British and American brewing methods in the largest Special Issue yet published. Also, find out who's who in homebrewing with the 1993 AHA National Homebrew Competition winners. 8 1/2 x 11, 120 pp., magazine.

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Hop to it with this all-inclusive hop issue. Learn how to grow your own hops, calculate hop bitterness, match hops with beer styles, discover hop variety and assess hop quality. Includes 23 AHA first-place recipes. 8 12/2 x 11, 80 pp., magazine.

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GIFT SUBSCRIPTIONS

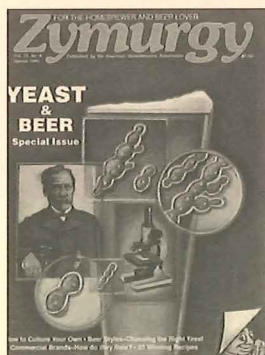
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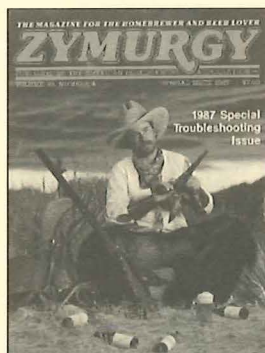


TROUBLESHOOTING

SPECIAL ISSUE 1987

The Troubleshooter's Chart identifies flavor flaws, their origins and remedies to help you make a fantastic batch every time you brew. Tasting techniques, flavor descriptors, drinkability and flavor profiling are also highlighted. 8 1/2 x 11, 64 pp., magazine, second edition.

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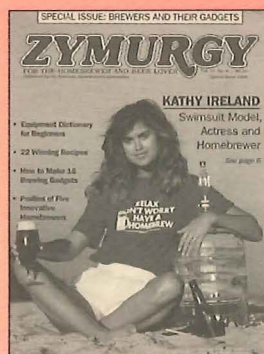
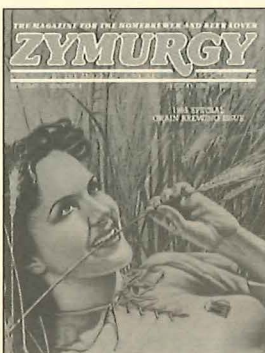


ALL-GRAIN

SPECIAL ISSUE 1985

One of our most popular publications, this issue is a classic reference for any all-grain brewer. Accurate, understandable information on malting, mashing, water and yeast is provided. 8 1/2 x 11, 80 pp., magazine, fourth edition.

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SPECIAL ISSUE 1988

Save valuable money and time with these handy brew-saving gadgets. This issue also has an equipment dictionary that is especially useful to beginning brewers. 8 1/2 x 11, 64 pp., magazine.

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SPECIAL ISSUE 1986

This issue provides you with a comprehensive compilation of malt extract information and tells how you can easily design great beer with malt extract, specialty grains and other successful brewing techniques. 8 1/2 x 11, 56 pp., magazine, third edition.

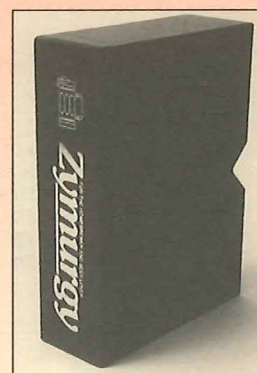
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- ➔ *Brewery Operations*, Vol. 9 (1992)
- ➔ *1994-1995 Brewers Resource Directory*

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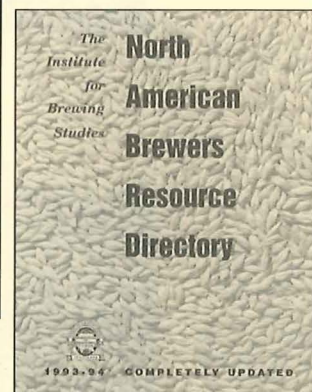
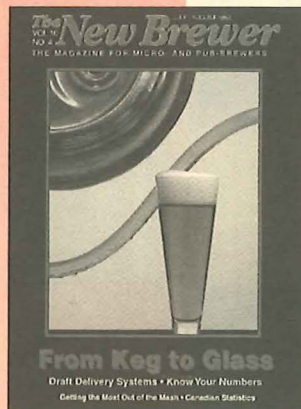
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- ➔ Reverse Osmosis Water Purifiers and How to Build One, *zymurgy*, Vol. 12, No. 2
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| 900 An Introduction to the American Homebrewers Association | 922 Application and info for the AHA's Sanctioned Competition Program |
| 901 <i>zymurgy</i> Mini-index 1978-1993 | 921 The Beer Judge Certification Program Booklet |
| 906 <i>The New Brewer</i> Magazine Index 1984-1993 | |
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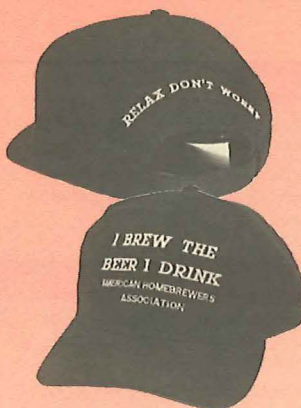
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The Pin-nacle of pride — our full-color AHA "Relax" logo is now featured on a spectacular, five-color lapel pin. This superior-quality pin is 1 1/8 inches in diameter and inscribed with our motto: "Relax. Don't Worry, Have a Homebrew!" Add it to your collection and wear it with pride.

#220 SHIPPING CODE: F \$2.95



"RELAX" APRON

Our "Relax, Don't Worry, Have A Homebrew" slogan in light grey on this 50/50 twill bur-gundy apron reminds the brewer or chef not to boil over when the kettle does! The front pouch is handy for stashing recipes, spoons, thermometers or munchies. One size.

#101 SHIPPING CODE: X \$11.95



AHA FLASHLIGHT

An invaluable homebrew evaluation and judging tool, the AHA flashlight is slim and easily fits into a shirt pocket or clips onto an apron. Blue with the AHA logo imprinted in white on the side. Shed some light on your homebrew!

#245 SHIPPING CODE: X \$4.95



AHA THERMOMETER

This accurate, industrial thermometer allows you to determine the temperature of your beer with the same precision as the professionals. Protected in a red sheath, with "American Homebrewers Association" imprinted in white on one side, this food-service-grade thermometer easily clips to a shirt pocket or brewing notebook.

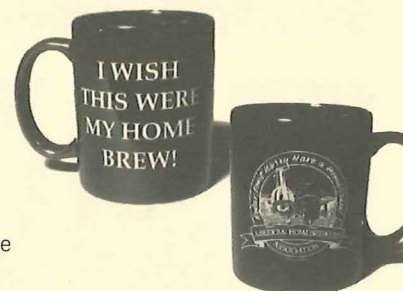
#246 SHIPPING CODE: X \$5.95

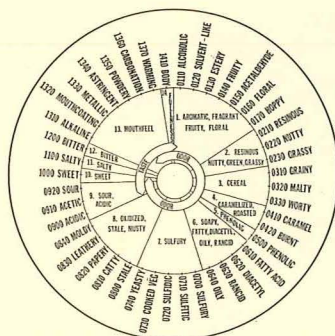


AMERICAN HOMEBREWERS ASSOCIATION COFFEE MUG

For those mornings when you wish the coffee in your mug was really homebrew, the American Homebrewers Association has introduced a new coffee mug featuring the AHA logo on one side and "I Wish This Were My Home Brew!" on the other side. This sturdy mug made of cobalt blue ceramic is microwavable and dishwasher safe. AHA logo and quote are in gold.

#265 SHIPPING CODE: X \$4.95
 #265F SET OF FOUR: Y \$16.80





AMAZING WHEEL OF BEER

The Wheel of Beer is an easy-to-use slide-rule-type calculator that allows you to accurately predict the amount of gravity you'll get from 20 different malts, grains and extracts. Works from one to 100 gallons and from one to 100 pounds. Just line up pounds with gallons, select the grain and read the gravity.

#241 SHIPPING CODE: F \$9.95



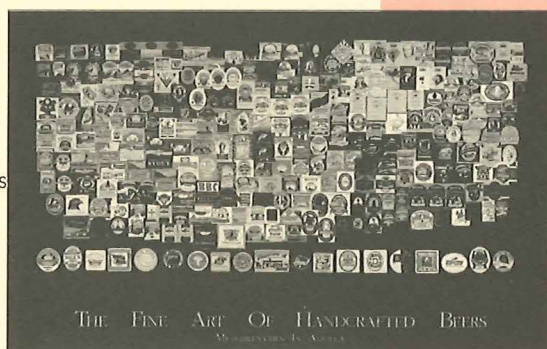
BREWER'S BUDDY READY REFERENCE AND CONVERSION CALCULATOR

Compute conversions and resize recipes quickly and accurately with this easy-to-use, pocket-sized slide calculator. This nifty gadget has numerous uses and provisions including 11 world beer style recipes, 11 hop varieties with percentage uses, steps for extract brewing, and windows for hydrometer correction and hop equivalent bitterness. Durable and dependable, it proves to be a real pal.

#240 SHIPPING CODE: F \$5.95

"THE FINE ART OF HANDCRAFTED BEERS" POSTER

Proudly display your taste for beer and appreciation for art with this dramatic, full-color poster featuring brewery logos and beer labels from craft-breweries across the United States. Either mounted or framed, this poster is a piece of craft-brew art that you'll want to hang in your home or pub.
24 1/2"W x 40" H.



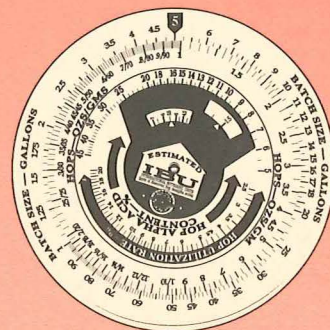
#257 SHIPPING CODE: X \$19.95



HOP-GO-ROUND

The Hop-Go-Round simplified the sometimes-difficult task of estimating the bitterness of hops. Unlike other methods, this takes into account the utilization rate, a critical factor ignored by simpler calculations. Once utilization has been determined, line it up with hop alpha acid content on the front. Then, line up ounces against gallons and read the estimated IBUs. Equally useful for extract and all-grain brewers.

#242 SHIPPING CODE: F \$9.95



SARAH CHESNUTT

AOB EMPLOYEE SINCE JANUARY 1994
GRAPHIC DESIGNER

Sarah is to the *North American Brewers Resource Directory* (Brewers Publications) what water is to life — an essential element. The BRD is one of the most labor-intensive and complex projects that passes through the Graphics/Production department, and Sarah gives this invaluable tool the coherence and organization that sets the standard from shore to shore. Sarah also charts the waters of all marketing materials for four divisions, as well as offering her inspiration to Conference materials. To keep beerily current, Sarah also waitresses at Boulder's Walnut Brewery and finds time for yard sales and bike rides.

BEER FORMULA

Wear this tee and show that you know beer inside and out. The chemical composition of your most treasured beverage is displayed on our 100 percent cotton shirt in your choice of three different color combinations.

BLACK ON WHITE

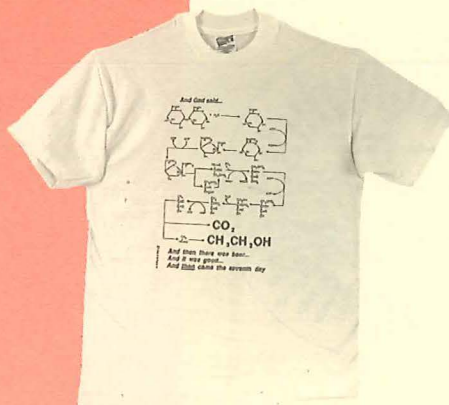
#110 (L, XL) SHIPPING CODE: X \$11.95
 #110 (XXL) SHIPPING CODE: X \$13.95

WHITE ON GRAPE

#111 (L, XL) SHIPPING CODE: X \$11.95
 #111 (XXL) SHIPPING CODE: X \$13.95

SKY BLUE ON BLACK

#112 (L, XL) SHIPPING CODE: X \$11.95
 #112 (XXL) SHIPPING CODE: X \$13.95



FLAVOR WHEEL

With this 100 percent cotton tee, you're assured to have the official flavor wheel of the American Society of Brewing Chemists right behind you. A beer mug on the front pocket says "Beer ... taste is what counts," while the back displays the flavor wheel in detail.

GOLD ON BLACK

#120 (L, XL) SHIPPING CODE: X \$11.95
 #120 (XXL) SHIPPING CODE: X \$13.95



MELISSA VANARSDALE

AOB EMPLOYEE SINCE AUGUST 1991
 GRAPHIC ASSISTANT

Melissa is the glue that holds the Graphics/Production ship together. She provides all-around assistance and support to the department, while processing all of the projects through the proper departmental channels. Melissa lends her talents to *zymurgy*, divisional marketing pieces, the IBS Brewery List and numerous other tasks. Melissa is currently studying graphic design in Denver and is an accomplished skier and mountain biker. After an extensive day, this New Mexico native enjoys washing down hot 'n spicy food with a few dark brews.



I BREW THEREFORE I AM

If you exist for your beer, this tee's a must. Who knew René Descartes expounded on beer as intensely as life? Available in two color combinations, 100 percent cotton.

BLACK ON WHITE

#130 (L, XL) SHIPPING CODE: X \$11.95
 #130 (XXL) SHIPPING CODE: X \$13.95

BLACK ON JADE

#131 (L, XL) SHIPPING CODE: X \$11.95
 #131 (XXL) SHIPPING CODE: X \$13.95



IBS POLO SHIRT

From the Institute for Brewing Studies comes this handsome black, short sleeve polo shirt with the IBS logo beautifully embroidered in green, on the chest. You'll be able to wear this 100 percent cotton shirt in the brewhouse, as well as in the brewpub.

#170 L, XL SHIPPING CODE: X \$35.95
 #170M L, XL SHIPPING CODE: X \$35.95
 IBS MEMBERS \$29.95





BOTTLE OPENER

Open your bottle and ease your mind with this "Relax, Have A Homebrew!" key chain bottle opener. Ideal for those preferring bottles to cans. Made of solid aluminum.

#230 SHIPPING CODE F \$1.25

BUMPER BANNERS

#210 **RELAX, DON'T WORRY, HAVE A HOMEBREW.**
Advice for stressed-out roadies.

#211 **I BREW THE BEER I DRINK.**
Proudly state your priorities and skills.

#212 **I BREW THEREFORE I AM.**
A time-honored phrase with a twist.

Red with white letters. Non-fading.

#213 SET OF THREE SHIPPING CODE: F \$1.25
SHIPPING CODE: F \$3.19



**Relax, Don't Worry,
Have a Homebrew**

American Homebrewers Association, P.O. Box 217, Boulder, CO 80502, USA, 303-447-0816, FAX 303-447-3020

**I BREW THE
BEER I DRINK**

The American Homebrewers Assoc., Box 287, Boulder, CO, 80306 (303) 447-0816

**I BREW
THEREFORE
I AM**

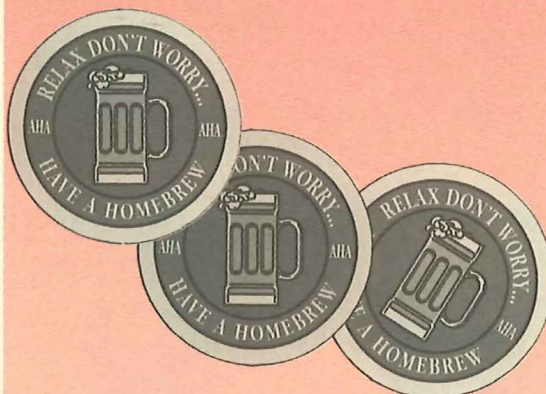


COASTERS

Remember to "Relax, Don't Worry, Have a Homebrew" each time you and your guests set your glasses down on these strong, colorful AHA coasters.

#225 SHIPPING CODE: X \$1.50 (SLEEVE OF 10)

#226 SHIPPING CODE: X \$5.00 (5 SLEEVES OF 10)



OFFICIAL JUDGES' CLOISONNE PINS

FOR RECOGNIZED AND CERTIFIED JUDGES ONLY

Purchase these pins when you pass the Beer Judge Certification Program (BJCP) exam and wear them at all of your future judging events. Exceptionally crafted and boldly colored, these pins are to be worn with pride. (Each purchase helps support the BJCP.)

#221 (BJCP RECOGNIZED JUDGE) SHIPPING CODE: F \$20.00

#222 (BJCP CERTIFIED JUDGE) SHIPPING CODE: F \$20.00

BOTTLECAPS

These burgundy caps are a great way to top off every homebrewed batch. The inscribed "Relax" motto reminds you to relax and enjoy each brew you worked so hard to create! Each pound is approximately 200 caps.

#250 (1 LB.) SHIPPING CODE: X \$2.99



PURE SEAL CAPS®!

Lined with an oxygen-absorbing compound, these special caps greatly improve the shelf-life and quality of your beer. Bright blue caps have the AHA "Relax" motto printed in silver. Each pound is approximately 200 caps.

#251 (1 LB.) SHIPPING CODE: X \$3.99

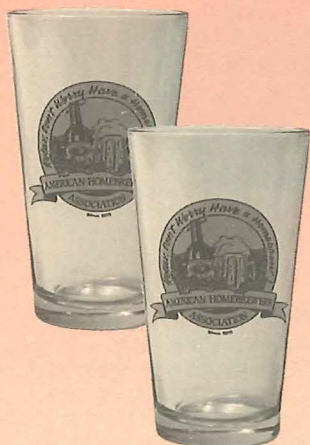
GREAT AMERICAN BEER FESTIVALSM COMMEMORATIVE TASTING GLASSES

Take advantage of this limited-time offer to buy 1993 Great American Beer FestivalSM Tasting Glasses. Left over from the 1993 Festival, each glass holds eight ounces of your favorite brew. Sold individually or by the case, these GABF glasses are destined to become collector's items. Available only while supplies last through this catalog.

