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FOR THE HOMEBREWER AND BEER LOVER



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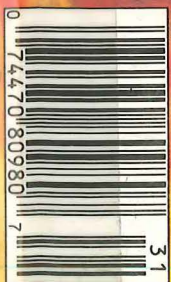
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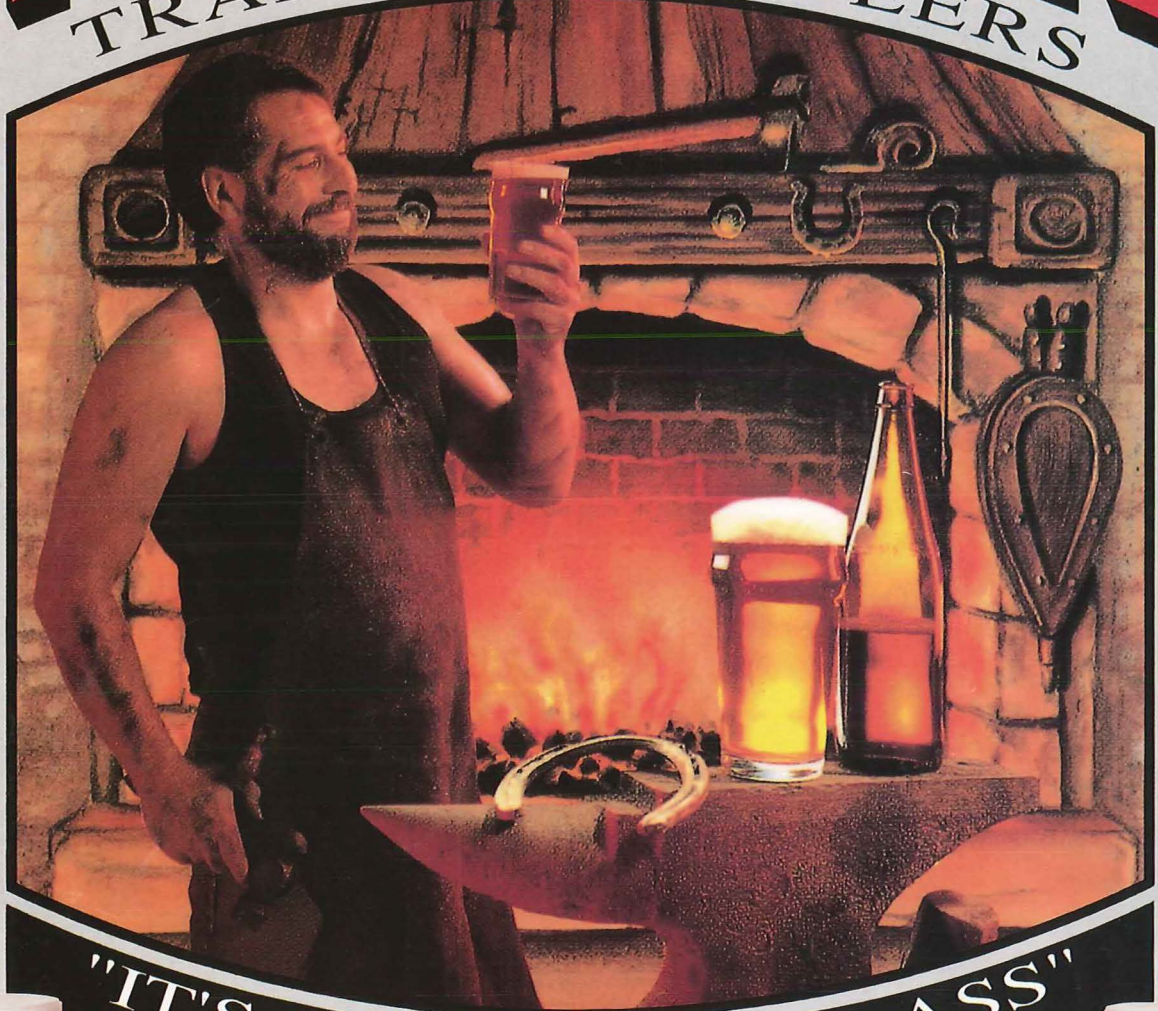
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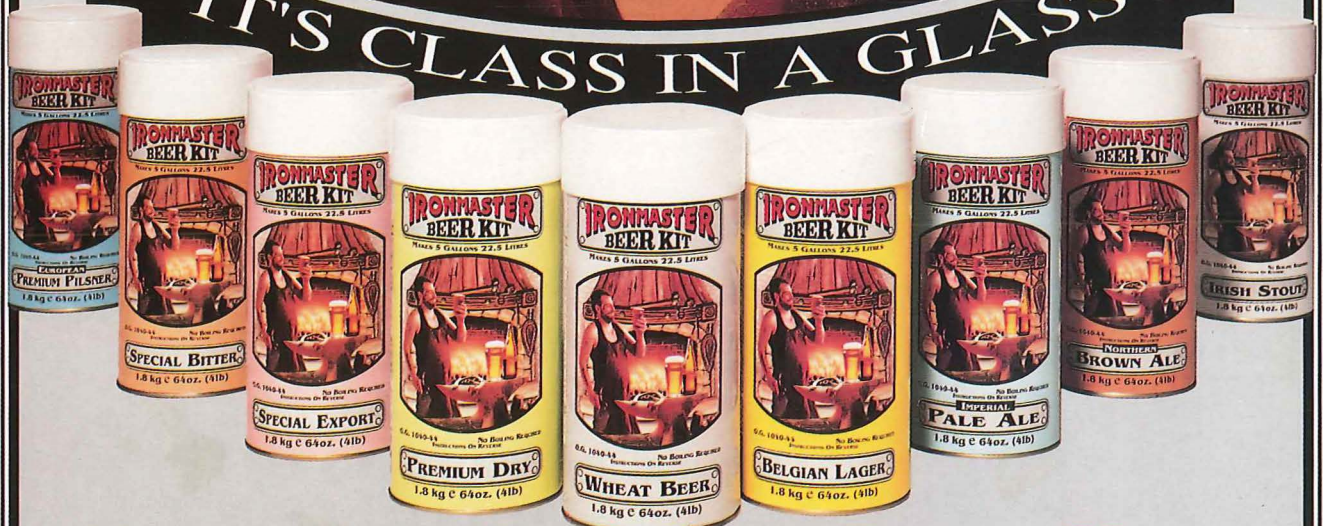


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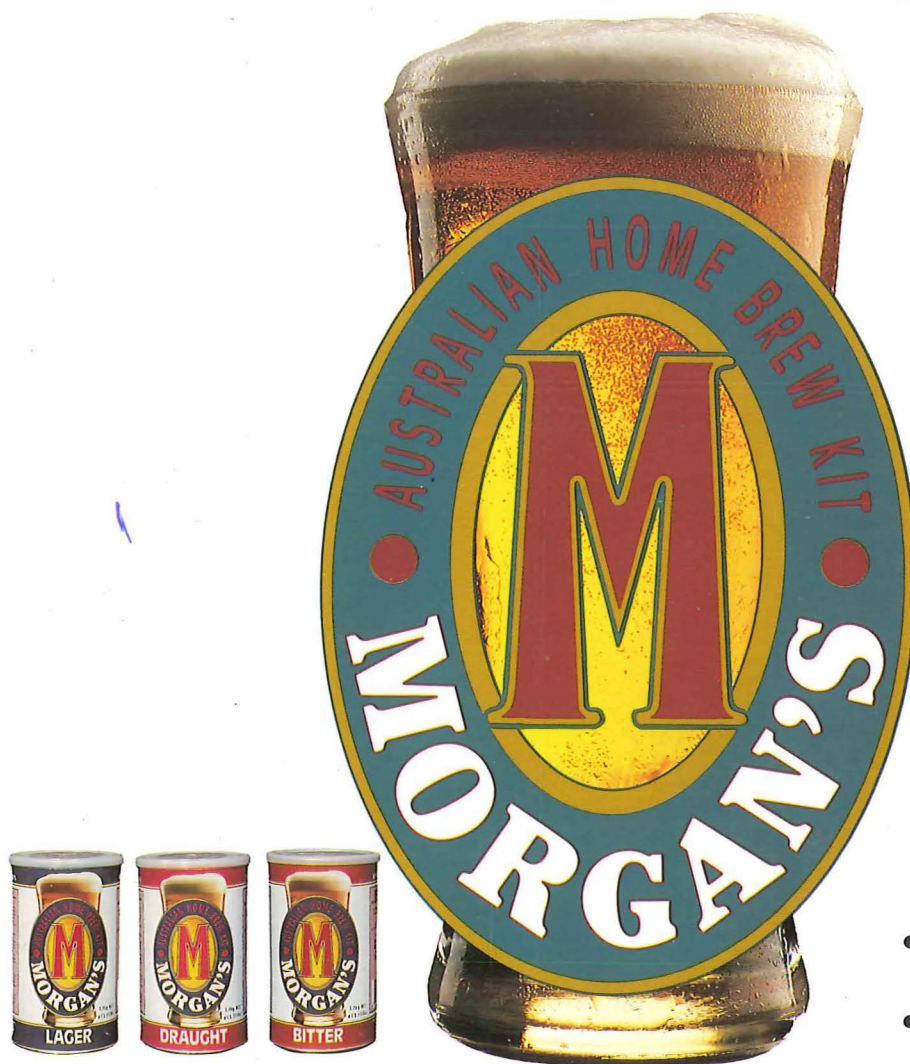
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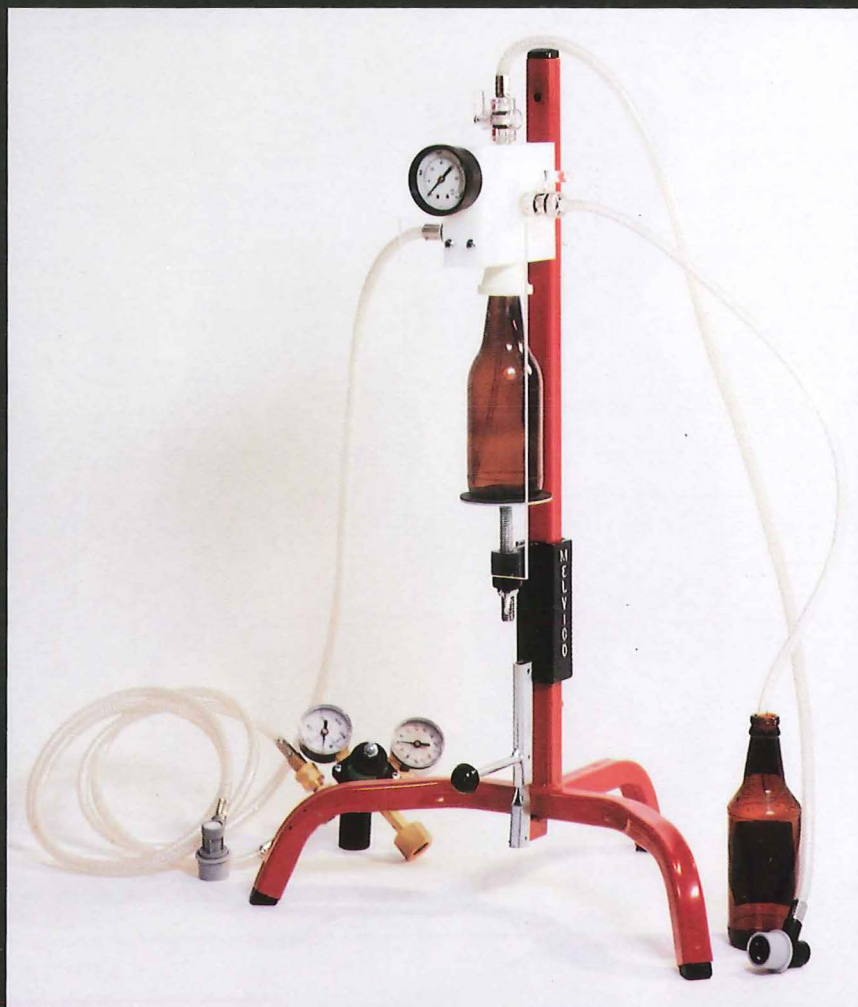
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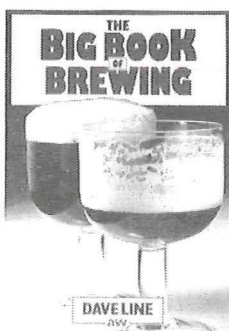
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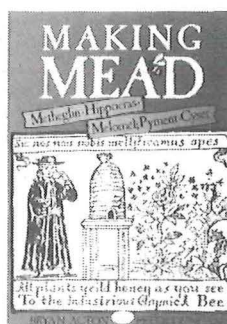
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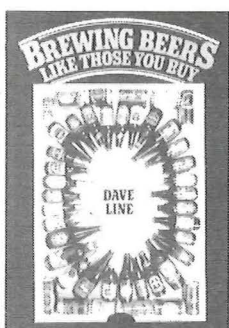
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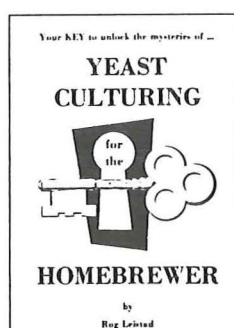
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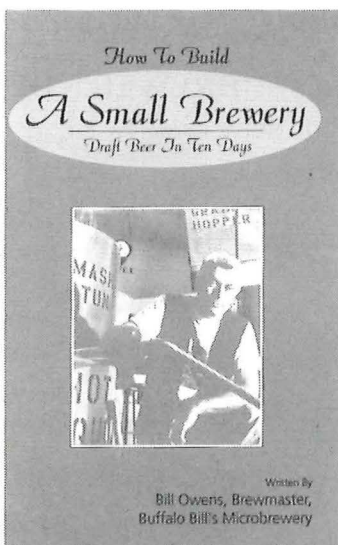
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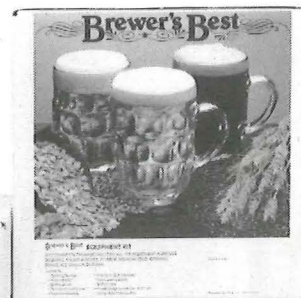
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FOR THE HOMEBREWER AND BEER LOVER



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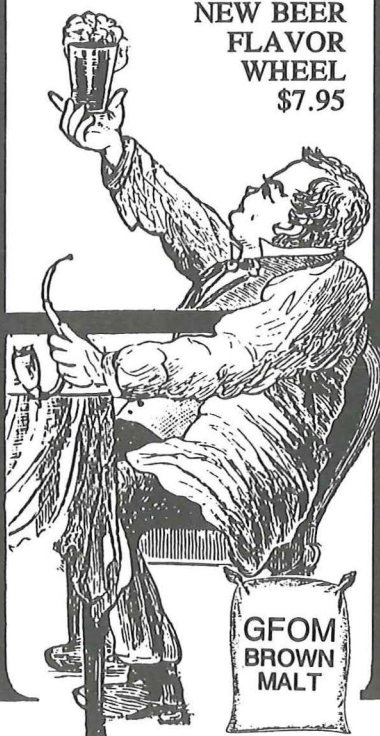
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THE AMERICAN HOMEBREWERS ASSOCIATION MISSION STATEMENT

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

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EDITORIAL

Charlie Papazian

zī 'mər jē

zymurgy has a new look. You've noticed. Don't worry, have a beer. Yes, I mean it, go and crack one open right now. It'll taste as good as it did before we metamorphosed. We've dressed ourselves up so you can take us out. Now all we have to do is behave.

Zymurgy. It's the last word in our dictionary. Pronounced zī'mər jē. Simply put, it's the art and science of yeast fermentation, as in making beer. We've always strived to reflect the essence of that strange word within the covers of this magazine. It has always been fun to be focused on the hobby of homebrewing and beer appreciation with due respect for the technical nature of our brewing endeavors.

15TH YEAR

This issue of *zymurgy* marks the beginning of the 15th year of publication since the founding of the American Homebrewers Association in 1978. America's appreciation of beer and perceptions of homebrewing have evolved dramatically since our first 12-page issue. *zymurgy* has evolved as well. There is little doubt about this when one peruses past pages.

In deciding what goes into each issue of *zymurgy* we have never taken our readers for granted. We are grappling constantly with the essence of who you are and what your needs are, while striving to maintain an image of the hobby in which we can all take a great deal of pride. We continue to ask you in surveys and other communications who you are and what your interests are.

ZYMURGY
Journal of the American Homebrewers Association [1992]



THE MAGAZINE FOR THE HOMEBREWER AND BEER LOVER
ZYMURGY
PUBLISHED BY THE AMERICAN HOMEBREWERS ASSOCIATION

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Zymurgy
Published by the American Homebrewers Association

Vol. 15 No. 1 Winter 1992 Published by the American Homebrewers Association \$5.00
ZYMURGY
FOR THE HOMEBREWER AND BEER LOVER


While the fresh redesign of *zymurgy* may seem quite sudden, it has been more than 12 months in the making. Marketing Director Matt Waller, Graphics Director Tim Sposato, Art Director Marilyn Cohen, Editor Elizabeth Gold and AHA Vice President Karen Barela, production and art staff, circulation and sales departments have been reviewing the needs and priorities of various and sometimes complex interests. If it could, *zymurgy* might indeed appreciate having a beer.

You may have noticed some changes over the past 12 months. You've seen a higher profile of technical articles while we maintain and improve the quality of beginners articles. For the new brewer, valuable and reassuring information and reviews continue to be sought. The presentation of our advertisers has undergone some important changes to make

you better aware of their services. After having been managing editor of *zymurgy* for two years, Elizabeth Gold has taken on the important role of editor-in-chief. After 14 years I continue to oversee *zymurgy* as publisher and adviser.

You've told us time and time again: Quality is your number one concern. Second is your interest in homebrewing as a hobby and third, you value your independence. This is what you feel about your beer. This is the way we think you feel about *zymurgy*. And we feel a responsibility to reflect your needs and desires as brewers, while offering exciting and innovative ideas every once in a while for fun and inspiration (and maybe, just a little, to lead the way).

You are small-scale brewers. We are a small magazine published for people we appreciate and consider great to deal with. Your desire to learn about beer and brewing inspires us. You are indeed unique. We hope that some of your uniqueness rubs off onto our spirit and into the pages of *zymurgy*. You are all leaders of this spirit in big and small ways.

So you see, we've made some changes as we enter our 15th year. We'll change again, I'm sure. We'll need to. Can we be all things to all homebrewers? Honestly, we don't think so. But we'll try to be responsive while continuing to be aware of the diversity of your skills and specialized interests. It's our mission to do our best to fulfill primary goals: to educate and provide information to those interested in homebrewing and the appreciation of beer, while maintaining an image for homebrewing that will foster respect and pride in our craft. 

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DEAR

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Our Readers

Correction

zymurgy Special Issue 1992 (Vol. 15, No. 4), "Keeping It Clean," bottom of page 36 should read: "For safety reasons use grain or ethyl alcohol or 150 proof vodka." Not "methyl" alcohol.

WELCOME TO THE AHA

Dear **zymurgy**,

I have discovered it is quite in order to pay for overseas items with a Visa card (no problems with exchange control regulations) and I am ready to join the Association.

I am very impressed with the quality and professional approach shown by your magazine—it is apparent that you have a pool of expertise quite equal to any possible queries a reader might come up with. Apart from that, I have already spied some items of brewing equipment I would love to get my hands on—finances permitting.

Thanks again for your friendly help—I have already received letters from three American **zymurgy** readers.

Cheers for now,
Richard Hooper
Dundee, South Africa

POINT: PEOPLE MAKE GOOD TIMES

Dear **zymurgy**,

Having just attended the AHA National Conference in Milwaukee, I can relate to Charlie Papazian's editorial in **zymurgy** Summer 1992 (Vol. 15, No. 2). Although I

traveled to the conference alone, I knew I'd have no problem meeting many interesting people there.

From the moment I arrived at the Marc Plaza Hotel until the final outdoor gathering in a park, I shared both brewing experiences and life experiences. As Charlie said in the editorial, "Beer does not make good times, people do." I'd encourage anyone considering attendance at the AHA National Conference in Portland, Ore., next August, to go by yourself if you must; you won't be alone for long.

Paul Mesmer
Huntington Beach, California
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COUNTERPOINT: NO DENYING BEER MAKES GOOD TIMES

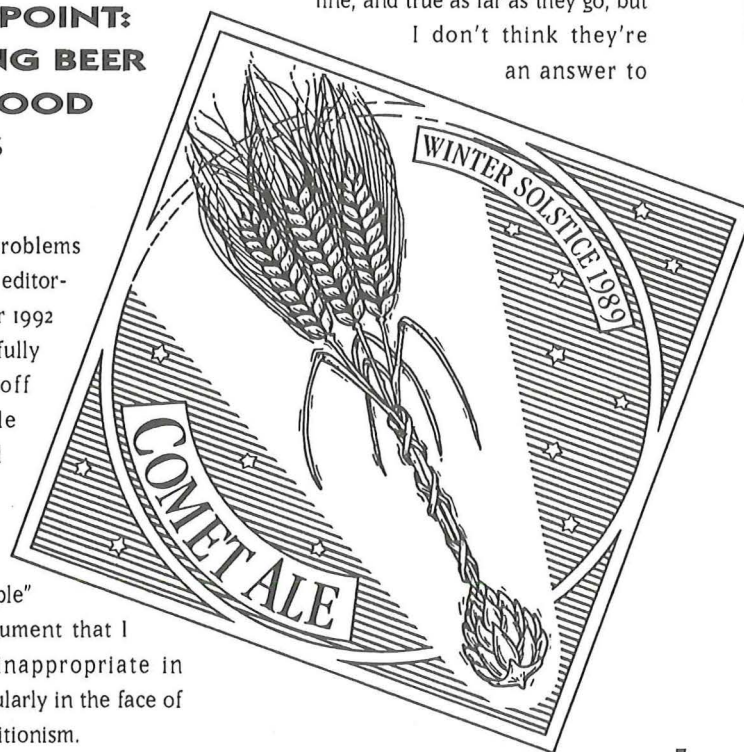
Dear **zymurgy**,

I have some real problems with Charlie Papazian's editorial in **zymurgy** Summer 1992 (Vol. 15, No. 2). Hopefully without setting off the National Rifle Association, I must tell you that some of this sounds very like the "Guns don't kill people, people kill people" argument. It's an argument that I think is singularly inappropriate in defense of beer, particularly in the face of determined neo-prohibitionism.

Saying that "Beer doesn't make good times, people do," or "It's not that homebrewing is fun, but rather that people have fun while making homebrew," or "People don't enjoy homebrew, they may like the taste of homebrew but even more, people enjoy being with people," reduces credibility.

It's a point of definition that beer—homebrew included—contains alcohol. It's undeniable that alcohol has an effect on the human body—which is why alcohol has been so popular with humans since the Sumerians. It's also indisputably a part of why people do enjoy homebrew—otherwise we'd all be brewing non-alcohol beers. I think Charlie's sentiments about people are fine, and true as far as they go, but

I don't think they're
an answer to



beer's critics. What is more important is to say "Yes, beer is an alcoholic beverage, and yes, that's part of what we like about beer. What's wrong with that?"

And if only the people are important, and not the beer, why does the AHA get so involved in defining and judging beers according to specific stylistic guidelines? We judge the beer as it sits in the glass. I think you're right to some extent. I believe that all craftsmen must imbue their products with something of themselves, and that a brewer's beer is a reflection of the spirit. When I sit down with a great beer, the real exchange is going on with that beer in my mouth, my senses. If that's anthropomorphizing, so be it.

I love being with good people, and sometimes good beer plays a part in that. But let's not pretend that the beer doesn't play a part and that the situation would be the same whether the beer was there or not.

Sincerely,
Jeff Frane
Portland, Oregon

MORE ABOUT GOOD TIMES

Dear *zymurgy*,

I just had to read your recent heretically titled editorial, "Beer Does Not Make Good Times." Thank you for sharing your daydreaming, Charlie.

The message that beer is not the beverage of moderation, beer does not promote good health, etc., really hit home. It is easy to become lost on the subject of beer. Its history and breadth are so rich; but, as you point out, it is the people who make it work.

Working in the beer business since 1980, I am often tempted to imbue the product with mystical qualities. Yet one needs to recognize the human element, the feelings created in the process of brewing.

Well, I'd best get back to my corporate duties, but please accept my sincere appreciation for your writing. Should you be wandering through Milwaukee (still the

spiritual beer capital of the United States) give me a call, Charlie, and we'll have a couple.

Take care,
Jim Quinn
Miller Brewing Co.
Milwaukee, Wisconsin

WE HOMEBREWERS ARE SMARTER THAN THAT

Dear *zymurgy*,

As a homebrewer for more than seven years and an AHA member for life, I must say I have thoroughly enjoyed *zymurgy* and the benefits of this organization that brings together the best and most enthusiastic brewers in North America. However, while perusing *zymurgy* Winter 1990 (Vol. 13, No. 5) I reread the editorial, "Odd Couples and Free Beer" about the relationship between homebrewers and professional brewers and the expectations one should have when visiting a brewery. I remembered that when I originally read the editorial I found its tone to be akin to a parental lecture. I had wanted to respond then, but since writing a letter doesn't put beer in my mug, I have procrastinated. Anyway, in response to the editorial I have compiled a few things that "we as amateur brewers can keep in mind to maintain a quality relationship and inspire even more great beers and brewers."

(1) About tours. I agree with the editor that we should phone ahead to request a tour. However, I don't think homebrewers are so discourteous they need this reminder. Further, visiting breweries in most areas requires some travel and it simply would not be sensible to venture out for a tour without making the proper arrangements.

Another valid point the editor makes regarding tours is that small breweries are sometimes understaffed. If a brewery has limited human resources, they should not agree to your request for a tour. On the other hand, if the brewery feels obligated to accommodate a fellow brewer, I think

we homebrewers are aware enough to recognize the processes occurring in the brewery. In this case, I have not hesitated to pitch in as an unskilled laborer, quietly observe the brewers' work without interference or politely excuse myself from the premises. I am confident that other homebrewers behave similarly in these situations, having observed fellow homebrewers' respect for the professionals. I strongly believe that homebrewers as a group are very considerate and do not call for or expect any "special treatment."

(2) About free beer. Somehow the editor has made a connection between an exuberant chant at beer gatherings and a demand for complimentary servings of our favorite beverage. The free beer chant has less to do with an angry mob mentality and everything to do with homebrewers' expression of mirth. If we really wanted free beer, we'd go to work for the AHA or apply for Michael Jackson's job. (Those of you who don't understand the meaning of free beer probably didn't recognize that as a joke.)

Homebrewing is the most rewarding hobby I know. We all know the free beer concept is not based on reality. Every homebrewer I know is generous and considers their beer as an expression of friendship that is meant to be shared with others. When I visit breweries and meet with professional brewers I always bring some of my brew to share.

(3) About critiquing the beer. The editor's advice to keep our negative comments to ourselves is clearly his opinion only. Again, I believe homebrewers to be fair, polite and fully capable of expressing their opinions tactfully. If homebrewers wish to keep their opinions private, they should do so. On the contrary, if homebrewers wish to express their evaluation, they should feel free to do so. There are two situations in which I feel comments, whether positive or negative, should be aired. The first situation is when honest opinions are solicited. The second is when beer that is either outstanding or clearly defective has been purchased.

While the editor has advised us not to offer advice, my personal view is that beer is a consumer food product. If a restaurant has outstanding food, I am quick to compliment. Conversely, if I am served spoiled food, I will point out the problem and request a refund or replacement. The same guidelines hold for my purchase of beer. This is my right as a consumer and I really don't see standing up for this right to be in opposition to the supportive relationship between commercial and amateur brewers. Most homebrewers have jobs (which unfortunately may not be related to the brewing industry!) and we expect to get some unsolicited comments on our performance. We are mature enough to take these comments for what they are, recognize their source, make our own evaluation and respond accordingly. I expect that commercial brewers behave much the same as the rest of us humans. After all, do we stop making homebrew when "little" beer drinkers turn their unappreciative noses up at our prized creations? No way!

(4) About new breweries. The editor tells us homebrewers not to expect perfection from the first batches of beer served at a new brewery. Do we really need to be told that brewing is a complex process governed by control of multiple parameters, human factors and ingredients? I don't think so. If we are unable to mentally extrapolate our relatively simple stove-top processes to the potential problems encountered when brewing in commercial proportions, then we really don't have a grasp of the art or science of brewing.

I don't think anyone expects the first tanks tapped at a new brewery to be the best they are capable of producing, but these first brews are the foundation upon which a business is to be built. New breweries that start by serving defective beers must quickly recover or risk failure. Because a new brewery's beer does not meet our expectations does not mean that we as homebrewers are not supportive. On the contrary, we are the ones who are

leading the cheer for new breweries that give us access to the widest selection and freshest beer. Homebrewers do not detract from support of local breweries; we are the driving force behind the consumer trend toward beer quality and style diversity. We are the reason people are asking "why" and are trying and actually enjoying some real beer.

I sincerely hope that in the future the AHA or its representatives will not see a need to instruct us on how to behave,

when to speak and what to expect with regard to our relationship to our commercial counterparts or any other aspect of our beloved hobby. As evidenced by the behavior of both small and large groups of homebrewers, we are courteous, cooperative and focused on brewing and enjoying good beer. We don't need scolding, we need free beer!

Sincerely,
Tim Artz
Lorton, Virginia

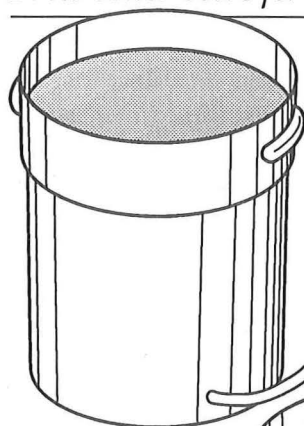
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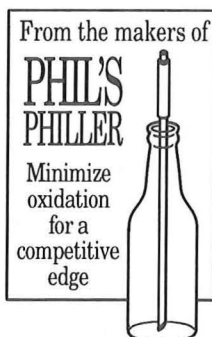


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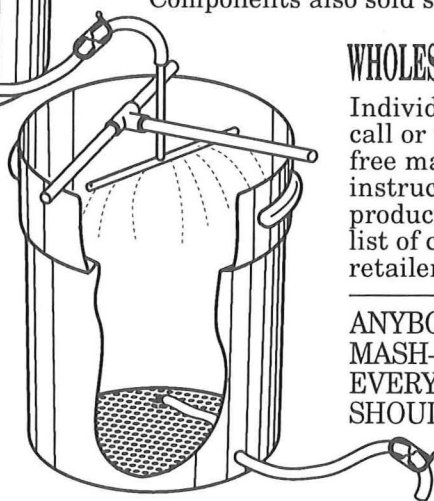
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A S S O C I A T I O N

NEWS



BREWING FRONTIERS

The AHA 1993 National Homebrewers Conference is set for July 26 through 30 at the Marriott Hotel in Portland, Ore. The theme, Brewing Frontiers, reflects the Pacific Northwest and its innovative beers, brewing techniques and new fields of learning. The timing couldn't be better. The Oregon Brewers Festival will be July 30, 31 and Aug. 1, immediately following the AHA Conference. A two-day preconference tour for the weekend before the Conference will begin in Seattle, Wash., with an inside jaunt through famous beer and brewing hot spots, continue through the beautiful Yakima Valley hop farms at the peak of their season and finish in Portland. The 15th annual Conference will gather beer and brewing experts for both technical and practical presentations.

Perhaps the most important aspect, however, is the atmosphere. And the only way to have good atmosphere is to draw enthusiastic attendees from all over the country, namely you. From beginning to end we have planned nine days of beer and brewing education. Attendees may choose all nine days or stay for less time. The Pacific Northwest has spectacular scenery (beaches, mountains, rivers) with plenty of outdoor activities and all the cultural advantages of a big city. It's a great place to take your family. Plan now to attend; you won't want to miss the fun! Details will be available in *zymurgy* Spring 1993. For more information, contact Karen Barela at (303) 447-0816.

1992 OREGON BREWERS FESTIVAL

Brewers and beer lovers gathered in Portland's Waterfront Park for three days of fun, sun and delicious microbrewed beers at the Oregon Brewers Festival (OBF) in late July. The Association of Brewers was represented by AHA Vice President Karen Barela, Sales Manager Buzz Burrell and Institute for Brewing Studies Assistant Director David Edgar. Barela confirmed plans for the AHA 1993 Conference and met with area homebrewers. A few homebrewers from as far away as Vermont and Georgia joined the 550 volunteers who poured beers. The Oregon Brew Crew's daily homebrew demonstrations attracted a large crowd and possibly converted a few beer lovers to homebrewers.

AHA 1993 NATIONAL HOMEBREW COMPETITION

For the 15th year, the National Homebrew Competition is under way and we hope your beer is too. The 901 brewers who entered in 1992 sent nearly 2,400 beer, mead, cider and saké entries. Brew now for the 1993 Competition using information available in this and past issues of *zymurgy*, books by Brewers Publications, local club meetings and by talking to fellow homebrewers. Consider entering the beer in your carboy or the batch that's already bottled and aging. The competition is the perfect place to enter any

beer because you will receive quality, useful and informative feedback. You already know what your neighbors and friends think about your beer, so why not find out what qualified judges think? Everyone's a winner! The National Competition will be organized and judged at four first-round sites around the country by hundreds of volunteers. For details and a schedule of events, check the Competition Rules and Regulations insert in this issue. Judges, volunteers, brewers and beers are needed. For information on how you can help or participate, contact Karen Barela at (303) 447-0816.

VOLUNTEER COMMITTEES

Two new volunteer committees have been formed to advise the AHA. The Competition Committee will clarify the Competition Rules and Regulations, set schedules and select the four sites and volunteers to work at them. Throughout the year the committee will direct judging procedures, activities at first- and second-round judging and oversee the entire process. The new Conference Committee will help find speakers and topics, determine how the program will run, select sites for future Conferences and give advice on all of the details. The committees are made up of volunteer Board of Adviser members and members at large. If you would like to serve on a committee, contact Karen Barela at (303) 447-0816.

THE GREAT AMERICAN BEER FESTIVAL

On Oct. 2 and 3, the Great American Beer Festival (GABF) celebrated its 11th year by bringing together 161 breweries, 710 beers and 12,000 beer lovers all under one roof. The GABF is a first-rate showcase for some of the finest beers brewed in America. The primary goal is to educate the festival goer about the vast spectrum of beer being produced in the United States, something homebrewers are aware of already. In 63,000 square feet of exhibition space, beer lovers from around the world learned about the diversity of styles available only in the United States. Hop Barley & The Ale's, a Colorado homebrew club, demonstrated how to brew beer. Festival goers stopped by the AOB/AHA booth to learn about our organizations and met AOB President Charlie Papazian and other staff members. On Oct. 3 AHA members joined Institute for Brewing Studies members and the participating brewers for an exclusive three-hour sampling at the members-only tasting with Michael Jackson as special guest. All were treated to an afternoon of meeting beer experts and beer enthusiasts—and open taps of festival beers.

CLUB-ONLY COMPETITIONS ROTATE

Beginning with the February Hail to Ale competition, five of the six annual Club-Only Competitions will be run by various AHA-registered clubs across the country. Running a Club-Only Competition provides judges from other regions the opportunity to earn BJCP points and offers apprentice judges the chance to gain judging experience. The Maltose Falcons of Woodland Hills, Calif., will organize the February Hail

to Ale Competition. Details of upcoming Club-Only Competitions will be announced in *zymurgy*. Currently 297 clubs are regis-

ter beer appreciation and improve the quality of homemade beer through participation in AHA Sanctioned Competitions.



Greater Topeka Hall of Foamers homebrew club at the Great American Beer Festival in Denver.

tered with the AHA. If your club is interested in hosting a Club-Only Competition, contact James Spence at (303) 447-0816.

SANCTIONED COMPETITION PROGRAM UPDATE

The AHA Sanctioned Competition Program (SCP) has seen a tremendous amount of activity in the past 12 months when 81 competitions were produced. Among them were the Third Annual Central Florida Sunshine Challenge with 103 entries, the First CAMRA Victoria, B.C., Competition with 53 entries and the New Jersey Freedom to Brew Competition with 78 entries—the first legal competition ever in the state of New Jersey. The SCP is available to anyone wishing to hold a competition of any size, in any place and on any date. The program's purpose is to support competition organizers with a packet of helpful information, a list of BJCP judges, promotion in our calendar of events and maintenance of the judging standards. We keep files and comments on every competition sanctioned and in 1993 we will improve the packet using your suggestions. It is our goal to promote bet-

ter beer appreciation and improve the quality of homemade beer through participation in AHA Sanctioned Competitions.

for 2.3 years and prefer technically oriented columns. It was interesting to discover that 67 percent are willing to pay a little more for *zymurgy* to have it printed on recycled paper, and we are researching the possibilities of doing so. Congratulations to Robert Slaughter of Ponca City, Okla., and Joseph McCoy of Sterling, Va., whose names were chosen from all the surveys to win a complete library of *zymurgy* Special Issues. Robert and Joseph, you have a lot of great reading ahead of you!

AHA DONATES \$1,200 TO THE BJCP PROGRAM

The AHA donated \$1,200 in December 1992 to support the BJCP program that, since 1985, has operated on and off in the red. The BJCP is cosponsored by the AHA and the Home Wine and Beer Trade Association, which also donates throughout the year via their sanctioned competition program. The HWBTA charges \$1 per judge per sanctioned competition. With the increase in judges and exams in the last year and a half and with improved administrative efficiency, the program has

SUMMER SURVEY RESULTS

Thanks for participating in our 1992 membership survey. We will use this information to make important decisions on how to serve you better. We discovered that your brewing skills fall into these categories: 7 percent beginner, 36 percent intermediate, 39 percent advanced and 18 percent very advanced. Most of you have been a member

shown a small financial gain. The AHA donation will refresh the program and carry through new and ongoing projects. The AHA's commitment to the BJCP and its 850 participants is ongoing. BJCP judges are, in fact, the cornerstone of all AHA and HWBTA sanctioned beer competitions, including the National Competition. As the program grows, it affords the opportunity for more competitions to take place throughout the country and for more people to receive quality feedback about the beer they brew. The connection between judging homebrews and simply homebrewing can sometimes be lost, but we believe the information we all gain from qualified judges helps beer and brewing become smarter, better and tastier.

COMPUSEVE ACTIVITY

We've been raving about CompuServe now for many months and are still hoping you'll give it a try. One example of how we use the network took place in Milwaukee,

Wis. During the National Conference CompuServe system operator Robin Garr went on-line to broadcast the homebrew expo, club night and the awards ceremony live. We've been uploading articles from *zymurgy* onto CompuServe to inform users about the magazine. AHA staff members Charlie Papazian and/or James Spence are on-line daily, Monday through Friday, checking the activity, "talking" to members and addressing issues that arise. Another computer network accessible through CompuServe is Internet with its Homebrew Digest. For more information and a free introduction packet to CompuServe that includes a \$15 line of credit, contact James Spence, PO Box 1679, Boulder, CO, 80306-1679, (303) 447-0816 or e-mail directly to # 70740,1107.

FOREIGN MEMBERSHIP IS ALIVE AND WELL

We thought you might like to know about the appeal that homebrewing,

zymurgy and the AHA have worldwide. Outside Canada and the United States there are more than 220 foreign members in 26 different countries. We've listed them here with the number of members noted: Argentina, Australia (54), Bahamas, Belgium, Brazil (5), England (29), Finland, France, Germany (9), Greece, Honduras, Israel, Italy, Japan (9), Kenya, Mexico, Netherlands, New Zealand (23), Norway (5), Philippines, Scotland, South Africa (The Liver Research Center!), Sweden (25), Switzerland, Ukraine, Russia, Western Samoa. There also are several clubs in foreign countries including Australia (6), England, Japan (2), New Zealand (7) and Sweden (3).

TRAVELING NEWS

St. Louis, Mo., was the spot in September for book signings, a tasting and "hop-hobbing" with area homebrewers when Charlie Papazian visited as guest of the St. Louis Wine and Beer Making Shop. Still in St. Louis, Papazian represented the

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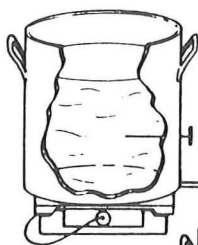
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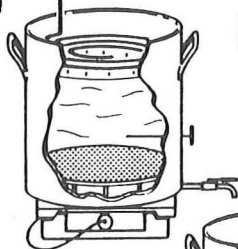


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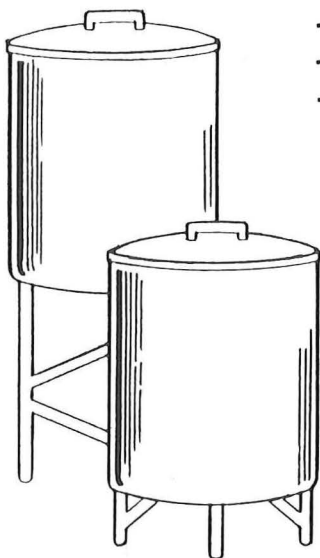
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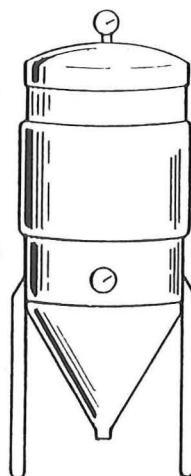
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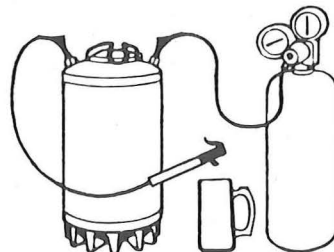
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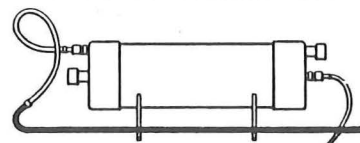
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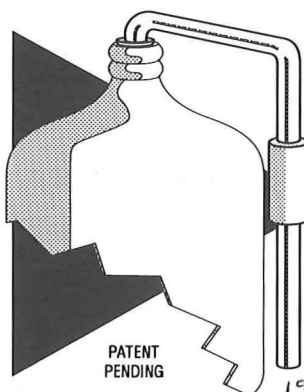
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Association of Brewers at the Brewing Congress of the America's International Exposition. Meanwhile, AHA Administrator James Spence was in Fort Mitchell, Ky., for the Oldenberg Brewery's Beer Camp. On Oct. 2 and 3 the staff was in Denver, Colo., for the Great American Beer Festival. In November, Papazian was in Ottawa, Ontario, Canada, giving a seminar, signing books and meeting homebrewers. The event was sponsored by DeFalco's of Ottawa. If you plan on being in the Washington, D.C., area Dec. 12, be sure to check out the Great East Coast Beer Expo and Festival. Papazian will be on hand for a book signing and to give the keynote address during the beer banquet. For more information contact DNA productions at (703) 222-5394.

EXTENDED CUSTOMER SERVICE HOURS

As a special service to our members and customers, the Customer Service Department of the Association of Brewers will have extended hours during the holiday season from Oct. 19 through Dec. 23. In addition to our regular hours, 8 a.m. to 5 p.m., customer service representatives will be available to take orders between 5 and 6 p.m. Monday through Friday and noon to 4 p.m. on Saturdays, Mountain Standard Time. During the holiday rush your order will be shipped within three days of receiving it, usually the very next day. Overnight delivery is always available. Also note that the entire office will be closed at noon Dec. 24 and reopen at 8 a.m. Jan. 4.

ZYMURGY WELCOMES CONTRIBUTORS

zymurgy welcomes ideas, outlines, proposals or manuscripts on the subject of beer, cider, mead, saké and brewing. All submissions will be carefully considered. Direct inquires to Elizabeth Gold, editor-in-chief, *zymurgy*, PO Box 1679, Boulder, CO 80306-1679.

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- ☐ IPA
- ☐ Canadian
- ☐ Alt
- ☐ Porter
- ☐ Scottish
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- ☐ English Mild
- ☐ Am. Brown
- ☐ Dry Stout

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- 5 lbs.
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- 7 lbs.
- 5 lbs.
- 6 lbs.
- 7 lbs.
- 5 lbs.
- 6 lbs.
- 7 lbs.
- 5 lbs.
- 6 lbs.
- 7 lbs.

LAGERS

- ☐ Canadian
- ☐ Amber Bock
- ☐ Märzen
- ☐ Domestic
- ☐ Australian
- ☐ German Pilsner
- ☐ Cream Ale
- ☐ Rauchbier
- ☐ Oktoberfest
- ☐ Lite Beer
- ☐ Calif. Common
- ☐ Boh. Pilsner

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ALE

AMERICAN BROWN ALE

Gold: Pete's Wicked Ale, Pete's Brewing Co., Palo Alto, Calif.
Silver: Oktoberfest Ale, North Coast Brewing Co., Fort Bragg, Calif.
Bronze: Brooklyn Brown, The Brooklyn Brewery, Brooklyn, N.Y.

AMERICAN PALE/AMBER ALE

Gold: McTarnahan's Ale, Portland Brewing Co., Portland, Ore.
Silver: Ruedrich's Red Seal Ale, North Coast Brewing, Fort Bragg, Calif.
Bronze: Albemarle Ale, Dilworth Brewing Co., Charlotte, N.C.

BARLEY WINE

Gold: Sierra Nevada Bigfoot Barleywine Style Ale, Sierra Nevada Brewing Co., Chico, Calif.
Silver: Old Crustacean, Rogue Ales, Newport, Ore.
Bronze: Old Bawdy Barleywine, Pike Place Brewery, Seattle, Wash.

BLONDE ALE

Gold: Prime Time, Big Time Brewing Co., Seattle, Wash.
Silver: Alpine Pearl Pale, Tied House Cafe & Brewery, Alameda, Calif.
Bronze: Bicentennial Ale, The Mountain Brewers, Bridgewater, Vt.

CLASSIC PALE ALE

Gold: Sierra Nevada Pale Ale, Sierra Nevada Brewing Co., Chico, Calif.

DRY STOUT

Gold: Stout, Butterfield Brewing Co., Fresno, Calif.
Silver: Rainbow Trout Stout, Hubcap Brewery, Vail, Colo.
Bronze: Old No. 38 Stout, North Coast Brewing Co., Fort Bragg, Calif.

ENGLISH BROWN ALE

Gold: PMD Mild Ale, Goose Island Brewing Co., Chicago, Ill.
Silver: Steelhead Nut Brown Ale, Pizza Deli & Brewery, Cave Junction, Ore.
Bronze: Bond Street Brown Ale, Deschutes Brewery, Bend, Ore.

INDIA PALE ALE

Gold: Solstice Ale, Hubcap Brewery & Kitchen, Vail, Colo.
Silver: Banty Rooster India Pale Ale, Seabright Brewery, Santa Cruz, Calif.
Bronze: The Commodore Perry India Pale, Great Lakes Brewing Co., Cleveland, Ohio

PORTER

Gold: Boulder Porter, Boulder Beer, Boulder, Colo.
Silver: Pleasure Point Porter, Seabright Brewery, Santa Cruz, Calif.
Bronze: Parley's Porter, Squatters Pub Brewery, Salt Lake City, Utah

SCOTTISH ALE

Gold: Sonoma Irish Ale, Sonoma Brewing Co., Petaluma, Calif.
Silver: Kidder's Scottish Ale, Kidders Brewpub, Fort Myers, Fla.

SWEET STOUT

Gold: Seabright Oatmeal Stout, Seabright Brewery, Santa Cruz, Calif.
Silver: Zoser Stout, Oasis Brewery, Boulder, Colo.
Bronze: Oatmeal Stout, Goose Island Brewing Co., Chicago, Ill.

STRONG ALE

Silver: Imperial Stout, Pacific Coast Brewing Co., Oakland, Calif.
Bronze: Eye of the Hawk Select Ale, Mendocino Brewing Co., Hopland, Calif.

TRADITIONAL BITTER

Gold: Moon Dog Ale, Great Lakes Brewing Co., Cleveland, Ohio
Silver: Atlas Amber, Big Time Brewing Co., Seattle, Wash.

LAGER

AMERICAN DRY LAGER

Gold: Keystone Dry, Coors Brewing Co., Golden, Colo.
Silver: Olympia Dry, Pabst Brewing, Milwaukee, Wis.
Bronze: Coors Dry, Coors Brewing Co., Golden, Colo.

AMERICAN LAGER

Gold: Schlitz, The Stroh Brewery Co., Detroit, Mich.
Silver: Hamm's, Pabst Brewing Co., Milwaukee, Wis.
Bronze: Stoney's Beer, Jones Brewing Co., Smithton, Pa.

AMERICAN LIGHT LAGER

Gold: Michelob Light, Anheuser-Busch, St. Louis, Mo.
Silver: Busch Light, Anheuser-Busch, St. Louis, Mo.
Bronze: Bud Light, Anheuser-Busch, St. Louis, Mo.

AMERICAN MALT LIQUOR

Gold: Olde English 800 Malt Liqueur, Pabst Brewing, Milwaukee, Wis.
Silver: Silver Thunder Malt Liqueur, Stroh Brewery Co., Detroit, Mich.
Bronze: Colt 45 Malt Liqueur, G. Heileman Brewing Co., La Crosse, Wis.

AMERICAN PREMIUM LAGER

Gold: Lowenbrau Special, Miller Brewing Co., Milwaukee, Wis.
Silver: Genuine Draft, Miller Brewing Co., Milwaukee, Wis.
Bronze: Signature, Stroh Brewery Co., Detroit, Mich.

BOCK

Gold: Frankenmuth German Style Bock, Frankenmuth Brewery, Frankenmuth, Wis.
Silver: Mai Bock, Stoudt Brewing Co., Adamstown, Pa.
Bronze: Blue River Bock, Breckenridge Brewery & Pub, Breckenridge, Colo.

DARK LAGER

Gold: Schwarz Hacker, Rock Bottom Brewery, Denver, Colo.
Silver: Lowenbrau Dark, Miller Brands, Denver, Colo.
Bronze: Neuweiler Black & Tan, Neuweiler Brewing Co., Allentown, Pa.

MÄRZEN/OKTOBERFEST

Gold: Fest, Stoudt Brewing Co., Adamstown, Pa.
Silver: Landmark Oktoberfest, Minnesota Brewing Co., St. Paul, Minn.

MUNCHNER HELLES AND DORTMUNDER EXPORT

Gold: Export Gold, Stoudt Brewing Co., Adamstown, Pa.
Silver: Golden Lager, Stoudt Brewing Co., Adamstown, Pa.

Bronze: Hard Times Select, Old Dominion Brewing Co., Ashburn, Va.

VIENNA

Gold: Brooklyn Lager, The Brooklyn Brewery, Brooklyn, N.Y.
Silver: Golden Rail, Cherryland Brewery, Sturgeon Bay, Wis.
Bronze: Anchor Steam Beer, Anchor Brewing Co., San Francisco, Calif.

MIXED STYLE

AMERICAN LAGER—ALE/CREAM ALE

Gold: Scrimshaw Beer, North Coast Brewing Co., Fort Bragg, Calif.
Silver: Dock Street Cream Ale, Dock Street Brewing Co., Philadelphia, Pa.
Bronze: Little Kings Cream Ale, Hudepohl-Schoenling, Cincinnati, Ohio

AMERICAN WHEAT

Gold: Marin Hefe Weiss, Marin Brewing Co., Larkspur, Calif.

DUSSELDORF ALTBIER

Gold: Samuel Adams Boston Stock Ale, Boston Beer Co., Boston, Mass.

EUROPEAN PILSENER

Gold: Legacy Lager, Chicago Brewing Co., Chicago, Ill.
Silver: Garten Bräu Special, Capital Brewery Co., Middleton, Wis.

FRUIT, VEGETABLE

Gold: Passion Pale, Tied House Cafe & Brewery, Alameda, Calif.
Silver: Woodruff Ale, San Andreas Brewing Co., Hollister, Calif.
Bronze: Sangre de Frambuesa, Santa Fe Brewing Co., Santa Fe, N.M.

GERMAN WHEAT

Gold: Hops! Hefe-Weizen, Hops! Bistro & Brewery, Scottsdale, Ariz.
Silver: Samuel Adams Dunkelweizen, Boston Beer Co., Boston, Mass.
Bronze: Heartland Weiss, Chicago Brewing Co., Chicago, Ill.

HERB, SPICE

Gold: Celis White, Celis Brewery, Austin, Texas
Silver: Our Special Ale, Anchor Brewing Co., San Francisco, Calif.
Bronze: Sigda's Green Chile Beer, CooperSmith's Pub, Ft. Collins, Colo.

SMOKE FLAVORED

Gold: Alaskan Smoked Porter, Alaskan Brewing & Bottling Co., Douglas, Alaska
Silver: Welcomme, Rogue Ales, Newport, Ore.
Bronze: Vermont Smoked Porter, Vermont Pub & Brewery, Burlington, Vt.

SPECIALTY

Gold: Tripel Threat, Cambridge Brewing Co., Cambridge, Mass.
Silver: Greyhound Honey Ale, Flying Dog BrewPub, Aspen, Colo.
Bronze: HefeRyzen, Big Time Brewing Co., Seattle, Wash.

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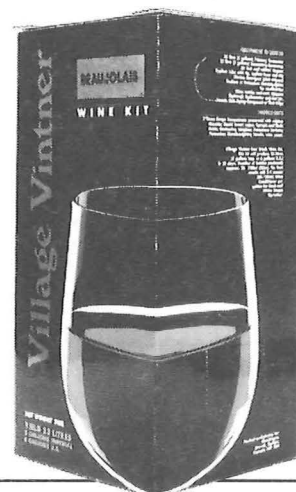
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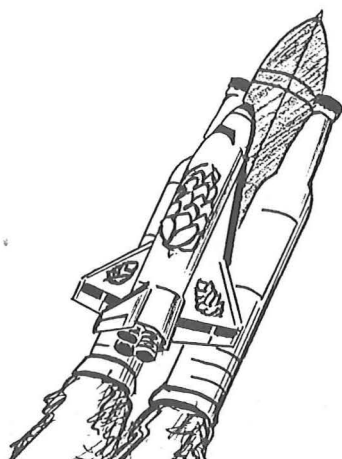
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BREW NEWS

James Spence



ASTROHOPS LAUNCHED ON SHUTTLE DISCOVERY

Avid homebrewer and astronaut Bill Readdy had a special mission on the January flight of the space shuttle Discovery: determine the effects of space flight on hops. Readdy smuggled about 10 1/2 ounces of hops he purchased in Houston on board and stored them in the fresh food locker for the trip. Upon landing the hops were used in a special batch of "Discovery Ale" brewed by Spinnakers Brewpub of Victoria, British Columbia. The keg of amber ale was tapped by Readdy on April 29 and served to six other astronauts.

BJCP JUDGE EARNS PROFESSOR OF THE YEAR

Brock University chemistry professor and homebrewer Mary Richardson, a Beer

Judge Certification Program Certified Judge since 1987, was named the 1992 Canadian Professor of the Year by the Council for Advancement and Support of Education. Richardson received the \$5,000 award for her efforts in making chemistry studies accessible to women. She helped organize Scientifically Yours, a spring camp for high school girls, and led the committee that developed the women's studies program at Brock University. Richardson frequently lectures on beer making and hosts beer tastings. Merck Frosst Canada Inc. funded the award.

A LESSON FROM THE BEES: FERMENTED NECTAR MAKES BEES' KNEES WOBBLY

In the tropics, summer heat can cause nectar to ferment into a type of alcohol. According to a Reuters report, bees that drink the nectar become inebriated and often crash on the flight home or lose their way. Errol Hassan, an entomologist at the University of Queensland, Australia, has been studying fermented nectar as part of a research project on hive health and honey production. Hassan says the altered social behavior of the drunk bees causes them to be ostracized by other members of the hive. The bees also develop a type of diarrhea that shortens their

life. A normal lifespan of 36 to 40 days was reduced to 19 days after a bout of drinking. Hassan says surviving bees probably suffer from hangovers as well.

HEAD OF GUINNESS BREWING FAMILY DIES

Arthur Francis Benjamin Guinness, Third Earl of Iveagh, died after a short illness in early June at the age of 55. He was chairman of Guinness PLC from 1962 to 1986, when he became the Dublin brewery's company president. Guinness was educated at Eton and Cambridge University and at the time of his death was the only descendant of 1759 founder Arthur Guinness still serving on the board. Guinness Stout has become so legendary around the world that Irish Industry Minister Desmond O'Malley announced recently that, when Ireland converts to metric next year, Guinness drinkers will still be able to order the traditional pint.

SIERRA NEVADA SPONSORS CALIFORNIA AWARD

Sierra Nevada Brewing Co. of Chico, Calif., in conjunction with the San Andreas Malts homebrew club of the San Francisco Bay area, have agreed to award a day of

brewing at Sierra Nevada and \$500 to the winner of the Sierra Nevada Homebrewer of the Year trophy. The award will be given each year to the homebrewer who garners the most points at three of California's most prestigious homebrew competitions. Points for the award can be earned at the Maltose Falcon's Mayfaire, the Gold Country Brewers Association's California State Fair and the California State Homebrew Competition sponsored by the San Andreas Malts.

ANCHOR BACK IN BRITAIN

Anchor beer was first served in Britain in 1978 at the Great British Beer Festival. After 14 years, the San Francisco brewery's Anchor Steam, Liberty Ale and Porter are once again being served at a handful of British pubs.

OLDENBERG OPENS BREWING MUSEUM

The American Museum of Brewing History and Arts, billed as the world's largest brewing history museum, opened June 25 in Ft. Mitchell, Ky. The museum owns an extensive collection of brewing memorabilia, including about 750,000 pieces of breweriana and the archives of the Brewers Association of America. The museum board also formed the American Foundation for Brewing History dedicated to research into American brewing history.

AHA SANCTIONED COMPETITIONS

CRESCENT CITY COMPETITION

Peter Caddoo of New Orleans won best of show with his pale ale at the Crescent

City Competition in New Orleans. The March 14 competition drew 114 entries.

GEM STATE

Boise, Idaho, hosted the 1992 Gem State Homebrewer's Competition March 28 to April 18. Of the 79 entries judged, Mel Bohart of Boise took best of show from the field.

SPRING THING

The Spring Thing was held April 25 in Albuquerque, N.M. Tom Hart of Albuquerque took best of show out of 77 entries with his fruit ale, "Joe Peche-y Lambic."

UNYHA CONTEST AND THIRD EMPIRE STATE OPEN

The Upstate New York Homebrewers Association's 14th Annual Contest and Third Empire State Open drew 105 entries on April 25. Glenn VanGraafeiland of Rochester, N.Y., won best of show at the Pittsford, N.Y., competition.

GREEN MOUNTAIN COMPETITION

Mike Fertsch of Woburn, Mass., captured best of show in the May 2 Green Mountain Homebrew Competition. The Burlington, Vt., competition drew 180 entries.

BOSS CHALLENGE

Chicago, Ill., hosted the Second Annual BOSS Challenge on May 2. Dave Lowe of Frankfort, Ill., won best of show from a field of 110 entries.

SUNSHINE CHALLENGE

Don Taylor of Gulf Breeze, Fla., took best of show out of 103 entries in the Third Annual Central Florida Sunshine Challenge May 2 and 3 in Winter Park, Fla.

CAMRA COMPETITION

The First CAMRA BC Homebrewing Competition in Victoria, British Columbia, received 51 entries. Barry Ladell and Mike Doehnel of Saanichton, British Columbia, took best of show at the May 2 competition.

ROCKY MOUNTAIN SHOOTOUT

Rob Brunner of Windsor, Colo., won best of show at the Rocky Mountain Homebrew Shootout May 9 and 10 in Denver, Colo. The competition drew 71 entries.

FULL MOON MADNESS

Bob Grossman of Hadden Heights, N.J., won best of show at the Full Moon Madness Beer Competition May 16 in Pottstown, Pa. The competition received 78 entries.

OREGON STATE FAIR

Portland, Ore., hosted the Oregon State Fair on May 17. Dave Kussman of Salem, Ore., won best of show out of 124 entries.

GREAT CANADIAN HOMEBREW COMPETITION

Erich Mann of Ajax, Ontario, took best of show out of 246 entries in the Great

Canadian Homebrew Competition May 22 in Toronto, Ontario.

ABCNY COMPETITION

The Seventh Annual Amateur Brewers of Central New York Competition in Syracuse, N.Y., drew 50 entries on May 30. Lee Turner of Baldwinsville, N.Y., won best of show.

SCOTTISH GAMES

Micah Millspaw of Oakdale, Calif., won best of show with a Scotch ale at the Scottish Games Competition in Ceres, Calif., on May 31. Forty-two entries competed.

ALAMEDA COUNTY FAIR

At the June 22 Alameda County Fair Homebrew Competition in Pleasanton,

Calif., 67 entries competed for best of show. Gerald Burke of Castro Valley, Calif., took the prize with a barley wine.

MAZER CUP

The Mazer Cup Mead Competition July 13 in Ann Arbor, Mich., drew 67 mead entries. Robert Kime of Romulus, N.Y., won best of show with a piment.

WINES INC. CHRISTMAS COMPETITION

The Third Annual Wines Inc. Christmas Homebrew Competition drew 30 entries on July 25 in Columbus, Ohio. Tom Charlton of Columbus took best of show.