#293 SHIPPING CODE: X
INDIVIDUAL GLASSES \$2.50

#293D SHIPPING CODE: Z
CASE OF 12 GLASSES \$19.95

We still have a limited supply of 1992 GABFSM glasses and assorted beer T-shirts, please contact the Association of Brewers at (303) 546-6514 for more details.

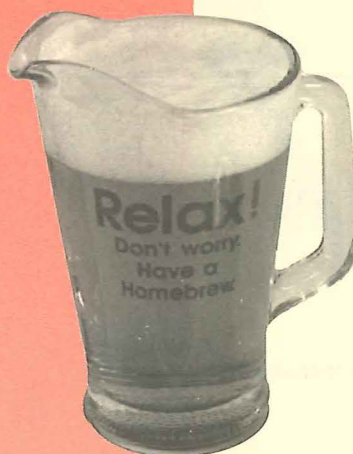
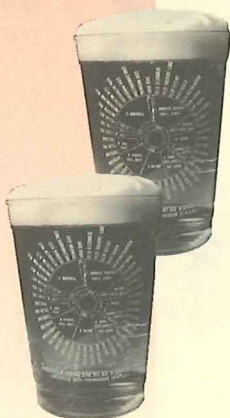


AHA PINT GLASS

The perfect accompaniment to your homebrew. The AHA pint glass is a heavy-duty, 16-ounce glass just like the ones you find in your local brewpub. The glass is dishwasher safe and has the AHA logo on the side. A great addition to your collection of glassware for partaking in the best beer in the world — your beer.

#262 SHIPPING CODE: X \$4.95
EACH

#262F SET OF 4
SHIPPING CODE: Y \$16.80



HOME BREW-SIZE BEER PITCHER

Enjoy plenty of your brew among friends with this clear, heavy-duty glass pitcher. Molded spout makes for smooth pouring and easy cleaning. "Relax, Don't Worry, Have a Homebrew" is printed in black to express your tasting mood.

#261 SHIPPING CODE: Y \$11.95

"RELAX" BEER MUG

These sturdy glass mugs with fluted bases compliment the pitcher perfectly. The AHA logo and "Relax" motto are printed in black to set an enjoyable mood while you take a private moment with your brew or share it with friends and family. Each mug holds 12 ounces.

#260 SHIPPING CODE: X \$4.95

SET OF 4

#260F SHIPPING CODE: Y \$16.80

THE BEER COMPETITION CUP

These 10-ounce, AHA-approved, clear plastic cups are excellent for competition judging. Each cup is sturdy and odorless and has Dr. Morten Meilgaard's renowned Beer Flavor and Aroma Wheel printed on the side for handy evaluation reference. Reusable and versatile, these cups are also great for picnics or parties.

SLEEVE OF 25

#235 SHIPPING CODE: X \$2.50

CASE OF 500

#235Z SHIPPING CODE: Z \$40.71



SALE



NEW LOWER PRICES! YARD OF BEER

Whether it's a yard of ale or lager, friends will be impressed when you serve them your best in one of these elegant, handblown glasses. Comes with or without a special wooden stand for everyday display and safekeeping. By the foot, half-yard or yard, you'll treasure this very special traditional English pub glass — when you can get it away from your friends. Is it the glass, or is your beer that good? Great for beer bonding.

#270	YARD GLASS W/STAND - 36" TALL, HOLDS 42 OZ.	
	SHIPPING CODE: Y	\$69.95
#275	1/2 YARD GLASS W/STAND - 18" TALL, HOLDS 25 OZ.	
	SHIPPING CODE: Y	\$49.95
#280	FOOT GLASS W/STAND - 12" TALL, HOLDS 12 OZ.	
	SHIPPING CODE: Y	\$29.95
#286	CAP FOR FOOT GLASS	
	SHIPPING CODE: X	\$4.95
#285	CAP FOR YARD/1/2-YARD	
	SHIPPING CODE: X	\$4.95

YARD OF BEER SETS

#271	DUAL YARD STAND - 36" TALL, WITH TWO 42 OZ. GLASSES.	
	SHIPPING CODE: Z	\$109.95
#276	DUAL 1/2-YARD STAND - 18" TALL, WITH TWO 25 OZ. GLASSES.	
	SHIPPING CODE: Z	\$79.95
#281	DUAL FOOT STAND - 12" TALL, WITH TWO 12 OZ. GLASSES.	
	SHIPPING CODE: Y	\$59.95

CLEANING BRUSHES

#287	YARD BRUSH - 35" TALL, KEEP YOUR YARD GLASSES CLEAN.	
	SHIPPING CODE: X	\$4.95
#288	1/2-YARD BRUSH - 17" TALL, PROTECTS YOUR INVESTMENT.	
	SHIPPING CODE: X	\$3.95
#289	FOOT BRUSH - 11" TALL, IS THE ESSENTIAL CLEANING TOOL.	
	SHIPPING CODE: X	\$3.95

IN HEAVEN THERE IS NO BEER. THAT'S WHY WE DRINK IT HERE.

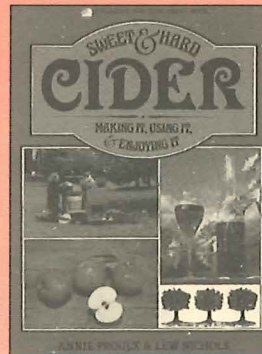
This inscription on a plaque at a trappist monastery in the Netherlands inspires the monks to brew their world-famous beer. 100 percent cotton T-shirt in two color combinations:

WHITE ON NAVY BLUE

#141	L	SHIPPING CODE: X	\$9
#141	XXL	SHIPPING CODE: X	\$10

NAVY BLUE ON WHITE

#140	L	SHIPPING CODE: X	\$9
#140	XXL	SHIPPING CODE: X	\$10

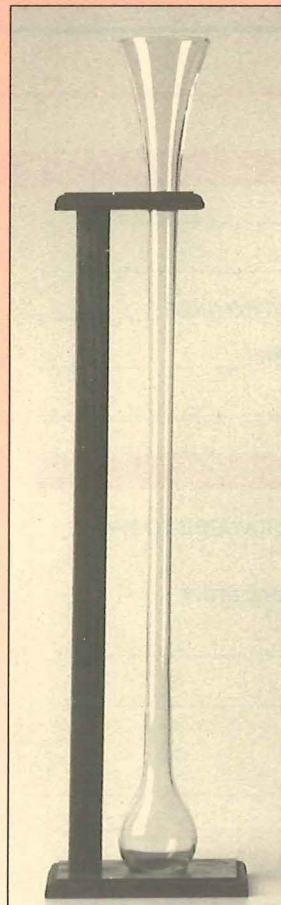


SWEET AND HARD CIDER

BY ANNIE PROULX AND LEW NICHOLS

Use your homebrew equipment to make and enjoy cider! This book tells you how to create, distill and judge this flavorful drink and includes recipes, legal advice and tips for selecting apples and growing cider apple trees. 11 x 8 1/2, 188 pp., Garden Way, 1980.

#370 SHIPPING CODE: A \$10.95



MARILYN COHEN

AOB EMPLOYEE SINCE OCTOBER 1991
ART DIRECTOR

Marilyn was the *zymurgy* art director for one year before abandoning ship in October 1992 to have a baby. No longer marooned, she now works part time as art director on books, book covers, marketing materials and the newest addition to the Classic Beer Styles Series, *Bock* (Brewers Publications, 1994). Marilyn has also been in deep with the *Beer Enthusiast Catalog* and was art director for the *Great American Beer Cookbook* (Brewers Publications, 1993) that recently won an award for its cover and interior design. Max, Marilyn's new junior designer, provides a treasure of creative insight on a variety of projects. Land Ho!

ITEM NO.	SIZE	QTY.	DESCRIPTION	PRICE EA.	CODE	CHARGE
			AHA Membership	\$29.00		

Please use additional sheet of paper if necessary.

Catalog prices valid through Feb. 1, 1995. Prices & availability subject to change.





NOTE: If items you have ordered are not in stock, we will automatically backorder them and ship upon arrival. Check if you prefer a refund. ☐ REFUND

SHIPPING CHARGES

- ◆ Each item in the catalog has a shipping code attached. Use the chart below to include the correct shipping charge for each item.
- ◆ Please call for RUSH ORDER service (Federal Express, Next Day Air, etc.)
- ◆ YOU MUST INCLUDE THE BASE HANDLING CHARGE, A SHIPPING CHARGE FOR EACH ITEM AND ALL APPLICABLE TAXES, OR SHIPMENT WILL BE DELAYED.
- ◆ QUESTIONS? Please call.

SHIPPING CODES

Choose one of the following:

 UPS CONTINENTAL USA ONLY	1.00	2.00	4.00	12.00	NO ADDITIONAL CHARGE	1.00	3.00	5.00
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 BOOK RATE U.S. ZIP CODES ONLY	.50	1.00	3.00	6.00		NON-BOOK ITEMS CANNOT GO BOOK RATE		
 AIRMAIL OVERSEAS ALL NON-U.S. LOCATIONS	5.00	9.00	36.00	150.00		5.00	12.00	36.00

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SUBTOTAL (USE SHIPPING CHART AT LEFT)	
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IF OUTSIDE CONTINENTAL USA, PLEASE ADD \$1 SERVICE CHARGE	
COLORADO RESIDENTS ADD 3% SALES TAX	
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PAYMENT METHOD

☐ CHECK OR MONEY ORDER ENCLOSED, PAYABLE TO THE ASSOCIATION OF BREWERS

 VISA MC \$10 minimum credit card order

SIGNATURE _____

EXP. DATE _____

CARD NUMBER: _____

OUR GUARANTEE

EVERY ITEM IN THE *BEER ENTHUSIAST CATALOG* HAS BEEN CAREFULLY SELECTED. IF, FOR ANY REASON, YOU ARE NOT COMPLETELY SATISFIED WITH THE PRODUCT YOU RECEIVE, SEND IT BACK TO US WITHIN 45 DAYS FROM DATE OF SHIPMENT, WITH A COPY OF THE INVOICE FOR REPLACEMENT, CREDIT OR REFUND OF THE PURCHASE PRICE. FOR ALL CORRESPONDENCE, PLEASE MAIL OR FAX US A COPY OF YOUR ORIGINAL INVOICE WITH YOUR QUESTION, COMPLAINT OR REQUEST.

ASSOCIATION OF BREWERS

PO Box 1679 • BOULDER, CO 80306-1679 • USA

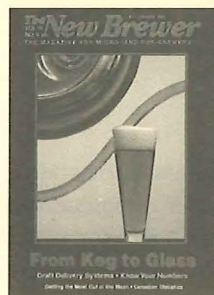
WEEKDAYS 8 A.M. TO 5 P.M. MOUNTAIN TIME.

ORDER BY **PHONE (303) 546-6514** ORDER BY **FAX (303) 447-2825**

DISCOVER *THE NEW BREWER* ADVANTAGE

The craft-brewing industry is our business, and we understand what it takes to be successful. Published six times a year, *The New Brewer* is the resource for anyone involved in the craft-brew industry, or anyone thinking of getting involved. If you're in the business, you have no business missing it.

WE OFFER OUR READERS THE FOLLOWING ADVANTAGES:

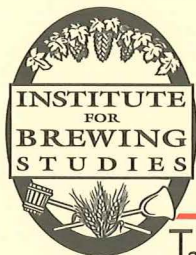


- ♦ Technical brewing information from professionals
- ♦ Marketing and distribution ideas
- ♦ Discussions about operational issues
- ♦ Statistical and legislative information from the Institute for Brewing Studies
- ♦ Articles from the brightest minds in the craft-brewing industry
- ♦ *The New Brewer* Trade Directory
- ♦ Money back guarantee

INSTITUTE FOR BREWING STUDIES

In this age of competitive business environments, becoming a member of the Institute for Brewing Studies can provide you with the information necessary to help take some of the risk out of succeeding in your own brewing venture. All IBS members receive benefits designed to help the brewer succeed. In our continued commitment to members, the Institute offers the following benefits:

- ♦ One-year subscription to *The New Brewer*
- ♦ Discounts to the National Microbrewers and Pubbrewers Conference and Trade Show
- ♦ Savings on select Brewers Publications books
- ♦ Press releases and public relations kits
- ♦ Brewmaster for Hire Program
- ♦ Unequaled network of peers in the craft-brewing industry
- ♦ Brewpub legislation support and information



Take proactive steps toward a successful brewing future by checking the appropriate box below:

☐ Enclosed is \$55 (\$65 foreign) for a one-year subscription to *The New Brewer*

☐ Please send me more information about the Institute for Brewing Studies

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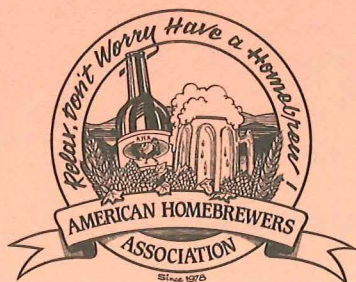
If you are ordering merchandise from the *Beer Enthusiast Catalog*, you can add your subscription to the order form. For credit card orders, please call (303) 546-6514, FAX (303) 447-2825.

THE AMERICAN HOMEBREWERS ASSOCIATION IS YOUR GATEWAY TO THE BEST BEER IN THE WORLD — YOUR BEER!

Established in 1978, the American Homebrewers Association is a non-profit educational association dedicated to the art and science of homebrewing. Whatever your brewing level, we have cutting-edge information for you. With the homebrewing techniques, inspiration and the information you'll get from the AHA, you really can brew the best beer you've ever tasted.

For an annual fee, members receive five issues of *zymurgy* magazine and these other valuable AHA services:

- ♦ Discount for the AHA National Homebrewers Conference
- ♦ Periodic discounts on books published by Brewers Publications
- ♦ Discount for the AHA National Homebrew Competition
- ♦ Free information to help you brew better beer
- ♦ Support for the Beer Judge Certification Program
- ♦ Members Information Service
- ♦ Homebrew Club Network



If ordering merchandise from the *Beer Enthusiast Catalog*, mark the appropriate membership line on the order form to become a member of the AHA.

Yes! I want to take the steps toward better homebrewing

- ☐ Enclosed is \$9 for a sample *zymurgy* issue plus information about the AHA.
- ☐ Enclosed is \$29 (\$34 Canada; \$44 foreign) for one-year membership to the AHA (includes subscription to *zymurgy*).

NAME _____

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CITY _____ STATE/PROVINCE _____

ZIP/POSTAL CODE _____ COUNTRY _____

DAYTIME PHONE _____

Send check or money order (U.S. funds only) to *zymurgy*, PO Box 1510, Boulder, CO 80306-1510, or call (303) 546-6514; FAX (303) 447-2825 for Visa/MasterCard orders. Prices valid through 12/31/94.

AMERICAN HOMEBREWERS ASSOCIATION

1994 NATIONAL HOMEBREW COMPETITION WINNERS



BEST OF SHOW

HOMEBREWER OF THE YEAR

Sponsored by Muntion & Fison, England

James Liddil, Tucson, Ariz.

"Wild Pseudo-Lambic"

Belgian-style Lambic

Round-trip travel and accommodations have been awarded to the Homebrewer of the Year to attend the 1994 Great American Beer FestivalSM XIII in Denver, Colo., Oct. 21 and 22.

NINKASI AWARD

(HIGH-POINT HOMEBREWER)

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

Michael Byers, Santa Cruz, Calif.

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 HoneyMoon Mead Co., Austin, Texas

Byron Burch, Santa Rosa, Calif.

"Anointing Oil"

Melomel, Cyser, Pyment, Braggot

CIDERMAKER OF THE YEAR

Sponsored by Lyon's Brewery of Dublin, Dublin, Calif.

Martin Stokes, Old Town, Maine

"New England Cider"

Cider

SAKÉMAKER OF THE YEAR

Sponsored by Momokawa Sake, Ltd., Forest Grove, Ore.

Dale Howell, Wellington, Fla.

"Saké"

Saké

HOMEBREW CLUB OF THE YEAR

Sponsored by Coopers Brewery, Adelaide, Australia

1st: Sonoma Beerocrats — Santa Rosa, Calif.

2nd: Boston Wort Processors — Boston, Mass.

3rd (tie): Ann Arbor Brewers Guild — Ann Arbor, Mich.

Hop Barley and the Aler's — Boulder, Colo.

WINNERS BY CATEGORY

1) BARLEY WINE — 94 entries

Sponsored by Edme Ltd., Mistley, Manningtree, England

1st: David M. West, Bill Pankratz — Milford, Mich.

"Spring Heaven"

2nd: Ray Call — Stockton, Calif.

"Romulin Ale II"

3rd: Carl Eidbo, Ray Taylor and

Jim Gebhardt — Fargo, N.D.

"North Dakota Farmer's All Grain Barley Whine"

2) BELGIAN AND FRENCH ALE — 164 entries

Sponsored by Manneken-Brussel Imports Inc., Austin, Texas

1st: Shawn Bosch, Joseph Bosch — Wading River, N.Y.

"Icy Hollow Brown Ale"

2nd: Phil Rahn — Cordova, Tenn.

"Pale Face"

3rd: Bill Yearous — Galt, Calif.

"A Taste of Brussels"

3) BELGIAN-STYLE LAMBIC — 42 entries

Sponsored by L.D. Carlson Co., Kent, Ohio

1st: James Liddil — Tucson, Ariz.

"Wild Pseudo-Lambic"

2nd: Douglas Faynor — Woodburn, Ore.

"Kripple Kreik"

3rd: Gunther Jensen — Pacoima, Calif.

"Forbidden Kiss"

4) BROWN ALE — 148 entries

Sponsored by Premier Malt Products, Grosse Pointe, Mich.

1st: No first place awarded

2nd: Russell Leviitt — Bloomington, Ind.

"Get Your Thumb Out Your Butt"

3rd: Charlie Wiemann — Carol Stream, Ill.

"Satchmo"

5) ENGLISH-STYLE PALE ALE — 167 entries

Sponsored by Wynkoop Brewing Co., Denver, Colo.

1st: Mike Harper — Oakdale, Calif.

"White Oak Ale"

2nd: John O'Neal — Tucson, Ariz.

"Nelson's Victory Ale"

3rd: James L. Raders — Minneapolis, Minn.

"Iowa Pale Ale"

6) AMERICAN-STYLE ALE — 181 entries

Sponsored by Northwestern Extract Co., Brookfield, Wis.

1st: John M. Arends — Calistoga, Calif.

"Vince's Pale"

2nd: Chad Thistle — Santa Rosa, Calif.

"DW7"

3rd: Ross Hastings — Edmonton, Alberta

"Immaculate Ale III"

7) ENGLISH BITTER — 119 entries

Sponsored by Alternative Beverage, Charlotte, N.C.

1st: Michael Byers — Santa Cruz, Calif.

"Be Bop Bitter"

2nd: George Fix — Arlington, Texas

"Vineyard Bitter"

3rd: Ray Call — Stockton, Calif.

"Mock Fuller's"

8) SCOTTISH ALE — 71 entries

Sponsored by Something's Brewing, Burlington, Vt.

1st: Michael Byers — Santa Cruz, Calif.

"What's Under The Kilt?"

2nd: Carl Hinsman — Yarmouth, Maine

"MacLeod's Revenge"

3rd: Gregg Dickerson — Folsom, Calif.

"Screamin' Scotch Ale"

9) PORTER — 184 entries

Sponsored by The Cellar, Seattle, Wash.

1st: David A. Lose, Glenn Klein, Dale Dockins — Sebastopol, Calif.

"Jim Bob Porter"

2nd: David Bunnell — Clovis, Calif.

"Converter Porter"

3rd: Neil Gudmeslad, Ray Taylor — Fargo, N.D.

"Pullman Porter"

10) ENGLISH AND SCOTTISH STRONG ALE — 94 entries

Sponsored by Wine and Hop Shop, Denver, Colo.

1st: Bob Gorman — Waltham, Mass.

"English Strong Ale"

2nd: Don R. Griffiths — Fayetteville, Ark.

"Milligan's Wee Heavy"

3rd: Ray Daniels — Chicago, Ill.

"Wee Heavy"

11) STOUT — 217 entries

Sponsored by Alternative Garden Supply, Streamwood, Ill.

1st: Jim Gebhardt — Fargo, N.D.

"Rapid Run Stout"

2nd: Robert Burko — Milwaukee, Wis.

"Cream City Imperial Stout"

3rd: Ron Bouffard — Bowdoinham, Maine

"Black Velvet"

12) BOCK — 147 entries

Sponsored by Washington Hop Commission, Yakima, Wash.

1st: David M. Cooke, James Prince — Yorktown, Va.

"Hallucinator"

2nd: Darryl Richman — Bellevue, Wash.

"Ein Bischle"

3rd: Jim Lopes — Fresno, Calif.

"Turnberry Bock"

13) BAVARIAN DARK — 61 entries

Sponsored by Crosby & Baker, Westport, Mass.

1st: John Rittenhouse — Folsom, Calif.

"Backyard Brown"

2nd: Tom Allenbach — Tracy, Calif.

3rd: Stu Tallman — Rochester, Mass.

"Stubrew"

14) GERMAN LIGHT LAGER — 73 entries

Sponsored by Briess Malting Co., Chilton, Wis.

1st: Keith Weerts — Windsor, Calif.

"Fallen Oak Dortmund"

2nd: Bill Murphy — Brookline, Mass.

"Wortmunder Export"

3rd: Dan Leithauser — Thornton, Colo.

"Leithauslager"

15) CLASSIC PILSENER — 127 entries

Sponsored by California Concentrates, Acampo, Calif.

1st: Alan Pagliere — Ann Arbor, Mich.

"First Pilsner II"

2nd: Mick and Vi Walker — Fargo, N.D.

"Harvest Pils"

3rd: Vince Shumski — York, Pa.

"Vince's X-Pils"

16) AMERICAN LAGER — 85 entries

Sponsored by Brewski Brewing Co., Culver City, Calif.

1st: Jeffery C. Cypert — Ross, Texas
"Clarabelle's Cream Ale"2nd: Rick Larson — Sebastopol, Calif.
"American Pride"3rd: Todd W. Anderson — Lompoc, Calif.
"Warbonnet"**17) VIENNA/OKTOBERFEST/MÄRZEN — 114 entries**

Sponsored by F.H. Steinbart Co., Portland, Ore.

1st: Byron Burch, Dave Woodruff —
Santa Rosa, Calif.
"Protection of the Holy Virgin Oktoberfest"2nd: Jeff Niggemeyer — Kent, Wash.
"Wizard Lager"3rd: John Roberts — Jamaica Plain, Mass.
"Red Oktober"**18) GERMAN-STYLE ALE — 108 entries**

Sponsored by The Beverage People, Santa Rosa, Calif.

1st: Bill Murphy — Brookline, Mass.
"Kolsch 45"2nd: Dave Shaffer — Lafayette, Colo.
"Klink Kolsch"

3rd: John Manczuk — Watauga, Texas

19) FRUIT BEER — 127 entries

Sponsored by The Purple Foot, Milwaukee, Wis.

1st: Allen E. Jr. Bavry — Sarasota, Fla.
"Cherry Pie"2nd: Mike Sternick, Jan Sternick — Denver, Colo.
"Fillmore Peche"3rd: David Norton — Kenosha, Wis.
"Summer's Cherry Ale"**20) HERB BEER — 100 entries**

Sponsored by Marin Brewing Co., Marin, Calif.

1st: Dan Rabin — Boulder, Colo.
"Chautauqua Holiday Ale"2nd: Mike Cobb — Mountain View, Calif.
"Bingbadaba' Chili Pepper Ale"3rd: Ray Daniels — Chicago, Ill.
"Aspen Export"**21) SPECIALTY BEER — 131 entries**

Sponsored by Homebrew Headquarters, Dallas, Texas

1st: Paul Sullivan — Brooklyn, N.Y.
"Hazelnut Brown Ale"2nd: Grant Johnston — Woodacre, Calif.
"Hazelnut Brown Ale"3rd: John Manczuk — Watauga, Texas
"Ho Ho Ho X-Mass Ale"**22) SMOKED BEER — 56 entries**

Sponsored by Jim's Homebrew Supply, Spokane, Wash.

1st: Morris Schademan — Portland, Ore.
"Old Smokie"2nd: George Mika — Warrenton, Va.
"Raven Doppelbock"

3rd: Tom Allenbach — Tracy, Calif.

23) CALIFORNIA COMMON BEER — 76 entries

Sponsored by Anchor Brewing Co., San Francisco, Calif.

1st: Walter Dobrowney — Saskatoon,
Saskatchewan
"Steamer"2nd: Paul Hale — Burlington, Vt.
"Spank'er Steam"3rd: Gary Arkoff — Tigard, Ore.
"Oregon Sunshine"**24) WHEAT BEER (ALE) — 139 entries**

Sponsored by Tabernash Brewing Co., Denver, Colo.

1st: Thomas O'Connor III, MD —
Rockport, Maine
"Three Year Weizenbock"2nd: Phil Kaszuba — Essex Junction, Vt.
"Last Stop Wheezin'"3rd: Robert A. Miller — Ft. Collins, Colo.
"Blucherbrau Weiss"**25) TRADITIONAL MEAD — 58 entries**

Sponsored by Havill's Mazer Mead Co., New Zealand

1st: Andrew Lamorte, Susanne Price —
Littleton, Colo.
"It's My First Mead"2nd: David Suda — Toronto, Ontario
"Mary Ann's Mead"3rd: Paddy Giffen — Rohnert Park, Calif.
"Be Siill My Heart"**26) MELOMEL/CYSER/PYMENT/BRAGGOT — 102 entries**

Sponsored by The National Honey Board, Longmont, Colo.

1st: Byron Burch — Santa Rosa, Calif.
"Anointing Oil"2nd: Gordon L. Olson — Los Alamos, N.M.
"Cherry Mead"3rd: Mitch Gelly — Mt. Horeb, Wis.
"Nibble Cyser"**27) METHEGLIN, HIPPOCRAS — 24 entries**

Sponsored by Home Wine and Beer Trade Association

1st: Kevin Stiles — Orefield, Penn.
"Hypocrite's Hippocras"2nd: Robert Grossman — Haddonfield, N.J.
"Dixie"3rd: David Sherfey — La Crescenta, Calif.
"Afterglo II"**28) CIDER — 41 entries**

Sponsored by Lyon's Brewery of Dublin, Dublin, Calif.

1st: Martin Stokes — Old Town, Maine
"New England Cider"2nd: Paddy Giffen — Rohnert Park, Calif.
"Mulling Gabriel"3rd: Ron Page — Middletown, Conn.
"Pommes Poem"**29) SAKÉ — 10 entries**

Sponsored by Momokawa Saké, Ltd., Forest Grove, Ore.

1st: Dale Howell — Wellington, Fla.
"Sake"2nd: Mike Karnowski — New Orleans, La.
"End Marijuana Prohibition Sake"3rd: Charles Hessom — Redwood Valley, Calif.
"Diaphanous Kimono"

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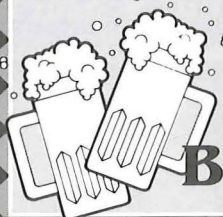
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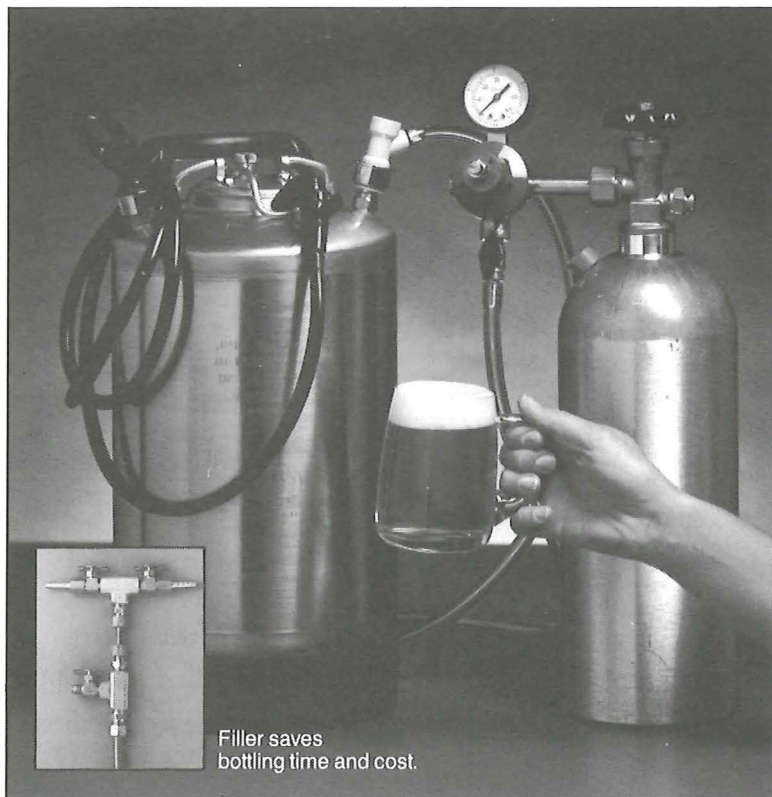
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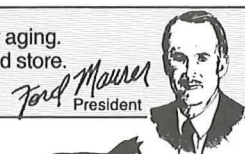
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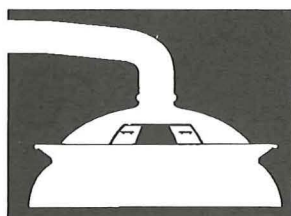
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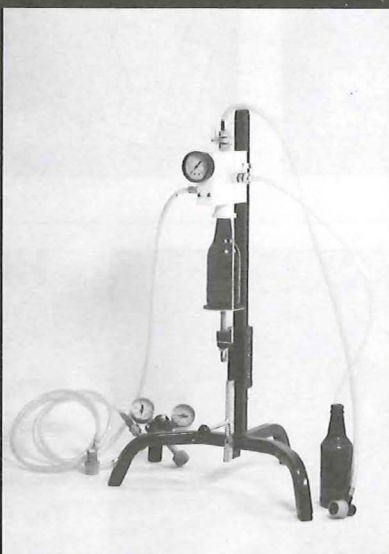
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FOR THE BEGINNER

Fred Hardy

Equipping Your Kitchen Brewery

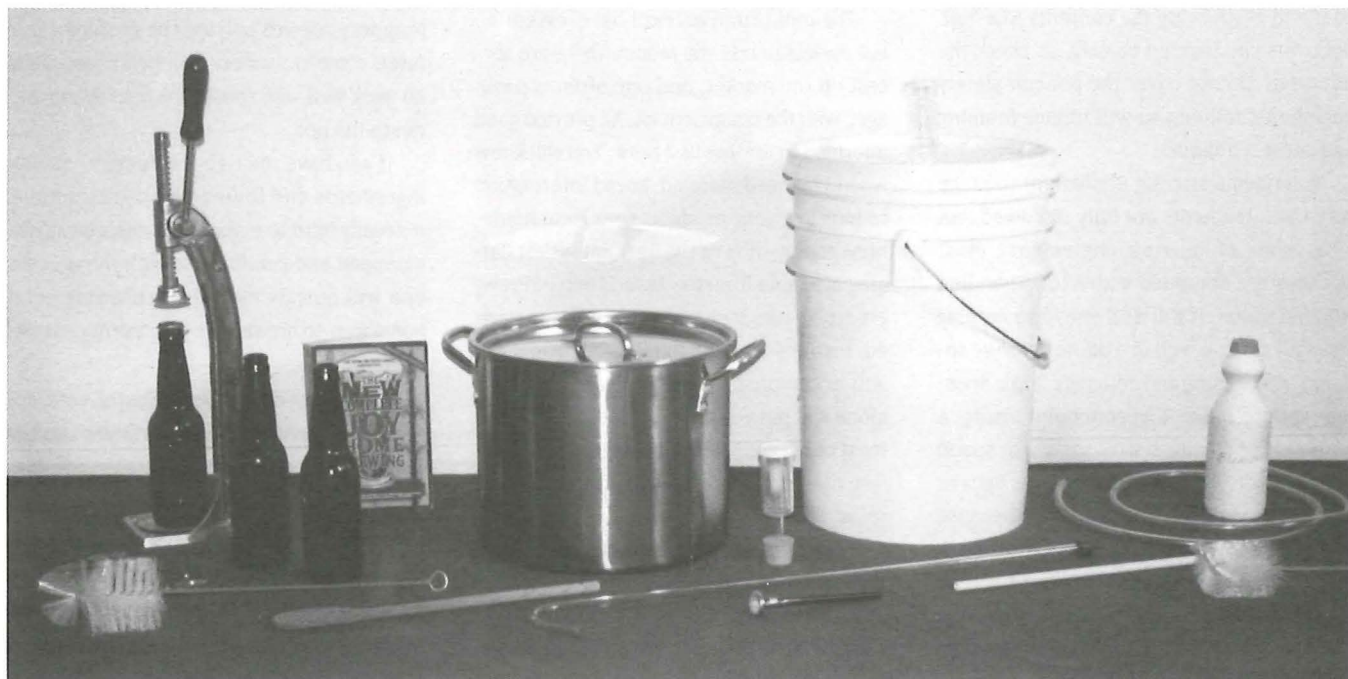
Many sources help the beginner determine what ingredients are required to brew great beer. The "Best From Kits" column in *zymurgy* is a super place to start, because I strongly advise the beginner to use kits for both ingredients and equipment. Use the simpler kits consisting of canned hopped syrup and a yeast packet for your first one or two efforts to become comfortable with the brewing process. Then you can try hopping your own brew by selecting unhopped extract or buying an extract kit packaged with

some specialty grains for more adventure.

Equipment kits should have the same warning found on children's Christmas toys — some assembly required! I have never heard of a homebrew equipment kit containing everything needed to brew that first batch. Better to start with a list of items you need, select an equipment kit that supplies a good number of them and then go shopping for the rest. Relax, you actually need only a few items and a minimal investment to turn your kitchen into a first-class homebrewery.

First, a list of the minimum equipment required, then a discussion:

- 1 6 1/2-gallon (or larger) plastic fermenter with a tight-fitting lid that has been drilled to accept an airlock
- 1 plastic racking cane
- 1 plastic racking hose (five feet long)
- 1 plastic airlock (several styles perform the same function)
- 1 6 1/2-gallon plastic bottling bucket
- 1 bottle filler
- 1 bottle capper
- 1 gross bottle caps
- 1 bottle brush
- 48 to 52 longneck brown non-twistoff 12-ounce beer bottles



- 1 **20-quart or larger boiling pot (enamel or stainless steel are preferred)**
- 1 **long-handled stirring implement (wooden, plastic or stainless-steel spoons are options)**
- 1 **thermometer (32- to 212-degree-F or 0- to 100-degree-C range)**
- 1 **authoritative text on homebrewing**
- 1 **bottle of unscented household bleach (for cleaning and sanitizing)**

A key piece of equipment is the boiling pot. My stove still bears the signs of a few boilovers that resulted from too little of both pot and attention. The minimum size stockpot you should consider is three gallons, and then only if you can't find a five-gallon pot. Your boiler should be either enameled steel or stainless steel, and should have a lid. Stainless steel is better because it will neither chip nor rust. Some brewers will argue that aluminum pots can give your brew a slightly metallic flavor. If you move on to all-grain brewing and a nine-gallon boiler, your five-gallon pot can serve as mash tun or be used to heat sparge water.

The secret to avoiding scorching is to bring 1 1/2 gallons of water to a boil, remove the pot from the heat, then thoroughly stir in your malt extract. Only when the extract is fully dissolved should you return the pot to the heat and again bring the contents to a boil. Boilovers can happen quickly, so check the pot often. Do not cover the pot completely during the boil or you will induce foaming and cause a boilover.