1992 MAYFAIRE

The 1992 Maltose Falcon's Mayfaire Competition drew 142 entries on April 25 in Woodland Hills, Calif. Jeff and Susan Mellum of Canoga Park, Calif., took best of show.

MICRO AND PUBBREWRIES

OPENINGS United States

Microbreweries

California: Los Gatos Brewing Co., Los Gatos

Colorado: Irons Brewing Co., Lakewood; Breckenridge Brewery and Pub (No. 2), Denver

Iowa: Dallas County Brewing Co./Old Depot Pub, Adel

Kansas: Miracle Brewing Co., Wichita

Maine: Andrew's Brewing Co., Lincolnville

Montana: Milestown Brewing Co., Miles City

New York: Brown and Moran Brewing Co., Troy

Washington: Onalaska Brewing Co., Onalaska

Brewpubs

Arkansas: Weidman's Old Fort Brew Pub, Ft. Smith

California: Hops Bistro and Brewery (No. 2), San Diego; Solana Beach Brewery/Pizza Port, Solana Beach; The Brewery at Lake Tahoe, South Lake Tahoe

Colorado: Cheyenne Brewing Co., Colorado Springs

District of Columbia: Capitol City Brewing Co., Washington

Florida: Hops Bar and Grill (No. 4), South Tampa

Idaho: Treaty Grounds Brewpub, Moscow

Illinois: O'Fallon Brewing Co./Wolfgang's Restaurant & Brewery, O'Fallon

Indiana: Mishawaka Brewing Co., South Bend

Massachusetts: John Harvard Brewhouse, Cambridge

Missouri: White River Mining Co., Springfield

Nebraska: Sharky's Brewery and Grill, Omaha; Jones Street Brewing Co., Omaha; Crane River Brewery and Cafe, Lincoln

New York: Mountain Valley Brewpub, Suffern

Canada

Regional breweries

Ontario: Lakeport Brewing Co. (formerly Amstel Brewery), Hamilton

Microbreweries

Ontario: Thames Valley Brewing Co., London

CLOSINGS United States

New Jersey: Clement Brewing Co., Vernon

California: Dead Cat Alley Brewery, Woodland; Los Angeles Brewing Co./Eureka Restaurant, Los Angeles
Washington: Noggins Brewpub, Seattle

Canada

Ontario: The Snooty Fox, Burlington



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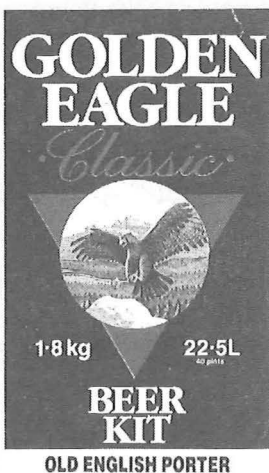
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CALENDAR

DECEMBER

- 12-13 Great East Coast Beer Expo and Festival, Washington, D.C. Special guest, Charlie Papazian. Call DNA Productions at (703) 222-5394.
- 19 St. Louis Brews Happy Holiday Homebrew Competition, **AHA Sanctioned Competition**, St. Louis, Mo. Entry deadline is Nov. 25. Contact Jerry Dahl at (314) 822-8039.

1 9 9 3

JANUARY

- 6 **BJCP Exam**, Philadelphia, Pa. Contact Richard Gleeson at (215) 833-2357.
- 23 Seventh Annual Bay Area Brewoff, **AHA Sanctioned Competition**, Dublin, Calif. Entry deadline is Jan. 9. Contact John Pyles at (510) 790-8160.
- 23 **BJCP Exam**, Burlington, Vt. Contact Tom Ayres at (802) 660-9008.
- 24 Winterfest, **AHA Sanctioned Competition**, Las Vegas, Nev. Entry deadline is Jan. 10. Contact Sheldon Jackson at (702) 459-8696.
- 25 Hail to Ale, **AHA Club-Only Sanctioned Competition**. Entry deadline is Jan. 25. Contact James Spence at the AHA (303) 447-0816.

FEBRUARY

- 7-14 HWBTA International Homebrew Competition, San Jose, Calif. Entry deadline is Jan. 23. Contact Richard Mansfield at (408) 288-6647.
- 20 Kansas City Biermeister's Regional Homebrew Competition, HWBTA Sanctioned Competition, Kansas City, Mo. Contact Vondie O'Conner at (916) 686-2210.
- 21 **BJCP Exam**, Lenexa, Kan. Contact Alberta Rager at (913) 262-4243.
- 27 Homebrew Competition of New England, HWBTA Sanctioned Competition, Westport, Mass. Entry deadline is Feb. 19. Contact Leslie Reilly at (508) 636-5154.
- 27 S.N.O.B.S. Sampling, **AHA Sanctioned Competition**, Cleveland, Ohio. Entry deadline is Feb. 19. Contact Andrew Tveekrem at (216) 321-1965.

MARCH

- 6 3rd Annual TRASH Competition, **AHA Sanctioned Competition**, Pittsburgh, Pa. Entry deadline is Feb. 27. Contact Gregory Walz at (412) 331-5645.
- 13 Beer Expo and Festival, San Jose, Calif. Call DNA Productions at (703) 222-5394.

- 21 Southern New York Spring Regional Competition, HWBTA Sanctioned Competition, Staten Island, N.Y. Entry deadline is March 18. Contact Ken Johnsen at (718) 667-4459.
- 29 Bock is Best, **AHA Club-Only Sanctioned Competition**. Entry deadline is March 29. Contact James Spence at the AHA (303) 447-0816.

APRIL

- 17 Crescent City Competition, **AHA Sanctioned Competition**, New Orleans, La. Entry deadline is April 14. Contact Mike Meisner at (504) 738-1407.
- 18-21 The Institute for Brewing Studies' National Microbrewers and Pubbrewers Conference and Trade Show, *Brew Bayou*, New Orleans, La. Call the Institute for Brewing Studies at (303) 447-0816.
- 24 Dukes of Ale's Spring Thing, **AHA Sanctioned Competition**, Albuquerque, N.M. Entry deadline is April 16. Contact Guy Ruth at (505) 294-0302.
- 24-25 Bidal Society of Kenosha Seventh Annual Competition, **AHA Sanctioned Competition**, Kenosha, Wis. Entry deadline is April 16. Contact David Norton at (414) 654-2211.
- 25 Bootleggers Homebrewers Fest, **AHA Sanctioned Competition**, Montreal, Quebec. Contact Mike Mathieson at (514) 457-1455.

MAY

- 2 **National Homebrew Day**. Call the AHA at (303) 447-0816.
- 13-21 1993 **AHA National Homebrew Competition** first-round entries received at regional sites. Contact Karen Barela at the AHA (303) 447-0816.
- 31 It's Scottish! Scottish Ale, **AHA Club-Only Sanctioned Competition**. Entry deadline is May 31. Contact James Spence at the AHA (303) 447-0816.

JUNE

- 1-14 1993 **AHA National Homebrew Competition** first round judging. Contact Karen Barela at the AHA (303) 447-0816.

JULY

- 14-21 1993 **AHA National Homebrew Competition** second round entries received. Contact Karen Barela at the AHA (303) 447-0816.
- 26-30 **AHA 1993 National Homebrewers Conference, *Brewing Frontiers***, Portland, Ore. Details in *zymurgy* Spring 1993. Call the AHA at (303) 447-0816.
- 30-Aug. 1 Oregon Brewers Festival, Portland, Ore. Contact Widmer Brewing Co. at (503) 281-BIER.

To list events, send information to *zymurgy*, Calendar of Events. Competition organizers wishing to apply for AHA Sanctioning must do so at least two months before the event. To be listed in *zymurgy* Spring 1993, information must be received by January 22, 1993. Contact Karen Barela at (303) 447-0816, FAX (303) 447-2825, PO Box 1679, Boulder, CO 80306-1679.

JACKSON ON BEER

Michael Jackson

Supping at Santa's Knee ...

“Hey, hey, hey!” chuckled Santa. I assumed this was Lapp for **“Ho, ho, ho!”** As he reached to shake my hand, he nimbly pulled me onto his knee. This made me feel rather silly and probably hurt his knee.

"You had a question you wanted to ask," he beamed. Yes, I agree. Did Santa drink beer?

"Why?" he inquired, with a glint of Groucho Marx. "Do you have one on you?" It was my turn to be nimble. I responded with another question: which beer did Santa prefer?

He thought for a moment, then answered uncompromisingly: "Lapin Kulta, the beer from Lapland." This was the correct answer. Santa was a good chap and favored his local beer; I shall make sure he gets a present this Christmas.



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- Steve and Tina Daniel, 1992 Ninkasi Award (AHA High Point Winners)

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There is meant to be some mystery about Santa. Even those people who are sure he lives in Lapland are often unclear as to exactly where in the frozen north that is. Their vagueness is understandable, as the region of Lapland embraces Norway, Sweden, Finland and parts of the former Soviet Union.

If you write a letter to "Santa Claus, Lapland," it will be delivered to a post office that sits astride the Arctic Circle just north of the town of Rovaniemi, in Finnish Lapland.

It was there that I had my revealing interview with Santa. The post office is made of pine logs and has a couple of reindeer in a paddock outside. Santa has two or three student-like helpers wearing pixie-ish red hoods and I noticed even their computer was in Christmassy colors.

I had begun my Finnish journey in the capital, Helsinki, then had flown more than 400 miles north to the lumber town and port of Kemi, just inside Lapland. From Kemi airport, it was just a 15-mile drive to the fur-trading and gold-panning town of Tornio, home of the Lapin Kulta brewery.

This was established in 1873 as the Tornio Porter and Beer Brewery. The mention of porter aroused one of my obsessions, but no one remembers when the brewery ceased to produce the black stuff.

It started to use the brand name Lapin Kulta ("Lapp Gold") in 1963, and began to sell its principal product, a conventional lager, "down south" in Helsinki through the national group Hartwall in 1965.

Soon afterwards it was taken over by the larger company. The romance of Lapland, and the (truthful) claim that it takes its water from the icy Tornio river, has helped Lapin Kulta become the biggest beer in the Finnish market.

It has grown so quickly that three brewhouses of sharply ascending sizes are accommodated in the buildings.

Regrettably, none of the frontier feeling is left in the brewery's modern outer structure.

Without the Lapin ("the British might think it had something to do with the French word for rabbit"), Kulta lager has entered the British market.

It is a pleasant enough lager, soft and fresh (unpasteurized but sterile-filtered), but by no means distinctive. I prefer the lightly malty, tawny-colored Lapin Kulta Joulu. This "Yule" lager would be what Santa drinks.

In Finland, where the strength and availability of beers is regulated by the state, Joulu comes in two versions: classes III (OG 1.042 to 1.043; 3.6 percent alcohol by volume) and IV (OG 1.050 to 1.051; 4.45 percent alcohol by volume). Unfortunately, neither is readily available in Britain.

After visiting Lapin Kulta and having a lunch of smoked reindeer (about which I kept quiet later), I headed about 75 miles north on my side trip to Santa.

I must say I had always assumed that he would have favored Samichlaus, the immensely strong tawny lager from Switzerland. It all goes to show how wise I am in pursuing my firsthand research to the ends of the earth.

Many nations have winter and Christmas specialties. Strong lagers and occasionally dark wheat beers, often of double bock potency, are favored by some German brewers as an early winter or Christmas special. The town of Bamberg, for example, saves its doppelbock for the October-November-December period.

Traditions of malty, strongish beers in various styles stretch from October to March, and across Europe. There are several good reasons for this.

Before the development of refrigeration March was the last month in which brewers could make beer. Stocks were then laid down somewhere cool and shady, to be drawn upon during summer, a season in which airborne wild

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yeasts were just too active to permit brewing.

In the days when the farmers who grew the barley also made the beer, they were too busy, anyway, to brew in summer. After the harvest, they had little work on the farm and were glad to be brewing again.

Malty beers, perhaps slightly syrupy and with a hint of alcohol in the finish, make ideal winter warmers, of course. No doubt they also drove away the fear

of endless nights, and ghosts, in the depths of pagan midwinters.

There is a sense that Christmas beers should have some reference to the cold North. The Belgians serve for Christmas an extra-strong Scottish ale. The Dutch bring out their bock beer in October and November.

The Danes have two Christmas beer traditions. Children are given a very sweet, malty, high gravity but low alcohol beer to have with a savory rice dish


before the Christmas goose (the same combination is left for Santa). The adults, if they are lucky, get a "Jule brug" (Yule brew) that is a malty, amber-red lager and around OG 1.051.

Beers in broadly this style are regarded as a Christmas tippie throughout the Nordic countries, though the heavy hand of state control has struck a mean blow in Norway. There, Christmas beers that can be picked up in the store by the customer must now be of a conventional gravity (around OG 1.043). The stronger types have to be asked for over the counter, as though it were a guilty secret.

One of the nicest Christmas surprises in recent times was the decision of the world's biggest single-plant brewery, Adolph Coors Golden, Colo., to issue a winter beer from its Rocky Mountain home. This, too, is a deep golden lager in the mid-1.050 range. It has a typically clean but tasty, malty palate, and is called Coors Winterfest.

All over the United States, winter beers are springing up, usually emerging for Thanksgiving and lasting to the other side of New Year.

Anchor Steam began this custom, with the Christmas and New Year brew they called: "Our Special Ale." They also revived the custom of adding spices to such a seasonal brew—and they use a different selection each year. This most open of breweries likes to keep its choice of spices as one of its little secrets. Cinnamon, licorice, quinine? We shall probably never know, but you can taste for yourself.

As they say in America: Enjoy! 

Michael Jackson is internationally the best-known writer on beer. His articles, books and documentary films 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.

Happy Brew Year!



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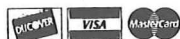
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However, there comes a time when indulgent beer gifting can deplete a bounteous supply of bottled brew down to mere dust in the corners.

Should this year's cache of beer be modest and your gift list lengthy, you can still share your brewing expertise while stretching your supplies by giving a gift that has been prepared with your beer.

The easiest gifts are sweets. Prepared with beer, sweets have a delectable flair all their own. No other method of cooking will impart such uniqueness to a confection as the addition of beer.

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It is this weaving of qualities that makes the following recipes so distinctive. From

Holiday Sweets Made with Beer



the Porter-n-Rum Chocolate Dessert Sauce to the Beer Brittle, these are superb gifts for those lucky enough to be on your gift list this year.

But first, here are a few cooking tips before you get started on your holiday goodies.

- An accurate candy thermometer is essential for any recipe requiring the boiling of a syrup.
- Assemble all ingredients before starting.
- Read the recipe through at least once before starting.
- Use heavy-bottomed pans to prevent scorching.
- Have beer at room temperature.
- Use a wooden spoon so the handle stays cool.

PORTER-N-RUM CHOCOLATE DESSERT SAUCE

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- 8 tablespoons unsalted butter
- 1/4 cup vegetable oil

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(913) 321-7710

- 1 1/3 cup Dutch process cocoa powder
- 1/3 cup rum-vanilla (split vanilla bean in a bottle of rum)*
- 2/3 cup strong porter
- 2 cups sugar
- 1/2 cup Lyles Golden Syrup** or corn syrup
- 1/2 teaspoon salt
- 1 1/2 teaspoons vanilla

(1) Place the butter, oil and cocoa in a heavy saucepan on medium low. Stir until the butter has melted. Add the remaining ingredients except vanilla.

(2) Bring the mixture to a boil over medium heat. Do not stir once the liquid begins to boil. Once boiling, lower to medium low and cook for about 10 minutes. The sauce should look thick, glossy and coat a spoon when done.

(3) Remove from heat and allow to cool until just warm. Stir in the vanilla and finish cooling.

* Rum-vanilla is delicious and easy to make. Simply place a split vanilla bean in a bottle of dark rum for at least two weeks (two months is even better).

** A buttery, caramel-flavored corn syrup made in England.

THE ULTIMATE CARAMEL SAUCE

Buttery and rich, this sauce is worth swooning over. Makes about 1 1/2 cups.

- 1/2 cup unsalted butter
- 1/3 cup Lyles Golden Syrup** or corn syrup
- 1 cup raw sugar ground finely in a blender
- 1/2 cup light bock (Helles Bock)
- 1/2 cup heavy cream

(1) Warm the butter and syrup on medium low. Add sugar and stir until dissolved.

(2) Add beer and cream, bring to a low boil and cook without stirring for six minutes. Cool.

** A buttery, caramel-flavored corn syrup made in England.

BEER & NUT BRITTLE

Traditional peanut brittle never had it this good. The definitive holiday gift, this is even more luxurious when cashews are used. Pale malt can be substituted for nuts—a suggestion from my friend Dan Listerman. Makes one 9 X 12-inch pan.

- 2 cups sugar
- 1 cup Lyles Golden Syrup** or corn syrup
- 1/2 cup Bavarian Dark or Oktoberfest-style beer
- pinch of salt
- 3 tablespoons butter
- 2 cups nuts roasted at 350 degrees until golden
- 1 1/2 teaspoons baking soda
- 1 teaspoon vanilla
- 1 9 X 12-inch baking pan, buttered

(1) In a heavy-bottomed pan, combine the sugar, syrup, beer and salt. Dissolve the sugar over medium low heat.

(2) When the sugar is dissolved, cook without stirring over medium high heat until the syrup reaches 300 degrees.

(3) Remove from the heat and immediately stir in the butter, nuts, soda and vanilla. Pour into the buttered pan and cool. Break into pieces and store in an airtight container.

** A buttery, caramel-flavored corn syrup made in England.

APPLE CIDER BUTTER

This chunky apple butter is flavored with hard cider or beer and plenty of spices for an intensely flavored spread. Makes about 3 1/2 to 4 pints.

- 6 pounds of tart cooking apples (Granny Smith, Winesap)
- 1 cup Märzen-style beer
- 1 cup hard or fresh cider
- pinch of salt
- 1 1/2 cups granulated sugar
- 1 1/2 cups firmly packed brown sugar
- juice and finely minced zest of one lemon

- 4 thick sticks of cinnamon
- 1 teaspoon whole cloves
- 1 teaspoon whole allspice
- 1/2 teaspoon ground nutmeg

(1) Peel, core and thinly slice the apples. Place with beer and fresh cider into a heavy-bottomed, six-quart Dutch oven. Cover and simmer slowly until the apples are tender.

(2) Using a potato masher or the back of a large spoon, lightly mash the apples until you have a 60/40 mixture of mashed to chunky pieces.

(3) Tie the cloves and allspice into a piece of cheesecloth and add to the apples along with salt, sugars, lemon juice, zest, cinnamon sticks and nutmeg. Stir and bring to a rapid boil. Lower to a medium simmer and cook, stirring constantly until the mixture starts to thicken.

(4) Continue to cook and stir until the mixture falls in a sheet from the spoon. Remove and discard the cinnamon sticks and spice bag.

(5) Ladle into hot sterilized jars if

canning, or cool and place in a crock or jar for use within nine days.

BEER TRUFFLES

Chocolate truffles made with melted chocolate, cream and, of course, stout make a terrific gift for the chcoholic in your life. Makes about 40 one-inch truffles.


- 8 ounces of fine extra dark chocolate, chopped finely
- 1/3 cup stout
- 3 tablespoons heavy cream
- 4 tablespoons sweet butter
- 1/2 to 2/3 cup powdered sugar
- 2 tablespoons quality whiskey or Bailey's Irish Cream
- 1/2 cup pecans toasted at 350 degrees for 12 minutes and chopped

(1) Heat the stout, cream and butter until bubbles form around the edges of the pan.

(2) Remove from heat and add the chocolate, stirring constantly until completely melted and the mixture is smooth.

(3) Stir in the powdered sugar, whiskey and nuts.

(4) Refrigerate until firm, two to four hours. Use a melon baller or small scoop to form the mixture into small, rough ball shapes.

(5) Roll in Dutch process cocoa powder, toasted nuts, lightly toasted coconut, finely crushed pralines or dip in additional melted chocolate. Keep cool or refrigerated. 

Candy Schermerhorn of Phoenix, Ariz., is the culinary consultant and instructor at Kitchen Classics. Schermerhorn takes great joy in educating the public about beer and its culinary potential through her cooking classes. This enthusiasm for homebrew cooking has prompted her to begin a full-length cookbook devoted to the art and joy of cooking with beer to be published in 1993 by Brewers Publications.

What Cabernet Sauvignon grapes are to red wine, Maris Otter barley is to ale malt.

Maris Otter is a rare, old fashioned two-row barley, low in yield per acre and tough to grow. Seasoned brewers still insist on the delicious, rich, plump, nut-like character and the finesse that the variety gives their pale and brown ales, porters, stouts and barley wines. Crisp Malting Ltd. of Great Ryburgh continues to contract with local Norfolk farmers to supply them this extraordinary barleycorn. Crisp maintains one of the few remaining traditional floor maltings in England. Their fine pale, crystal, and dark malts are now available to micro- and home brewers in the U.S. and Canada through Liberty Malt Supply Company and their retail agents.



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← Crisp Maris Otter won 1st place at this year's National Malting Barley Competition. →

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FLAMING STONE

Brewing Traditional Steinbiere

PHIL RAHN AND CHUCK SKYPECK

Memphis, Tenn., is not known as the beer capital of the world. Want a fresh ale on tap? Forget it. Only two brands are available, and they are in bottles. The selection of lagers is not much better. Name the top 15 imports and you have it. Microbrewed beers? Don't waste your time looking. With these sad facts in mind, beer connoisseurs in Memphis can face long trips to St. Louis or New Orleans for a better selection, or they can brew their own. We take the homebrewing approach more often than not. Because examples of beers we would like to brew are not available, research into the specifics of styles is part of our brewing routine. When we decided to brew a German "steinbiere" we found ourselves doing more research than we bargained for.

Most homebrewers are familiar with the general precepts behind steinbiere. Stein is the German word for stone. The style supposedly dates back to the time before metal kettles. Because wood kettles could not be set on an open fire, red-hot stones were added to the wort to bring it to a boil. Besides imparting a smoky, phenolic flavor to the beer from the ash and soot on the rocks, the intense heat in the stones caramelized sugars in the wort. Often the stones would be added back into the beer after fermentation, when a secondary fermentation would occur as the caramelized sugars dissolved into solution.

This general information was in Michael Jackson's *The New World Guide to Beer* (Running Press, 1988). We found additional information on the style, such as original gravity, hop rates and color in Fred Eckhardt's *The Essentials of Beer Styles* (Abis, 1989), but these sources hardly answered all the questions we had about the style. What types of rocks are best? What is the ratio of stones to wort? Can the addition of stones affect the pH? While seeking the answers to these questions, we came across information we believed was worth sharing.

Steinbiere is brewed commercially in Germany by Rauchenfels at Neustadt. While we waited for a reply from the brewery concerning their production methods, we took matters into our own hands. Our first attempt at brewing stone beer was more an experiment to test rock samples and a heating system. We found out quickly what would not work. Memphis, along the Mississippi River Delta, has just as poor a selection of surface rocks as it does of fine beers. Our two choices were soft limestone and quartzite, which is metamorphic sandstone. The limestone was a poor choice. It cracked and popped in the fire. When added to the wort it dissolved, elevating the pH and ruining the beer's flavor. (Speaking from experience, bricks and beer are not a good combination.) The quartzite, on the other hand, held up well when heated and was coated with a layer of delicious caramelized malt when cooled. We had our stones.

We had yet to hear from Rauchenfels, so we made some decisions and pressed ahead. We selected stones that weighed about two pounds each and were the size of average oranges for ease in handling. They also fit inside the opening of a five-gallon soda canister used during secondary fermentation. The stones were scrubbed, boiled in water and soaked overnight in acid to ease our concerns about contamination and lime content. Not knowing the ratio of stones to wort, we decided to brew a six-gallon split batch with two stones in "A" and three stones in "B." "A" contained 0.77 pounds of stones per gallon of wort; "B" had 1.53 pounds per gallon. (Subsequent research turned up the fact that Rauchenfels brews with 0.64 pounds of stones per gallon, so we were in the ballpark.

For our experimental batch we heated the stones in the coals of an oak-wood fire. This method produced very little smoke flavor in the beer and caused a lot of ashes to stick to the stones. We decided to use a different technique in our split batch. We constructed a fire chamber of cinder blocks and used grates from Phil's fireplace to hold the stones above the flames. We placed an electric fan in front of the opening to make a hotter fire and to direct the flames up past the stones. Although this method melted the plastic fan housing, it made the stones hot enough to pop a few flakes off.

While the stones were heating we began our mash. In formulating our recipe, we decided to use traditional German ingredients. Because the stone beer style is an ale, we chose to use one of Phil's award-winning altbier recipes. The combination of eight pounds of German Pilsener malt (Ireks), two pounds of light Munich malt and one pound of wheat malt became the backbone

of our steinbiere, which we named "Flaming Stone."

We mashed the grains at 126 degrees F (52 degrees C) for 30 minutes (protein rest), and at 154 degrees F (68 degrees C) for 90 minutes (starch conversion). After a negative iodine test, the mash temperature was raised to 165 degrees F (74 degrees C) and the mash sparged with 168-degrees-F (75.5-degrees-C) water. We boiled the sweet wort for 30 minutes and then split it into two three-gallon batches.

At this point, we lowered two hot stones weighing 2 pounds 5 ounces all together into the wort of "A," and three stones weighing 4 pounds 9 ounces all together into "B." Large stainless-steel tea strainers cradled the stones. As the stones contacted the wort, great clouds of steam were released. The stones seemed angry as they hissed, growled and rumbled during the first few minutes. The worts, which we had removed from their burners, began to boil again. We removed the stones while they were still too hot to touch. They were coated with a shiny layer of caramelized sugars. We cooled the stones, sealed them in containers and put them in the freezer until secondary fermentation.

We maintained the boils over propane burners and added one-half ounce of compressed German Northern Brewers hops to both "A" and "B." After 20 minutes, we added 11.4 grams of fresh Tettnanger hops to "A" and 17 grams to "B." After 40 more minutes of boiling, the batches were each finished with three-quarter-ounce of Tettnanger hops and given ice baths to cool them quickly. During the boil we both noticed something different in the air. The brewery, which used to be Phil's garage, was filled with a pleasant soft aroma of caramelized malt.

After cooling, we strained the worts from the hops into three-gallon carboys to settle, then siphoned into five-gallon carboys for fermentation. During the split of the sweet wort after the initial boil, "A" received less wort. When topped with water to three gallons, the original gravity of "A" was 1.045 and "B" was 1.050. (Rauchenfels Steinbiere has an original gravity of 1.045.) We pitched both batches with one pint of a Wyeast No. 1338 European ale yeast starter, then fermented at 65 degrees F (18 degrees C).

After 12 days we racked the batches onto the stones in three-gallon stainless-steel soda canisters. After two days we racked both batches into three-gallon carboys to finish secondary fermentation. One week later the beers were chilled, fined with three ounces of isinglass solution, kegged, carbonated and bottled.

The results? Both beers were fantastic, but "B" had a more pronounced caramel flavor and slightly more body. "A" was lighter in flavor with a hint of caramelized malt, light hop character and a clean finish. Missing was a light smoky flavor, which may have been hidden by the distinctive caramel character. Both beers produced a thick, creamy head. In "B" this creamy note in the aroma was carried into the flavor. Both beers were great and distinctly different from one another. The obvious difference was the number of stones boiled in the wort. Rauchenfels uses metamorphic stones from their own private quarry that supposedly "bloom," or


expand their surface area, when heated. This in turn adds more caramel and smoky flavors to the beer. This information left us wishing for some authentic stones to experiment with.

Our research convinced us that we produced a reasonable example of an authentic steinbeire. The color of our homebrewed stone beer was a deep, rich gold, and was identical to color photos sent to us by Rauchenfels. The rock to wort ratio, hop rate and original gravity were all confirmed by the official analysis of Rauchenfels Steinbiere performed by the Versuchsanstalt für Bierbrauerei in Nürnberg. We also received a document from the above institute declaring that Rauchenfels Steinbiere has no harmful effect and is good for human consumption.

This would have been the end of our experiment with stone beers until Brewmaster Franz-Joseph Sailer of Rauchenfels spurred our curiosity. Knowing of our interest, Sailer sent us an article from the Austrian brewing and hops trade publication, *Gambrinus*, published in 1910, that told of stone brewing techniques used in 1906. The process did not involve the use of stones to boil the wort, but to heat and control temperature in the mash and to roast the hops. The hops were roasted on top of a layer of hot stones in the mash tun before the brewing liquor and malt were added. Consequently, the hops were present in the mash tun throughout the process. The mash was eventually boiled after it was gradually warmed by the addition of more and more stones, but the wort was not boiled. The yeast was pitched immediately after sparging. Half the beer was generally kegged after seven to

10 hours of fermentation and consumed after about six days. The other half was allowed to ferment for two days, kegged, then consumed after the first half was gone, usually in two weeks.

These techniques point to practices of brewers in ancient times. Another clue is the fact that juniper branches were used in the bottom of the mash tun, which doubled as the lauter-tun. Juniper was a popular bittering agent before the use of hops. It appears that the evergreens also served as a filtering medium during sparging. Boiling the mash with the stones may have been a predecessor to decoction mashing, the German method where portions of the mash are removed, boiled, then returned. The mash, in the 1906 Steinbiere version, was a combination of equal parts of barley malt, wheat malt and oat malt.

In the presence of so many interesting facts and unanswered questions, it appears that our stone brewing experiments may have just begun. 

Phil, a homebrewer for almost 20 years, has covered his office wall with ribbons and brewing awards. A current resident of Cordova, Tenn., he is a field representative for Monsanto. Chuck recently advanced from Certified Judge to National Judge in the Beer Judge Certification Program and is active in contests throughout the Midwest and South. A resident of Memphis, Tenn., he is operations manager of Squash Blossom Markets and owner of Mid-South Malts.

This article is available in Library 13-AHA/zymurgy/Clubs on CompuServe's Beer and Wine Forum as STNEBR.Wg2.