You need a stirring implement to make sure the ingredients are fully dissolved, but what kind of stirring implement? Most kitchens are equipped with a long-handled wooden spoon. It will do if you have nothing else, but clean it well in a dilute chlorine solution before using and designate it as a brewing spoon only. I recommend using a melamine or stainless-steel spatula or spoon with a handle at least 13 inches long. Spoons are traditional, but not necessary because you will not be ladling the wort or tasting it. Most homebrew shops sell a long-handled melamine spoon; a spatula can be found in most housewares stores. Melamine is easy to sanitize with either a chlorine soak or by boil-

ing. Stainless steel is best sanitized with a non-chlorine cleaner or by boiling because it can be corroded by chlorine. Sanitizing reduces the possibility of brew seasoned with remains of spaghetti sauce or sautéed garlic leached from a wooden spoon.

I mentioned chlorine bleach as a sanitizer in my list of essentials to remind the beginner that cleanliness is essential to brewing great beer, and you must have the necessary stuff available to do the job.

I find it helps to have a new non-metallic scouring pad and a new untreated throw-away dishcloth for each brewing session. Use them for the scrubbing and wiping that goes on during brewing. Avoid dishcloths or scouring pads that are pretreated with silicon or soap, or have been around the kitchen long enough to collect a bit of everything from the cat's food to last night's cheese sauce.

One non-essential item I do not list but one I strongly recommend is a pair of rubber kitchen gloves. They are inexpensive and available everywhere. Consider some of the steps involved in the brewing process: ammonia to remove bottle labels, chlorine bleach to sanitize plus considerable washing, rinsing and scrubbing with hot water. (By the way, never mix ammonia and bleach: toxic gas results.) All of this is rough on hands, but they easily can be protected with kitchen gloves. Equally important is safety. The gloves protect you from scalds caused by hot tap water and steam.

The authoritative text I list is essential, but useless unless you read it. There are several on the market, and one often is packaged with the equipment kit. All provide good information for that first brew. You will know when you need more advanced information to improve your product. Your local homebrew supply shop or the Beer Enthusiast Catalog available from the Association of Brewers are sources for brewing texts. To get started, read the text and think through how you will accomplish the individual steps. This alone will put you ahead of the game. If, like most of us, you insist on charging ahead before thinking (the ready, fire, aim syndrome), relax, don't worry!

Some kits on the market claim to have a thermometer in the kit. Read the contents list carefully and you will probably find that the thermometer is a stick-on temperature-indicating strip that indicates different tem-

peratures ranging from 40 to 80 degrees F (4 to 27 degrees C). These strips are quite adequate for beginners. You stick the strip on your fermenter and watch for the correct temperature before adding the yeast. They are not designed to be moved from one vessel to another. When you are ready for an upgrade I recommend a quick-recording thermometer with a stainless-steel shaft sold by most homebrew supply shops. It is easily sanitized with cleansers or iodine solutions.

As your brewing progresses, you will want to add items such as a hydrometer and test jar, carboy(s), drilled carboy stoppers, wine thief, larger boiling pot, heat diffuser, bottle trees, yeast starter jars and so on. Your kit may come with a hydrometer. The kits I have seen that include a hydrometer do not have a test jar and one is of little use without the other. The hydrometer is essential to determine the gravity of the wort. Relax, neither the hydrometer nor the test jar is needed at this stage of your brewing. For your first brewing sessions stick to the basics, and if you acquire some of these other items, all the better.

Optional, but suggested for brewers using electric stoves is a heat diffuser. Hot spots that caramelize the sugar in the wort are a real problem for homebrewers. This type of caramelization leaves a scorched flavor, not the pleasant sweetness one normally associates with caramel. A heat diffuser goes a long way toward solving the problem. Diffusers come in a variety of permutations. They all work well, and spread the heat evenly beneath the pot.

If you have the right equipment, quality ingredients and follow simple instructions it's really hard to make bad homebrew. Once equipped and comfortable with the process you will quickly move from brewing good homebrew to brewing world-class homebrew. Brew on!

A 30-year computer industry veteran, Fred brewed his first beer 25 years ago using Blue Ribbon malt, table sugar and bakers yeast. He brewed his second beer three years ago. He is founder of the Dulles Regional Brewing Society (Drebs), a Certified BJCP Judge and has won several ribbons with his homebrews. Fred's Internet address is: fcmh@access.digex.net.





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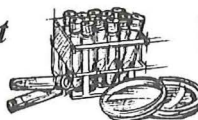
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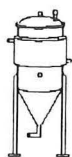
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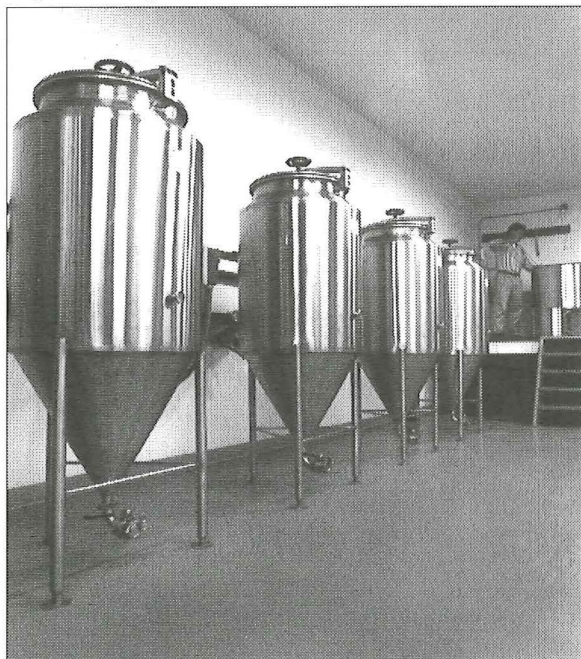
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C I R C L E

James Spence

How many homebrewers do you know who follow a recipe *exactly*? When it comes right down to it, most of us just use a recipe as a guide, an idea generator, a little nudge toward a style we've never brewed. Here are some real nudgers. If you think brewing a smoked beer is hard, you're wrong. If you've never used grain before, try Mike Rego's third-place stout, which is mostly extract but includes steeping some specialty malt. Mike's recipe is proof you don't have to brew all grain to brew a winner. If you've never tasted a Scottish ale, give Jay Ankeney's brew a shot. You'll probably like it.

Even though these folks are a lot like you and even though they have won awards in the AHA National Homebrew Competition, they all have different ways of *brewing* things. As a result, your brews may vary. Relax, etc.



SMOKED BEER



SECOND PLACE

AHA 1993 NATIONAL HOMEBREW COMPETITION

Mike Fertsch

Woburn, Massachusetts

"Mt. Ngauruhoe Rauch"

Bamberg-style Rauchbier

Ingredients for 3 gallons

- 2 pounds Pils malt
- 1 1/4 pounds Munich malt
- 1 1/4 pounds Vienna malt
- 1 pound smoked Munich malt
- 1 pound smoked Vienna malt
- 1/2 pound CaraPils malt
- 1/4 pound crystal malt
- 1/4 ounce Northern Brewer hops, 7.5 percent alpha acid (45 minutes)
- 1/2 ounce Hersbrucker hops, 2.9 percent alpha acid (45 minutes)
- 1/4 ounce Northern Brewer hops, 7.5 percent alpha acid (30 minutes)
- Wyeast No. 2206 Bavarian Lager liquid yeast culture
- 1/2 cup corn sugar to prime

- Original specific gravity: 1.058
- Final specific gravity: 1.018
- Boiling time: 60 minutes
- Primary fermentation: six days at 50 degrees F (10 degrees C) in glass
- Secondary fermentation: 20 days at 50 degrees F (10 degrees C) in glass
- Age when judged (since bottling): 14 months

Brewer's specifics

Smoke the crushed, dampened grain on stove-top smoker for 30 minutes. Mash grains at 125 degrees F (52 degrees C) for 30 minutes. Quickly raise to 148 degrees F (64 degrees C) with boiling water. Raise to between 156 and 158 degrees F (69 and 70 degrees C) for 60 minutes. Raise to 165 degrees F (74 degrees C) for 10 minutes.

Judges' comments

"Intensity of smoke, malt and hops is adequate. Exceptionally well-made beer. Very exciting to drink, fine job."

"Malty and smoky. Bitterness is low, but balanced. Smoke taste is low and could probably be a bit stronger, but not much."

"Malt, hops and smoke blend together pretty well. Slight off-flavor either from fermentation or smoked wood."

"Subtle smoke flavor comes through. Flavor profile thin on maltiness. Leaves hop bitterness unbalanced. Body a bit thin."

STOUT



THIRD PLACE
AHA 1993 NATIONAL HOMEBREW COMPETITION
Mike Rego
Amherst, New Hampshire
"New Year's Day Stout"
Foreign-style

Ingredients for 5 gallons

- 4 pounds Mountmellick stout extract syrup
- 3 pounds Munton and Fison dark dry extract
- 3/4 pound crystal malt
- 1/3 pound roasted barley
- 1/3 pound black patent malt
- 1 1/2 ounces Northern Brewer hops, 7.5 percent alpha acid (60 minutes)
- 1/2 ounce Fuggles hops, 4 percent alpha acid (10 minutes)
- Mountmellick yeast
- 3/4 cup corn sugar to prime

- Original specific gravity: 1.060
- Final specific gravity: 1.026
- Boiling time: 60 minutes
- Primary fermentation: seven days at 68 degrees F (20 degrees C) in plastic
- Age when judged (since bottling): 6 1/2 months

Brewer's specifics

Steep grains until water begins to boil (about 15 minutes).

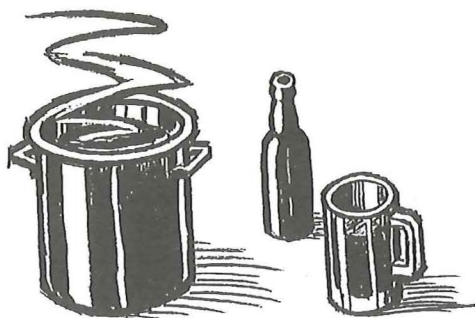
Judges' comments

"Harsh flavor — from oxidation? Otherwise well-balanced."

"Low fill on bottle causes stale aroma."

"Good malt up front, roasted malt evident. Hops there as well. Alcohol notes. Finishes kind of papery thin. Some oxidation."

"Creamy, overcarbonated. Lacks some malt emphasis. Oxidized flavor. Very nice overall."



SCOTTISH ALE



THIRD PLACE
AHA 1993 NATIONAL HOMEBREW COMPETITION
Jay Ankeney
Manhattan Beach, California
"39th Street Scots Ale"
Scottish Light

Ingredients for 5 gallons

- 3 pounds Australian light dry extract
- 1 1/2 pounds Scots roast grain
- 3 pounds dry wheat extract
- 1 pounds Desert Jack's honey
- 1 ounce Kent Goldings hops, 7 percent alpha acid (40 minutes)
- 2 ounces Hallertauer hops, 6 percent alpha acid (20 minutes)
- 1 ounce Hallertauer hops, 6 percent alpha acid (finish)
- 1 cup corn sugar to prime
- ale yeast cultured from a friend's stock

- Original specific gravity: unknown
- Final specific gravity: unknown
- Boiling time: 60 minutes
- Primary fermentation: 21 days at 70 degrees F (21 degrees C) in specially designed plastic fermenter
- Age when judged (since bottling): 5 1/2 months

Brewer's specifics

Use Scots roast grain in sparge. Closed single-stage fermentation.

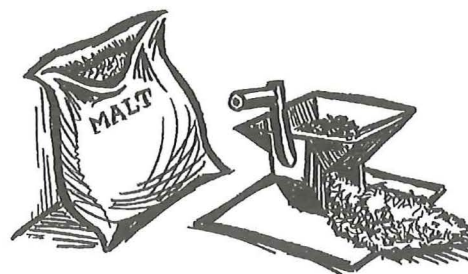
Judges' comments

"Malty, fruity taste. Somewhat alcoholic for style. Good effort; needs lower starting gravity. A little too fruity. Lower fermentation temperature or use different yeast."

"Very nicely done. Clean, balanced, with lots of nice flavor. Just a bit too alcoholic and maybe a little too caramelly in overall flavor."

"Pretty nice beer. Might be a bit heavy for style, but a basically good beer."

"OK brew. A bit too big for style. Also a bit winy — maybe oxidized."



BELGIAN-STYLE SPECIALTY



SECOND PLACE

AHA 1993 NATIONAL HOMEBREW COMPETITION

Tony Babinec

Flossmoor, Illinois

"Flossmoor Tripel"

Tripel

Ingredients for 5 gallons

- 13 pounds Pilsener malt
- 1 1/2 pounds sugar
- 1 ounce Styrian Goldings hops, 4.9 percent alpha acid (60 minutes)
- 1 ounce Hallertauer hops, 2.9 percent alpha acid (60 minutes)
- 1/2 ounce Saaz hops, 3 percent alpha acid (10 minutes)
- Wyeast No. 1214 Belgian ale liquid yeast culture
- 3/4 cup corn sugar to prime

- Original specific gravity: 1.085
- Final specific gravity: 1.014
- Boiling time: 120 minutes
- Primary fermentation: 21 days at 64 degrees F (18 degrees C) in glass
- Secondary fermentation: seven days at 62 degrees F (17 degrees C) in glass
- Age when judged (since bottling): seven months

Brewer's specifics

Mash grain for two hours at 153 degrees F (67 degrees C).

Judges' comments

"Finish hides alcohol level of this beer. Nice balance is being struck. A complex, well-made beer."

"Clean well-made beer. Yeast seems to have worked its way through. Alcohol tends to dominate."

"Alcoholic warmth pronounced. Needs more lingering malt support for this. Nice work. Alcohol is assertive, perhaps in a younger condition there would be more support for this."

"Beguiling rich malty/sweet flavor with loads of spiciness. Alcohol level is really nice — noticeably strong, but not hot. I like this beer a lot."

"The alcohol is there. Rum notes suggest sugar used to boost specific gravity without adding body. Maybe a trifle hot, but other than that, very good!"

BARLEY WINE



SECOND PLACE

AHA 1993 NATIONAL HOMEBREW COMPETITION

Chuck Boyce

Cincinnati, Ohio

"Boobs Barley Wine"

Ingredients for 5 gallons

- 12 pounds light dry malt extract
- 3 pounds Klages malt
- 1/2 pound dextrin malt
- 1/2 pound crystal malt
- 9 ounces Bullion hops, 8.6 percent alpha acid (90 minutes)
- 1 1/2 ounces Fuggles hops, 5.2 percent alpha acid (15 minutes)
- 1 1/2 ounces Cascade hops, 4.5 percent alpha acid (one to two minutes)
- Wyeast No. 1056 liquid yeast culture
- 3/4 cup corn sugar to prime

- Original specific gravity: 1.110
- Final specific gravity: 1.034
- Boiling time: 90 minutes
- Primary fermentation: four weeks at 75 degrees F (24 degrees C) in glass
- Secondary fermentation: two weeks at 65 degrees F (18 degrees C) in glass
- Age when judged (since bottling): 14 months

Brewer's specifics

Mash grains for one hour at 152 degrees F (67 degrees C).

Judges' comments

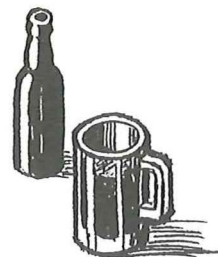
"Very well done. Lots of hops in aroma and flavor which follow through. Nothing odd detected — seems very clean, but lacks complexity. Body may be on the light side."

"Rather bitter. A bit more unfermentables, please."

"Very malty, rich and hoppy. Nice drinkable brew."

"Slightly overhopped. Good body, could take a little more. Very smooth."

"Good flavor, but lacks intensity. Seems soft, finish a bit harsh. Medium body needs a bit more stuffing."



1993 HAIL TO ALE CLUB-ONLY COMPETITION WINNER



India Pale Ale
Michael Knaub of Mt. Wolf,
Pennsylvania, representing the York
Area Homebrewers Association

Ingredients for 5 1/2 gallons

- 9 pounds Hugh Baird pale ale malt
- 2 pounds Geordie light dry malt extract
- 1/2 pound Hugh Baird crystal malt
- 1/2 pound Hugh Baird toasted crystal malt
- 1 1/2 ounces Bullion hops, 8.6 percent alpha acid (60 minutes)
- 2 ounces Cascade hops, 6.4 percent alpha acid (15 minutes)
- 2 ounces Cascade hops, 6.4 percent alpha acid (dry, 15 days)
- Yeast Lab London ale liquid yeast culture
- 3/4 cup corn sugar to prime

- Original specific gravity: 1.059
- Final specific gravity: 1.017
- Boiling time: 90 minutes
- Primary fermentation: 12 days at 68 degrees F (20 degrees C) in glass
- Secondary fermentation: 20 days at 40 degrees F (4 degrees C) in glass
- Age when judged (since bottling): 2 1/2 weeks

Brewer's Specifics

Mash grains at 150 degrees F (66 degrees C) for 60 minutes. Sparge with 4 1/2 gallons of 170-degree-F (77-degree-C) water.

Judges' comments

"Good beer overall, needs a little more hop bitterness. Esters a little underdeveloped — ferment slightly warmer."

"Nice malt and hop blend. Alcohol evident. Good mouthfeel."

"Nice beer. I'd prefer more hop aroma. Bitterness and hop flavor right on style. Could use a touch more maltiness."

"Might be a little too astringent. Maybe check sparge technique. Slightly sweet with a good bitterness."

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AHA 1993 National Homebrew
Competition was printed in
zymurgy 1993 Special Issue
(Vol. 16, No. 4) "Winners Circle."

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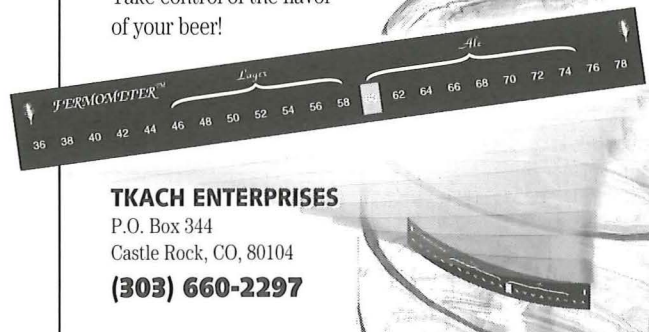
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Category India Pale Ale

Category Range			
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Alc./vol.	5	5.8%	6.5
IBU	40	52	65
Color	8	8.7	14
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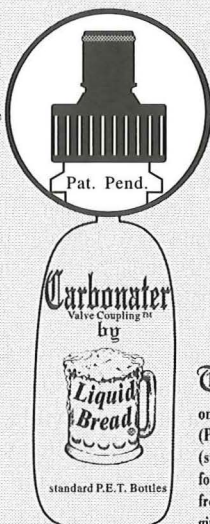
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Charlie Papazian

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The specialty dark-roasted malts plus some gently toasted malts give this lager its classic, smooth texture while contributing to the flavor and aroma — both important signatures of a traditional German dunkel.

German hop varieties are carefully added in steps to achieve a bitterness of about 27 IBUs. Care also is taken with the type and addition of darkly roasted malts because they can add too much bitterness when used in excess. Tower of Truth has just enough roasted malts to lend a deep, coppery-brown color and a touch of roast character without any bite or bitterness. This brew is meant to be lagered at cold temperatures for several weeks. Roasted malt bitterness and sharpness tend to decrease with age and lagering, so I've overcompensated the malt bitterness in the recipe design to reach a perfect balance at the moment of readiness.

This beer is best consumed within three to five weeks of its peak after lagering and bottle conditioning. It is such a perfectly and delicately balanced brew that age will change Tower of Truth. Don't worry, it will still be a fantastically great beer, but it will eventually go beyond being a brewery-fresh classic German dunkel.

This is a mash-extract recipe. If you are an extract brewer, instead of using the aromatic, wheat, Pilsener and biscuit malts use a total of 4 1/4 pounds of light dried malt along with the a steep of crystal, chocolate and black malt. The extract version will not result in the complex character of German



Tower of Truth Dunkel

dunkelbier, but a fine dark German lager it certainly will make.

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

Mash-extract recipe for 5 gallons (19 liters)

For the mash

- 1 4/5 pounds (0.8 kilogram) crushed two-row Pilsener malt
- 7/10 pound (0.32 kilogram) crushed American wheat malt
- 1/2 pound (0.23 kilogram) crushed Belgian aromatic malt
- 1/2 pound (0.23 kilogram) crushed Belgian biscuit malt
- 7/10 pound (0.32 kilogram) crushed crystal malt 40 °L
- 2 ounces (57 grams) Belgian chocolate malt
- 2 ounces (57 grams) Belgian black malt

Add to the mash runoff

- 2 1/2 pounds (1.13 kilograms) light dried malt extract

And boil with hops

- 6.5 Homebrew Bittering Units (I used 7/10 ounce or 19.8 grams 9 percent alpha acid German Northern Brewer whole hops.)
- 2.9 Homebrew Bittering Units of flavor hops (I used 2/5 ounce or 11 grams of 8 percent alpha acid American Perle whole hops.)
- 3.2 Homebrew Bittering Units of late flavor hops (I used 7/10 ounce or 20 grams of 4.6 percent alpha acid German Hallertauer hop pellets.)
- 1 teaspoon gypsum is added if the mash water is extremely soft
- 1 teaspoon gypsum is added if the sparge water is extremely soft
- 1/4 teaspoon Irish moss
- 7/8 cup (207 milliliters) corn sugar for bottling
- Bavarian lager yeast is recommended

- Original specific gravity: 1.045 to 1.049 (11 to 12 °B)

- Final specific gravity: 1.008 to 1.012 (2 to 3 °B)
- IBUs: about 27

A step-infusion mash is employed to mash the grains. Add 4 1/2 quarts (4.3 liters) of 135-degree-F (57-degree-C) water to the crushed grain, stir, stabilize and hold the temperature at 130 degrees F (54 degrees C) for 30 minutes. Add 2 1/4 quarts (2.13 liters) of boiling water, stabilize the temperature at about 148 to 152 degrees F (64 to 67 degrees C) and hold for about 45 minutes. Temperature may be allowed to drop from 152 to 148 degrees F (67 to 64 degrees C) with no worrying. Then raise temperature to 160 degrees F (71 degrees C) and hold for 10 to 15 minutes to complete conversion.

After conversion, raise temperature to 167 degrees F (75 degrees C), laut and sparge with 2 gallons (7.6 liters) of 170-degree-F (77-degree-C) water. Collect about 2 1/2 to 3 gallons (9.5 to 11.4 liters) of runoff and add the malt extract and bittering hops and bring the wort to a full boil.

The total boil time will be about 90 minutes. When 30 minutes remain add 2.9 Homebrew Bittering Units of flavor hops. When 15 minutes remain add 3.2 Homebrew Bittering Units of late flavor hops and Irish moss. Af-

ter a total wort boil of 90 minutes, turn off the heat and strain into a sanitized fermenter to which you've added 2 gallons of water. It helps to boil and prechill (33 degrees F or 1 degree C) the water added to the fermenter rather than simply adding tap water (which is warmer and probably chlorinated).

Bitterness of about 27 IBUs was calculated for this recipe by making the following assumptions: (1) Whole hops and hop pellets were used where indicated, (2) The wort boil was a concentrated boil with about 2 pounds (0.9 kilograms) of extract per gallon (3.8 liters) of liquid boiled, (3) 22 percent utilization was assumed for 90 minutes of boiling, 13 percent utilization was assumed for 30 minutes of boiling and 7 percent utilization was assumed for 15 minutes of boiling. Beginners and intermediate brewers should relax, don't worry and have a homebrew.

With the lager yeast, primary ferment at 45 to 50 degrees F (7 to 10 degrees C). Rack your brew after primary fermentation into a secondary fermenter and lager at 38 to 45 degrees F (3 to 7 degrees C) for three to five weeks.

Prime with corn sugar and bottle when fermentation is complete.

Let age until clear and carbonated and go for the Tower of Truth with a thirst for the best. ☺

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 x 9) + (3 x 5) = 18 + 15. Bittering units per gallon would be 3.3 in a 10-gallon batch or 6.6 in a five-gallon batch, so it is important to note volumes whenever expressing bittering units.

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

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

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

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

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Dear Professor,

I looked a long time for some calcium chloride and finally got some. Now I have a ppm dilemma.

Darryl Richman, in *zymurgy* Winter 1989 (Vol. 12, No. 5), and Charlie Papazian, in *The New Complete Joy of Home Brewing* (Avon, 1991), seem to be working with anhydrous calcium chloride. Mine is dihydrate, however, and the ppm difference seems more than would be expected. A call to the manufacturer yielded: one gram per liter adds 72 ppm calcium. This works out (I think) to one teaspoon per five gallons and adds 10.7 ppm of calcium, if there are 10 teaspoons in an ounce. Because this is only about one-ninth the ion concentration of the anhydrous, I'm a little hesitant to accept my figures. Before I add five or nine teaspoons of this stuff to a batch of beer, I'd love to get an opinion from someone who slept less than I in chemistry class. Also, I'd be able to relax a lot more.

Ever appreciative,
Jack Means
Tucson, Arizona

Dear Jack,

I consulted with my colleague, Rodney Morris (a professor in his own right) and this is what he relayed to me:

"Calcium chloride in the anhydrous form has a molecular weight of 111, and is 36.1 percent calcium and 63.9 percent chloride. One gram per gallon adds 95.3 ppm calcium and 169 ppm chloride. If you add 1,000 milligrams (1 gram) of the anhydrous form to a liter of water, at 36.1 per-

cent calcium you would have 361 ppm. The dihydrate is about 75 percent of the anhydrous form, so adding one gram of dihydrate calcium chloride to one gallon of water yields 71.5 ppm of calcium (0.75×95.3 ppm) and 126.75 ppm of chloride (0.75×169 ppm). I hope that stumps the Professor. Keep the dihydrate and anhydrous tightly capped because in a humid environment they will pick up water."

Well, Jack. I'm not quite stumped, but I am feeling a bit twiggy.

Branching out,
The Professor, Hb.D.

Wayne's Wort

Dear Professor,

I have been brewing for about three years, and though I feel like I have a good handle on the subject I am still puzzled about a few things.

(1) I slowly bring my specialty grains to a boil in about a quart of cold tap water. Just as it begins to boil, I turn off the heat and let the grains steep for about 20 minutes. Then



I strain out the grains and add the liquid to the wort, which has been boiling the entire time. I continue the boil for about five to 10 minutes, then turn off the heat. Am I getting the most from the grains this way? Should I continue adding the grains at the end of the boil, or should I steep the grains first and add them to the boiling water when I add the malt and bittering hops?

(2) I've read in *zymurgy* that hop bitterness is extracted much more quickly from pellet hops than from whole hops. Is this true? And if it is, I've read that most of the bitterness is extracted after the first 30 to 40 minutes in the boil. And boiling for 45 to 60 minutes does not provide any hop benefit (with pellets). Could you please shed some light on this? Since I am pretty much a pellet user, I believe this has quite a significant effect in my finished product.

(3) I'm still a little confused about the different types of bittering hops. If a recipe calls for 10 HBUs of Saaz bittering hops (2 ounces x 5 percent), will substituting 10 HBUs of Bullion hops (1 ounce x 10 percent) have the same bittering character as the Saaz? I know that technically speaking the bitterness is the same (10 HBUs). But is there actually some type of flavor that goes along with a certain style of bittering hops?

I thank you for your time. As always, happy brewing.

Sincerely,
Wayne Wrubel
Three Rivers, Massachusetts

Dear Wayne,

You're getting all the stuff from your grains you need to. You could improve the quality of the "extract" by simply steeping the grains at about 160 degrees F (71 degrees C) for about 30 minutes, thereby reducing some of the harsher phenols that would otherwise be extracted at the higher temperatures.

I don't quite understand what you mean by "should I continue adding grains at the end of the boil ..." The procedure should be to add the grains to the cool water or steep them at 160 degrees F (71 degrees C). After 30 minutes at 160 degrees or upon reaching the boiling point you discard the specialty grains. There are no grains to add at the end of the boil or to the boiling water. You want

to boil the extract from the specialty grains, not the grains themselves, with hops and dry or syrup malt extract.

By the way, five to 10 minutes of boiling is pretty minimal. Boil the whole concentrated wort for 60 minutes for best results.

In some ways whether you get most of the bitterness benefit after 30 to 40 minutes is irrelevant. More importantly it takes a good 60 minutes for all the beneficial chemical reactions to take place once the hop goodies are extracted. There's a lot more going on in the boil besides making a bitter tea from hop flowers or pellets.

Two ounces of 5 percent Saaz (wow, where can you find Saaz with alpha acid higher than 4 percent?) will contribute the same bitter essentials as one ounce of 10 percent Bullion, but Saaz and Bullion will add different flavor characteristics to your beers. Many brewers will say it doesn't matter what hop you use if you are going to boil it for an hour because all the flavor character is lost. I don't agree. There are some very subtle but noticeable qualities that each variety of hops gives to the flavor even when boiling for a long time. Try making a English bitter with Saaz hops for a 60 minute boil and compare it with Kent Goldings using the same procedures. Not the same.

*Hopping for a specialty kind of guy,
The Professor, Hb.D.*

Not Beer Intolerant

Dear Professor,

My husband has developed a condition known as "gluten intolerance" meaning he can't have anything with wheat, rye, oats or barley. I remember reading somewhere that beer can be made from corn. Is it possible? And if so, where can I get the directions?

Thank you for any help or suggestions.

Sincerely,
Mary Nizza
Ridgewood, New Jersey

Dear Mary,

You can malt and brew with corn just as with barley, though corn sugars are usually derived through other enzymatic and industrial processes. Here's something to consider: Is your husband allergic to spelt (also known

as dinkel)? It is a non-hybridized ancient wheat. I've been told that 70 percent of people allergic to wheat, barley, rye, etc., are not allergic to spelt. Consult your physician about this. If your husband is not allergic, you can make a spelt beer by germinating and drying the spelt, thus creating malted spelt. I just experimented with this and produced a very nice speltbrau. If you want additional information look for the procedures and recipe in Charlie Papazian's new book, The Home Brewer's Companion (Avon, 1994), which will be published in August.

*Ale-ergic,
The Professor, Hb.D.*

The Secret Chambers of Ninkasi

Dear Professor Surfeit,

While I realize that brewing Romulan Ale on Earth might approximate the challenge of replicating a French malt liquor in Palm Springs, I am hoping that similar local recipes exist. More than once, dinner guests have requested something beyond the ordinary Earth-toned homebrew, something in a bubbling sky blue. Do Romulans use blueberries?

Sincerely,
Prescott C. Nichols
Palm Springs, California

P.S. I shave sporadically.

Dear Prescott,

The archives of Ninkasi are said to hold the secrets of a millennium of brewing reaching far back into the galactic history of Warp-5. Bubble mesmerization has aided my journey as I seek the chambers of the goddess Ninkasi. This looks like a job for Supersaturated Man, who I am from time to time.

*Unearthed and on the loose,
The Professor, Hb.D.*

P.S. Blueberries will add a violet tint to your beer. Even blue food coloring will make the beer greenish-blue thanks to the yellowish color of beer. You can, of course, minimize the greenness by starting out with a pale, pale beer before adding the food coloring. ☺

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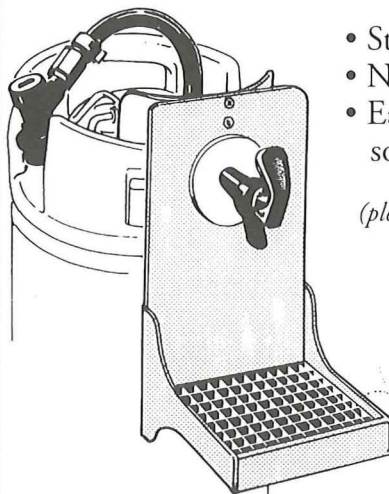


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Parts Catalog

Foxx Equipment Co. of Kansas City, Mo., and Denver, Colo., a wholesale supplier, has announced the publication of a 120-page, illustrated catalog of service parts, equipment and tools for the carbonated beverage industry. The catalog's reference-manual format is designed to save the reader time when selecting from more than 6,000 parts and accessories. Individual selections include a range of beverage dispensing and refrigeration equipment parts featuring dispensing valves, product tanks, Procon pumps, carbonators, CO₂ cylinders and valves, CO₂ regulators, hand tools, cleaners and more. Many hard-to-find items are included. Service suggestions are included with product information on many pages.

The wholesale catalog is free. Contact Foxx Equipment Co., 421 Southwest Blvd., Kansas City, MO 64108; (800) 821-2254, or 955 Decatur St., Unit B, Denver, CO 80204; (800) 525-2484.

Connectors and Fillers

A modular quick-disconnect for CO₂ delivery that allows one gas bottle to perform multiple tasks is now available from The Beverage People. The system allows you to quickly change fittings to carbon-

ate, dispense, filter beer or push sanitizer through kegs.

The connector consists of a female coupling that attaches to the regulator, and a male end to attach to each specialized gas disconnect. To exchange a line to perform a task, such as carbonating the keg, disconnect the service-beer line and plug in the carbonating line. The coupling eliminates the need to remove the actual disconnect ends to swap gas and liquid lines.

Also available is an improved grip-style, two-valve counterpressure bottle filler. It works by delivering CO₂ through one valve to purge the bottle of O₂ and keep the beer under pressure while the second valve delivers the beer to the bottle.

The manufacturer's suggested retail price is \$5.95 for the coupling device, \$3.95 for the female coupling and each male end, and \$59.95 for The Beverage People Counter Pressure Filler. The products are available from The Beverage People, 840 Piner Rd. #14, Santa Rosa, CA 95403; (800) 544-1867.

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Morris Hanbury suggests you contact your local retailers for the current prices. For further information contact Morris Hanbury U.S.A. Inc., 402 E. Yakima Ave., PO Box 1548, Yakima, WA 98907; (509) 457-6699, FAX (509) 452-9468.

Craft-Brewing Classes

The American Brewers' Guild is offering short courses and apprenticeship programs for the craft-brewing industry. The head instructor is Michael Lewis, Ph.D., professor of brewing science at the University of California at Davis.

Courses offered include: "The Practical Brewers' Apprenticeship," a structured 10-week education and internship program offered in Davis from September through November; and "Brewing Science — Practical Brewing for Microbrewers," a one-week course in August. Also presented will be a new weekend series for the advanced homebrewer and "Brewpubs and Microbreweries: The Definitive Short course," in cities throughout the United States from July through May 1995.

To register or receive a catalog of courses, contact the American Brewers' Guild at (916) 753-0497, FAX (916) 753-0176 or write A.B.G., 2110 Regis Dr., Davis, CA 95616.

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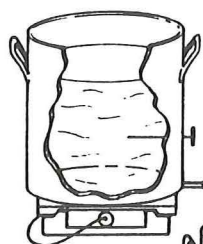
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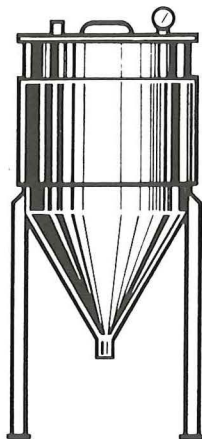
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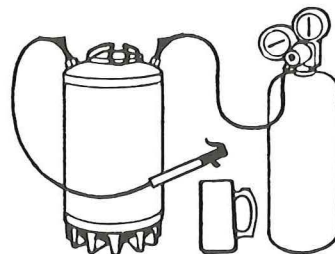
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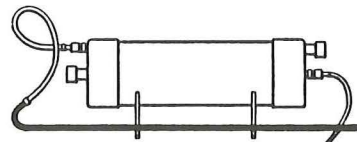
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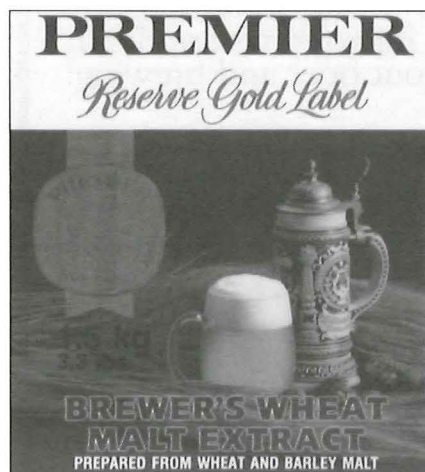
THE BEST FROM KITS

Gregg Smith

Premier Wheat and Pale Ale Kits

Brewing presents many opportunities for sharing fun with friends. Aside from sampling the results, there is the pleasure of introducing a newcomer to the activity. The simplicity of a kit beer rewards the novice with both a drinkable beer and early confidence in the somewhat mystical process of brewing.