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1993 Rules and Regulations

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American Homebrewers Association 1993 National Homebrew Competition



DESCRIPTOR DEFINITIONS

✓ CHECK WHENEVER APPROPRIATE

- ☐ **Acetaldehyde**—Green applelike aroma; byproduct of fermentation.
- ☐ **Alcoholic**—The general effect of ethanol and higher alcohols. Tastes warming.
- ☐ **Astringent**—Drying, puckering (like chewing on a grape skin) feeling often associated with sourness. Tannin. Most often derived from boiling of grains, long mashes, oversparging or sparging with hard water.
- ☐ **Bitter**—Basic taste associated with hops; braun-hefe or malt husks. Sensation experienced on back of tongue.
- ☐ **Chill haze**—Haze caused by precipitation of protein-tannin compound at cold temperatures. Does not affect flavor. Reduction of proteins or tannins in brewing or fermenting will reduce haze.
- ☐ **Chlorophenolic**—Caused by chemical combination of chlorine and organics. Detectable in parts per billion. Aroma is unique but similar to plasticlike phenolic. Avoid using chlorinated water.
- ☐ **Cooked Vegetable/Cabbagelike**—Aroma and flavor often due to long lag times and wort spoilage bacteria that later are killed by alcohol produced in fermentation.
- ☐ **Diacetyl/Buttery**—Described as buttery, butterscotch. Sometimes caused by abbreviated fermentation or bacteria.
- ☐ **DMS** (dimethyl sulfide)—A sweet, cornlike aroma/flavor. Can be attributed to malt, short or non-vigorous boiling of wort, slow wort chilling or, in extreme cases, bacterial infection.
- ☐ **Fruity/Estery**—Similar to banana, raspberry, pear, apple or strawberry flavor; may include other fruity/estery flavors. Often accentuated with higher temperature fermentations and certain yeast strains.
- ☐ **Grainy**—Raw grain flavor. Cereallike. Some amounts are appropriate in some beer styles.
- ☐ **Hoppy**—Characteristic odor of the essential oil of hops. Does not include hop bitterness.
- ☐ **Husky**—See Astringent.
- ☐ **Light-Struck**—Having the characteristic smell of a skunk, caused by exposure to light. Some hops can have a very similar character.
- ☐ **Metallic**—Caused by exposure to metal. Also described as tinny, coins, bloodlike. Check your brewpot and caps.
- ☐ **Oxidized/Stale**—Develops in the presence of oxygen as beer ages or is exposed to high temperatures; winy, wet cardboard, papery, rotten vegetable/pineapple, sherry, baby diapers. Often coupled with an increase in sour, harsh and bitter. The more aeration in bottling/siphoning or air in headspace, the more quickly a beer will oxidize. Warm temperatures dramatically accelerate oxidation.
- ☐ **Phenolic**—Can be any one or combination of a medicinal, plastic, electrical fire, Listerinlike, Band-Aidlike, smoky, clovelike aroma or flavor. Most often caused by wild strains of yeast or bacteria. Can be extracted from grains (see astringent). Sanitizing residues left in equipment can contribute.
- ☐ **Salty**—Flavor associated with table salt. Sensation experienced on sides of tongue. Can be caused by presence of too much sodium chloride, calcium chloride or magnesium sulfate (Epsom salts); brewing salts.
- ☐ **Solventlike**—Flavor and aromatic character of certain alcohols, often due to high fermentation temperatures. Like acetone, lacquer thinner.
- ☐ **Sour/Acidic**—Pungent aroma, sharpness of taste. Basic taste like vinegar or lemon; tart. Typically associated with lactic or acetic acid. Can be the result of bacterial infection through contamination or the use of citric acid. Sensation experienced on sides of tongue.
- ☐ **Sweet**—Basic taste associated with sugar. Sensation experienced on front tip of tongue.
- ☐ **Sulfurlike (H₂S; Hydrogen sulfide)**—Rotten eggs, burning matches. Is a byproduct with certain strains of yeast. Fermentation temperature can be a factor of intensity. Diminishes with age. Most evident with bottle-conditioned beer.
- ☐ **Yeast**—Yeastlike flavor. Often due to strains of yeast in suspension or beer sitting on sediment too long.

Round No. _____ Entry No. _____

Category No. _____

Subcategory (spell out) _____

Judged By (please print) _____

Judge Qualifications (check one): ☐ Recognized ☐ Certified☐ National ☐ Master ☐ Experienced (but not in BJCP)☐ Apprentice or Novice ☐ Other: _____

BOTTLE INSPECTION Comments _____

Max. Score

BOUQUET/AROMA (as appropriate for style) 10 _____

Malt (3), Hops (3), Other Aromatic Characteristics (4)

Comments _____

APPEARANCE (as appropriate for style) 6 _____

Color (2), Clarity (2), Head Retention (2)

Comments _____

FLAVOR (as appropriate for style) 19 _____

Malt (3), Hops (3), Conditioning (2), Aftertaste (3), Balance (4), Other Flavor Characteristics (4)

Comments _____

BODY (full or thin as appropriate for style) 5 _____

Comments _____

DRINKABILITY & OVERALL IMPRESSION 10 _____

Comments _____

TOTAL (50 possible points): _____

Scoring Guide

Excellent (40-50): Exceptionally exemplifies style, requires little or no attention**Very Good (30-39):** Exemplifies style well, requires some attention**Good (25-29):** Exemplifies style satisfactorily, but requires attention**Drinkable (20-24):** Does not exemplify style, requires attention**Problem (<20):** Problematic, requires much attention

Use other side for additional comments.

NHC/93

1993 Score sheets sponsored by: The Purple Foot, Mary and Jerry Uthmann, Proprietors, 3167 S. 92nd St., Milwaukee, WI 53227

American Homebrewers Association 1993 National Homebrew Competition

INTRODUCTION

What does it take to be a winner? The answer in every case is to relax, don't worry and have a homebrew—usually your own because you know that the best homebrew in the world is the one you brewed. The logistics of preparing for the AHA National Homebrew Competition are mind-boggling. Last year, it took more than 13,000 human hours to register, prepare and judge the nearly 2,400 entries. It's the largest homebrew competition in the history of the world.

Competitions broaden everyone's knowledge about beer and brewing. They serve as a reason to learn how to evaluate beer. Competitions also add an educational dimension for all those involved—the organizers, the judges and the entrants. For the past 14 years, the AHA's National Homebrew Competition has excelled in the service and educational value it offers to contestants and to homebrewers everywhere. On page 2 of this brochure is a sample of the score sheet judges will use to evaluate your beer. We believe this score sheet is one of the best formats for providing educational feedback on your brew.

Good luck in the 1993 National Homebrew Competition. Please follow all the instructions carefully. If you have any questions, please call Karen or James at (303) 447-0816.

A. ELIGIBILITY

- 1. Eligibility:** The competition is open to all—either AHA members or non-members. Contestants will be considered an individual entrant based on the name appearing on the registration form. No employee of the Association of Brewers may enter. Persons under contract and/or persons volunteering their services to the Association of Brewers are eligible. First-round Registrars, Site Directors and Judge Directors who enter must enter at a site other than the one they are hosting. Judges may not judge a category they have entered. Applicable entry fees and limitations shall apply.
- 2. The "Brewery":** Entries brewed in facilities that are also used to brew beer for resale or other commercial purposes, whether for commercial research, production or any other purpose, are ineligible. Any beer brewed with the help of another brewer must be entered under the names of all brewers who helped.
- 3. Entry Limitations:** Contestants may not submit more than one entry in any one beer, mead, cider or saké subcategory.
- 4. Entrants' Responsibilities:** It is the sole responsibility of the entrant to complete all registration and recipe forms, enclose the proper entry fee and designate the category and subcategory in which they wish their entry to be judged. Under no circumstances will registrars, judges or directors categorize entries.
- 5. Classification of Entries:** Beer, mead, cider and saké will be judged in categories and subcategories listed on page 6-9. Entries must be referred to by category

NUMBER and subcategory LETTER. Dry, medium or sweet must be designated for all cider, saké and mead entries. Any homebrew that is made using exclusively all grains must be indicated as such on the registration form.

B. ENTRY REQUIREMENTS

- 1. Entry Fees:** AHA Members: \$8 per entry
Non-members: \$10 per entry
Non-members may have membership status by enclosing the \$25 annual membership fee with entry fees. If you are becoming a member of the AHA, circle Yes in Section A of the entry form and send separate checks for your membership and your entries. All checks should be made payable to the American Homebrewers Association.
- 2. Bottle Entry Requirements:** For the first round, beer and mead competitors must enter **one** bottle for each subcategory entered. Cider and saké require **three** bottles for each subcategory entered. Attach the AHA Entry Form or a facsimile to each bottle with a rubber band. The use of tape or glue to attach forms is not acceptable. Bottles must be 10- to 14-ounce green or brown glass clean and free of any labels (inked, paper or otherwise). Bottles with raised glass brand-name lettering or any other identifying or distinctive marks will be disqualified. Clear glass bottles will be disqualified. Bottles with Grölsch-type wire swing tops will be disqualified. Printed crown caps are acceptable; however, any printing must be blacked out with a BLACK marking pen to assure anonymity in all judging situations. Entrants are encouraged to use brown long-necked bottles for maximum protection against light-struck beer.
- 3. Recipe Requirement:** Recipe must be submitted with entry. Upon entering this competition entrants agree to allow (at no cost) publication of their recipe by the Association of Brewers, or any of its divisions in any publication. Entrant will receive all due credit.
- 4. Information and Fees Requirement:** All entry fees, names of competitors, address, phone number, category and subcategory entered and recipes must accompany entries when submitted. No entries will be returned whether received late or otherwise. All entries become property of the AHA.
- 5. Forms:** Use the official National Competition Entry Form or a facsimile.
- 6. Disqualification:** Beers will be disqualified for eligibility or entry requirement infractions. These entries may still be judged but will be ineligible for awards or prizes.
- 7. Qualifying for Second Round: IMPORTANT NOTE:** If your beer or mead qualifies to move on to second-round judging you will be notified by first-class mail between June 30 and July 5. You will be instructed on how, when and where to send two additional bottles for judging, to be received in the Portland area between July 14 and July 21. Contestants are advised to refrigerate potential second-round entries to minimize changes in character.

C. WHEN AND WHERE TO ENTER

1. **When:** Time the shipping of your first-round entries to be received at their destination between May 13, and May 21, 1993. They will be refrigerated within 24 hours of receiving, thus helping to preserve the quality in which we receive them.
2. **Where:** All entrants must ship their entries to the appropriate National Homebrew Competition Sites. Refer to the Site Locator Map on page 11 of this brochure to determine which one of the six sites you should send your entries to.
3. **Shipping:** It is not against any BATF regulations or federal laws to ship your entries via a privately owned shipping company for analytical purposes. It is illegal, however, to ship alcoholic beverages via the U.S. Postal Service. Private shipping companies may refuse your shipment if they are informed that the package contains alcoholic beverages.
4. **Packing:** Pack your entries well. There are quite a few broken bottles every year. Every reasonable effort will be made to contact entrants whose bottles have broken to make arrangements for sending replacement bottles. Line the inside of your carton with a plastic trash bag. Partition and pack each bottle with adequate packaging material. Do not over pack! Clearly write: "Glass—Fragile. This Side Up" on the package. Your package should weigh less than 40 pounds. Refer to the article on How to Pack Your Beer, in *zymurgy* Spring 1991 (Vol. 14, No. 1) for excellent advice on how to save time, money and avoid broken bottles. A copy of this article is available free upon request if accompanied with a self-addressed stamped envelope. A forthcoming review in *zymurgy* Spring 1993 (Vol. 16, No. 1) of reusable containers specially designed for shipping homebrew also will be available after March 1, 1993.

D. ENTRY DEADLINES

First Round: All first-round entries must be received at the appropriate site BETWEEN Thursday, May 13, 1993, and 5 p.m., Friday, May 21, 1993. **No late entries will be accepted under any circumstances.**

Second Round: Entries competing in the second round must be received BETWEEN Wednesday, July 14, 1993, and 5 p.m., Wednesday, July 21, 1993. **No late entries will be accepted under any circumstances.**

E. JUDGING

1. First-round judging of all beer and mead entries will be done in closed sessions at the National Homebrew Competition Sites, June 1 through 14, 1993.
2. Second-round judging of qualifying beer and mead entries will be done at the National Homebrewers Conference in Portland, Ore., July 26 through 30, 1993.
3. Best-of-Show judging of qualifying beer and mead entries will be done at the National Homebrewers Conference in Portland, July 26 through 30, 1993.
4. All rounds of judging for cider and saké entries will be completed at the appropriate National Homebrew Competition Site, June 1 through 14, 1993.
5. In the first round, the highest scoring three entries from each category at each site will advance to the second round, for a total of 12 beers in each category competing in the second round.

In the second round, first, second and third place will be awarded to three entries from each category. The first-place beers from each category will compete for Homebrewer of the Year. The first-place meads from each mead category will compete for Meadmaker of the Year.

6. Winners will be notified by mail. Every reasonable effort will be made to return score sheets and judges' evaluations to all entrants. The judges' decisions are final.
7. Judges are needed for first and second rounds. Qualified and interested individuals are encouraged to contact the AHA after April 1, 1993.

F. AWARDS AND PRIZES

Certificates will be awarded to any brewer whose achievements are outstanding on the basis of judges' final scoring and the following standards:

Gold Certificate: Scores of 40-50

Silver Certificate: Scores of 30-39

Bronze Certificate: Scores of 25-29

Prizes will be awarded for first, second and third place in each category. First place in each category receives a hand-cut and engraved stein. First-, second- and third-place winners will receive a ribbon courtesy of the category sponsor.

First-place winners in each beer category will compete in a best-of-show judging. The winner will be awarded "Homebrewer of the Year" **sponsored by Munton & Fison of England.**

First-place winners of each mead category will compete in a best-of-show judging. The winner will be awarded "Meadmaker of the Year," **sponsored by the Home Wine and Beer Trade Association.**

The first-place winner of the cider category will be awarded "Cidermaker of the Year," **sponsored by Lyon's Brewery of Dublin, Dublin, Calif.** The first-place winner of the saké category will be awarded "Sakémaker of the Year," **sponsored by Hakusan Saké, Napa, Calif.**

The Ninkasi Award will be given to the High-Point Homebrewer, the brewer who accumulates the most points in all categories of beer, mead, cider and saké in this competition. Three points are awarded for a first place, two for a second and one for a third place. Individual members of a group of brewers do not earn points on an individual basis, i.e., if Brewer A and Brewer B enter individually, they will earn points individually, but if they enter as a team, they will only earn points as a team. Entry forms must list each member of the team of brewers to count toward the point total. The Ninkasi Award is **sponsored by The Institute for Brewing Studies, Boulder, Colo.**

The Homebrew Club High-Point Award will be awarded to the club that accumulates the most points in all categories of beer, mead, cider and saké. Three points are awarded for a first place, two for a second and one for a third place. Points earned and awarded for the six annual AHA club competitions (Penultimate Pilsener 1992, Weiss is Nice 1992, Best of Fest 1992, Barley Wine is Fine 1992, Hail to Ale 1993 and Bock is Best 1993) will be added into the tally. For your club to receive credit you must have the club listed on the entry form AND the club must be registered with the AHA by April 1, 1993. Homebrew Club High-point Award is **sponsored by Homebrew Headquarters, Dallas, Texas.**

G. INSTRUCTIONS FOR COMPLETING THE ENTRY FORM (PAGE 12)

Section A: Brewers' Information. Please print clearly or type. In item 1, fill in the name of the brewer who will be responsible for receiving mailings and results. In item 2, fill in the full names of all other brewers who participated in brewing the entry. All names will appear on any certificates the entry may win. In items 3 through 5, write the address where mailings and results should be sent.

Section B: Entry Information. In item 10 give any name you have given your beer. In item 11 write out the full names of the Category and Subcategory you are entering. In items 12 and 13, write the Category number and Subcategory letter you are entering. Your entry will not be classified or reclassified by directors, judges or registrars under any circumstances.

IMPORTANT: If you have entered in 2f, 19, 20, 21, 22b, 26, 27c, 27d, 28c, please use and follow the instructions below very carefully to give information in item 14. Leave item 14 blank if you have not entered the above categories. This information is necessary for accurate judging of entries in these categories. In all cases, do not give brand names, geographic names or any other proper names of special ingredients that may indicate the origin or identity of the brewer. For example, if you used Premier Malt Extract, Briess pale malt, Washington apples, or Idaho clover honey you should only enter malt extract, pale malt, apples or clover honey, respectively.

Entries in 2f: Give the type of lambic you brewed.

Entries in 19: If you are entering in 19a, list the fruit(s) you used. If you are entering in 19b, list the fruit(s) you used and give the classic style you are emulating. For example: raspberry stout, blueberry Pilsener, plum India pale ale. If you have used any other special ingredient in addition to the fruit, enter your beer in category 21: Specialty Beer.

Entries in 20: If you are entering in 20a, list the herb(s) you used. If you are entering in 20b, list the herb(s) you used and give the classic style you are emulating. For example: nutmeg stout, chili Pilsener, coriander India pale ale. If you have used any other special ingredients in addition to the herbs, enter your beer in category 21: Specialty Beer.

Entries in 21: If you are entering 21a, write the special technique or ingredients you used. If you have used both fruit and herbs, list them. If you are entering 21b, give the classic style you are emulating. For example: honey Pilsener, cinnamon maple stout or lambic barley wine.

Entries in 22b: Indicate the classic style (if any) you have emulated and the type of wood used to smoke the grain. For example: birch-smoked porter, apple-smoked American dark, etc.

Entries in 26: Give the fruit or herb you used.

Entries in 27c: Indicate whether your entry is still or sparkling New England-style cider.

Entries in 27d: Give the special ingredients and/or special yeast you used.

Entries in 28c: Give the type of oriental rice beer.

Section C: Ingredients and Procedures. Be as detailed as possible in this section. If you need more room, write on a separate piece of paper. If your brew wins first,

second, or third in the National Competition, this information will be used if your recipe is published in *zymurgy*. Judges do not see your recipe information.

When you have completed the entry form, attach it to your bottle with a rubber band (do not use glue or tape). Put your entry fee(s) in an envelope and rubber band it to one of your entries.

Check List

- ☐ One bottle of each beer or mead entry is being sent.
- ☐ Three bottles of each cider or saké entry are being sent.
- ☐ All bottles are green or brown glass, between 10 and 14 ounces in volume, and have no raised-glass brand name lettering or labels of any kind. Printed caps are blacked out.
- ☐ Entry Form is filled out correctly, including, Category (item 12) and Subcategory (item 13). Special ingredients have been listed in item 14 for entries in categories 2f, 19, 20, 21, 22b, 26, 27c, 27d, 28c only.
- ☐ All-grain entries are indicated in Section B of entry form.
- ☐ Total fee for all entries is enclosed (\$8 per entry AHA members, \$10 per entry non-members).
- ☐ A separate check is enclosed for new AHA memberships (\$25).
- ☐ Package is being sent to the correct National Homebrew Competition Site determined from page 11.

American Homebrewers Association 1993 National Homebrew Competition

CATEGORY DESCRIPTIONS

There are 24 categories of lager, ale or mixed-style beers, two categories of mead, one category of cider and one category of saké to be judged. Some have subcategories using small-letter designations. If a beer is entered, for example, as "16c American Premium" it will be judged as an American premium lager against the others in the American Lager category.

The following section gives more detailed information about each category and subcategory. Please note that when a style characteristic is designated "OK," this means it does not have to be apparent but it is permissible in amounts indicated. When the term "noble-type hops" is used it refers to European continental-type hops such as Saaz, Hallertauer, Tettnanger and Spalter, to name a few.

Categories are designated by numbers. Subcategories are designated by letters. Please note the Style Guidelines Chart on page 10.

ALE

Ales are distinguished by the use of top-fermenting *Saccharomyces cerevisiae* yeast strains. These strains perform at warmer temperatures, the ferments are faster and fermentation by-products are generally more evident. Ales tend to have a very pronounced palate where esters and fruity qualities are part of the character.

1a. BARLEY WINE

Category award sponsored by Edme Ltd., Mistley, Manningtree, England.

Copper to medium brown. Malty sweetness. Fruity/estery. Medium to high bitterness. Hop aroma and flavor OK. Alcoholic taste. Low to medium diacetyl OK.

2. BELGIAN-STYLE SPECIALTY

Category award sponsored by Manneken-Brussel Imports Inc., Austin, Texas.

a) Flanders Brown—Slight sourness and spiciness. Deep copper to brown. Fruity/estery. No hop flavor or aroma. Low to medium bitterness. Low diacetyl OK.

b) Dubbel—Dark amber to brown. Sweet malty, nutty aroma. Faint hop aroma OK. Medium to full body. Low bitterness. Low diacetyl OK.

c) Trippe—Light/pale color. Light malty and hop aroma. Neutral hop/malt balance. Finish may be sweet. Medium to full body. Alcoholic, but best examples do not taste strongly of alcohol.

d) Belgian Ale—Pale color. A Belgian "pale ale." Bitterness subdued. Light to medium body. Low malt aroma. Slight acidity OK. Low diacetyl OK.

e) Belgian Strong Ale—Pale to dark brown. Alcoholic. Can be vinous. Darker beers are colored with candy sugar and not so much dark malt. Full body.

f) Lambic-style—Intensely and cleanly sour. No hop bitterness, flavor or aroma. Effervescent. Fruity/estery and uniquely aromatic. Malted barley and unmalted wheat. Stale, old hops used. Cloudiness OK. Types:

Faro—Lambic with sugar and sometimes caramel added. Pale to light amber.

Gueuze—Unflavored lambic. Pale. Often very dry. Diacetyl very low.

Fruit (Framboise, Kriek, Peche)—Raspberry, cherry, peach, etc., fermented and flavored lambic. Fruit flavor, aroma and color are intense. Sourness predominates. Often very dry.

g) White—Unmalted wheat and malted barley. Oats OK. May be spiced with coriander seed, orange peel. Hop flavor and aroma "noble-type" desired. Low to medium bitterness. Low to medium body. Dry. Low diacetyl OK. Low to medium esters.

3. BROWN ALE

Category award sponsored by Premier Malt Products, Grosse Pointe, Mich.

a) English Brown—Medium to dark brown. Sweet and malty. Low bitterness. Hop flavor and aroma low. Some fruitiness and esters. Medium body. Low diacetyl OK.

b) English Mild—Low alcohol. Medium to very dark brown. Low hop bitterness, flavor and aroma. Mild maltiness. Light body. Low esters.

c) American Brown—Medium to dark brown. High hop bitterness, flavor and aroma. Medium maltiness and body. Low diacetyl OK.

4. ENGLISH STYLE PALE ALE

Category award sponsored by Wynkoop Brewing Co., Denver, Colo.

a) Classic English Pale Ale—Pale to deep amber/copper. Low to medium maltiness. High hop bitterness. Medium hop flavor and aroma. Use of English hops such as Goldings, Fuggles, etc. Fruity/estery. Low diacetyl OK. Medium body.

b) India Pale Ale—Pale to deep amber/copper. Medium body. Medium maltiness. High hop bitterness. Hop flavor and aroma medium to high. Fruity/estery. Alcoholic strength evident. Low diacetyl OK.

5. AMERICAN STYLE ALE

Category award sponsored by Northwestern Extract Co., Brookfield, Wis.

a) American Pale Ale—Pale to deep amber/red/copper. Low to medium maltiness. High hop bitterness. Medium hop flavor and aroma. Use of American hops such as Cascade, Willamette, Centennial (CFJ-90), etc. Fruity/estery. Low diacetyl OK. Medium body.

b) American Wheat—Pale to amber. Light to medium body. Low to medium bitterness. Malt and hop flavor and aroma OK. Low to medium fruitiness and esters. Low diacetyl OK. Lager yeast OK.

6. ENGLISH BITTER

Category award sponsored by The Brewery, Postdam, N.Y.

Gold to copper. Low carbonation. Medium bitterness. May or may not have hop flavor or aroma. Low to medium maltiness. Light to medium body. Low to medium diacetyl OK. Fruitiness/esters OK.

a) English Ordinary—Mildest.

b) English Special—Moderate strength. Maltiness more evident along with increased hop character.

c) English Extra Special—Strong bitter. Maltiness evident. Hop bitterness balanced with malt sweetness.

7. SCOTTISH ALE

Category award sponsored by Something's Brewing, Burlington, Vt.

a) Scottish Light—Gold to amber. Low carbonation. Low bitterness. May or may not have hop flavor and aroma. Medium maltiness. Medium body. Low to medium diacetyl OK. Fruitiness/esters OK. Faint smoky character OK.

b) Scottish Heavy—Gold to amber to dark brown. Low carbonation. Low bitterness. May or may not have hop flavor and aroma. Medium to high maltiness. Medium body. Low to medium diacetyl OK. Fruitiness/esters OK. Faint smoky character OK.

c) Scottish Export—Gold to amber to Dark brown. Low carbonation. Low to medium bitterness. May or may not have hop flavor and aroma. High maltiness. Medium to high body. Low to medium diacetyl OK. Fruitiness/esters OK. Faint smoky character OK.

8. PORTER

Category award sponsored by The Cellar, Seattle, Wash.

a) Robust Porter—Black. No roast barley character. Sharp bitterness of black malt, without high burnt/charcoal-like flavor. Medium to full bodied. Malty sweet. Hop bitterness medium to high. Hop flavor and aroma: none to medium. Fruitiness/esters OK. Low diacetyl OK.

b) Brown Porter—Medium to dark brown. No roast barley or strong burnt malt character. Light to medium body. Low to medium malt sweetness. Medium hop bitterness. Hop flavor and aroma: none to medium. Fruitiness/esters OK. Low diacetyl OK.

9. ENGLISH AND SCOTTISH STRONG ALE

Category award sponsored by Wine & Hop Shop, Denver, Colo.

a) English Old Ale/Strong Ale—Light amber to deep amber/copper. Medium to full body. Malty. Hop bitterness apparent but not aggressive, flavor and aroma can be assertive. Fruitiness/esters high. Alcoholic strength recognizable. Low diacetyl OK.

b) Strong "Scotch" Ale—Similar to English Old/Strong Ale. Stronger, malty character. Deep copper to very black. Hop bitterness low. Diacetyl medium to high.

10. STOUT

Category award sponsored by Chicago Garden Supply, Chicago, Ill.

a) Classic Dry Stout—Black opaque. Light to medium body. Medium to high hop bitterness. Roasted barley (coffee-like) character required. Sweet maltiness and caramel malt evident. No hop flavor or aroma. Slight acidity/sourness OK. Low to medium alcohol. Diacetyl low to medium.

b) Foreign Style—Stronger version of Classic Dry Stout.

c) Sweet Stout—Overall character sweet. Black opaque. Medium to full body. Hop bitterness low. Roasted barley (coffee-like) character mild. No hop flavor or aroma. Sweet malty and caramel evident. Low to medium alcohol. Low diacetyl OK.

d) Imperial Stout—Dark copper to black. Hop bitterness, flavor and aroma medium to high. Alcohol strength evident. Rich maltiness. Fruitiness/esters OK. Full bodied. Low diacetyl OK.

LAGER

Lagers are produced with bottom-fermenting *Saccharomyces uvarum* (or *carlsbergensis*) strains of yeast at colder fermentation temperatures than ales. This cooler environment inhibits the natural production of esters and other fermentation byproducts, creating a cleaner-tasting product.

11. BOCK

Category award sponsored by Yakima Valley Hop Growers, Yakima, Wash.

a) Traditional German Bock—Copper to dark brown. Full body. Malty sweet character predominates in aroma and flavor with some toasted chocolate. Low bitterness. Low hop flavor "noble-type" OK. No hop aroma. No fruitiness or esters. Low to medium diacetyl OK.

b) Helles (light) Bock—Pale to amber. Other characters same as dark bock without chocolate character and medium to full body.

c) Doppelbock—Light to very dark; amber to dark brown. Very full body. Malty sweetness evident in aroma and flavor can be intense. High alcoholic flavor. Slight fruitiness and esters OK, but not very desirable. Low bitterness. Low hop flavor, "noble-type" OK. No hop aroma. Low diacetyl OK.

d) Eisbock—A stronger version of Doppelbock. Deep copper to black. Very alcoholic.

12. BAVARIAN DARK

Category award sponsored by Crosby & Baker, Westport, Mass.

a) Munich Dunkel—Copper to dark brown. Medium body. Nutty, toasted, chocolatelike malty sweetness in aroma and flavor. Medium bitterness. Hop flavor and aroma, "noble-type" OK. No fruitiness or esters. Low diacetyl OK.

b) Schwarzbier—Dark brown to black. Medium body. Roasted malt evident. Low sweetness in aroma and flavor. Low to medium bitterness. Low bitterness from roast malt. Hop flavor and aroma, "noble-type" OK. No fruitiness, esters. Low diacetyl OK.

13a. DORTMUND/EXPORT

Category award sponsored by Briess Malting Co., Chilton, Wis. Pale to golden. Medium body. Medium malty sweetness. Medium bitterness. Hop flavor "noble-type" and aroma OK. No fruitiness, esters or diacetyl. Alcoholic warmth evident.

14a. MUNICH HELLES

Category award sponsored by L.D. Carlson Co. (formerly Wines Inc.), Akron, Ohio.

Pale to golden. Medium body. Medium malty sweetness. Low bitterness. Hop flavor and aroma "noble-type" OK. No fruitiness, esters. Low diacetyl OK.

15. CLASSIC PILSENER

Category award sponsored by California Concentrates, Acampo, Calif.

a) German—Pale to golden. Light to medium body. High hop bitterness. Medium hop flavor and aroma "noble-type." Low maltiness in aroma and flavor. No fruitiness, esters. Very low diacetyl OK.

b) Bohemian—Pale to golden. Light to medium body. Medium to high bitterness. Low to medium hop flavor and aroma "noble-type." Low to medium maltiness in aroma and flavor. No fruitiness, esters. Low diacetyl OK.

16. AMERICAN LAGER

Category award sponsored by Coors Brewing Co., Golden, Colo.

a) Diet/Lite—Very pale. Light body. Very low bitterness. No malt aroma or flavor. No hop aroma or flavor. Effervescent. No fruitiness, esters or diacetyl.

b) American Standard—Very pale. Light body. Very low bitterness. Low malt aroma and flavor. Low hop aroma and flavor OK. Effervescent. No fruitiness, esters or diacetyl.

c) American Premium—Very pale to golden. Light body. Low to medium bitterness. Low malt aroma and flavor OK. Low hop flavor or aroma OK. Effervescent. No fruitiness, esters or diacetyl.

d) Dry—Pale to golden. Light body. Low to medium bitterness. Low malt aroma or flavor. Low hop aroma and flavor. Effervescent. No fruitiness, esters or diacetyl. No lingering aftertaste or bitterness.

e) Cream Ale/Lager—Very pale. Effervescent. Light body. Low to medium bitterness. Low hop flavor or aroma OK. Low fruitiness/ester OK. Can use ale or lager yeasts or combination of both.

f) American Dark—Deep copper to dark brown. Light to medium body. Low bitterness. Low malt aroma or flavor OK. Low hop flavor or aroma OK. Effervescent. No fruitiness, esters. Very low diacetyl OK.

17. VIENNA/ OKTOBERFEST/MÄRZEN

Category award sponsored by F.H. Steinbart Co., Portland, Ore.

a) Vienna—Amber to deep copper/ light brown. Toasted malt aroma and flavor. Low malt sweetness. Light to medium body. Hop bitterness "noble-type" low to medium. Low hop flavor and aroma, "noble-type" OK. No fruitiness, esters. Low diacetyl OK.

b) Märzen/Oktoberfest—Amber to deep copper/orange. Malty sweetness, toasted malt aroma and flavor dominant. Medium body. Low to medium bitterness. Low hop flavor and aroma, "noble-type" OK. No fruitiness, esters or diacetyl.