The early experience of my co-brewers, who call themselves Ethel and Lucy, is typical. They made most every mistake possible, including following the directions that told them to add sugar to their first batch. Although the results were interesting, they weren't quite sure why their beer had acquired a cidery taste. Since that first beer, Ethel and Lucy have gone on to become award-winning homebrewers and Certified BJCP judges.



With Premier Wheat and Pale Ale kits in hand, they prepared to brew. Opening the lid they found two packets of yeast attached to each can. Knowing that yeast is alive and that temperature extremes would damage its health, Lucy and Ethel were concerned whether the kit yeast would be able to do its magic. As it turned out, their concern was warranted.

Premier Wheat

Ingredients for 5 gallons

- 2 cans Premier hopped wheat extract kit (3.3 pounds each)
- 1 cup dry malt extract (for priming)
- dry ale yeast (included with kit)

- Original specific gravity: 1.052
- Final specific gravity: 1.012

The hopped wheat extract kit was easily brewed by pouring the two cans into a gallon and a half of water for a concentrated boil. Deviating slightly from the directions, Ethel and Lucy used a 45-minute boil for sanitation and things like protein coagulation and boiling off undesirable volatiles.

When the boil was finished they placed the pot in the sink and surrounded it with ice water for quick cooling. After adding three gallons of water to their primary fermenter, they funneled in the cool wort from their brewpot, agitated the primary to supply oxygen for the yeast which was then poured in from its packet.

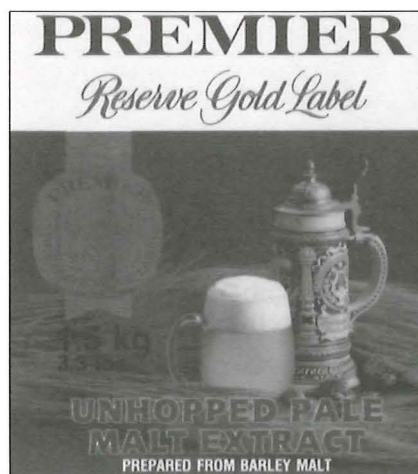
Premier Pale Ale

Ingredients for 5 gallons

- 2 cans Premier Pale Ale kit (3.3 pounds each)

- 1 ounce Northern Brewer hops, 7.8 percent alpha acid (45 minutes)
- 1/2 ounce Fuggles hops, 4.3 percent alpha acid (45 minutes)
- 1/2 ounce Tettnanger hops, 4.8 percent alpha acid (45 minutes)
- 1 tablespoon Irish moss (15 minutes)
- 1 ounce Kent Goldings hops, 4.4 percent alpha acid (finish)
- 1 package Munton and Fison ale yeast
- 1 cup pale dry malt extract (for priming)

- Original specific gravity: 1.048
- Final specific gravity: 1.010



Lucy and Ethel brewed a pale ale with the second kit, and because it was unhopped a bit of recipe formulation was required, placing the skill level at advanced novice or lower intermediate. They first determined their hopping scheme for a 45-minute boil:

- 1 ounce Northern Brewer hops
- 1/2 ounce Fuggles hops
- 1/2 ounce Tettnanger hops

Then they chose a finishing hop to add at the end of boiling (just as they turned off the stove). For this purpose they used:

1 ounce Kent Goldings hops.

As with the wheat they used a concentrated 1 1/2-gallon boil with two cans of unhopped extract. The bittering hops were added as the boil started. Then in the last 15 minutes they added 1 tablespoon of Irish moss to the boiling pot; this adds no flavor to the beer but it does help make it clear.

As they turned off the boil they added the last ounce of Kent Goldings hops and placed the pot in a sink of ice water. Three gallons of water were added to the primary along with the cooled wort, which was then agitated and the yeast pitched.

After several days Lucy and Ethel's concerns about the yeast were confirmed. There was absolutely no activity in the fermenter and, while flinging copious unchecked "I told you so's," they added two more packets of yeast that had been attached to the cans. Still there was no fermentation and amidst grum-

bling and complaining they added some Munton and Fison dried ale yeast. Within 24 hours the primary was merrily bubbling away with the smug approval of the two brewers. Final gravity was reached within five days.

Both of the beers had been fermented at a steady temperature of 65 degrees F (18 degrees C) in the beer-friendly darkness of the basement. Lucy and Ethel racked their beer to a secondary fermenter at the end of active fermentation, but they advised this could be skipped if the brewer siphoned the beer carefully into a bottling bucket.

So what did the final beers taste like? The evaluation was performed by the area's two biggest critics — Lucy and Ethel. They found the wheat beer to have the style's typical cloudiness combined with a refreshing tangy flavor. They think a specific wheat beer yeast would have made this an even better brew. They also recommended a bit higher (about 20 percent) priming rate than normal to produce the aggressive carbonation typical in wheat beers.

The pale ale was a little more to their liking, despite the difficulties with fermentation. The finished beer was an amber-copper

color with bright clarity. Hopping was acceptable but a touch light on bittering. Lucy and Ethel agree another ounce of classic English hops, like the Goldings, added about 20 minutes into the boil would have resulted in a beer closer to the style standard.

In the final evaluation, Lucy and Ethel recommend the two kits provided their suggestions regarding longer wort boils and replacing sugar with additional malt extract are incorporated into the directions.

Editor's Note: Slow starts and fermentation problems blamed on dry yeast often can be avoided by rehydrating. Preboil one-half cup water, cool to between 95 and 100 degrees F (35 and 38 degrees C) and add the yeast. Ten minutes of rehydration prior to pitching improves the viability and performance of dry yeast.

A 20-year veteran of the nuclear power industry, Gregg Smith has traveled Europe and the United States in search of great beers. A Certified BJCP judge and award-winning brewer, he has written extensively on beer and is author of *The Beer Enthusiast's Guide* (Storey Communications, 1994).

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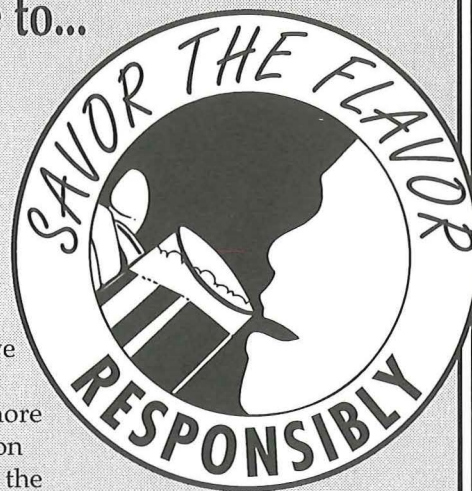
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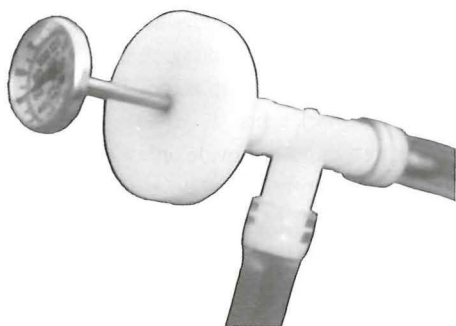
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REVIEWS

The opinions of individual reviewers do not necessarily represent the opinions of the American Homebrewers Association or *zymurgy*.

The TempTee



Every homebrewer wrestles with the demons of temperature control. From strike temperatures to sparge water and lauter-tuns to lagering, the best brewing depends on accuracy and consistency. The TempTee from Chinook Manufacturing has provided a solid addition to the homebrewer's temperature control systems.

Made of sturdy plastic, The TempTee is, as the name implies, a T-shaped cylinder with grooves on its two open ends to hold either three-eighths- or one-half-inch tubing. A metal shaft runs from the thermometer head at one end through the long shaft of the T and ends in a probe wrapped in plastic. This shaft has a wide plastic grip disc and may be slid more deeply into the T-shaped cylinder to slow or stop the flow of fluids through the unit.

Before using the device I checked its precision against three dairy thermometers. The TempTee was precise plus or minus 1 degree.

The instructions provided were clear and simple. I snipped the output line on my counterflow chiller, slipped in the TempTee and sanitized as usual.

Living in the Colorado foothills, cold ground-water temperatures vary 25 degrees

or more between August and March. Despite this, with the help of the TempTee I was able to hit and maintain a 68-degree-F (20-degree-C) reading by adjusting the flow on my chiller. Cleanup was the same as for the chiller alone.

Those who use immersion-style coolers will only be able to use the TempTee for wort exiting the boil kettle. While this may not be as useful, there are other applications for the device.

On my next batch I used the TempTee to monitor the temperature of my sparge water. Again, operation was easy and the device held up to the heat of the 170-degree-F (77-degree-C) water with no sign of its tough food-grade plastic outer construction softening or changing shape. There was, however, a slight darkening of the material from the heat. This could indicate a longer-term problem than the test batches would show.

In addition to the uses listed above, the TempTee could be used at racking to determine exact fermentation temperatures. While the homebrewer may or may not be able to fully control fermentation temperature variables, it helps in record keeping and flavor reproduction to determine the mean temperature within the fermenting or fermented wort.

The only criticism I have of the device is that the small size and round shape of the thermometer make it difficult to read. The thermometer's readings range from 0 to 220 degrees F, yet the size is just less than one inch in diameter. The range typically used in brewing is considerably smaller so fitting 220 small marks in the face is busy at best.

Overall I was impressed with the TempTee.

With its ease of sanitation and use, it fits the bill, well, to a T. If the device holds up as well as it tests, it could be a real boon for temperature-minded homebrewers.

The manufacturer's suggested retail price is \$15.95. For more information contact Chinook Manufacturing, 143 East 7570 S., Midvale, UT 84047; at (801) 562-1836.

Reviewed by Emmett Smith, a longtime homebrewer in Lakewood, Colo.

The Sucking Thing



The Sucking Thing looks and works like a modified turkey baster. As you compress the rubber bulb, air is forced through a one-way exit valve on the side of the unit. Releasing the bulb closes this exit valve and sucks air through a one-way intake valve at the end of the unit. Attach a racking tube to the hose barb at the end of the unit and you're ready to go. The unit is durable and simple in construction, and can be completely disassembled for cleaning.

Using The Sucking Thing is a breeze. Drop one end of your sanitized racking hose into your brew. Attach the other end to the hose barb (my five-sixteenths-inch outside-diameter hose fit perfectly). Elevate the unit so the racking hose runs slightly downhill into your beer. This assures that any bub-

bles in the rising column of liquid will bubble up and out of your way. Compress the rubber bulb, release and watch your beer climb up the racking hose. One squeeze of the rubber bulb nearly filled my 48-inch racking hose. Next, lower the racking hose, disconnect it from the hose barb and watch your beer flow. No sweat, no contamination, no worries.

Using The Sucking Thing made racking to a secondary fermenter more trouble free than ever. I also used it to siphon chilled wort from my brew kettle to the primary fermenter. Transferring into the primary this way eliminated the need to sanitize the pots and funnels I formerly used for this purpose and by directing the siphon flow down the interior walls of the fermenter I was able to oxygenate the chilled wort. Although I did not try this, I imagine The Sucking Thing and a short section of hose could be used instead of a wine thief to easily take samples for gravity readings. In general, using The Sucking Thing made siphoning easier and much less frustrating.

Obviously this gadget isn't for everyone — plenty of great homebrew has been made in spite of siphoning. The Luddites may cringe at the idea of yet another gadget to complicate brewing. Personally I've always been frustrated by siphoning and The Sucking Thing made it so much easier that I found myself searching for other ways a siphon might improve my brewing.

The manufacturer's suggested retail price for The Sucking Thing is \$9.95 complete with illustrated instructions. For more information contact Lowenbitter Brewing Supplies, 209 Laws Ave., Ukiah, CA 95482; (800) 474-7377.

Reviewed by Craig Hopkins, eight-year homebrewer and Association of Brewers information services manager.

The Beer Enthusiast's Guide

How does one get to be a beer judge? The question is often asked with envious skepticism, as if becoming a beer judge were only a matter of appointing oneself to the post. Yet it also hints at the gulf of knowl-

edge separating the casual taster from the true beer enthusiast.

In attempting to bridge that gulf, the ambitious but brief *The Beer Enthusiast's Guide* bites off more than it can chew. The first chapter, "Beer and the Story of Civilization," dispatches that formidable topic in a mere seven pages! From there, the book zips through an explanation of the brewing process, a catalog of beer styles, a primer on beer evaluation, an analysis of brewing ingredients and a walk-through of a judging session.

Author Gregg Smith combines an enthusiasm for beer with a serious attitude toward the subject, making this book a good introduction to the world of beer appreciation. He is to be commended for steering neophytes toward the Beer Judge Certification Program, the answer to our opening question.

Gregg, a Certified BJCP judge, is at his best when explaining the philosophy and actual mechanics of judging beer. He leads us step by step through a model tasting, from table

the brewer. He stresses positive communication and warns against overly brutal scoring of problem beers.

His attitude toward stewards is similarly enlightened: "Today's stewards are not just beer gofers and score-sheet collectors, they are tomorrow's judges." This recognition of the human factor is a too-often overlooked aspect of judging.

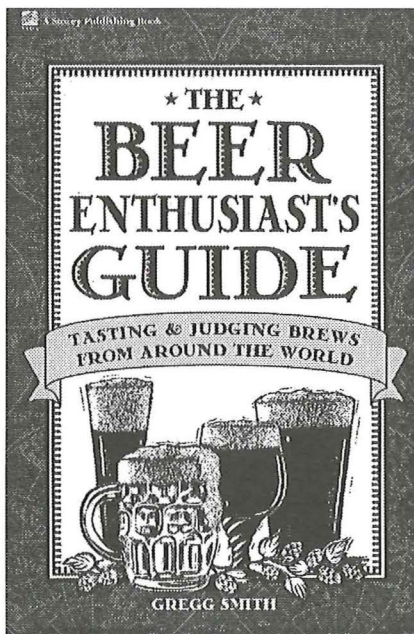
However, the usefulness of this book as a study guide for the BJCP exam is limited. The capsule descriptions of beer styles are good as far as they go, including generally accurate specifications for original gravity, color and bittering units. There are a few arguable points: for example, the French *bière de garde* style is listed under Belgian ales, and some experts might disagree with "low to medium diacetyl" as an acceptable characteristic of bock beers.

The descriptions provide only a sketchy sense of the geo-historical development of beer styles. Gregg asserts that the Vienna style "owes much of its character to the method of malting," without specifying what that method is.

The coverage of brew house procedures is likewise uneven. While the malting process is covered in some detail, the description of mashing is very basic and incomplete. There is no mention, for instance, of multiple-step infusion mashes. Fining agents are listed as brewing ingredients, but beer clarification as a process is not discussed.

Some subjects lend themselves to Gregg's "crash course" approach better than others. The distinction between ale and lager yeasts is drawn succinctly and lucidly. Water, on the other hand, is a notoriously complex subject that has tripped up many a beer author. In this book, the significance of the various ionic constituents of water is tangled up in a couple of confusing paragraphs.

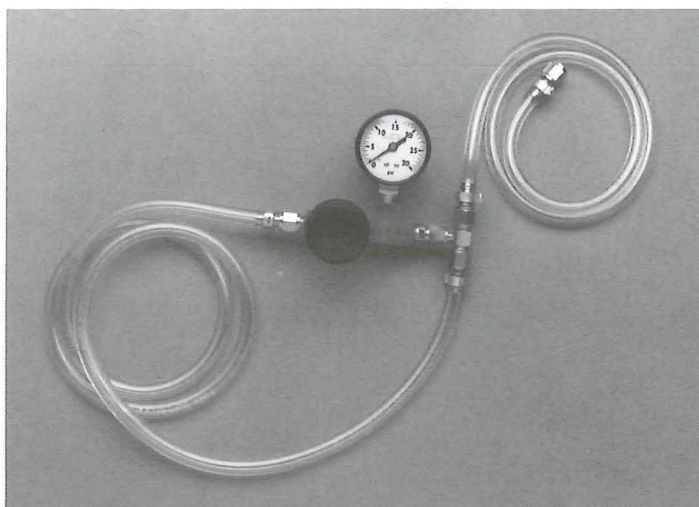
Oddly, the chapter titled "Preparing for the BJCP Exam" is devoted mostly to the logistics of conducting a tasting and judging session. The only guidance prospective BJCP examinees will find here are some generalized (though useful) comments about mental preparation and organization of exam time. One would have hoped to see some samples of exam questions or some ideas for study methods (flash cards, club study sessions, etc.)



settings to completed score sheets. His advice will prove useful not only to competition judges, but also to anyone organizing an informal beer-tasting session.

Gregg's remarks on the priorities of beer judging are well taken. He explains the need to evaluate aroma first, before its ephemeral qualities are lost. Gregg also urges homebrew judges to focus on the goal of helping

The author would do well to limit the scope of future editions of *The Beer Enthusiast's Guide*. An explanation of hop cultivation seems entirely extraneous, as do the appendices listing homebrew shops and brewpubs. Most of this information is available else-



where in more complete form. A book of similar size that focuses solely on the process of beer judging would play to the author's strengths and help fill a void in the literature.

(*The Beer Enthusiast's Guide* by Gregg Smith, Storey Communications, 1994, publisher's suggested retail price: \$12.95.)

Reviewed by Eric McClary, an Honorary Master judge and BJCP committee chairman.