MIXED STYLE (LAGER-ALE)

The following beers are fermented or aged with mixed traditions or could be brewed as an ale or lager.

18. GERMAN-STYLE ALE

Category award sponsored by Great Fermentations of Santa Rosa, Santa Rosa, Calif.

a) Düsseldorf-style Altbier—Copper to dark brown. Medium to high bitterness. Very low hop flavor. No hop aroma. Light to medium body. Low fruitiness and esters. Traditionally fermented warm but aged at cold temperatures. Very low diacetyl OK.

b) Kölsch—Pale Gold. Low hop flavor and aroma. Medium bitterness. Light to medium body. Slightly dry, winy palate. Malted wheat OK. Lager or ale yeast or combination of yeasts OK.

19. FRUIT BEER

Category award sponsored by The Purple Foot, Milwaukee, Wis.

a) Fruit Beer—Any ale or lager made with fruit. Character of fruit should be evident in color, aroma and flavor. Body, color, hop character and strength can vary greatly.

b) Classic-style Fruit Beer—Any classic style of ale or lager to which fruit has been added. Brewer to specify style.

20. HERB BEER

Category award sponsored by Marin Brewing Co., Larkspur, Calif.

a) Herb Beer—Any ale or lager with herbs. Character of herb or spice should be evident in aroma and flavor. Body, color, hop character and strength can vary greatly.

b) Classic-style Herb Beer—Any classic style of ale or lager to which herbs have been added. Brewer to specify style.

21. SPECIALTY BEER

Category award sponsored by Beer and Wine Hobby, Woburn, Mass.

Any ale or lager brewed using unusual techniques and/or fermentable ingredients other than (or in addition to) malted barley as a unique contribution to the overall character of the beer. Examples include (but are not limited to) the use of honey and maple sap or syrup or heating the wort with white-hot stones. Examples do not include fruit or herbs, though they can be used to add to the character of other uniquely fermentable ingredients.

a) Specialty Beer—Any non-classic style fitting the above description.

b) Classic-style Specialty Beer—Any classic ale or lager to which special ingredients or special process has been used, e.g., honey Pilsener, maple porter, sorghum stout, pumpkin pale ale. Brewer to specify style.

22. SMOKED BEER

Category award sponsored by Jim's Homebrew Supply, Spokane, Wash.

a) Bamberg-style Rauchbier—Oktoberfest style (see Oktoberfest) with a sweet smoky aroma and flavor. Dark amber to dark brown. Intensity of smoke medium to high.

Low diacetyl OK.

b) Other (brewer to specify style)—All other beer styles as so designated by brewer with smoke flavor.

23a. CALIFORNIA COMMON BEER

Category award sponsored by Anchor Brewing Co., San Francisco, Calif.

Light amber to copper. Medium body. Toasted or caramellike maltiness in aroma and flavor. Medium to high hop bitterness. Hop flavor medium to high. Aroma medium. Fruitiness and esters low. Low diacetyl OK. Lager yeast, fermented warm but aged cold.

24. WHEAT BEER (ALE)

Category award sponsored by the National Association of Wheat Growers Foundation, Washington, D.C.

a) Berliner Weisse—Pale. Light body. Dry. Sharp lactic sourness. Fruity/estery. Between 60 and 70 percent malted wheat. Very low bitterness. No hop flavor or aroma. Effervescent. No diacetyl.

b) German-style Weizen/Weissbier—Pale to golden. Light to medium body. About 50 percent wheat malt. Clove and slight banana character. Fruity/estery. Clove, vanilla, nutmeg, smoke and cinnamonlike phenolics permissible. Mild sourness OK. Highly effervescent. Cloudiness OK. Low bitterness. Low hop flavor and aroma OK. No diacetyl.

c) German-style Dunkelweizen—Deep copper to brown. Dark version of Weizen. Chocolatelike maltiness evident. Banana and cloves and other phenolics may still be evident, but to a lesser degree. Stronger than Weizen. Medium body. Low diacetyl OK. Low hop flavor and aroma OK.

d) German-style Weizenbock—Usually deep copper to dark brown, but light versions can be amber to copper. Medium to full body. Alcoholic strength evident. Maltiness high. Low bitterness. Hop flavor and aroma absent. Banana and clove character apparent. Low diacetyl OK.

MEAD

Meads are produced by the fermentation of honey, water, yeast and optional ingredients such as fruit, herbs and/or spices. Their final gravity determines whether they are: Dry—0.996 to 1.009, Medium—1.010 to 1.019 or Sweet—1.020 or higher. Wine, Champagne, sherry, mead, ale or lager yeasts may be used.

25. TRADITIONAL MEAD

Category award sponsored by Havill's Mazer Mead Co., New Zealand.

a) Sparkling—Effervescent. Dry, medium or sweet (designate on entry form). Light to medium body. No flavors other than honey. Honey character in aroma and flavor. Low to fruity acidity. Color depends on honey type. Absence of harsh and stale character.

b) Still—No effervescence. Dry, medium, sweet or very sweet (designate on entry form). Light to full body. Honey character in aroma and flavor. Low to fruity acidity. Absence of harsh and stale character.

26. MELOMEL, CYSER, PYMENT, METHEGLIN

Category award sponsored by the National Honey Board, Longmont, Colo.

Melomel: fruit, Cyser: apple juice, Pymment: grapes, Metheglin: herbs, spices.

a) Sparkling—Effervescent and made with any fruit, apple juice, grapes, herbs or spices. Flavors should be expressed in aroma and flavor. Color should represent ingredients. Light to medium body. Dry, medium or sweet (designate on entry form). Honey character still apparent in aroma and flavor. Absence of harsh and stale character.

b) Still—Not effervescent. Made with any fruit, apple juice, grapes, herbs or spices. Flavors should be expressed in aroma and flavor. Color should represent ingredients. Light to full body. Dry, medium, sweet or very sweet (designate on entry form). Honey character apparent in aroma and flavor. Absence of harsh and stale character.

CIDER

27. CIDER

Category award sponsored by Lyon's Brewery of Dublin, Dublin, Calif.

a) Still—Not effervescent. Less than 7 percent alcohol by volume. Can be dry or sweet. Pale yellow color, must be clear or brilliant. Apple aroma. Light bodied and crisp apple flavor. Sugar adjuncts may be used.

b) Sparkling—Effervescent but not foamy. May be force carbonated. No head. Less than 8 percent alcohol by volume. Dry or sweet. Pale yellow color, must be clear and brilliant. Light to medium body, crisp apple taste. Sugar adjuncts may be used.

c) New England-style—Still or sparkling dry cider. Carbonation must be natural. Between 8 and 14 percent alcohol. Pale to medium yellow color. Pronounced apple aroma. Medium to full body. Balanced by "drying" tannins, but never hot due to excess alcohol. Adjuncts include white and brown sugars, molasses or raisins. Wild or wine yeasts only.

d) Specialty Cider—Any and all adjuncts and yeasts may be used. Alcohol content must be below 14 percent. At least 75 percent apple juice must be used in the "must."

NOTE: Cyser or Cider made with honey as an adjunct should be entered into Category 26: Melomel, Cyser, Pyment, Metheglin.

SAKÉ

28. SAKÉ

Category award sponsored by Hakusan Saké, Napa, Calif.

a) Saké (Japanese rice beer)—Twelve to 20 percent alcohol. Can be semidry to very dry. No carbonation. Pale yellow color to almost water clarity. Must be made with rice koji, rice and yeast only. This subcategory includes Genshu saké, ordinary saké, Nigori saké, Ginjo saké, brown rice (Genmai) saké, rice wine and fruit saké.

b) Sparkling Saké—This is regular saké refermented in the bottle (like Champagne) to produce carbonation. It is about 12.5 percent alcohol, and the bottle priming is rice syrup and yeast. Can be made from fruit saké.

c) Other Oriental Rice Beers—This subcategory includes Chinese amber rice beer (Huang-Chiu), Korean saké types (Taek Ju and other Jus), saké variations from other grains (corn, barley, millet, etc.) and Mirin (cooking) saké.

SPONSORS

"Homebrewer of the Year"

Munton and Fison of England

"Meadmaker of the Year"

The Home Wine and Beer Trade Association

"Cidermaker of the Year"

Lyon's Brewery of Dublin, Dublin, Calif.

"Sakémaker of the Year"

Hakusan Saké, Napa, Calif.

The Ninkasi Award

The Institute for Brewing Studies, Boulder, Colo.

Homebrew Club High-point Award

Homebrew Headquarters, Dallas, Texas

SPONSORS BY CATEGORY

Barley Wine

Edme Ltd., Mistley, Manningtree, England

Belgian-style Specialty

Manneken-Brussel Imports, Inc., Austin, Texas

Brown Ale

Premier Malt Products, Grosse Pointe, Mich.

English-style Pale Ale

Wynkoop Brewing Co., Denver, Colo.

American-style Ale

Northwestern Extract Co., Brookfield, Wis.

English Bitter

The Brewery, Postdam, N.Y.

Scottish Ale

Something's Brewing, Burlington, Vt.

Porter

The Cellar, Seattle, Wash.

English and Scottish Strong Ale

Wine & Hop Shop, Denver, Colo.

Stout

Chicago Garden Supply, Chicago, Ill.

Bock

Yakima Valley Hop Growers, Yakima, Wash.

Bavarian Dark

Crosby & Baker, Westport, Mass.

Dortmund/Export

Briess Malting Co., Chilton, Wis.

Munich Helles

L.D. Carlson Co. (formerly Wines Inc.), Akron, Ohio

Classic Pilsener

California Concentrates, Acampo, Calif.

American Lager

Coors Brewing Co., Golden, Colo.

Vienna/Oktobertfest/Märzen

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

German-style Ale

Great Fermentations of Santa Rosa, Santa Rosa, Calif.

Fruit Beer

The Purple Foot, Milwaukee, Wis.

Herb Beer

Marin Brewing Co., Marin, Calif.

Specialty Beer

Beer and Wine Hobby, Woburn, Mass.

Smoked Beer

Jim's Homebrew Supply, Spokane, Wash.

California Common Beer

Anchor Brewing Co., San Francisco, Calif.

Wheat Beer

The National Association of Wheat Growers Foundation, Washington, D.C.

Traditional Mead

Havill's Mazer Mead Co., New Zealand

Melomel, Cyser, Pyment Metheglin

National Honey Board, Longmont, Colo.

Cider

Lyon's Brewery of Dublin, Dublin, Calif.

Saké

Hakusan Saké, Napa Valley, Calif.

American Homebrewers Association 1993 National Homebrew Competition

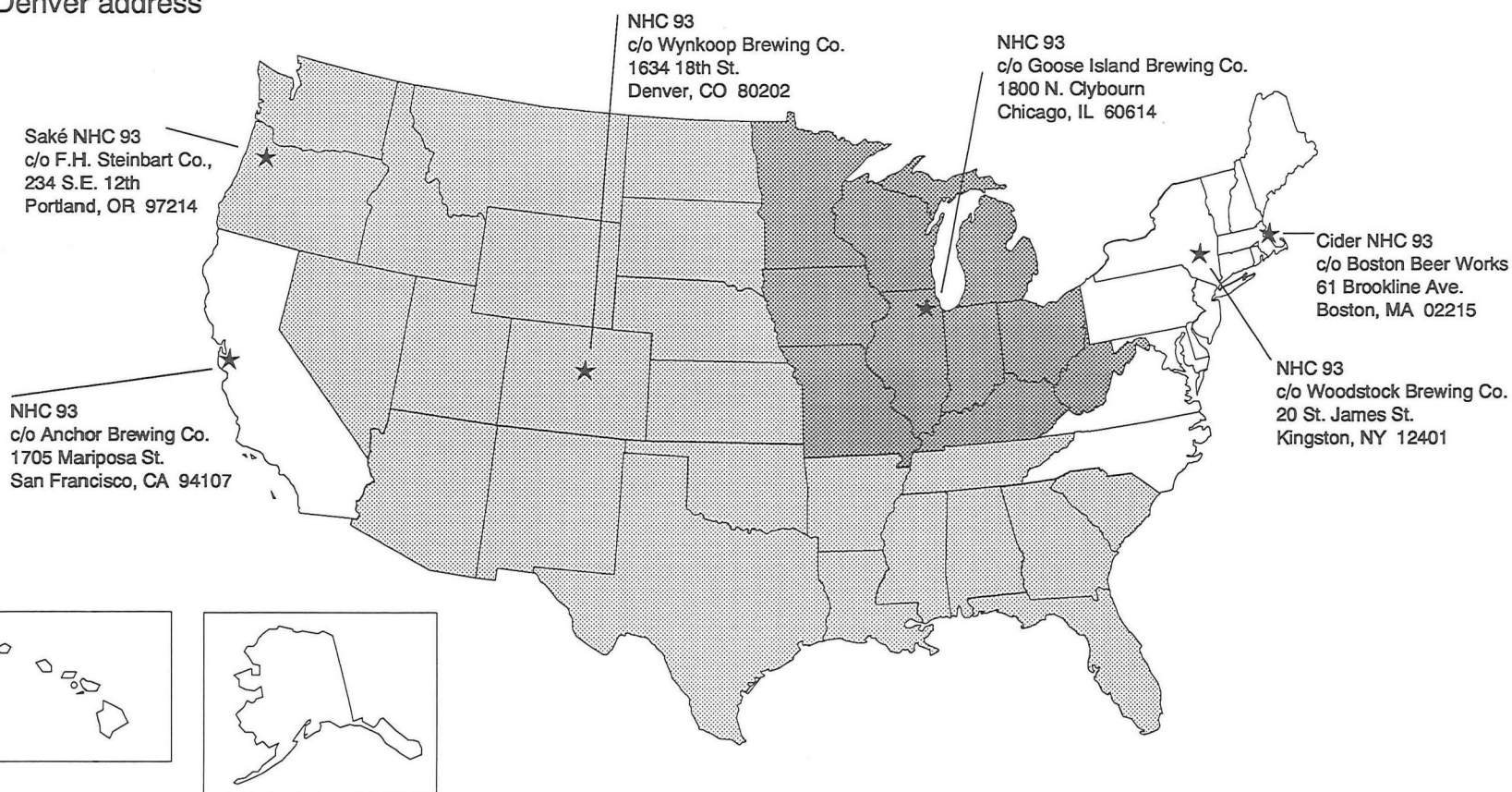
	Original Gravity (Balling/Plato)	Percent Alc./vol.	Int'l Bittering Units	Color SRM
ALE				
1a. BARLEY WINE	1.090-1.120 (22.5-30)	8.4-12%	50-100	14-22
2. BELGIAN-STYLE SPECIALTY				
a) Flanders Brown	1.045-56 (11-14)	4.8-5.2%	15-25	10-20
b) Dubbel	1.050-70 (12.5-17.5)	6-7.5%	18-25	10-14
c) Tripel	1.070-95 (17.5-24)	7-10%	20-25	3.5-5.5
d) Belgian Ale	1.044-54 (11-13.5)	4-6%	20-30	3.5-12
e) Belgian Strong Ale	1.063-95 (16-24)	7-12%	20-50	3.5-20
f) Lambic-style:				
Faro	1.044-56 (11-14)	5-6%	11-13	6-15
Gueuze	1.044-56 (11-14)	5-6%	11-13	6-13
Fruit (Framboise, Kriek, Peche)	1.040-72 (10-17.5)	5-7%	15-21	—
g) White	1.044-50 (11-12.5)	4.5-5.2%	15-25	2-4
3. BROWN ALE				
a) English Brown	1.040-50 (10-12.5)	4-5.5%	15-25	15-22
b) English Mild	1.032-36 (8-9)	2.5-3.6%	14-20	17-34
c) American Brown	1.040-55 (10-14)	4-5.5%	25-60	15-22
4. ENGLISH STYLE PALE ALE				
a) Classic English Pale Ale	1.044-56 (11-14)	4.5-5.5%	20-40	4-11
b) India Pale Ale	1.050-65 (12.5-15)	5-6.5%	40-65	8-14
5. AMERICAN STYLE ALE				
a) American Pale Ale	1.044-56 (11-14)	4.5-5.5%	20-40	4-11
b) American Wheat	1.030-50 (7.5-12.5)	4.3-5.5%	5-17	2-8
6. ENGLISH BITTER				
a) English Ordinary	1.035-38 (8.5-9.5)	3-3.5%	20-25	8-12
b) English Special	1.038-42 (9.5-10.5)	3.5-4.5%	25-30	12-14
c) English Extra Special	1.042-55 (10.5-13.5)	4.5-6%	30-35	12-14
7. SCOTTISH ALE				
a) Scottish Light	1.030-35 (7.5-9)	3-4%	9-15	8-17
b) Scottish Heavy	1.035-40 (9-10)	3.5-4%	12-17	10-19
c) Scottish Export	1.040-50 (10-12.5)	4-4.5%	15-20	10-19
8. PORTER				
a) Robust Porter	1.044-60 (11-15)	5-6.5%	25-40	30+
b) Brown Porter	1.040-50 (10-12.5)	4.5-6%	20-30	20-35
9. ENGLISH AND SCOTTISH STRONG ALE				
a) English Old Ale/ Strong Ale	1.060-75 (15-19)	6.5-8.5%	30-40	10-16
b) Strong "Scotch" Ale	1.072-85 (18-21)	6.2-8%	25-35	10-47
10. STOUT				
a) Classic Dry Stout	1.038-48 (9.5-12)	3.8-5%	30-40	40+
b) Foreign-style	1.052-72 (13-18)	6-7.5%	30-60	40+
c) Sweet Stout	1.045-56 (11-14)	3-6%	15-25	40+
d) Imperial Stout	1.075-95 (19-23.5)	7-9%	50-80	20+
LAGER				
11. BOCK				
a) Traditional German Bock	1.066-74 (16.5-18.5)	6-7.5%	20-30	20-30
b) Helles (light) Bock	1.066-68 (16.5-17)	6-7.5%	20-35	4.5-6
c) Doppelbock	1.074-80 (18.5-20)	6.5-8%	17-27	12-30
d) Eisbock	1.092-1.116 (23-29)	8.6-14.4%	26-33	18-50
12. BAVARIAN DARK				
a) Munich Dunkel	1.052-56 (13-14)	4.5-5%	16-25	17-23
b) Schwarzbier	1.044-52 (11-13)	3.8-5%	22-30	25-30
13a. DORTMUND/EXPORT				
	1.048-56 (12-14)	4.8-6%	23-29	4-6
14a. MUNICH HELLES				
	1.044-52 (11-13)	4.5-5.5%	18-25	3-5

	Original Gravity (Balling/Plato)	Percent Alc./vol.	Int'l Bittering Units	Color SRM
LAGER (cont.)				
15. CLASSIC PILSENER				
a) German	1.044-50 (11-12.5)	4-5%	30-40	2.5-4
b) Bohemian	1.044-56 (11-14)	4-5%	35-45	3-5
16. AMERICAN LAGER				
a) Diet/Lite	1.024-40 (6-10)	2.9-4.2%	8-15	2-4
b) American Standard	1.040-46 (10-11.5)	3.8-4.5%	5-17	2-4
c) American Premium	1.046-50 (11.5-12.5)	4.3-5%	13-23	2-8
d) Dry	1.040-50 (10-12.5)	4-5%	15-23	2-4
e) Cream Ale/Lager	1.044-55 (11-14)	4.5-7%	10-22	2-4
f) American Dark	1.040-50 (10-12.5)	4-5.5%	14-20	10-20
17. VIENNA/OKTOBERFEST/MÄRZEN				
a) Vienna	1.048-55 (12-13.5)	4.4-6%	22-28	8-12
b) Märzen/ Oktoberfest	1.052-64 (13-16)	4.8-6.5%	22-28	7-14
MIXED STYLE (LAGER-ALE)				
18. GERMAN-STYLE ALE				
a) Düsseldorf-style Altbiel	1.044-48 (11-12)	4.3-5%	25-35	11-19
b) Kölsch	1.042-46 (10.5-11.5)	4.4-5%	20-30	3.5-5
19. FRUIT BEER				
a) Fruit Beer	1.030-1.110 (7.5-27.5)	2.5-12%	5-70	5-50
b) Classic-style Fruit Beer	(refer to individual styles)			
20. HERB BEER				
a) Herb Beer	1.030-1.110 (7.5-27.5)	2.5-12%	5-70	5-50
b) Classic-style Herb Beer	(refer to individual styles)			
21. SPECIALTY BEER				
a) Specialty Beer	1.030-1.110 (7.5-27.5)	2.5-12%	0-100	0-100
b) Classic-style Specialty Beer	(refer to individual styles)			
22. SMOKED BEER				
a) Bamberg-style Rauchbier	1.048-52 (12-13)	4.3-4.8%	20-30	10-20
b) Other (Specify classic style or other styles smoke added to.)				
23a.CALIFORNIA COMMON BEER				
	1.040-55 (10-14)	3.6-5%	35-45	8-17
24. WHEAT BEER (ALE)				
a) Berliner Weisse	1.028-32 (7-8)	2.8-3.4%	3-6	2-4
b) German-style Weizen/ Weissbier	1.048-56 (12-14)	4.8-5.4%	10-15	3-9
c) German-style Dunkelweizen (dark)	1.048-56 (12-14)	4.8-5.4%	10-15	17-22
d) German-style Weizenbock	1.066-80 (16.5-20)	6.5-7.5%	10-20	7-30
25. TRADITIONAL MEAD				
a) Sparkling	1.050-90 (12.5-22.5)	5-11%	0	0-4
b) Still	1.090-1.140 (22.5-35)	11-15%	0	0-5
26. MELOMEL, CYSER, PYMENT, METHUOLIN				
a) Sparkling	1.050-90 (12.5-22.5)	5-11%	0-15	0-7
b) Still	1.090-1.140 (22.5-35)	11-15%	0-20	0-7
27. CIDER				
a) Still	1.045-.053	7%	—	—
b) Sparkling	1.045-.061	8%	—	—
c) New England-style	1.061-1.105	8-14%	—	—
d) Specialty Cider	1.045-1.105	5.8-14%	—	—
28. SAKÉ				
a) Saké (Japanese rice beer)		12-20%	—	—
b) Sparkling Saké		12.5%	—	—
c) Other Oriental Rice Beers		varies with style	—	—

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use Denver address



Send your entries to the National Homebrew Competition Site in the same shaded region as the state you live in.
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 All cider entries should be sent to Boston regardless of where you live.
 If you live in Canada or any other foreign country, send your entries to the Denver Site.

American Homebrewers Association Official Entry Form

1993 National Homebrew Competition

PLEASE READ THE INSTRUCTIONS ON PAGE 5 OF THE RULES AND REGULATIONS BROCHURE.

FOR AHA USE ONLY
ENTRY NO.: _____

**SECTION A:
BREWERS' INFORMATION**

1. Name(s) _____
2. Additional Brewer(s) _____
3. Address _____
4. City _____ State/Province _____ Zip/Postal Code _____
5. Country _____ Phone () _____
6. If you are a member of an AHA Registered Homebrew Club, write its name here _____
7. AHA Membership Number _____
8. New Member ☐ Yes (separate check enclosed) ☐ Non-Member
9. Number of years I have entered the AHA National Competition _____

**SECTION B:
ENTRY INFORMATION**

10. Name of Brew _____
 11. Category/Subcategory (print full names) _____
 12. Category (1-28) _____ 13. Subcategory (a-g) _____
 14. SPECIAL INGREDIENTS: If you have entered in categories 2f, 19, 20, 21, 22b, 26, 27c, 27d, 28c, refer to page 5 of the Rules and Regulations for instructions on filling out this space. _____
- Recipe is (circle one):
- | | | | |
|---------------------------|----------|-------------------------------------|-------------------------|
| 1. Malt Extract Only | 4. Mead | For Mead, Cider, Saké (circle one): | |
| 2. Malt Extract and Grain | 5. Cider | Dry | Medium Sweet Very Sweet |
| 3. All-Grain | 6. Saké | | |

**SECTION C:
INGREDIENTS AND PROCEDURES**

NUMBER OF U.S. GALLONS BREWED FOR THIS RECIPE: _____

HOPS:

MALT (grain and extracts):

Type	oz.	% a. acid	Use (boil, dry, etc.)	Time	Type/Brand	lbs.	Use (steep/mash)	Time	Temp.

WATER TREATMENT: type(s) and amount(s) _____

YEAST CULTURE: liquid _____ dried _____ brand and type _____ Did you use a starter? ☐ Yes ☐ No

YEAST NUTRIENTS: type _____ brand _____ amount _____

CARBONATION: (designate amount and type of sugar and/or use of kegs) _____

BOILING TIME: _____ **SPECIFIC GRAVITIES:** Original _____ Terminal _____

FERMENTATION: Duration _____ Temperature _____ Type of fermenter (glass, plastic, etc.) _____

Primary _____

Secondary _____

Other _____

Date this brew was bottled: _____

IMPORTANT: Please copy this form and elaborate on a separate of paper, if necessary, the details of your brewing procedure that you feel are important to know. If you have entered an all-grain beer, please indicate time and temperature of mashing and sparging techniques.

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The Detriments of

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Hot Side Aeration

The next time you visit Colorado and have time to tour the Coors Brewery in Golden, ask if you can see the pilot brewing system.

If the 50-barrel system is a stainless-steel tube attached to the inlet near the top and extending to the bottom. The tube is not part of the original equipment; it was added to dramatically alter the hot wort processing. Before modification, the wort came splashing into the kettle; now they get a smooth fill that significantly reduces oxidation of the hot wort. Before pitching the yeast it is necessary to oxygenate wort to make sure the yeast goes through the respiratory cycle. In the new Coors system with the kettle modification, wort oxygenation is done on the cold side, i.e., after wort chilling.

What is the relevance of procedures used by megabrewers for small-scale brewers? And what harm is done by hot-side oxidation either in wort transfer or in other parts of wort production? First, because oxidation is strongly affected by

surface area to volume ratios, something that increases with decreasing brew size, the effects are more relevant to small-scale brewing than to larger systems. Second, the materials that get oxidized on the hot side are derived from malt. Thus the bigger the beer, the more relevant the effects. Third, oxidation rates increase exponentially with temperature, so the oxygen picked up on the hot side will be quickly bound up with malt constituents and not be available to yeast.

Finally, the materials oxidized on the hot side will be passed on to the finished beer where they will play a role in staling. Their effects are somewhat complicated and different from the formation of papery-cardboard tones created by head space air in beer bottles. Some brewers may find this a highly relevant issue, while

others may find the effects are marginal. In small-scale commercial brewing, hot-side aeration is a "hot" subject. Just about all fabricators of five- to 20- barrel brewhouses are taking great pains to engineer "mild mashing systems" where hot-side aeration is kept to an absolute minimum. In these contexts the hot-side aeration issues have proven to be very relevant.

The abbreviation HSA will be used for the term "hot-side aeration" throughout. For those who disapprove, I can only offer condolences. After many years of fighting such things I have given in to the jaded and cynical view that it was a lost cause!

It should be noted that HSA is one of several issues associated with beer stability. Authors Bob Jones and Micah Millspaw will address these issues from a general perspective elsewhere in this issue.



A SURVEY OF THE QUALITATIVE THEORY

The wort constituents most relevant to the HSA issue are a class of pigments called melanoidins. These compounds are formed by amino acid-carbohydrate reactions induced by heat. This is a special case of a family of reaction systems that are generally called browning or Maillard reactions.

The place where Maillard reactions take place first is during malting. The production of color malts (amber to dark) would not be possible without these reactions. This is the main reason color malts are rich in melanoidins. Even though the melanoidin content of pale malts is lower, they will be present at sufficient levels. Therefore the transformation systems described below—the heart of the hot-side issue—are relevant to worts produced exclusively from pale malts as well as for

worts of amber and dark beers.

The other place where Maillard reactions are relevant is in the kettle boil. Here the process is remarkably efficient in the sense that very little of the wort carbohydrates and amino acids are used, yet there is typically a non-trivial increase in color. This in turn leads to a non-trivial increase in the wort melanoidin level. For example, it can happen that wort color measured in degrees Lovibond (SRM) doubles during the boil with only a 1 percent

loss in extract. The actual extract loss can be measured by hydrometer, once the volume reduction in the boil is taken into account. The actual change in color can be measured using the color curve chart, Figure 1.

Oxidation-reduction reactions (called redox reactions) occur throughout the brewing process. The redox reactions that occur during wort production are just as important as those that occur later. Oxidation is an electron transfer system. A compound oxidizes by giving up electrons, and conversely a compound is reduced when it takes on electrons. A compound can be oxidized if and only if another compound is reduced.

The heart of the HSA issue deals with the fate of the melanoidins in the mash, sparge, kettle boil and wort cooling. They will all start out in their reduced state, and will remain that way unless the hot wort is abused. Oxidation of the hot wort will promote oxidation of the melanoidins. Temperature is very important because oxidation rates increase exponentially with temperature. For example, if one were to put 12 ounces of wort at 68 degrees F (20 degrees C) into a beer bottle and inject to to three mL of air, then several days would pass before oxidation reactions would be detectable even at low levels. Repeat this experiment with wort at 140 to 212 degrees F (60 to 100 degrees C), and reactions would be detectable in minutes if not seconds.

Melanoidins, either oxidized or

reduced, will pass through the fermentation more or less unmodified. Reduced melanoidins are favorable and oxidized melanoidins are unfavorable in beer production. For example, in packaged beer the oxidized melanoidins can play the role of oxidizers by reacting with alcohols and producing staling aldehydes. The latter have an astringent character that sometimes takes on a metallic tone. DeClerck once characterized this process as "oxidation without molecular oxygen" because it can occur even if there is little, or no, air in the bottle's headspace.

Conversely, melanoidins in the reduced state can act as flavor protectors in packaged beer, which is why they are called reductones. They do this by reacting with oxygen dissolved in beer from head space air, which prevents the oxidation of alcohols and other beer constituents. This in turn delays the emer-

sense that the phenols in their reduced form act as reductones and flavor protectors. In fact, the presence of selected phenolic compounds in their reduced state is thought to be responsible for the freshness of flavor in many foods, including beer. Oxidized phenols, on the other hand, bring their own flavoring to beer. The German word "herbststoffe" (which roughly translates to "grain astringent") is often used to describe their effect. Many regard these flavors as being as unpleasant as the staling aldehydes that arise from the oxidation of alcohols.