The Carbonator

Benjamin Machine Products (BMP) has added an "In-Line Carbonator" to its already successful line of products. The carbonator allows you to instantly carbonate a keg by pushing beer with CO₂ from the beverage side of one keg through a stone and filling the receiving keg through the down tube.

The carbonating system consists of a stone placed within a removable stainless-steel T (for cleaning purposes), a hose that mates to the inlet side for the stone and a hose that mates to the outlet side of the stone. A relief valve for the receiving keg is recommended and can be purchased from BMP. Not provided are two beverage fittings with hose barbs (or stem and nut fittings) that attach to the inlet and outlet hoses for the stone and a gas fitting with a hose barb that attaches to the relief valve. A single source of CO₂ is used to push the beer and to provide gas to the carbonating stone, so you will also need a three-way splitter for the CO₂ line.

Documentation provided includes a seven-step procedure for using the "In-Line Car-

bonator," a diagram displaying the layout of the system and a carbonation level chart listing atmospheres required, temperature and necessary psi levels.

Beer must be cold in order to efficiently and properly use the "In-Line Carbonator." BMP recommends 40 degrees F (4 degrees C), but I suggest this is a high-end limit. The colder the beer the better. Norm Dickenson and I used a cold box set at 30 degrees F (-1 degree C) to chill the wheat beer we had selected to carbonate. Using the carbonation level chart and directions provided, we set the CO₂ cylinder pressure at 15 psi to achieve a carbonation level of three atmospheres.

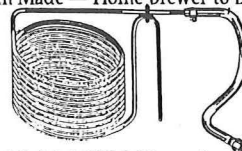
We found it was a delicate process to maintain a nice steady flow of tight CO₂ bubbles as the beer passed through the stone. If back pressure at the receiving keg wasn't closely monitored you could lose that steady flow of tight bubbles. In less than half an hour we had a finished beer, ready to drink with an estimated carbonation level of about two atmospheres.

While we didn't achieve the desired CO₂ level as first-time users, I think it's fair to say that with a bit more experience using the carbonator we could obtain the level we sought. The "In-Line Carbonator" is a nice addition that will enhance any brewer's draft system.

Manufacturer's suggested retail price is \$75. For more information contact Benjamin Machine Products, 1121 Doker Dr. Unit 7, Modesto, CA 95351; call or FAX (209) 523-8874. *Reviewed by Paddy Giffen, AHA 1993 Homebrewer of the Year.*

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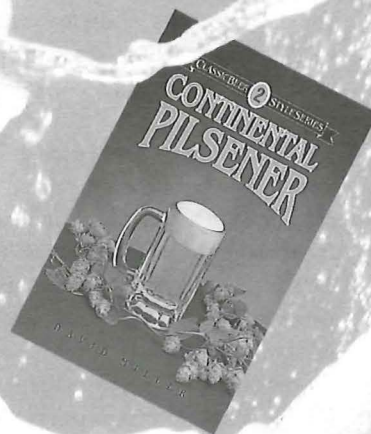
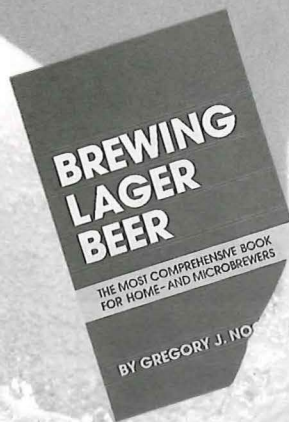
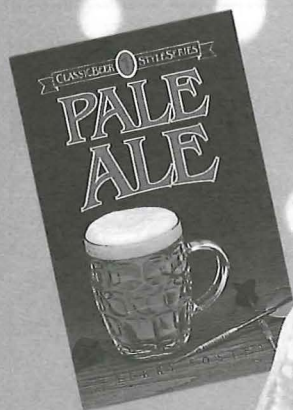
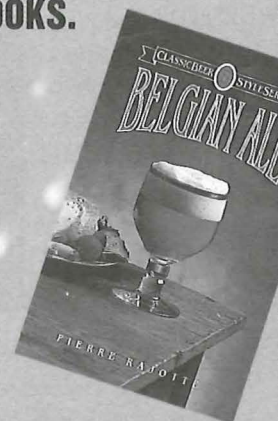
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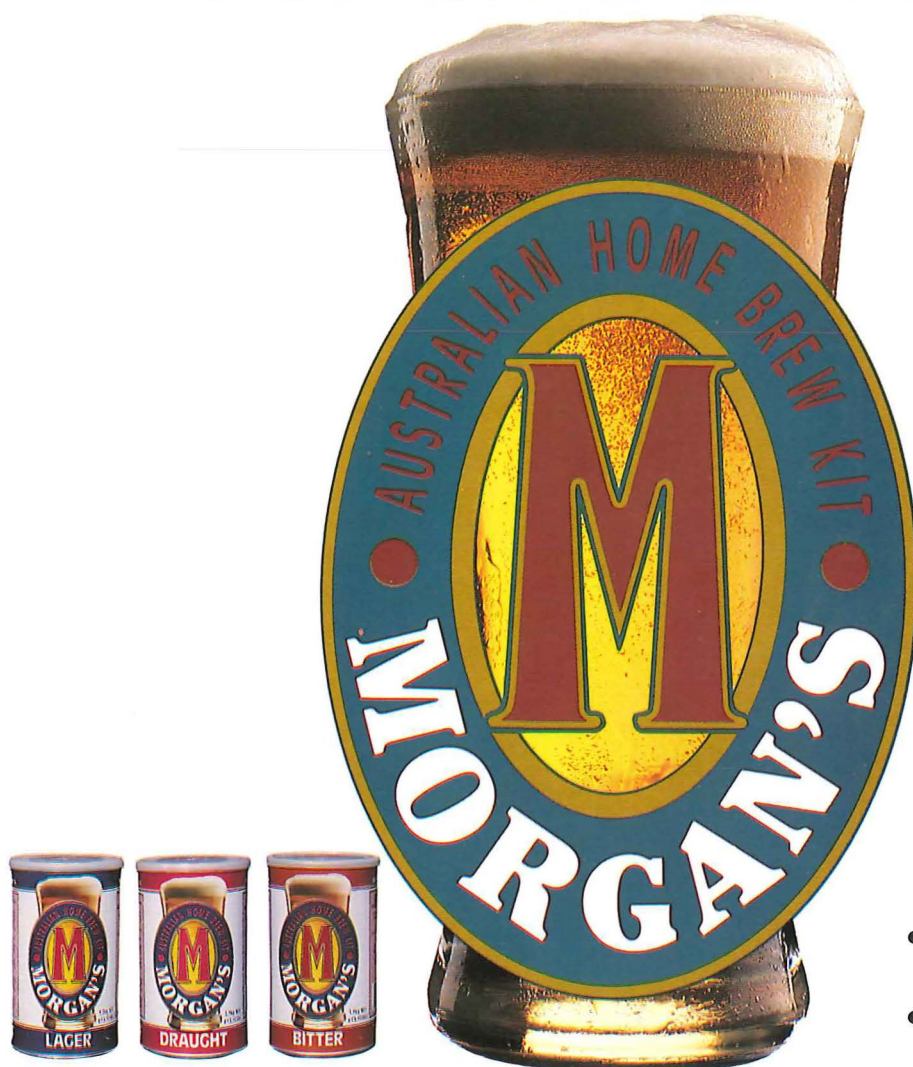
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1990

GOLD MEDAL, European Pilseners

GOLD MEDAL, Doppelbocks

1991

SILVER MEDAL, Dusseldorf Style Altbiers

1992

GOLD MEDAL, Dusseldorf Style Altbiers

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1993

SILVER MEDAL, Amber Lager

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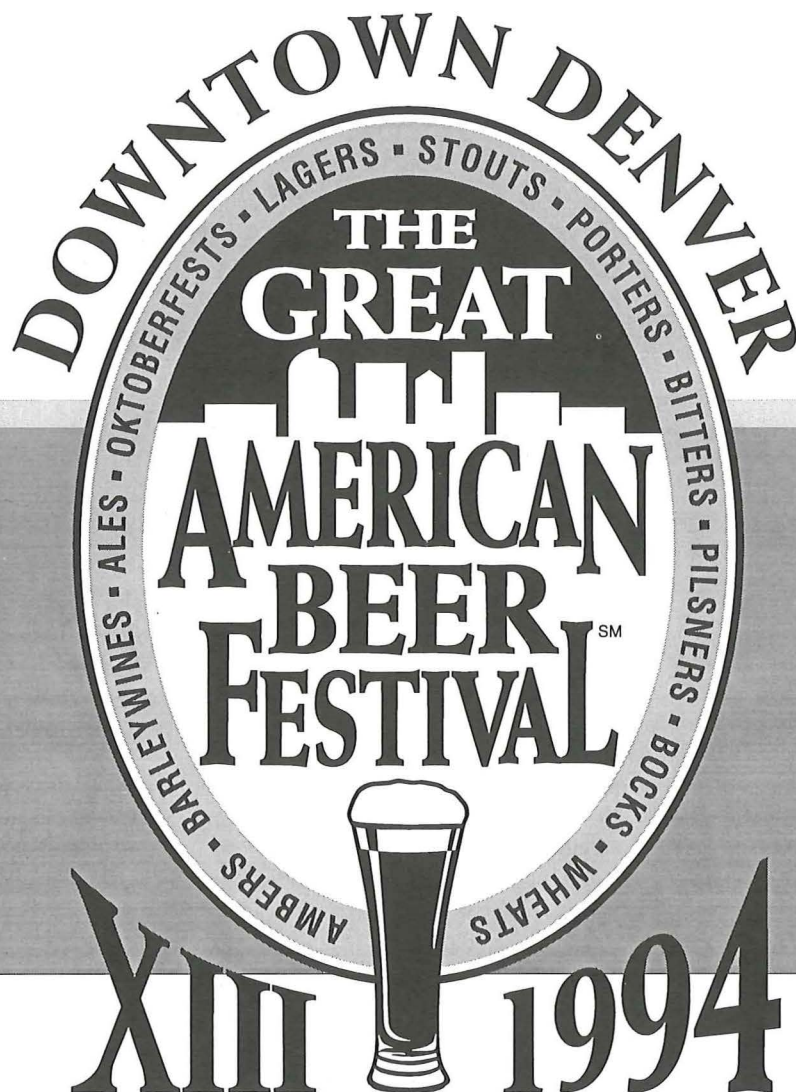
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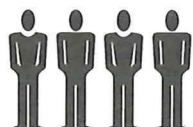


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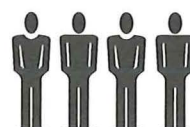
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All AHA members who purchase a general admission ticket are eligible to receive a special invitation to the private **Members-Only Tasting** on Saturday, Oct. 22, from 12:30 p.m. to 4:30 p.m.
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HOMEBREW CLUBS



James Spence

Big Competitions: How They're Run



John Algysa, Recognized BJCP judge, judges first-round entries at the AHA 1994 National Homebrew Competition in Denver, Colo.

Each year the AHA sanctions about 100 homebrew competitions across the country. The average number of entries in each competition is 121, but a handful each year represent enormous undertakings. For the past 11 years the Dixie Cup has judged more than 600 entries. The 1994 Bluebonnet Brewoff exploded from about

300 entries in 1993 to more than 500. Each of the five regional sites for the AHA 1994 National Homebrew Competition will judge about 600 entries.

The Dixie Cup is the brainchild of the Foam Rangers homebrew club of Houston. In 1985 the competition had 178 entries and quickly grew to 478 by 1988. With the 1993 numbers

at 677, the competition is the largest single-site homebrew judging in the country, if not the world. In conjunction with the competition, the Dixie Cup offers what's called a "milli-conference" that includes a pub crawl, talks by homebrew luminaries and potluck dinners. Andy Thomas, the 1993 Dixie Cup organizer, describes the event this way: "We try to draw judges to the competition by offering the biggest variety of stuff to do. It's almost mass hysteria, although last year's was probably the smoothest-run Dixie Cup of all time. It's multifaceted, a big party, a beer infusion weekend, semiorganized pandemonium and a lot of fun." In a unique tasting in 1993, guest speaker Fred Eckhardt showcased beer, chocolate and specially chosen Mozart for a full sensory experience.

Andy says the growth in entries, expected to reach 800 this year, may require a preliminary round prior to the milli-conference. The entries have been judged on Friday with followup sessions on Saturday.

Organizers begin rounding up volunteers in April in order to have everything in place by the late October competition date. "The secret is to delegate everything," says Andy, "Otherwise you'll be pulling your hair out." The 1993 Dixie Cup had 15 to 20 committees, some just one person, to handle all the de-

CLUB-ONLY COMPETITION WINNERS

HAIL TO ALE

★ *First Place*
Michael Knaub,
Mt. Wolf, Pa., of the York Area
Homebrewers Association (YAHA)

★ *Second Place*
Timothy Leithner,
Charlotte, N.C., of the Carolina
Brewmasters

★ *Third Place*
Frank Leers,
San Diego, Calif., of QUAFF

The 62-entry competition was organized by the Boston Wort Processors.

BOCK IS BEST

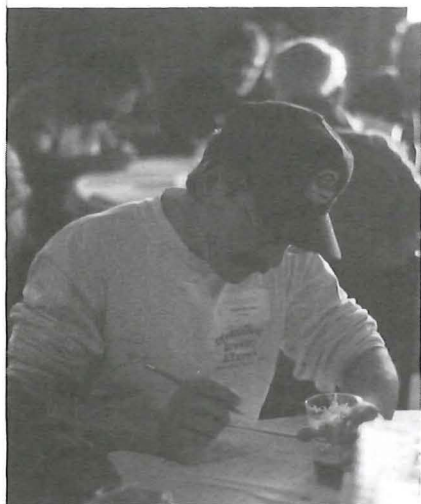
★ *First Place*
Arthur Steinhoff,
Burlington, Wis.,
of the Bidal
Society of Kenosha

★ *Second Place*
Phil Brushaber,
Dallas, Texas, of the North Texas
Home Brewers Association

★ *Third Place*
Tony McCauley,
Normal, Ill., of the Association of Bloomington/Normal Brewers (ABNormal)

The 52-entry competition was organized by the Maine Ale & Lager Tasters (MALT).



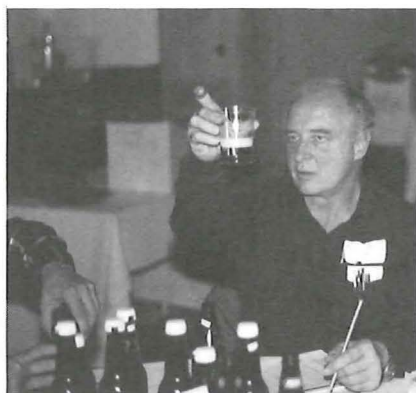


David Brereton, a Certified BJCP judge, at the first round of the AHA 1994 National Homebrew Competition in Denver, Colo.

tails. Awards organizer, T-shirt organizer, mailing organizer, judge organizer, steward organizer, pub-crawl organizer and beer marshals are all recruited from the Foam Rangers. They even recruited the Crescent City Homebrewers of New Orleans to "brew" a batch of

jambalaya — a big hit with the Dixie Cuppers.

For a few years the Bluebonnet Brewoff in the Dallas/Fort Worth area held steady with about 280 entries. In 1994, however, the competition accepted 539 homebrews, 50 percent more entries than the previous year. The competition started several years ago with three clubs forming a committee with a charter and bylaws specifically to create a self-sustaining competition. The North Texas



A.L. Kinchen, a Certified BJCP judge, judges for the AHA 1994 National Homebrew Competition in Denver, Colo.



1993 Dixie Cup

Homebrewers Association, the Cowtown Capers and the Arlington Homebrew Club were the original triad, but after the Arlington club phased out, the Denton Fermented Brewers Society was invited to join the alliance and continues to participate.

Each club appoints two members to the Bluebonnet committee. The competition ro-



AHA SANCTIONED COMPETITION

Kudos

Aug. 29, 1993

PUGET SOUND AMATEUR WINE & BEER MAKERS CLUB COMPETITION

Puyallup, Wash., 203 entries.
Rick Star of Kirkland, Wash., won best of show.

Sept. 1, 1993

LOS ANGELES COUNTY FAIR

Pomona, Calif., 104 entries.
Grover Vos of Thousand Oaks, Calif., won best of show.

Oct. 16, 1993

NORTHERN NEW ENGLAND REGIONAL HOMEBREW COMPETITION

South Portland, Maine, 155 entries.
Chris Truslow of Steep Falls, Maine, won best of show.

Dec. 18, 1993

HAPPY HOLIDAYS HOMEBREW COMPETITION

St. Louis, Mo., 139 entries.
Dennis Davison of Greenfield, Wis., won best of show.

Jan. 22, 1994

BAY AREA BREW-OFF

Dublin, Calif., 176 entries.
Richard Mansfield and Mike Smith of San Jose, Calif., won the competition.

Jan. 22, 1994

WINTERFEST '94

Las Vegas, Nev., 151 entries.
Joe Urcioli of Henderson, Nev., won best of show.

Jan. 23, 1994

FIRST NATIONAL DEAF HOMEBREW COMPETITION

Portland, Ore., 27 entries.
Scott Martin of Portland, Ore., won best of show.

Feb. 6, 1994

FLORIDA STATE FAIR COMPETITION

Tampa, Fla., 36 entries.
Bill Jenkins of Tampa, Fla., won best of show.

Feb. 11, 1994

1994 ANCHORAGE FUR RENDEZVOUS

Anchorage, Alaska, 187 entries.
Shane Docherty of Anchorage, Alaska, won best of show.

Feb. 21, 1994

COPA TOO'S ANNUAL PRESIDENT'S DAY HOMEBREW COMPETITION

Philadelphia, Pa., 58 entries.
George Hummel of Philadelphia, Pa., won best of show.

March 5, 1994

AMERICA'S FINEST CITY HOMEBREW COMPETITION

San Diego, CA, 167 entries.
Gray and Liz Lorton of Carlsbad, Calif., won best of show.

March 5, 1994

MARQUIS DE SUDS 10TH ANNUAL HOMEBREW COMPETITION

Calgary, Alberta, 185 entries.
Cal Cran of Calgary, Alberta, won best of show.

March 5, 1994

"WORT YOU BREWIN'?"

Vancouver, British Columbia, 123 entries.
Dan Marsh of Edmonton, Alberta, won best of show.

March 5-6, 1994

HWBTA 1994 NATIONAL HOMEBREW COMPETITION

Ashburn, Va., 367 entries.
Bill Szymczak, Gaithersburg, Md., won best of show.

March 6, 1994

BLUEBONNET BREWOFF

Irving, Texas, 539 entries.
John Manczuk of Watauga, Texas, won best of show.

March 12, 1994

ITHACA BREWERS UNION OPEN HOMEBREW COMPETITION

Ithaca, N.Y., 103 entries.
Ken Morton of Ithaca, N.Y., won best of show.

tates to a different club each year — the North Texas Homebrewers hosted the March competition and the Denton Fermented Brewers will be host in 1995. A director from the host club is chosen and from that point on, according to Tom Henderson, the 1994 Bluebonnet director, "You are no longer attached to your club, you are working for the Bluebonnet on a nonpartisan basis." The committee members

are responsible for reporting back to the three clubs, and a treasurer and secretary are chosen from the two clubs not hosting the site. "We probably have about 350 people involved in the competition. I think the Bluebonnet is unique because we have three clubs organizing the competition," Tom says. Entries come mainly from the three clubs, but entries from across the United States are accepted.

The AHA National Homebrew Competition first-round sites draw large numbers of participants from local and regional homebrew clubs. Russ Wigglesworth, a California site organizer for several years, says, "Having good club support is extremely helpful when running the Nationals. We've been very lucky in California to have strong support from many clubs. Volunteers from

NEW AHA REGISTERED HOMEBREW CLUBS

NEW CLUBS

ALASKA

Matanuska Thunder Brewers, *c/o Lowell S. Burgett*, PO Box 874554, Wasilla, AK 99687; (907) 373-0885.

CALIFORNIA

Brewers Guild of the Green Dragon, *c/o Tom Messenger*, 1424 Bayoaks Dr., Los Osos, CA 93402.

High Desert Barley Hoppers, *c/o Don Miller*, 8755 Devon Ave., Hesperia, CA 92345; (619) 947-7944.

Long Beach Homebrewers, *c/o Richard Lynn*, 5120 Faust Ave., Lakewood, CA 90713-1924; (310) 867-8412, CompuServe 73767,2212.

Marin Society of Homebrewers (MASH), *c/o Mike Riddle*, 2 Mt. Rainier Dr., San Rafael, CA 94903; (415) 472-3390.

Underground Spirits Association (USA), *c/o The Coddfish*, 8343 Quartz Ave., Winnetka, CA 91306; (818) 998-1637.

COLORADO

Fermentations of Aurora Mashers (FOAM), *c/o Doug Collins*, 221 Zion St., Aurora, CO 80011; (303) 366-5957.

FLORIDA

Caloosa Hop Heads, *c/o Gary Couter*, 826 S.E. 41st St., Cape Coral, FL 33904; (813) 549-7567.

HAWAII

Hawaiian Homebrewers Association, PO Box 852, Hauula, HI 96717; (808) 293-2229.

ILLINOIS

Brewers On the Bluff, *c/o Lake Bluff Park Distributor/Steve Howard*, PO Box 95, Lake Bluff, IL 60044; (708) 234-4150.

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, FAX (303) 447-2825, CompuServe 70740,1107.

INDIANA

Lafayette Brewing Bovinophiles, *c/o Russell H. Stwalley*, 512 Main St., Lafayette, IN 47901; (317) 742-2696.

LOUISIANA

Baton Rouge Enzyme Wrights (BREW), *c/o Jim Waits*, 1818 Wooddale Blvd. #18, Baton Rouge, LA 70806; (504) 926-BEER.

MARYLAND

Summer Hill Brewers, *c/o Bert Belote*, 222 Little New York Rd., Rising Sun, MD 21911; (410) 658-2865.

MICHIGAN

Kalamazoo Libation Organization of Brewers (KLOB), *c/o Dan Kiplinger*, 632 Oak St., Apt. 3, Kalamazoo, MI 49008; (616) 381-3266.

Mid-Michigan Brewers Union, *c/o Martin Woods*, 1404 Westerrace Dr., Flint, MI 48532; (810) 733-1870.

NEBRASKA

Respected Ale & Lager Fermentors — Of Nebraska (RALF-ON), *c/o Jeff Ramage*, 116 Westridge Ave., Bellevue, NE 68005-3515; (402) 291-2208.

NEW HAMPSHIRE

The Stagger Inn Brewers, *c/o Scott Dean*, 219 N. River Rd., Epping, NH 03042; (603) 679-1045.

NEW JERSEY

Hophedz, *c/o Kerry Bendel*, 38 Kirschner Ave., Lincoln Park, NJ 07035; (201) 633-7679.

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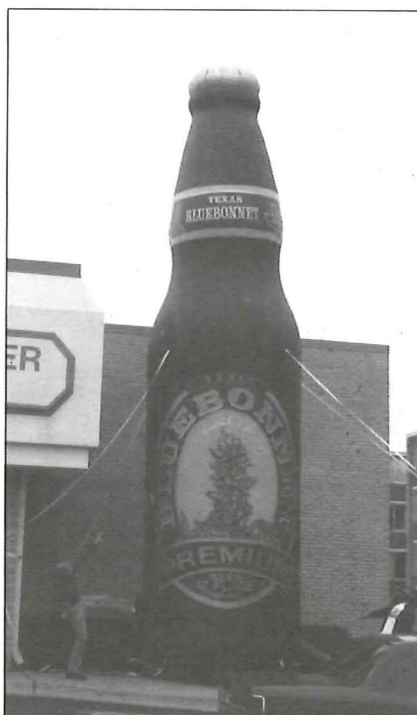
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the local clubs are on site during the arrival period to assist with unpacking, and most of the major clubs throughout the region send a contingent of members for the judging days. As organizers our intention has always been to share the workload as much as possible and represent as many of the state's clubs as we can." In most cases, the sites draw judges and participants from several area homebrew clubs, even though there may be a strong local club responsible for the principal coordinating. For example, the Bloatarians Brewing Society of Ohio, a strong, active club, draws many of its volunteers from the membership, as does the Chicago Beer Society for the Chicago site.

The bottom line for homebrew competitions is that a long-standing relationship between homebrew clubs and quality competitions has been formed over time. Homebrew clubs provide impetus, variety and plain old labor to homebrew competitions, meaning that clubs are the common denominator for the end goal — making better beer and having fun doing it.



Mark Norbuy (NTHBA) and Carlos Kelly (Cowtown Cappers) size up the Texas Brewing Co. Bluebonnet signpost.

Group Gear Gatherings

A worthwhile event to encourage brewing, take advantage of a club's resident experts and have an all-around good time is to have a meeting where people get to build a piece of equipment. Like an old-fashioned barn raising, projects can be completed under the guidance of members who know what they're doing. For example, you could have everyone chip in a sum of money, do a bulk purchase of copper tubing and have the group produce wort chillers. Your members save money, learn how to build their own gear and have fun constructing good brewing stuff. You could build two-bucket lautering/sparging systems or racking and siphoning equipment.

Take advantage of the experts in your club. Plumbers? Carpenters? Mechanics? Engineers? All-around handy people? Use that expensively trained and expensively obtained knowledge to help your club have good, productive fun.

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**Thanks to Brewers Publications and Candy Schermerhorn,
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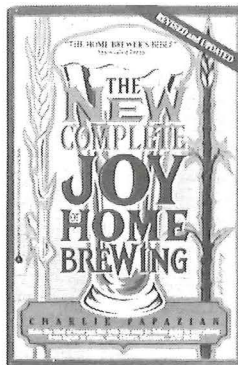
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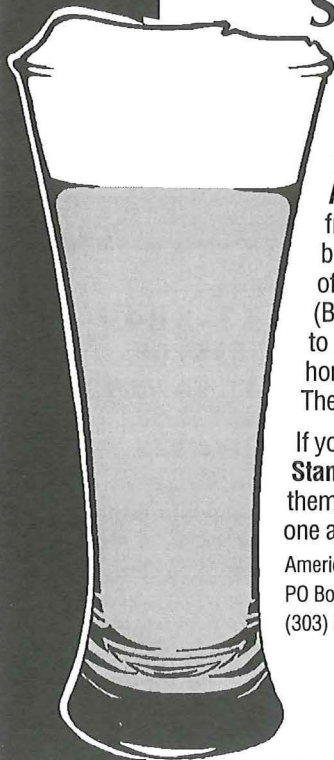
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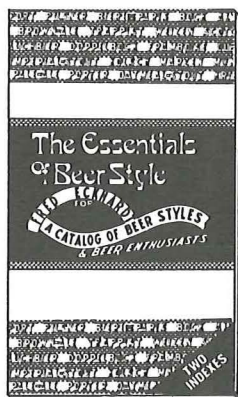
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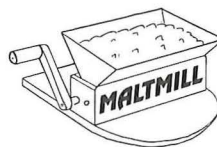
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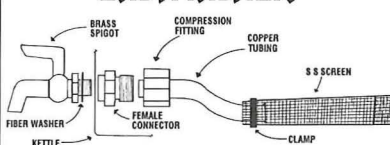
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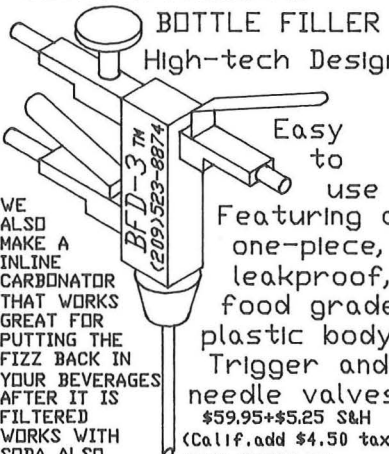


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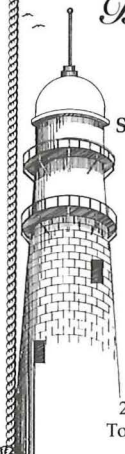


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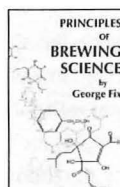
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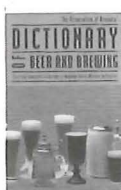
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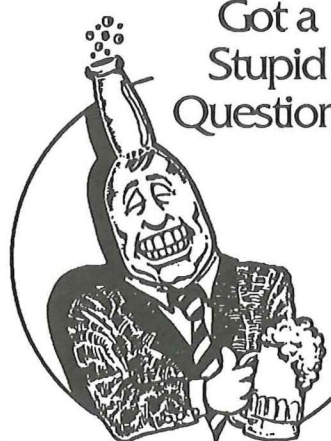
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LAST DROP



Pumpkin Ale! It sounded like a great idea when I read a recipe in *zymurgy*. I found a huge display of pumpkins ready for the Halloween season and thought it was a pity to carve them up when I could turn them into homebrew. I bought a 13-pound pumpkin and got down to a quiet Sunday morning brewing session, but little did I know this particular pumpkin had taken its role as a jack-o'-lantern seriously.

The first problem was how to incorporate the pumpkin into the mash. It might be asking for trouble to reduce the pumpkin to a pulp before mashing. I worried the pulp would clog the sparge bed and prevent a good runoff. I settled on cutting the pumpkin into large pieces, cooking just enough to soften and then grating it using the large holes on a box grater. This went according to plan, and an hour later the jack-o'-lantern was reduced to a pile of shreds.

I mashed seven pounds of klages malt, 11 quarts of water and the pumpkin in my favorite five-gallon pot with some difficulty. As I heated the mash on the stove I noticed the mash changed texture slightly as the temperature rose.

I brought the mash to 132 degrees F and let it rest in an insulated box for about 30 minutes. Then I raised the temperature to 145 degrees F to start the saccharification. I noticed a loosening of the mash. The pumpkin shreds had softened but remained pretty much intact. I left this for an hour and then tested for starch with iodine. In most of my mashes with klages and adjuncts 30 minutes was long enough, but this stuff had lots of starch left after an hour. I told myself, "relax, a little longer at a little higher temperature will do the trick."

I raised the temperature again and as I stirred I noticed the shreds had now broken

Monster Mash



down into smaller but still identifiable pieces. I held the temperature at 153 degrees F for a couple of hours. By this time the pumpkin was pulp. The iodine test showed there was still a trace of starch, but I couldn't delay the sparge any longer. The beer from hell was beginning to reveal its true personality. How could I have known this pumpkin dreamed of being carved into the shape of a Samurai warrior.

I put the mash into what Charlie Papazian describes as a Zapap lauter tun and away it went. Well, to be honest, it didn't go at all. By this time the mash was the consistency of tapioca pudding. "Be patient," I told myself. I sat down with a homebrew and watched the Saints and the Rams battle on Sunday night football while the runoff came to a complete stop. I had read about stuck runoffs before and had a few slow ones but never anything like this. From now on I won't plan to make beer around Halloween and maybe I should avoid Friday the 13th, too. I finally resorted to stirring, or rather lifting and dropping, the grain in the bed. I got irritated as I irrigated

the grain bed, but managed to recover six of the nine gallons of liquid that went into the mash and sparge.

After that things went smoothly. I boiled the wort for about an hour with ginger, cinnamon, nutmeg and mace, cooled the wort and let it settle overnight. I racked five gallons of the muddiest looking 1.050 wort I have seen in 100 batches of brewing and pitched the yeast. The beer from hell was finally in the fermenter and on its way. I captured the essence of that pumpkin in a bottle, but I wondered if I had really defeated the jack-o'-lantern. Only time would tell.

I was worried about clarity, but by bottling time the beer was crystal clear. After suitable time for carbonation I chilled myself a bottle and poured it. It was one of the prettiest beers I've ever made. It was the color of pale straw with a hint of orange. The aroma was terrible and the flavor was harsh with an overpowering nutmeg/mace element.

Being an experienced meadmaker, I knew that many harsh flavors mellow with age. Now that more than a year has passed I can say the harsh flavors have passed, but the nutmeg/mace flavor is still overpowering. I occasionally chill a bottle, drink it and start to think that maybe I could make a good pumpkin beer with a little Tettnanger hops leaving out the nutmeg and mace. But after about half a bottle I start to get an uneasy feeling that there is a great Samurai with flaming eyes and a wicked grin laughing at me from the shadows. I wonder if my neighbors would think it weird if I decorated my lawn with bottles of jack-o'-lantern ale painted to look like Samurai warriors this Halloween.

By Alan Barnes, physicist at Vanderbilt University, homebrewer for eight years and founding member of the Mashville Brews. Alan placed third in the bock category of the AHA 1993 National Homebrew Competition.

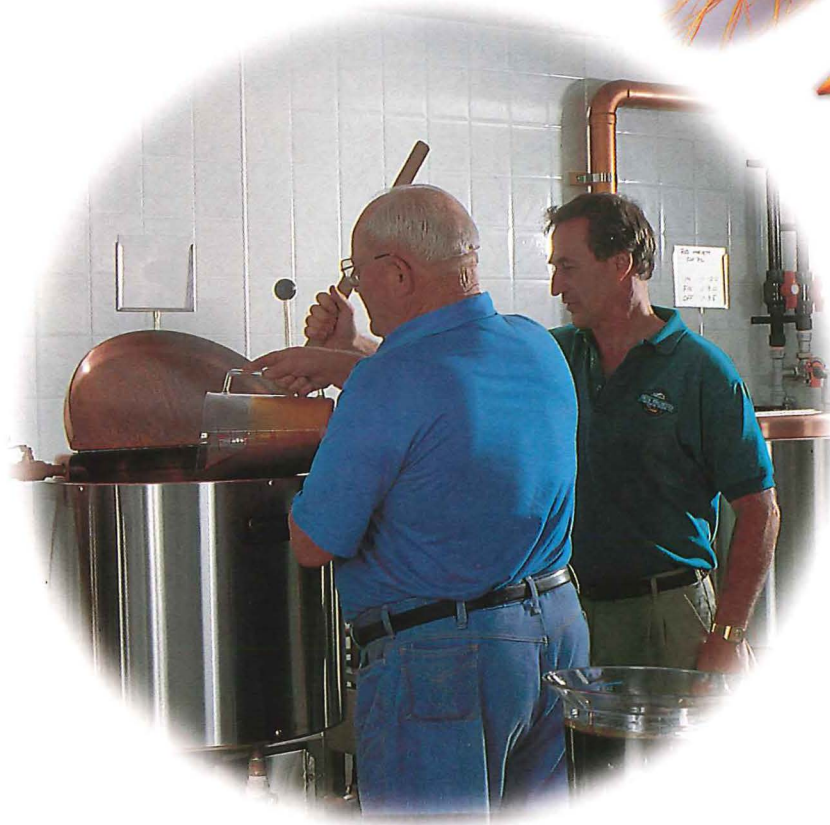
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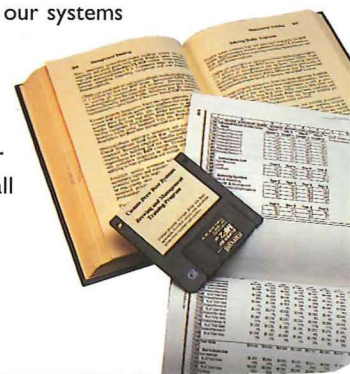
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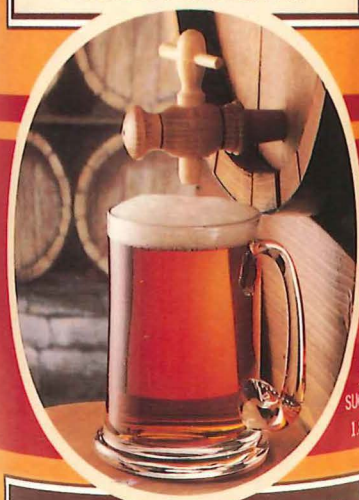
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