There are highly complex redox, oxidation-reduction, reactions involving hops in the kettle boil. These reactions are poorly understood, and some might be beneficial to beer flavoring. There is strong evidence that these are completely unrelated to the issues discussed in this article. Indeed, because boiling expels oxygen, the kettle boil may be a benign period for HSA.

gence of stale flavors. Amber and dark beers are rich in melanoidins, a point that explains why some of these beers have such remarkable flavor stability. It also explains why some amber and dark beers literally fall apart when packaged and subjected to even mild abuse. The key to this is proper wort production procedures, and in particular, the avoidance of HSA.

Phenols, sometimes called tannins, are another wort constituent of interest. For the most part they are extracted from malt husks during the sparge. They are somewhat similar to melanoidins in the

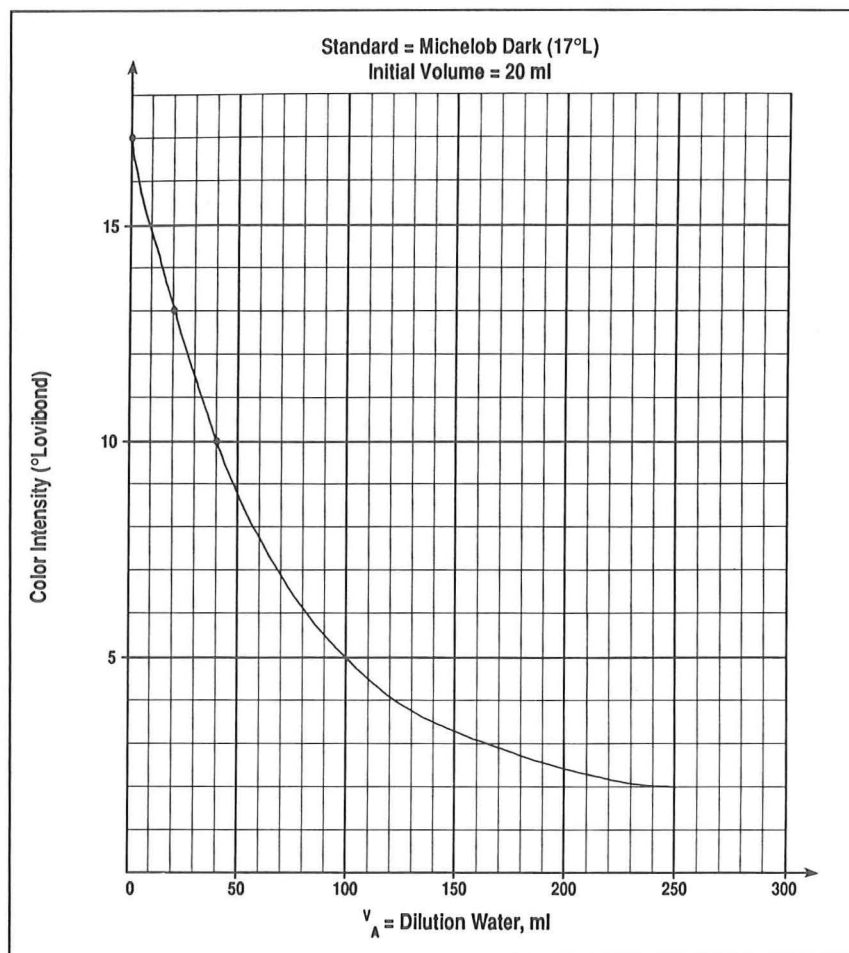


Figure 1: Intensity/Dilution Chart

Once beer is packaged, the redox reactions will start, and the higher the storage temperature the faster the effects will become apparent. The net result is reminiscent of a scene from a Marx Brothers movie, where characters appear and disappear in a state of chaos. Head space air reacts with alcohols, hop constituents and fatty acids derived from wort to create staling products like trans-2-nonenal. Oxidized melanoidins and tannins will do the same, creating other types of staling compounds. Countering this is melanoidins in their reduced state and other reductones that initially block staling. They will ultimately join the fray once they get oxidized. As a consequence the forces promoting staling will always win. Natural organic foods like beer will never have an infinite shelf life. However, by paying attention to appropriate details, a respectable period of flavor stability can be achieved. In the end this is all we can expect.

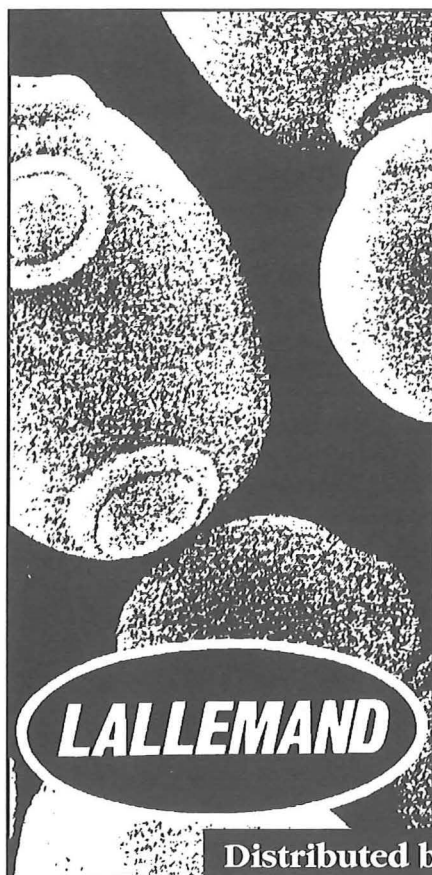
SOME PRACTICAL TIPS ON REDUCING HOT- SIDE AERATION

Perhaps the most important thing to avoid is excess splashing of wort during hot-side transfer, but exactly where the hot side ends and the cold side begins is somewhat arbitrary. For purposes of discussion we will make it at 86 degrees F (30 degrees C). I first became interested in the splashing problem when I had difficulties with transfer of the sparge to the brew kettle. This was achieved at the time by means of an ill-conceived pump. At both the start and the end of transfer there was considerable frothing and foaming. Using procedures I will describe I concluded the net effect of pumping was identical to what would have occurred if the mash were literally dumped into the kettle. There are pumps capable of a smooth laminar transfer, but this one was

not. Moreover, serious flavor problems developed after the pump was installed. Removal of the pump and introduction of "mild" transfer techniques, in this case a gravity-based system, removed the defects. The results were dramatic, particularly in the stability of fresh beer flavor. Consequently, anyone wanting to do the obvious experiments can readily verify the relevance of these issues.

Many use a pump to pull wort through a heat exchanger or counterflow chiller. This is fine even with a "frothing" type of pump described above. It is important to keep the pump on the cold side of the transfer. Any oxygen dissolved there will hang around as an inert gas until the yeast use it in a highly constructive manner during their aerobic respiration.

The next area to watch is the way the mash is stirred. In fact, as far as oxidation issues are concerned, the ideal mash is a single step infusion where there is no stirring. This is not to say that multiple step infusion or decoction mashing are neces-



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sarily going to lead to unacceptable levels of HSA. It is, however, important to minimize abusive procedures including excessive stirring of the mash.

There is a point of historical interest here. In the 1950s many small and regional breweries purchased new brewhouse equipment as a part of the post-World War II economic expansion. The brewhouse technology at that time for regionals featured raking systems that literally hurled grains to and fro in the mash tun. This was a period where many of the regionals started to go under. The conventional wisdom at the time held that the national beers were more appealing to customers because they were less bitter. The implication was that the regionals were overhopped for popular taste. C. Precht, in a very perceptive article "Some practical Observations Concerning Grain Bitterness" (*Master Brewers Association of the Americas Technical Quarterly*, Vol. 4, No. 1, 1964), made the point that brewhouse procedures and not hop levels

were responsible for the unpleasant bitterness found in many regionals. He focused in on excess stirring (the raking systems) and excessive sparging, and from the perspective of modern brewing science he got it exactly right in these areas. Unfortunately, this article was largely ignored, not so much for Precht, but for the regional breweries that are no longer with us.

Direct measurement has shown that sprinkler-type sparge water systems do not induce much HSA. However, beers that have been oversparged, (when the volume of sparge water exceeds 1.5 times the amount of mash water) invariably have elevated phenols and a large proportion are in the oxidized state. In fact, some of the world's smoothest beers have not been sparged at all.

The best advice is for brewers to use common sense about such matters—there is no need to become hyper about HSA. Perhaps the best posture is to think "gentle" and "mild" as one brews.

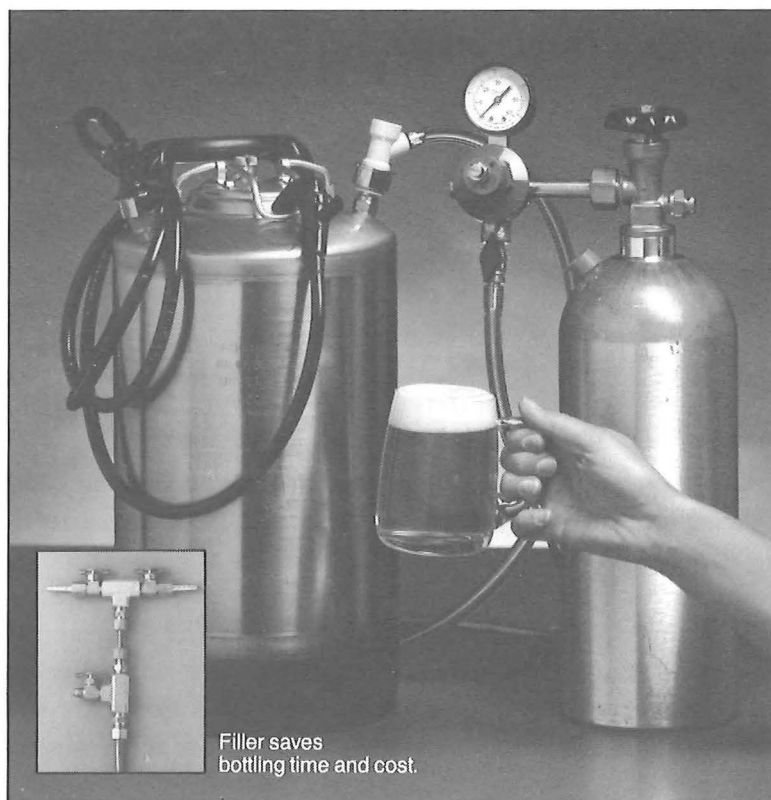
MEASUREMENT OF HOT-SIDE AERATION

A brewer can evaluate the extent to which HSA has occurred in a particular brewing situation through a test brew and through direct measurement.

The test brew is relatively straightforward. Take your favorite formulation, use your standard procedures but omit the sparge. It is desirable to keep the brew length (size) and starting gravities the same, so you will need to use more grains, roughly a factor of four-thirds more. The following is a specific example I have used on several occasions. The brew length is 50 liters (13.3 gallons), but any other size could be used as well. For example, if brewing 25 liters (6.7 gallons) simply divide the appropriate numbers by two.

Control Batch

Brew size	•13.3 gallons (50 liters)
Grain bill	•22 pounds (10 kilograms) pale malt



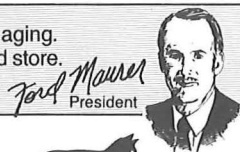
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Mash water	•8.5 gallons (32 liters)
Sparge water	•8.5 gallons (32 liters)
Volume at the start of boil	•14.8 gallons (56 liters)
Starting gravity	•1.048 (12 °Plato)

Experimental Batch

Brew size	•13.3 gallons (50 liters)
Grain bill	•30 pounds (13.3 kilograms) pale malt
Mash water	•11.5 gallons (44 liters)
Water directly added to kettle	•5 gallons (20 liters)
Volume at the start of boil	•14.8 gallons (56 liters)
Starting gravity	•1.048 (12 °Plato)

Note the mash thickness is just about the same in both batches. In the experimental batch the extra water not used in the mash is added directly to the kettle.

The phenol level in the experimental batch will be 10 to 100 times lower than the control batch so there will be significantly less material around in the former

to be oxidized. This test does not touch on the oxidation of other reductones like melanoidins, but the assumption is that problems with phenols will always be accompanied with other types of HSA problems.

The experimental batch invariably will be a smoother brew, but ideally not by much. This is a subjective area where brewers may disagree. However, if the differences are unacceptably large, then the next step is to find out exactly where HSA is occurring. For this, direct measurement is needed.

One may possibly be familiar with Zahm and Nagel air testers or dissolved oxygen (DO) meters. These are excellent for measuring the amount of head space air in beer bottles, and/or the oxygen dissolved in beer during cold storage. Such instruments are, however, worthless for hot-side work because any oxygen present will disappear (binding up with wort constituents) before it can be measured. These instruments measure

the potential for possible redox reactions. What is needed is a measurement of the amount of oxidation that has actually occurred.

A classical procedure well-suited to small-scale brewing is the indicator time test (ITT). The theory is simple. One takes a solution in an appropriately oxidized state that will change colors when it undergoes redox reactions. Added to a highly reduced solution (for example a 4 percent ethanol-deaerated water mixture), the decoloration would take place in seconds. On the other hand, added to a solution in a higher oxidation state (for example a ethanol-acetic acid-water mixture), the decoloration will take much longer. Beer wort is a good deal more complicated and will contain diverse constituents in a number of different oxidation states. Nevertheless, ITT measurements will give a bulk measure of the extent to which HSA has occurred. Moreover, by taking measurements at selected points in the wort production



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cycle, we can bracket locations where major increases occur.

The following is the detailed procedure. It is a modification of one recommended by deClerck (see references). The reactant is a simple salt/dye called 2,6-dichlorophenolindophenol. Rather than do that one again, we'll simply call it DCI! It is available from Kodak and other sources.

Procedure

(1) Buffer solution: Add an acid to distilled water until the pH of the wort to be tested is obtained.

(2) Comparison solution: Dissolve 0.25 mL of DCI in 10 mL of distilled water. Increase the volume to 50 mL with distilled water. Add 10 mL of this solution to a test tube and place upright in a rack.

(3) Wort solution: Dissolve 0.25 mL of DCI in 10 mL of room temperature wort in a test tube and put in the rack

next to the comparison solution. Start measuring time from the moment the DCI is added. Stop when the wort solution has changed from a reddish violet color to that of the comparison solution. (This amounts to 80 percent decoloration of the wort solution.)

The following are general criteria:

Time for decoloration	Comments
< 100 seconds	great!
100 to 500 seconds	good
500 to 1,000 seconds	poor
> 1,000 seconds	unacceptable

It is a good idea to try this procedure first on simple mixtures to get a feel for things. An ethanol-deaerated water solution should decolor rapidly. A water-vinegar solution may not ever fully decolor.

With these two tests and an understanding of the detriments of HSA, you can modify your brewing procedures and improve your beer.

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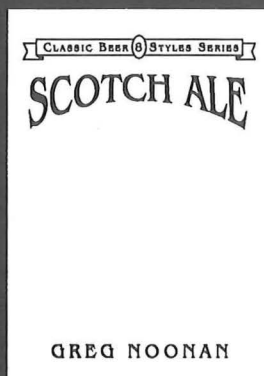
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A native Texan, George Fix lives with his wife Laurie in Arlington. He earned a doctorate at Harvard University and has been on the faculties of Harvard, Michigan and Carnegie-Mellon. He is chairman of the mathematics department at the University of Texas at Arlington and is the senior consultant for Brewers Research and Development Co. Fix has won 60 brewing awards including two best of shows in AHA and HWBTA sanctioned competitions.

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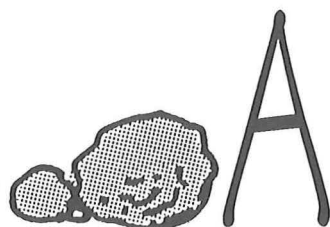
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SAP

BEER STABILITY

MICAH MILLSPA W AND BOB JONES



S HOME BREWERS, WE STRIVE TO

MAKE A QUALITY BEER THAT CAN BE ENJOYED AND SHARED WITH OUR FRIENDS. GENERALLY, IT IS EASY TO MAKE QUALITY HOMEBREW THAT CAN BE CONSUMED IN OUR HOMES OR TAKEN TO PICNICS AND OTHER SOCIAL GATHERINGS.

Occasionally we may even enter a homebrew competition to compare our homebrews with those of other brewers, and to get judges' comments. On these occasions it is sometimes necessary to entrust the transport of our beer to someone who isn't as concerned or caring as we are. These outside influences can have a huge effect on the beer's life and stability. Such

influences usually come in the form of commercial carriers, and most of their effects on homebrew are bad.

Our precious hand-crafted bottle of beer may be subjected to extremes of temperature, extreme and sudden pressure changes, sunlight and considerable amounts of physical abuse. Will it survive and how will it taste when it arrives at its

destination? Because you, the brewer, have almost no control over what happens during transport, it may be a good idea to take some steps in the brewhouse to make sure your beer is stable and fit for the rigors of travel. Even if your beer doesn't have to be transported, it is desirable to make a beer that will be stable when stored for long periods of time.

This article will discuss the mechanisms involved in beer stability and suggest techniques to produce beers that are inherently more stable, and therefore less susceptible to damage from physical abuse. The methods covered are brewhouse procedures only, from the beginning of the mash to the primary fer-

menter, and will not include pasteurization or submicron filtration. Pasteurizing and filtering are ways of increasing beer stability but will not be discussed here. (See the suggested reading list at the end of this article.)

What is an unstable beer and why should we be concerned about not brewing one? Unstable beers are ones that tend to throw a haze and later have flavor staling and oxidation problems. Oxidation plays an important role in the formation of protein haze and melanoidins function as antioxidants to prevent the oxidation of protein. Melanoidins are compounds formed by amino acid-carbohydrate reactions induced by heat. Oxidation also plays an important part in the production of colloidal haze, hence the name "oxidation haze," first coined by Helm, a German brewing scientist, in the early part of this century. Colloids are particulate matter in a solution. Moreover, the formation of chill haze is considerably increased by oxidation.

Chill haze occurs in finished beer during cold storage and disappears when the beer is warmed. If the beer is chilled again the haze will return. Poor handling will cause the beer to throw an irreversible haze at ordinary temperatures. This is an oxidation haze caused by the breakdown of proteins. The reaction occurs very rapidly in warm conditions. Permanent haze is the end product of chill haze. Unstable colloids promote chill haze and permanent haze in beer. The oxidation of melanoidins will result in a lower quantity of stable colloids. The stability of beer colloids is the result of a delicate equilibrium, and the problem of colloidal haze formation is complex. With a better understanding of this problem, it is possible to take steps to minimize the effects in finished beer.

Work done by Jean deClerck, the famous Belgian brewing scientist, has shown that darker beers are inherently more stable and clear. DeClerck attributed this to the presence of large

amounts of melanoidins found in darker grains. Melanoidins were first discovered by the French chemist Maillard, and the reaction between amino acids and sugars that form these substances is known as the "Maillard reaction." Melanoidins are stable complexes formed at high (mash-out) temperatures, they are colloidal in nature and are powerful reducing agents giving an acid reaction in aqueous solutions. Melanoidins are reddish-brown substances with a characteristic aroma of malt.

Color and aroma are not the only characteristics that melanoidins contribute to a beer. Their colloidal nature enables them to "protect" unstable colloids present in beer and to prevent haze formation. At the same time, melanoidins are powerful reducing agents and this too can prevent beer from throwing a haze. In addition, the acid character of melanoidins helps to improve the quality of beer. Melanoidins formed at 170 degrees F (76.5 degrees C) are more stable than those formed at the lower temperatures of conventional mashing. Adding specialty malts only in the mash-out can make the mash more efficient by maximizing the formation of melanoidins, optimizing saccharification and eliminating steeping vessels and/or grain bags.

In 1922, Visez, a brewing scientist at Louvain, in Belgium, showed that dextrins also act as protective colloids to diminish colloidal haze. This means that beer with higher dextrin levels are much less subject to colloidal haze than beers with low dextrin levels.

Reducing sugars, which result from malting and occur mostly in modified malts, form melanoidins more readily than non-reducing sugars. Crystal malts average 30 to 50 percent reducing sugars. In general, darker malts have higher levels of reducing sugars and dextrins than pale malts, even when the pale malts have been fully modified.

The concept of hot side aeration and the reactions involved are covered in the accompanying article by George Fix. It is

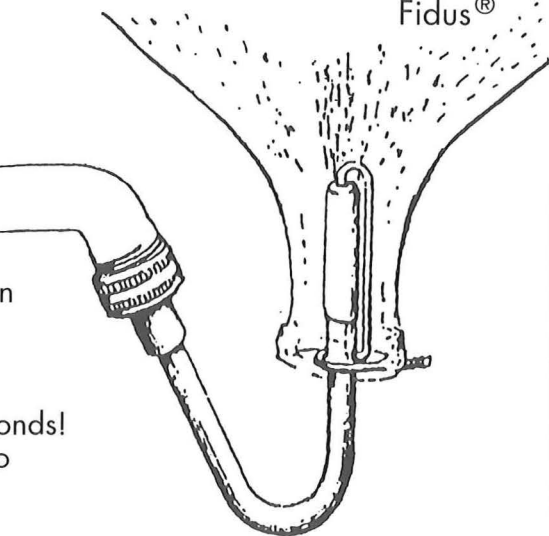
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sufficient to say that these hot oxygen reactions affect beer stability and that steps should be taken to reduce them. A few of the procedures and techniques to minimize hot side reactions are covered there. There are several additional ways to further limit aeration of your hot wort. It is best to start at the beginning, with the mash.

We will describe a mashing technique that is fairly simple, efficient and not too different from what is now common practice among homebrewers. Infusion mashing or step infusion in a combination mash/lauder vessel is very effective at achieving adequate starch conversion when using North American barley malt with its abundance of enzymes. To minimize hot side aeration of the mash, the grain in the mash can be underlet or

Although only a few parts per million of lipids are present in finished wort, they can have far-reaching effects on factors such as yeast viability, ester formation, gushing and flavor staling.

infused with hot water from the bottom up. This may be accomplished by simply adding a down tube to the hot water inlet or by adding an inlet below a false bottom in a mash/lauder vessel. By infusing in this manner stirring is not necessary to ensure uniform mixing of the grain and hot water. Not stirring the water into the mash reduces hot wort and oxygen reactions.

At the end of the mash it is important to perform a mash-out, that is, an upward temperature infusion step and rest. This mash-out is a good time to add your specialty grains. The mash should be infused

with hot water sufficient to bring the temperature up to 170 degrees F (76.5 degrees C) and hold it for 10 to 15 minutes. The effect on the specialty grains (dark and crystal malts) is similar to

that of steeping the grains as in extract brewing. This method of using dark and crystal malts will increase the quantity of melanoidins in your finished beer, thereby leading to smoother and rounder flavors from the specialty grains as well as more stable and clearer beers. The use of this mash-out technique also can reduce metallic flavors that often occur in dark beers but are not actually caused by metal ions in the brewing process.

Lipids, constituents of the malt, are very important elements to ensure proper beer stability. Lipids are unsaturated fatty acids, which means they are available to



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form new bonds with other elements of the wort. Although only a few parts per million of lipids are present in finished wort, they can have far-reaching effects on factors such as yeast viability, ester formation, gushing and flavor staling. Small variations in brewhouse procedure can produce large variations in

well as stripping lipids from the wort. Recycling is the collecting of the wort as it runs out of the lauter-tun and pouring it back over the grain bed. Many brewers claim that recycling should be done to settle and establish the grain bed. Flafling is the collecting of the wort as it runs out of the lauter-tun, boiling it and

When the oxygen is introduced to the wort at low temperatures (less than 70 degrees F, 21 degrees C) the problematic reactions that can damage the beer are less likely to occur.

wort lipids. Lipids adhere to trub particles (trub contains up to 50 percent lipids) and to filter materials. Spent grains are high in lipids. A turbid top runoff from the lauter-tun can contain five to 40 times as many lipids as the clear wort runoff from the same mash. Also yeast will autolyze if it does not receive small amounts of ergosterol or unsaturated lipids.

North American barley malt contains very small amounts of free fatty acids, or unsaturated lipids, (3.2 to 3.5 mg/L) opposed to European malts (18 to 26 mg/L). Insufficient fatty acid levels can result in high esters in the finished product and also can be responsible for gushing problems in the finished beer. The addition of unsaturated fatty acids can cure gushing. The quantity of unsaturated fatty acids has a strong influence on the formation of fermentation volatiles, notably the acetate esters. A wort that has been stripped of lipids could produce a beer too high in esters.

We believe that a shortage of lipids may be a problem for homebrewers who have an obsession with mash extraction yields. This need to eke out every trace of sugar from a mash leads homebrewers to practice wort flafling and/or recycling. These can be risky sparging techniques with regard to hot side aeration as

then returning it to the top of the grain bed. These practices not only give opportunity for hot oxygen and wort reactions, but also strip out fatty acids (which North American malts are low in) that are essential for proper yeast nutrition.

We believe that mash recycling is bad, in that it not only strips out those precious lipids, but tends to remove a large fraction of the particulate matter that would otherwise be in the boil. We feel that these particles (husks and grits mostly) provide a place for proteins to clump onto during the boil and then settle out more effectively when cooling. We have observed much clearer finished wort (cooled) from our boils, when the mashes were conducted with no recycling of wort than from those of other brewers whose worts were made by recycling the mash.

Some care should be taken in the transfer of hot wort from the mash/lauder vessel to the kettle. Splashing of the hot wort should be avoided. Avoid the use of a grant, which is a vessel fitted with one or more drain cocks for draining and inspecting the sweet wort as it is transferred from the mash tun to the kettle. If the sweet wort is to be pumped or gravity fed into the kettle, a simple tube going to the bottom of the kettle will do the job. The down tube removes the splashing free fall of the hot wort when it is most

likely to react with oxygen in the atmosphere. If the wort must be transferred by means of a bucket there is not much that can be done except to pour slowly and carefully to minimize splashing.

Although it is very important to limit the exposure of the hot wort to oxygen, it is equally important that enough oxygen be present in the post-boil wort to ensure a proper fermentation. Oxygen should be dissolved in the cooled wort prior to pitching the yeast. Oxygen is required by brewing yeasts for their reproductive phase and is essential for a normal fermentation. When the oxygen is introduced to the wort at low temperatures (less than 70 degrees F, 21 degrees C) the problematic reactions that can damage the beer are less likely to occur.

It should be of interest to most homebrewers to have a viable method of comparing beers made using their normal brewing procedure with beers made by implementing the above procedures. Jean deClerck developed a method for the critical evaluation of finished beer and for predicting the colloidal stability of a beer. He found the best method of predicting shelf life was to store the bottled beer at a high temperature (140 degrees F or 60 degrees C) for 21 hours and then to immerse the bottled beer in melting ice for three hours each day, noting the number of days until a haze appears. Beers subjected to this treatment throw a haze, after cooling, eight to 10 times more quickly than when stored at 77 degrees F (25 degrees C). From these data it is possible to better project the shelf life of a beer. The projected shelf life (in days) is simply the number of days it took for the beer to throw a haze times eight to 10.

We hope that this information will provide homebrewers with a better understanding of beer stability, and will suggest some techniques to reduce the factors that cause instability and haze in beer, and at the same time enhance the effect of melanoidins to bring out malt aromas.

For Further Reading:

Filtration:

"Beer Filtration for the Homebrewer," Rodney Morris, *zymurgy* Summer 1990 (Vol. 13, No. 2).

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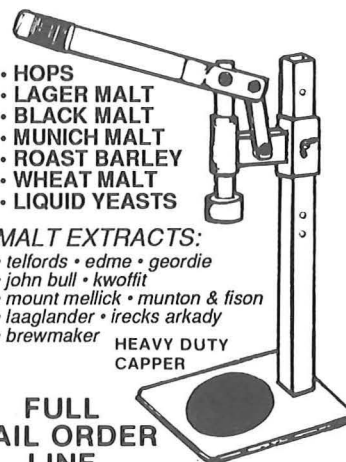
Micah Millspaw, a mechanical engineer, and Bob Jones, an electrical engineer, frequently collaborate on beer-related issues where they combine their talents to establish a synergistic approach to solving brewing problems. They have a combined brewing experience of more than 20 years. Both are avid homebrewers, each having his own custom-designed and built homebrewery.

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The Sensory Aspects

DAVID W. EBY, PH.D.

This spring the American Homebrewers Association hosted one of the largest amateur beer brewing competitions in the world. The nearly 2,400 entries came from all over the United States and from Canada, the Virgin Islands, Australia, Japan and Sweden. Using this annual competition as a gauge, the interest in having homebrew evaluated has increased dramatically over the last several years.

Many factors are involved in being a good judge, including training, experience and understanding of the brewing process.

Commercially, the evaluation of beer has become an important advertising boon. The Boston Beer Co. has built an advertising program on the claim that their Samuel Adams Lager was voted "the winner of the Great American Beer Festival for three years in a row." This claim is based on the fact that Samuel Adams was voted best beer in a consumer preference poll at the 1989, 1990 and 1991 Great American Beer Festivals (a national competition for commercial breweries). With so much interest, emphasis and capital placed on the outcome of zymological competitions, it is important to understand the task of the evaluator.

Many factors are involved in being a good judge, including training, experience and understanding of the brewing process. For these reasons the AHA and Home Wine and Beer Trade Association orga-

nized the Beer Judge Certification Program (BJCP) to provide training, set standards, give experience in judging and evaluating the judges themselves for competence and experience. I think that equal importance should be placed on understanding of the psychological aspects of the evaluation process. This point was made by Charlie Papazian in "Evaluating Beer," *zymurgy* Winter 1990 (Vol. 13, No. 5).

When tasting a beer, a person is having a psychological experience that is primarily perceptual in nature, but other psychological factors (such as mood) can affect the experience. (Sensations like taste and sight are considered to be psychological, just like emotions and thoughts.) This article intends to educate homebrewers about how their sensory systems are used when tasting beers (or other things) and will analyze the factors that can affect a sensory judgment. It is my hope that this information will enhance the quality, consistency and efficiency of judging.

We acquire information about the world through our sensory systems in a process known as perception. A common misconception about perception is that we have only five senses: seeing (vision), hearing (audition), touching (tactile), tast-

ing (gustation) and smelling (olfaction). Sensory psychologists add several more including *flavor* perception, a combination of taste, touch, smell, and perhaps, vision. When evaluating a beer, a judge uses all of these senses to gauge various characteristics, but certain senses have a strong influence while others contribute minimally.

Another common misconception about perception is that we perceive exactly what is out there in the world (or in a beer), but this is not always the case. For example, a full moon appears bigger on the horizon than when it is overhead. This is a perceptual illusion because the size of the moon is not changing, only your *perception* of its size. In terms of beer, perception is affected by factors not related to the beer itself. The same beer can be perceived differently depending on many factors, several of which I will discuss below.

Following is a description of the senses and their relation to zymological evaluation, including a discussion of some of the factors that can affect a perceptual judgment, and hence, the score a judge might give a beer.

SEEING

While visual perception is arguably the most important sense in everyday perception, it is of lesser importance in beer evaluation. Vision is used to determine the fill level, amount of sediment in the

of Zymological Evaluation

bottle and assess the head density and thickness, clarity and color of the beer. The scoring system used at AHA-sanctioned events allocates eight points (of a 50-point scale) to the beer's appearance. Thus, 16 percent of the possible points are judged using vision.

A person with normal vision should have little difficulty in evaluating a beer's appearance. No psychological factors are known to affect the accuracy or consistency of appearance judgments, with one notable exception. The perceived color of a beer can be influenced by a number of factors.

Vision operates when the eye is stimulated with light of certain wavelengths. Combinations of different wavelengths roughly correspond to different perceived colors. When light composed of many wavelengths (such as sunlight) passes through a bottle or mug of beer, most of the wavelengths are filtered out—only a few reach the eye. A person looking at the beer from the opposite side of the light source will see only those wavelengths passing through and will perceive the color that corresponds to the particular combination of unfiltered wavelengths. Different types of beers and colored glass filter out different combinations of wavelengths and thus have different colors. (Stouts filter out all wavelengths and appear black or without color).

Moreover, the perceived color, to some degree, is a function of the light source passing through the beer. Consider what happens if you start with a light source that contains some wavelengths (such as

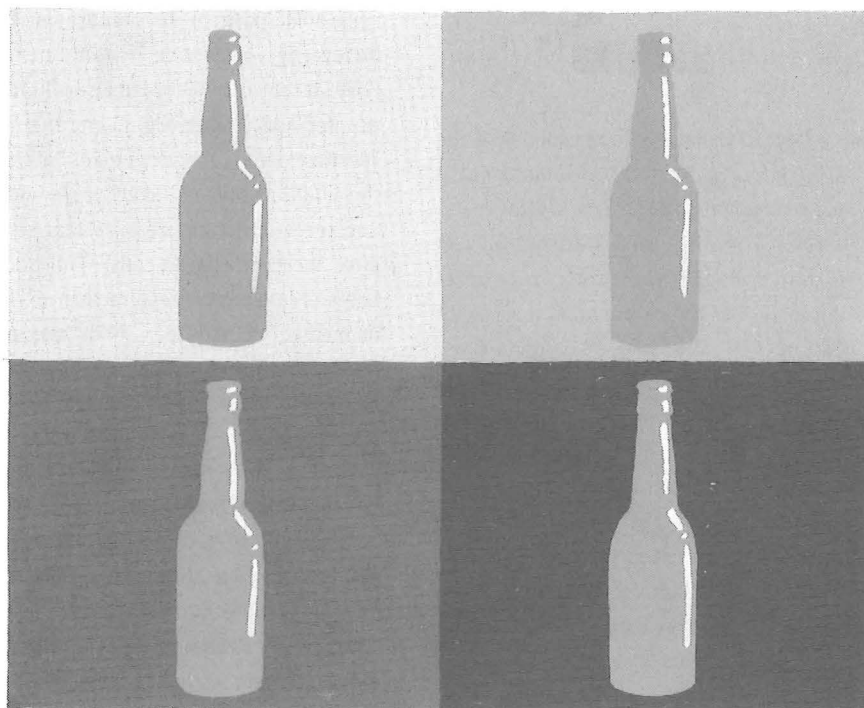


Figure 1

An example of the contrast effect. The beer bottles are all drawn with the same gray shade while the background squares are drawn with different gray shades. Notice how the perception of the shade of the beer bottle differs depending on the shade of the background.

colored light, the light from a standard incandescent bulb or candlelight). The combination of wavelengths that passes through the beer will be different from what is seen when the light source contains all wavelengths. To obtain the most consistent perception of color, judge a beer using a light source that contains all (or a large proportion) of the wavelengths that the eye can sense. Good light sources are sunlight, fluorescent lights and high-pressure xenon lamps.

Another relevant aspect of color per-

ception is something known as the contrast effect. Visual perception of an object varies as a function of what is located near the object. Figure 1 shows the contrast effect. All four beer bottles are the same shade of gray while the surrounding squares are drawn with different gray shades from light to dark. The brightness of the bottles appears different depending on the shade of the surrounding patch. The beer appears darker when judged against a light background than when judged against a dark background. In

actual judging, the contrast effect means the background a beer is judged against can alter perception of the color. For example, a light red background might make an amber beer appear dark red, or a green background might give an amber beer a non-red tint. To obtain consistent judgments of a beer's color, it is best to use a uniform background, preferably a piece of white paper.

HEARING

Next to vision, audition probably is the most important sense for humans but it plays almost no role in zymological evaluation. The only information you can obtain through audition is a general impression of the carbonation level when first opened. If no hiss is heard (an event that has saddened the hearts of many beginning homebrewers), you can conclude the beer is flat. Louder and higher-pitched hisses indicate more carbonation. But this information is questionable in zymological evaluation because the carbonation level can be detected in other ways. The one way that auditory information can lead to inconsistent judging could be when one judge opens the bottle while the others are not listening.

TOUCH

The sense of touch mainly involves the skin, including the lips, mouth and tongue. Tactile perception is surprisingly important in zymological evaluation, providing two primary types of information: temperature and pressure (or texture). Because the viscosity (texture) and the rate of release of carbonation are affected by the temperature, it is important to chill beers properly for the style. The AHA scoring system allocates five points for body and 19 points for flavor, so nearly half of the total points are for the sense of touch.

Physicists tell us the viscosity or body of the beer and the rate of carbon dioxide release are directly related to the liquid's temperature.

This sense works by applying pressure to the skin that stimulates nerve cells located there. Because certain areas of skin have a high concentration of nerve cells, some parts of the skin are better at detecting pressure than others. Fortunately for zymological evaluators, the lips and tongue are among the most sensitive parts. The tongue and jaw push the liquid against the roof of the mouth and teeth, creating pressure that stimulates the touch nerve cells. Full-bodied beers create more pressure than do light or medium-bodied beers. You may have heard someone make the comment, "Guinness stout is so thick you have to chew it." Such a comment implies it is possible to discriminate among the bodies of beers solely on the basis of touch.

This ability can be affected because the sense of touch exhibits something known as rapid *adaptation*. Prolonged pressure on a certain part of the skin will make that part unable to signal it is being pressed on. For example, if you were to rest your arm on a table top, you would initially be aware of the pressure but after a couple of seconds you would no longer feel the table top unless you move your arm. This adaptation occurs in all of the body's skin, including the mouth, lips and tongue. Therefore, zymological evaluators should make sure they judge the body of the beer soon after they sip the beer. Otherwise their ability to make this judgment will rapidly decrease unless they take another sip.

In addition, the inside of the mouth is about 98.6 degrees F. Physicists tell us the viscosity or body of the beer and the rate of carbon dioxide release are directly related to the liquid's temperature. Increases in temperature will lighten the

body and increase the rate of carbonation release in the mouth, so the longer the beer remains in the mouth, the higher its temperature will become and the more difficult an accurate judgment of body will be.

SMELL

As most of us who enjoy a fine beer know, an important part of the enjoyment is the smell or aroma. In fact, the AHA scoring system allocates 10 points or 20 percent to aromatics. Because a beer's aroma is an important component of its flavor (19 points), the olfactory sense is involved in about 60 percent of the total score.

The olfactory sense provides information about the chemical composition of the beer, the relative levels of certain chemicals and the presence (or absence) of additives and contaminants. In addition, the scent will often recall emotional responses and even memories of past events. For example, whenever I smell peach lambic, I invariably think back to my wedding reception when, instead of drinking Champagne, my wife and I toasted with peach lambic. A beer that evokes positive emotions and memories by virtue of its distinct smell may be judged more favorably than a beer that provokes negative recollections.

Because the olfactory sense detects chemicals (molecules) that are diffused into the air, it is known as a chemical sense. As shown in Figure 2, the area where the chemical components of beer are detected is hidden in the top, back portion of the nasal cavity at an area called the olfactory epithelium. During a sniff, only about 10 percent of the inhaled air reaches the olfactory epithelium. Research has shown that the judged intensity of a scent is not increased if one sniffs harder to get more air into the nasal cavity. This probably results from the fact that the extra air simply moves into the lungs.

Figure 2: Cut-away view of a typical beer drinker showing the nasal cavity and the various parts of the brain. The molecules from the beer diffuse into the air and are sniffed into the nasal cavity where they pass by the olfactory epithelium. Here they diffuse into the mucus layer covering the olfactory epithelium and are detected by specialized cells. Located directly above the olfactory epithelium is a part of the brain that is known to process emotions and memories.

On the other hand, a normal breath does not create enough turbulence to get any air into the back of the nasal cavity. Therefore, to get the beer's chemicals to the olfactory epithelium, it is important to sniff, but vigorous sniffs are not necessary.

Located directly above, and many think connected to, the olfactory epithelium is an area of the brain that is known to process emotional responses and certain memories. This connection between the area for smell and the brain probably accounts for the emotional responses and memory flashes associated with certain distinct smells.

The olfactory epithelium contains a layer of cells that are sensitive to various molecules. Surprisingly, these cells are covered with a layer of mucus (the substance that normally coats the inside of your nose and increases in quantity when you get a cold). Chemicals must pass through this mucus to get to the cells of the olfactory epithelium and be detected.

Four main factors can affect the ability to efficiently perceive the aroma of beer. First, changes in the thickness of the mucus layer will change the amount of molecules that make it through the mucus to the olfactory epithelium. As you have probably noticed, having a cold can reduce your sense of smell because clogged nasal passages do not allow air to enter the nasal cavity, and also because the mucus layer over the olfactory epithelium is thickened. Smoking, eating spicy foods (horseradish), using nasal

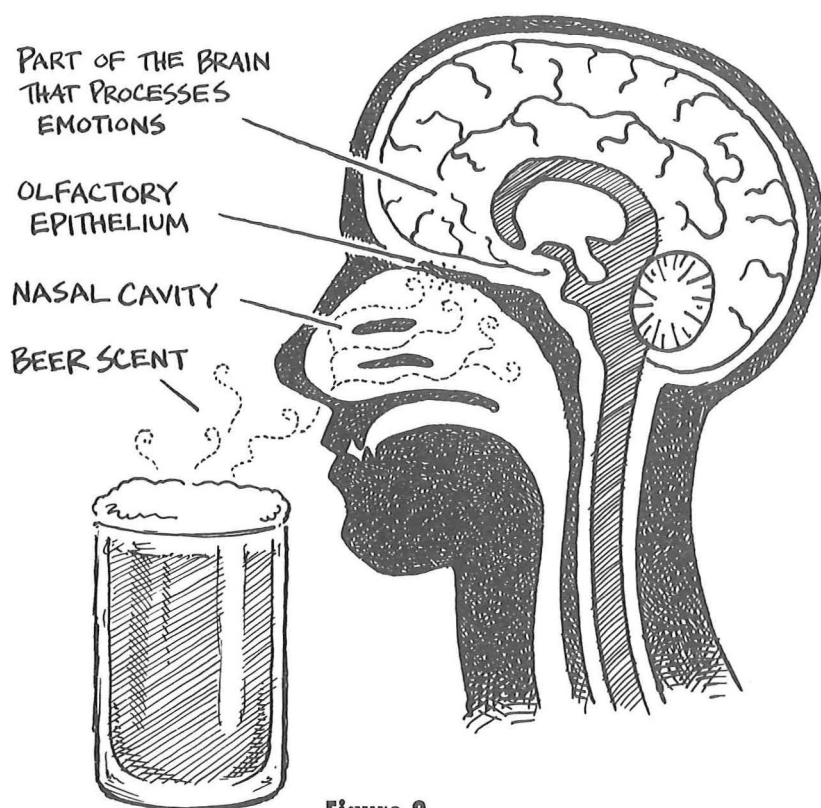


Figure 2

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sprays (of the type used for colds) and taking certain drugs (antibiotics, cocaine) can affect the thickness of this layer. Judges who believe their olfactory ability is reduced for whatever reason should voluntarily refrain from judging a competition until their sense of smell returns. Furthermore, to prevent diminished olfactory ability, it is best to prevent cigarette smoke from wafting around the judges during a competition.

A second factor influencing the sense of smell is the state of the cells in the olfactory epithelium. Certain fumes (like those from paint and ammonia), smoke and nasally ingested drugs can damage these cells so they cannot respond to scent chemicals. Following such damage it can take up to three weeks for the cells to be replaced (in some cases they are never replaced), knocking out the sense of smell in the meantime.

A third factor is simply individual variations in olfactory ability. Some people have a superb sense of smell and are able to detect a wide range of chemicals in very small quantities. In general, this ability is best for women and decreases with age. However, many older people have excellent olfactory abilities.

The fourth factor influencing smell perception is that olfaction shows rapid adaptation, similar to what we discussed for touch perception. This means that an initial perception of a strong odor will quickly decrease in perceived intensity until it is no longer detectable. You can experience this by conducting the following demonstration. Get a strong odorant like nail polish, ammonia or an onion and place it next to you while you read the rest of this article. In about 10 minutes, you will probably notice the smell has dramatically decreased in intensity, if you can even smell it anymore. As with touch, beer evaluators should make their judgment of aroma as soon as possible after the first sniff. Otherwise, their sensitivity to the chemicals in the beer will rapidly diminish as will the ability to effectively evaluate the aroma.

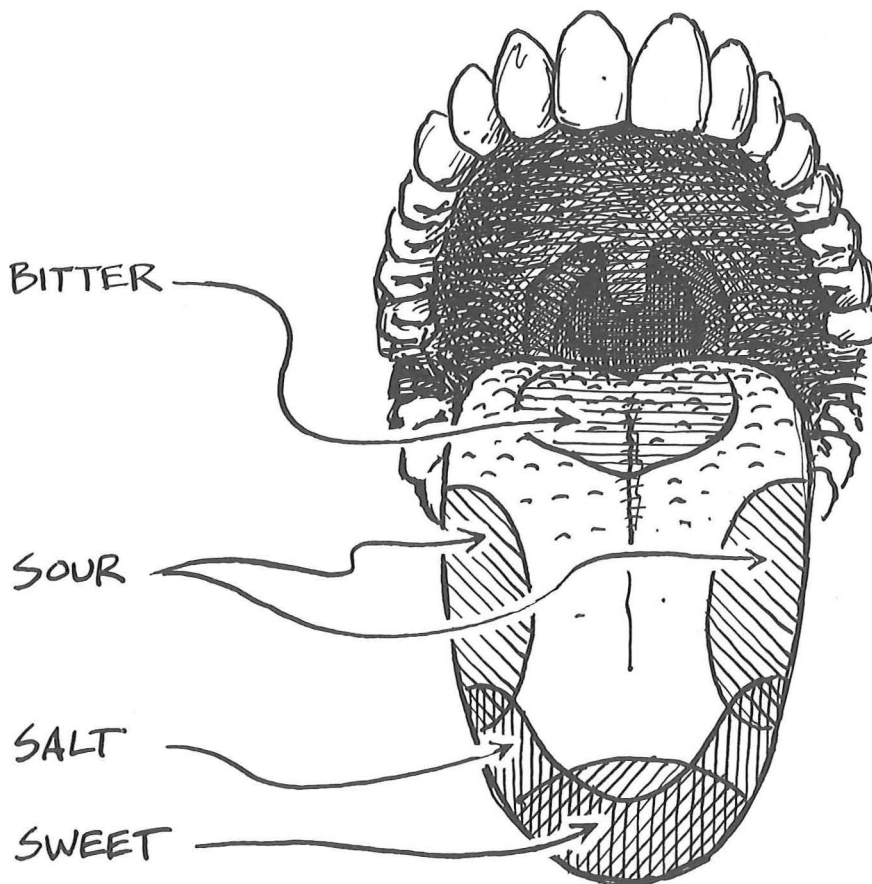


Figure 3:

A schematic depiction of a tongue. The labeled regions show areas where taste buds that detect chemicals associated with certain tastes are clustered. These locations are only approximate and, undoubtedly, vary slightly from person to person.

TASTE

Gustatory, or taste, perception probably is the most heralded sense in the culinary arts (such as beermaking). It is this sense that most people believe forms the foundation for zymological evaluation. As we already mentioned, the AHA scoring system allocated 19 points to the beer's *flavor*. However, taste and flavor perception are not the same thing. A beer's flavor is greatly influenced by its taste, but is also affected by its smell, feel and probably even its appearance. Therefore, based on the AHA scoring system, the information obtained from the gustatory sense is involved in somewhere around 30 percent of the total score.

Gustatory perception is similar to olfaction in that it is a chemical sense.

The gustatory sense, however, detects chemicals dissolved in a solution rather than diffused in the air. It allows a person to determine the basic chemical composition of substances in the mouth.

The taste sensations can be divided into four categories: sweet, salty, sour and bitter. Many sensory psychologists believe all tastes are a combination of these four basic units. The organ of taste is, of course, the tongue. Located on the tongue are a bunch of cells called *taste buds*. (The name is derived from their rosebud appearance rather than their ability to detect a certain domestic beer!) These cells seem to be arranged so that groups of taste buds signal a certain basic taste sensation.

Sensory psychologists have mapped the locations of these groups on the tongue (Figure 3). The area that senses sweet is on the tip. To perceive the sweet quality of a substance, you must place that substance on the tip of the tongue. If something is placed only on the tip of the tongue you will not be able to taste sour or bitter characteristics. You can test this with a simple demonstration. Carefully place a drop of lemon juice on the tip of your tongue. While your tongue is sticking out of your mouth, close your eyes and determine if you can taste the sourness. (This part must be done with the tongue out of your mouth. If you close your mouth the juice will quickly coat your tongue. I recommend doing this demonstration in the privacy of your own home!) Now pull the tongue back in and close your mouth, allowing the lemon juice to move to the sides of the tongue where you will likely taste the sour characteristics.

The taste bud map has several consequences for zymological evaluation. If you have never seen beer being evaluated (or have never judged a competition yourself), you may be unaware that beer judges swallow their sips of beer. This would be a major breach of etiquette during a wine tasting competition. However, there is a good reason why beer judges swallow in order to evaluate a beer's taste. Unlike wine, one of the most important taste characteristics of a beer is bitterness. As shown in Figure 3, the taste buds that signal bitterness are located far back and partly down the throat. To detect the bittering hops the beer must pass over these taste buds and by the time these taste buds are stimulated, the beer is well on its way down your throat. This is why the aftertaste often consists of the bitter characteristics. I jokingly tell perception students that because a beer's taste is a combination of all four of the basic taste categories and a wine's taste is only a combination of three, the argument can be made that a beer drinker's palate is more

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As in gustatory perception, the ability to sense different tastes can be influenced by several factors. The two most important are damage to the taste buds and interference of tasting abilities caused by the presence of other chemicals in the mouth. The taste buds have a lifespan of about 10 days and are continually dying and being replaced. Fortunately some taste buds are being replaced while others are dying, so there are always live taste buds ready to detect chemicals. However, a large number of taste buds in a localized area of the tongue can be simultaneously damaged causing a loss of tasting ability in that area until they have been replaced. This type of damage most frequently occurs when you eat food that is too hot. The heat may wipe out a whole area of taste buds, requiring several days to be replaced and diminishing a person's ability to perceive bitterness, sweetness, saltiness or sourness (depending on the injured area). Other events that can prematurely destroy taste buds (and temporarily alter tasting abilities) are smoking, eating spicy or acidic food (fresh pineapple) and using certain chemicals (some mouth washes).

The residual chemicals that remain in the mouth after a beer is sampled can also affect taste perception. To prevent this from happening many judges eat crackers or some other food to "clear their palate." However, this introduces different chemicals into the mouth that could affect later taste perception (and judging scores), especially if the food has a high salt or sugar content. To minimize this problem, wine evaluators eat unleavened and unsalted crackers. Another way to remove many of the residual chemicals in the mouth is to rinse with a neutral liquid, such as water at room temperature. Some chemicals, however, cannot be easily removed. You may have noticed this if you have brushed your teeth right before going down to your favorite brewpub.

FLAVOR

I have saved flavor perception for last because it is the product of combining the information gathered from smell, taste and touch (and possibly vision). I distinguish flavor perception from other perceptions because, when a substance is placed in the mouth, it has a smell, texture and taste. Alterations in any of these sensations will affect the flavor of the substance. It is perhaps easier to understand what I mean by trying another demonstration that, again, you will probably want to try in the privacy of your home. Place a small piece of apple and a piece of potato of equal size on a plate in front of you. Close your eyes and spin the plate several times so that you don't know which piece is which. Pinch your nostrils shut and place one of the pieces in your mouth. Try to guess which piece you are chewing. Most likely you will have a difficult time making this judgment. By pinching your nostrils you have removed the olfactory information that contributes partly to the flavor of foods.

The AHA scoring system has a category titled *flavor* worth a total of 19 points. In the AHA system, the term *flavor* is used in a different way than it is used here. The AHA system includes gustatory (*taste*) and flavor information in this category, with no designation as to the relative contributions of each type of information. According to my definition, *flavor* is the perception that results from the combined information from the other senses. Thus flavor perception merits a separate judgment category right beside that for taste perception. Regardless of this difference, because the perceived flavor is affected by the perceived smell, texture, taste and appearance of the beer, flavor perception may be involved in as much as 40 of the 50 points in the AHA judging scale.

Because the flavor of beer is a combination of all the sensory information, any of the factors that influence a certain sense (like smell) also will influence the perceived flavor. For example, a judge

who has a temporarily deficient olfactory sense could exhibit inconsistencies not only in the aroma category (10 points), but also in the flavor category (19 points). This could result in inefficient judging for 29 of the 50 points used in evaluating a beer.

CONCLUSION

We have reviewed the basic perceptual systems used by a zymological evaluator when judging beer and some of the factors that can affect the performance of these systems. You may have noted that in this entire discussion we did not talk about any factors that change the *physical* characteristics of the beer; the discussion was limited to the factors that affect the *perceived* components of beer. Thus, you should be aware that the perceived characteristics of any given beer can vary greatly depending upon the factors discussed in this article, *even when the physical characteristics of the beer have not changed.*

The drinking or evaluation of beer is a sensory process. By having a thorough understanding of how each sense acquires information, zymological evaluators and all people who enjoy quality beer should be able to increase their consistency and accuracy of judging competitions as well as increase their enjoyment of drinking beer. ☐

David W. Eby received his masters and doctorate from the University of California, Santa Barbara in experimental psychology. He has a postdoctoral fellowship at the University of California, Irvine in the cognitive sciences department researching visual perception.

Since beginning to homebrew in 1981, Eby has entered numerous AHA competitions. He enjoys science fiction, sports and art.

For information on the BJCP contact the AHA or see, "How Can the Beer Judge Certification Program Benefit You?" zymurgy Fall 1991 (Vol 14, No. 4).

F O R T H E BEGINNER

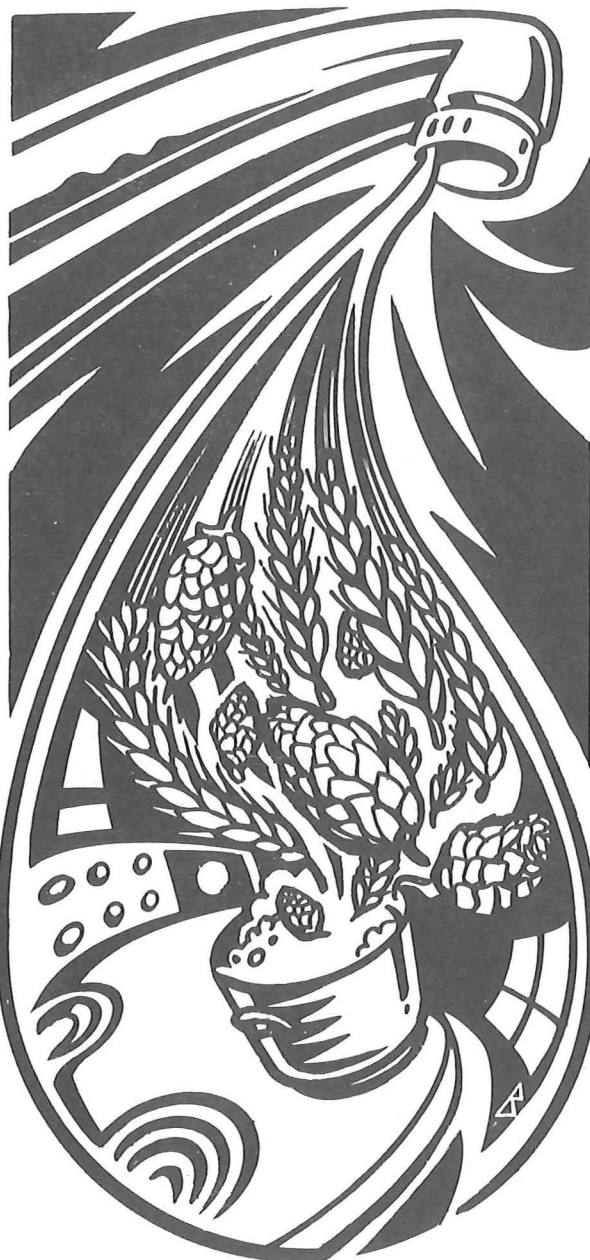
Rusty McCrady

What Else Should Go Into My Beer?

As most beer aficionados are aware, the Germans passed their Reinheitsgebot, or beer purity law, back in 1516—a decree that is still followed today. This law mandated in stern, Teutonic terms that beer may contain only the classic ingredients: water, barley malt and hops.

Purists that we are, homebrewers may well ask: What about all these additives we see advertised, and even touted, in prize-winning recipes?

Indeed the list of substances that can be used to brew beer is far longer than the three ingredients (plus yeast) prescribed by the German purity law. Just when the



novice brewer is feeling satisfied at having mastered the simplicity of the brewing process, he or she is confronted with this array of adjuncts and additives and confusion begins to rear its ugly head.

The German purity law isn't inherently wrong; in fact, it's the rule to follow if you wish to brew true German beer. But always bear in mind that there are many diverse beer styles in the world, and the German style, while certainly one of the best, isn't the only choice.

Having opened Pandora's box, I must caution you against going to the extreme of adding every known adjunct and additive to your next batch of brew. First read the following list of possibilities and decide which, if any, might be worth a try. These additives can make your beer better in subtle ways but do not change the flavor.

Brewing "salts:" Every brewing region boasts of its special, pristine water supply. What is really being bragged about is the mineral content, or lack thereof, in the water table. Some places such as Burton-on-Trent, England, tout the water's wonderful hardness as perfect for producing Bass Ale. Others like Plzen, Czechoslovakia, home of the original Pilsener, lay claim to extremely soft water (very low in minerals).

The following minerals adjust the water chemistry. As additives, they make your beer better and, if used in the proper amounts, should not be tasted. To determine how much of each mineral to use, find out what your local water content is and what the water content of the beer style you are brewing requires, then adjust accordingly. For more information see *zymurgy* Winter 1991 (Vol. 14, No. 5). With these and other minerals, a little goes a long way, so avoid an overdose.

Calcium sulfate: Brewer's gypsum is hydrated calcium sulfate used in the treatment of soft or neutral water to harden it. Gypsum increases the mash acidity that assists enzyme action and gelatinizes starch. It also helps extract hop bitterness, reduce haze and decrease wort color. Use between one and four teaspoons per five gallons depending on the hardness of your original water.

Magnesium sulfate: Epsom salts is a water hardener and can be added in small quantities, between one-fourth and three-

fourths teaspoon per five gallons. Refer to charts that indicate the magnesium content of your water before adding any Epsom salts.

Sodium chloride: That's right, good old table salt—the non-iodized kind because iodine is toxic to yeast. If you use about one-half teaspoon or slightly less, the sodium and chloride ions can have a beneficial effect on beer flavor and help smooth out bitterness.

Calcium carbonate: Chalk, an alkaline salt, is sometimes a desirable additive when brewing very dark beers such as stout, porter and Munich dark as it balances the acidity of the dark roasted malts. Use only 1 1/2 teaspoons per five gallons.

Polyclar: This powdered plastic is used as a chill haze preventative. It's an insoluble substance that electrostatically attracts tannin molecules as it drifts to the bottom of the wort. Because there will no longer be tannins in the beer, their combination with protein is prevented and thus, no chill haze. Add about two teaspoons of polyclar to the beer after the yeast has

sedimented. Used correctly, it will have no effect on taste or head retention.

Ascorbic acid (vitamin C): The same stuff that's in orange juice, ascorbic acid is added just before bottling to prevent oxidation. Ascorbic acid provides a way for oxygen to react with it instead of the beer, thus reducing off-flavors and instability. Proper beer storage away from heat and light in airtight containers takes care of potential oxidation problems, so ascorbic acid probably is not necessary. About one-half teaspoon for five gallons of beer is sufficient should you decide to use these crystals.

Irish moss: This dried seaweed is carrageenan and is a quick and easy fining (clarifying) agent. Unlike most of the others, you add one-half teaspoon during the last 15 minutes of the boil. It aids in settling the wort and has no effect on taste. It is so foolproof it is highly recommended.

Papain: An enzyme derived from the papaya plant, it works like other clarifiers by helping clear beer of protein. Papain has to be used at room temperature, thus it is added to the wort during or immediately after fermentation. If you decide to try papain, use it sparingly, about one-half gram per five gallons.

Gelatin: That's right, the same stuff that's in desserts (use the unflavored variety of course!). It is a clarifying agent when added just prior to bottling. With this fining agent use one-half teaspoon boiled in about one-half cup of water then cooled before adding to wort that has finished fermenting.

Isoinglass: Derived from the swim bladder of sturgeon, it requires a weak acid such as lemon juice to dissolve. This clarifier is commonly used by British brewers. Its effectiveness in settling yeast will vary with the strain. There are easier clarifiers to use.

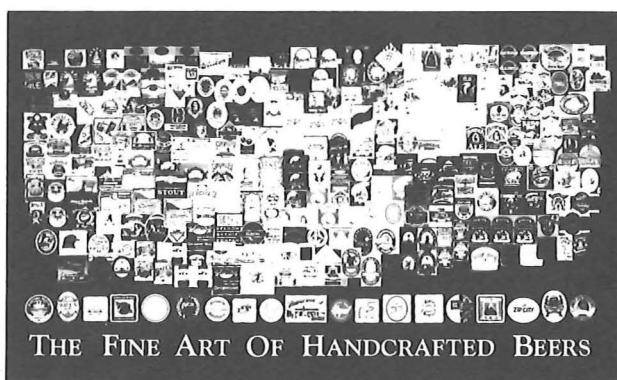
The remaining additives are adjuncts or special ingredients that will change the flavor of beer. There is a great variety of fruit and vegetable ingredients, so experiment with these and any others you dream up.

Corn sugar: One of the most fermentable of all sugars, this form of fruc-

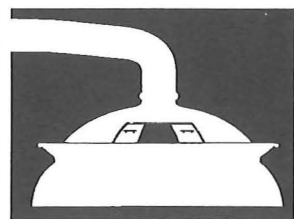
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tose will lighten the body and taste of beer if used as a substitute for malt extract, while at the same time boosting the alcohol content. It is called for in many beginner recipes, but is considered a no-no by many beer devotees who appreciate homebrew for its full body and malty taste. However, these days when "light" is all the rage, who knows? I won't recommend it, but I admit to being old fashioned.

Other sugars: Various types of brown sugar, molasses and even maple syrup have been used successfully in brewing heavy-bodied winter ales. These darker sugars add some unique flavors and increase the alcohol content without effecting the body of the beer. A pound or slightly less per five gallons usually is sufficient to give that extra character.

Fruit: This is really opening Pandora's box! See *zymurgy* Summer 1992 (Vol. 15, No. 2) for all sorts of ideas. Just about every type of fruit has been tried, and the results are no doubt interesting. Just remember, you're brewing beer, not making wine, so check some standard recipes for the amount and form (crushed? juice?) of fruit to use. The addition of fruit will radically alter the taste of what you brew.

Herbs and spices: Cinnamon, yarrow, spruce extract, chamomile—brewers have tried many, yet hops remain king. Try a few teaspoons of spice per five-gallon batch. Feel free to experiment with quantities and spices, but be prepared for strange results.

Honey: A wonderful fermentable, suitable for adding to almost any beer. Honey can be used instead of corn sugar for priming without imparting much flavor. Or try about one pound per five gallons in your next specialty batch. The more honey you add, logically, the more honey character your specialty beer will have, depending on the beer style. If you use only honey, you're making mead.

Specialty grains: Two prime examples are crystal malt (dark brown in color) and chocolate malt (nearly black). Steep them in hot water, 150 degrees F (65.5 degrees C), strain out the crushed grains and pour the resulting extract into your boiling

wort. You run the risk of harsh bitterness and husk flavors if you boil these grains with wort. Crystal malt can be used to add body and malt flavor to almost any beer, while chocolate malt and other very dark malts are often used in porters, stouts and other dark beers.

All in all, the Germans had it right five centuries ago. Beer really is composed of those four wonderful elements, without any one of which there would be no beer. All the others listed here are used to help

mother nature along. They fine tune your brew or create a specialty beer style. So if you add anything the Germans wouldn't, be sure to know why and how much.

Rusty McCrady is a high school teacher and homebrewer, not always in that order. He has been brewing steadily since 1982.

Please send questions or topics you'd like to see addressed in this column to Elizabeth Gold, *zymurgy* editor-in-chief.



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WINNER'S

C I R C L E

James Spence

With close competition in the final rounds of the 1992 National Homebrew Competition, second- and third-place recipes are excellent resources for brewing a particular style. Some of these recipes were separated from first place by only half a point. For some worthy winter brewing challenges, try out these new brews.

VIENNA/MÄRZEN /OKTOBERFEST

**MÄRZEN/OKTOBERFEST
THIRD PLACE
THOMAS O'CONNOR III
ROCKPORT, MAINE
EARL DUCK'S OKTOBERFEST**

Ingredients for 5 gallons

- 1 pound Munich malt
- 10 ounces crystal malt
- 6 ounces pale malt
- 10 ounces toasted pale malt
- 3 1/3 pounds BME Munich Gold malt extract
- 3 pounds Laaglander light dry malt extract
- 2 ounces Saaz hops, 3.3 percent alpha acid (60 minutes)
- 1/2 ounce Saaz hops, 3.3 percent alpha acid (45 minutes)
- 1/2 ounce Saaz hops, 3.3 percent alpha acid (10 minutes)
- 14 grams G.W. Kent dried German lager yeast
- 1/2 teaspoon yeast nutrient
- 3/4 cup corn sugar
- 1/2 teaspoon ascorbic acid
- 5 teaspoons isinglass

- Original specific gravity: 1.048
- Terminal specific gravity: 1.020
- Boiling Time: 60 minutes
- Primary fermentation: nine days at 55 degrees F (13 degrees C) in glass
- Age when judged (since bottling): eight months

Brewer's specifics

Mash all grains for 20 minutes at 130 degrees F (54 degrees C). Raise temperature to 150 degrees F (66 degrees C) for 40 minutes.

Judges' comments

"Excellent effort."

"Not a bad Oktoberfest. Seems to lack some overall malt character needed here. Good-looking beer. Color right, nice tiny bubbles."

"Really good beer. A bit sweet in balance. Slight harsh bite only detectable flaw."

"Get more malt in the nose and you've got an orgasmic beer."

BOCK

**DOPPELBOCK
SECOND PLACE
VERN AND DARLENE WOLFF
ESPARTO, CALIFORNIA
DOPPELTITILATOR BOCK**

Ingredients for seven gallons

- 15 pounds two-row malt
- 4 pounds wheat malt
- 2 pounds CaraPils malt
- 5 pounds six-row malt
- 3 pounds Munich malt
- 1 pound 40 °Lovibond crystal malt
- 2 ounces Clusters hops, 9 percent alpha acid (60 minutes)
- 1 ounce Goldings hops, 6.1 percent alpha acid (60 minutes)
- 1 ounce Tettnanger hops, 9 percent alpha acid (60 minutes)
- 1 ounce Hallertauer hops, 4.5 percent alpha acid (60 minutes)
- 1 3/4 ounces Cascade hops, 6 percent alpha acid (five minutes)
- Lallemand lager yeast culture

- 3 tablespoons freeze-dried malt extract for yeast nutrient
- 1 cup dextrose to prime

- Original specific gravity: 1.082
- Terminal specific gravity: 1.017
- Boiling time: 60 minutes
- Primary fermentation: 21 days at 55 degrees F (13 degrees C) in glass
- Age when judged (since bottling): four months

Brewers' specifics

Mash all grains at 140 degrees F (60 degrees C) for 20 minutes. Raise temperature to 146 degrees F (64 degrees C) for 70 minutes. Sparge with 5 gallons of 170-degree-F (77-degree-C) water.

Judges' comments

"Nice malt sweetness, too much finishing hops for style. Very nice beer, back off those finishing hops just a tad."

"Sweet malty flavor, alcoholic taste, some mild astringency, slight harshness. Watch grains and sparge temperatures. Cut down on finishing hops or change type. Nice beer, too spicy in flavor. Nice alcohol."

"Could bring out more non-fermentables. A good beer."

"Hops dominate the finish. Astringent note hangs on back of tongue. Malt flavor is appropriate. Alcohol lacking in mouth-feel. Very clean product. Nice job. Couldn't find any glaring faults."

ENGLISH PALE ALE

**INDIA PALE ALE
SECOND PLACE
ROBERT DROUTH
MADISON, WISCONSIN
IP-ALE-X**

Ingredients for 12 gallons

- 24 pounds two-row pale malt
- 2 pounds dextrin malt
- 2 pounds Vienna malt
- 2 ounces chocolate malt
- 2 ounces Perle hops (60 minutes)
- 2 ounces Willamette hops (30 minutes)
- 1 ounce Willamette hops (15 minutes)
- 1 ounce Cascade hops (hop back)
- 2 ounces Cascade hops (dry hopped)
- Wyeast No. 1056 liquid yeast
- 2/3 cup dextrose for every 5 gallons to prime

- Original specific gravity: 1.064
- Terminal specific gravity: 1.014
- Boiling time: 90 minutes
- Primary fermentation: seven days at 65 degrees F (18 degrees C)
- Secondary fermentation: 18 days at 75 degrees F (24 degrees C)
- Age when judged (since bottling): five months

Brewer's specifics

Step mash 126 degrees F (52 degrees C) for 60 minutes, 133 degrees F (56 degrees C) for 30 minutes, 143 degrees F (62 degrees C) for 30 minutes, 152 degrees F (67 degrees C) for 60 minutes. Mash-off at 167 degrees (75 degrees C).

Judges' comments

"Good hop aroma."

"Nice beer could use more hops for subcategory. Malty, fairly balanced for style. Big head. Smooth. Excellent."

"Might be better as an English pale ale. Nice long aftertaste, great looking beer, fruity and estery as true to style."

"Great job. This is a strong beer, appropriate to style. Bitter aftertaste lingers. Good nutty flavor from caramel malt. Good hop flavor and malt. Slightly oxidized."

MUNICH HELLES

**SECOND PLACE
STEVEN AND CHRISTINA DANIEL
LEAGUE CITY, TEXAS
W.I.T.H.I.M. II**

Ingredients for 5 gallons

- 7 pounds two-row malt
- 2 pounds Munich malt
- 23 IBUs Hallertauer hops (approximately 1 1/4 ounces) (60 minutes)
- Wyeast No. 2308 liquid yeast

- Original specific gravity: 1.052
- Terminal specific gravity: unknown
- Boiling time: 60 minutes
- Primary fermentation: 21 days at 50 degrees F (10 degrees C) in stainless steel
- Secondary fermentation: two months at 32 degrees F (0 degrees C) in stainless steel

Brewers' specifics

Mash all grains for 60 minutes at 151 degrees F (66 degrees C).

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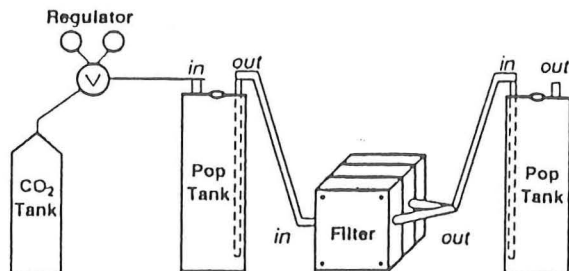
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GERMAN-STYLE ALE

KÖLSCH

SECOND PLACE

DAVID J. ROSE

YOUNTVILLE, CALIFORNIA

Ingredients for 10 gallons

- 10 pounds wheat malt
- 8 pounds Klages malt
- 2 pounds Munich malt
- 1/2 ounce Chinook hops, 11.8 percent alpha acid
(60 minutes)
- 1/2 ounce Tettnanger hops (30 minutes)
- 4 ounces Hallertauer hops (30 minutes)
- 1/2 ounce Perle hops (finish)
- Wyeast No. 2035 liquid yeast
- 1 1/2 cups corn sugar to prime

- Original specific gravity: 1.046
- Terminal specific gravity: 1.017
- Boiling time: 60 minutes
- Primary fermentation:
nine days at 50 degrees F (10 degrees C) in glass
- Secondary fermentation:
21 days at 48 degrees F (9 degrees C) in glass
- Age when judged (since bottling): five months

Brewer's specifics

Mash all grains at 156 degrees F (69 degrees C) for 75 minutes.
Mash-out at 170 degrees F (77 degrees C). Sparge with 12 gallons of
170-degree-F (77-degrees-C) water.

Judges' comments

"Overall a nice drinkable beer but the astringent quality
detracts significantly in this style."

"Hops a bit too aggressive. Overcarbonated bite. Some cling-
ing bitterness and astringency somewhat appropriate. Oxidation
interferes with everything else. This seems to be past its prime.
Cut back on hops a bit. This should be more delicate in taste, not
aggressive."

"Very good Kölsch character except slight oxidation overtone
at the end. Good effort—on the edge of losing it."

"Slight DMS detectable, sweet malt flavor and bitterness bal-
ance OK with hop finish lingering. A bit overdone on the flavoring
hops."

HERB BEER

SECOND PLACE
WAYNE GREENWAY
OAKLAND, CALIFORNIA
WET DREAM ALE

Ingredients for 25 gallons

- 35 pounds Klages malt
- 3 pounds 60 °Lovibond crystal malt
- 1/2 pound chocolate malt
- 4 pounds 20 °Lovibond Munich malt
- 14 1/2 pounds wildflower honey (60 minutes)
- 4 ounces Willamette hops,
5 percent alpha acid (six minutes)
- 3/4 ounces Northern Brewer hops,
8 percent alpha acid (60 minutes)
- 1 ounce Saaz hops, 3.7 percent alpha acid (60 minutes)
- 4 ounces Cascade hops, 5.2 percent alpha acid
(60 minutes)
- 1 ounce Chinook hops, 12 percent alpha acid (60 minutes)
- 7 ounces grated ginger root (15 minutes)
zest from 6 oranges (five minutes)
- 3 ounces ground coriander (20 minutes)
- 3 ounces ground coriander (finish)
- 4 tablespoons per five gallons orange blossom water in
secondary
- secret ingredient (unknown amount)
- Wyeast No. 1007 liquid yeast
- 2 tablespoons Irish moss (15 minutes)
- 3/4 corn sugar for every 5 gallons to prime

- Original specific gravity: 1.078
- Terminal specific gravity: 1.015
- Boiling time: 60 minutes
- Age when judged (since kegging): 16 months

Brewer's specifics:

Mash all grains for 60 minutes at 153 degrees F (67 degrees C).
 Boil wort and herbs as indicated above.

Judges' comments

"Nice warming beer. Slight astringency isn't unpleasant, just unexpected."

"Very interesting and complex beer. Ginger dominates. Good balance considering the variety of ingredients used."

"Coriander a little too strong for my taste."

"Good beer. Very drinkable. Richness balances spices and herbs."



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PENULTIMATE PILSENER CLUB-ONLY COMPETITION

FIRST PLACE MARK FAGERBURG HOP BARLEY & THE ALE'S BOULDER, COLORADO GERMAN "COAL CREEK PILS"

Ingredients for 5 gallons

- 5 1/2 pounds Klages two-row malt
- 1 1/2 pounds Munich malt
- 1 pound flaked barley
- 1 1/4 ounces Hallertauer hops, 4.4 percent alpha acid (60 minutes)
- 1/2 ounce Hallertauer hops, 4.4 percent alpha acid (40 minutes)
- 1/2 ounce Saaz hops, 3.03 percent alpha acid (20 minutes)
- 1/2 ounce Saaz hops, 3.03 percent alpha acid (10 minutes)
- 1 ounce Hallertauer hops, 4.4 percent alpha acid (five minutes)
- Wyeast No. 2206 liquid yeast
- 1 teaspoon Irish moss
- 1/2 cup dry malt extract and 1/2 cup corn sugar to prime

- Original specific gravity: 1.042
- Terminal specific gravity: 1.011
- Boiling time: 90 minutes
- Primary fermentation: five days at 46 to 48 degrees F (8 to 9 degrees C) in glass
- Secondary fermentation: eight days at 60 degrees F (15 degrees C) in glass
- Tertiary fermentation: 10 days at 46 to 48 degrees F (8 to 9 degrees C) in glass
- Age when judged (since bottling): 1 1/2 months

Brewer's specifics:

Mash with 2 gallons water. Strike at 146 degrees F (63.5 degrees C). Protein rest at 130 degrees F (54.5 degrees C) for 30 minutes. Add 1 gallon boiling water and raise to 156 degrees F (69 degrees C) until conversion. Mash-out at 168 degrees F (75.5 degrees C) for 5 minutes. Sparge with 2 1/2 gallons of 168- to 170-degree-F (75.5- to 76.5-degree-C) water.

Judges' comments

"Hop flavor medium to high leading to slight astringency after several sips. Good maltiness, malt-hop balance good."

"Good hop flavor, bitterness is about medium, low malt flavor. Nice aftertaste. It's very, very good."

WEISS IS NICE CLUB-ONLY COMPETITION

FIRST PLACE HARRY CLAYTON UNDERGROUND BREWERS OF CONNECTICUT FAIRFIELD, CONNECTICUT GERMAN-STYLE WEIZEN/WEISSBIER

Ingredients for 5 gallons

- 3 3/4 pounds Irek's Pilsener malt
- 3 3/4 pounds Irek's wheat malt
- 3/4 ounce Hersbrucker hops (70 minutes)
- 1/4 ounce Hersbrucker hops (three minutes)
- 1 teaspoon gypsum
- 1 teaspoon water crystals
- Chimay Rouge yeast culture
- 4 ounces turbinado sugar to prime

- Original specific gravity: 1.048
- Terminal specific gravity: 1.010
- Boiling time: 70 minutes
- Primary fermentation: five days at 70 degrees F (21 degrees C) in glass
- Secondary fermentation: 16 days at 70 degrees F (21 degrees C) in glass
- Age when judged (since bottling): two weeks (counterpressure bottled from keg)

Brewer's specifics:

Mash all grains for 90 minutes at 153 degrees F (67 degrees C).

Judges' comments:

"I have tasted some with even more clove phenolic. Perhaps you could raise fermentation temperature a bit. Good brew."

"Very good effort. Even stronger phenolic would be interesting. Stick with recipe and yeast. Try warmer fermentation."



WORLD OF WORTS

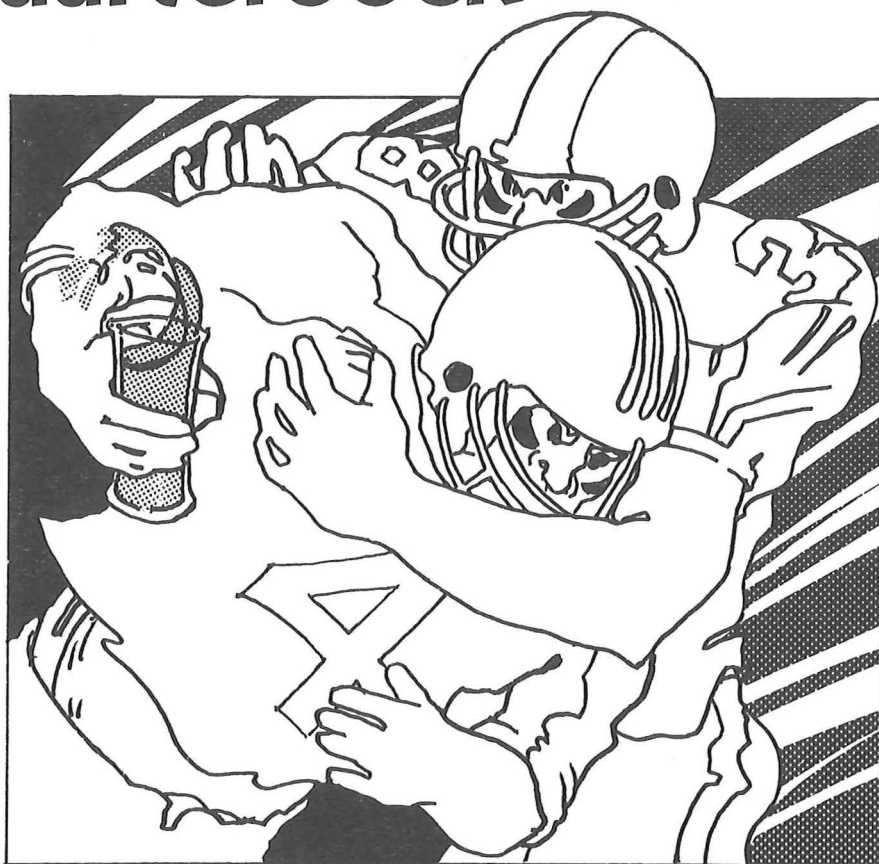
Charlie Papazian

Quarterbock

You'll not want to pass up handing this off to your "lite" drinking friends while you're rolling out another batch or running back to the center of town to buy ingredients for your next beer. Quarterbock is one beer that won't get sacked as a tasteless second-string effort.

Now that I've fumbled that out of bounds, let's consider recovering with a winning low-alcohol beer. "Why bother?" some of you on the opposing team may ask. I have always asked the same question after having tasted (or tried to taste) what is for sale as low-alcohol beer. But there must be a way. After all, we're homebrewers. If we can make chili-pepper-raspberry-cinnamon-honey-steam-wheat-barley-wine-style lager, well then, what's to defend against a satisfyingly flavored 2-percent-alcohol (by volume) beer?

Consider it done. It's easier than you think, but the secret is not quite so obvious. Quarterbock is a refreshing, light-bodied but not watery beer, light amber in color with a bitterness that complements yet doesn't linger. It's a great beer for reasons and occasions when you're thirsty, you want a beer and you want to minimize the effects of alcohol on your performance. It's a great starting point for your first batch of low-alcohol beer. Brew it. Taste it. Enjoy it. Then darken, light-



en, hop or add body with your next batch as it suits your own taste

The secret? Well it isn't really a secret but a trick some commercial breweries use to enhance their production. It's called high-gravity brewing, and is most often used to produce normal strength beer by watering down higher gravity beer during the packaging process. But none go the distance that we will.

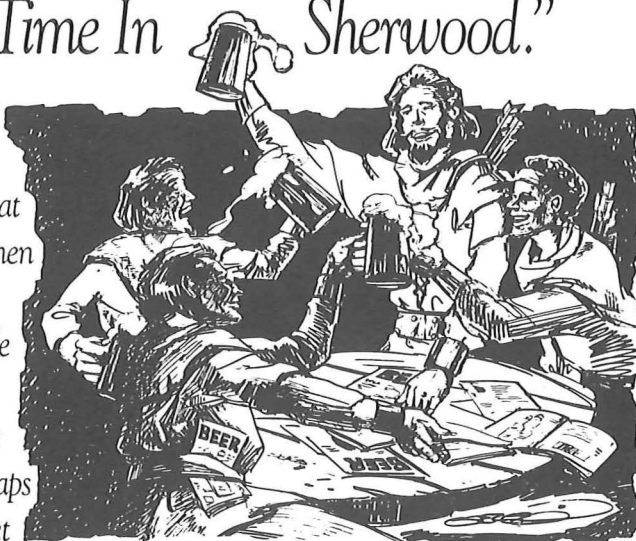
Aha! The higher the beer gravity, the more esters and other fermentation

byproducts are produced. These "interesting" flavors are usually not desirable in commercially available "lite" low-alcohol beers. But for people like you and I who enjoy the flavor of beer these are just what we want.

Here's the game plan and the reason for it. We want to brew a very strong doppelbock with a starting gravity of 1.096 to 1.100, let it ferment out to completion (about 1.028 to 1.032) then add de-aerated water at a ratio of three parts water to

"If the Sheriff of Nottingham Had As Fine A Head As This Ale, He Would Not Have Spent All That Time In Sherwood."

For years, people have marveled that my merry men and I were able to evade capture by hiding in the forest. Perhaps 'tis time to set



the record straight. When we weren't robbing from the rich and giving to the poor, we were in a pub hoisting a pint in honor of Richard the Lion Hearted. Which is not to say we weren't clever lads. We'd move from pub to pub, but not just any establishment would do. We'd frequent only those championed in the pages of *All About Beer*, the best magazine about beer, breweries and drinking establishments in all the realm. If the Sheriff had sense enough to subscribe, it would have led him sure as an arrow to our door.

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one part finished doppelbock. Result: a quarterbock that after dilution has a finished gravity of about 1.008 to 1.010. Brewing this as a straightaway run up the middle you'd more likely be brewing an original gravity of 1.025 and fermenting down to 1.003 to 1.005, avoiding esters and the complexity of flavor that higher-gravity brewing creates.

This was my first attempt at a low-alcohol beer. I didn't quite know what to expect, so I experimented by diluting two ounces of my finished batch of doppelbock with six ounces of chilled seltzer water. It tasted like the right thing to do. I'm astonished at how satisfying it is after a long bike ride, a good workout or anytime it suits my fancy.

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

Recipe for 4 gallons of mash-extract brew. Actually you will brew 1 gallon of high-gravity beer and dilute with 3 gallons of de-aerated water before bottling.

For the mash

- 6 ounces malted wheat
- 8 1/2 ounces malted barley
- 2 1/2 ounces Munich malt
- 2 1/2 ounces dark crystal malt (I used 40° Lovibond color)
- 1 ounce chocolate malt

(If you don't wish to mash you may substitute the above with 1 pound of dark dried malt extract.)

Add to the mash runoff

- 1.9 pounds (30 ounces) dried light malt extract
- 4 1/2 Homebrew Bittering Units (I used 1/2 ounce German-grown Northern Brewer hops at 8.9 percent alpha acid) for bittering
- 1/5 ounce (0.15 ounces or 4.2 grams) German Hallertauer hops for flavor
- 1/5 ounce (0.15 ounces or 4.2 grams) American Tettnanger hops for aroma
- 2/3 cup sugar for bottling

I packet of lager yeast or liquid culture starter

- **Original gravity: 1.096 to 1.100**
- **Final gravity before dilution: 1.028 to 1.032**
- **Final gravity after dilution: 1.008 to 1.010**


Add the crushed malt to 5 1/2 cups of water at 130 degrees F (54.5 degrees C). Stabilize the temperature at about 122 degrees F (50 degrees C) for 30 minutes. Then add 3 cups of boiling water and additional heat if necessary to stabilize the temperature at 158 degrees F (70 degrees C). Hold for 15 to 20 minutes. After this time you will have conversion of starches to sugars. Strain the sweet liquid from the grain and rinse (sparge) with 2 1/2 quarts of 170-degree-F (76.5-degree-C) water.

Add the malt extract and bittering hops and boil for 45 minutes or until you get the volume down to about 2 to 3 quarts. Add flavor hops during the last 15 minutes of additional boiling. Turn off heat and add aroma hops. Place the pot of hot wort in a tub of cold water for 15 to 20 minutes to help cool the wort. Then add this warm wort to a sanitized 1-gallon (or larger) fermenter to which you have added 1 quart cold water. Top off the wort to 1 gallon total. Aerate the cooled wort. Add active yeast when cooled to about 70 degrees F (21 degrees C).

When the beer is finished fermenting you will want to prepare the de-aerated dilution water. To de-aerate, boil 3 gallons of water and chill before adding to beer. If you have a 3- or 5-gallon soda canister for your draft system you can add boiled water or tap water to these containers and bubble carbon dioxide through the water, releasing the air as you add carbon dioxide. This will purge oxygen from the water and replace it with a small amount of carbon dioxide (not to worry about the amount of carbon dioxide). One last alternative is to use seltzer water as your dilution water, store bought or home-made. Add vigorously to de-carbonate it.

Add 2/3 cup corn sugar to finished and

racked beer. Dilute 3 to 1 water to beer. Mix gently and bottle. It'll be yours within weeks. You won't want to have a Monday morning Quarterback, but anytime after noon would be most appropriate.

Editor's note: I actually brewed a five-gallon batch of 10 1/2 percent alcohol doppelbock (using a recipe called Limnian Doppelbock, previously featured in this column). One gallon went toward making four gallons of Quarterbock. The other four gallons of doppelbock? Well, I bottled it as is, of course. 

HOMEBREW BITTERING UNITS

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

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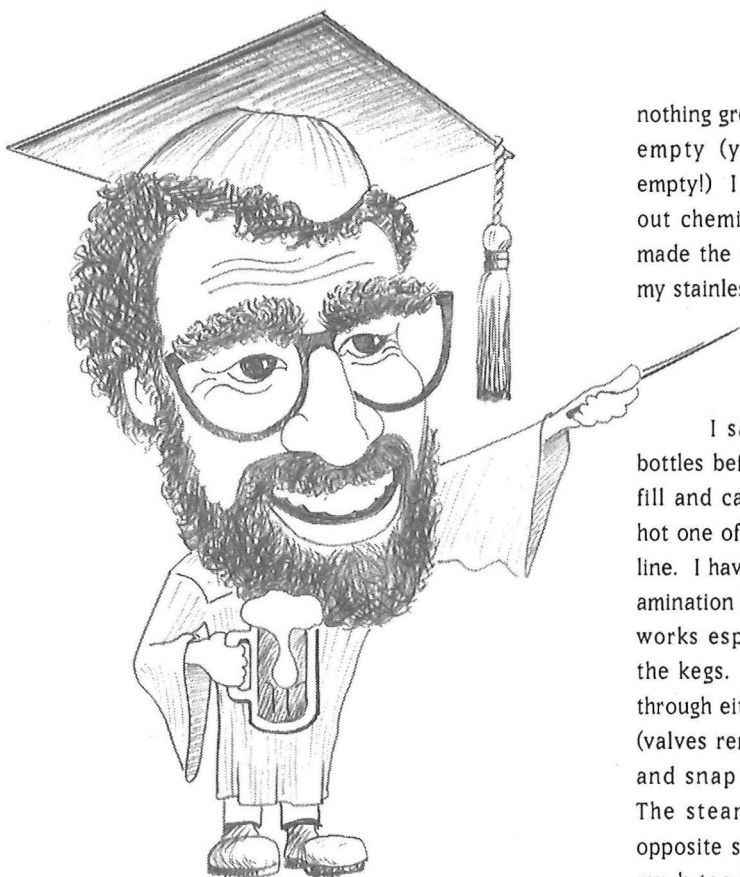
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Professor Surfeit

DEAR

P R O F E S S O R



PRESSURE COOKER SANITIZER

Dear Professor,

My sanitation system is a secondhand \$5 pressure cooker that I modified by replacing the safety valve with a right-angle compression fitting and two pieces of copper tubing. I use a long tube for sanitizing soda kegs and a short one for bottles. As long as I rinse them well,

nothing grows when they are empty (yes, they do get empty!) I can sanitize without chemicals. I originally made the system to sanitize my stainless-steel kegs but it seems to work fine on bottles, too.

I sanitize about six bottles before bottling. As I fill and cap one, I take the hot one off and put it last in line. I haven't had any contamination in five batches. It works especially well with the kegs. I insert the tube through either inlet or outlet (valves removed, of course) and snap the lid in place. The steam comes out the opposite side. The keg gets much too hot to touch and, as yet, has had no contamination! I use boiling water to sterilize the valve bodies.

Another system I have is just an idea that maybe someone more dedicated can try, or someone more experienced can shoot down. I was intrigued with the *zymurgy* 1988 Special issue (Vol. 11, No. 4). I thought, why not take the auto mash system and the remote bulb thermostat idea and combine them with a large, watertight, insulated container, a pump, copper coil and a remote bulb thermostat. You'd

be in business. The coil would be in your lagering refrigerator and you could recirculate the water bath from the container at a specific temperature. The thermostat would turn the pump on when the bath got too warm. Your lagering beer would be at 40 degrees F (4.5 degrees C) while your ferment could be any temperature. Sound idea? Or is my mind fermented?

Steaming away in paradise,
Thomas Ritchie
Kaneohe, Hawaii

P.S. In Hawaii, we always relax, never worry and the lucky ones get to have a homebrew.

Dear Thomas,

Your pressure cooker steam sanitizer is a small wonder, though I wonder how hot those bottles are when the beer is siphoned into them? If they are too hot, I'd imagine some bottle breakage caused by temperature stress.

Now what's this about your other idea? I don't quite understand what you're getting at. You're obviously a creative kind of a guy, so I would like to know more details about this auto-mash remote-bulb thermostat-watertight container-pump-coil-thingamabob idea you have. Please explain.

*A patient dude,
The Professor, Hb.D.*

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FERMENTATION LIMITATION

Dear Professor,

I hope you can help me with a small homebrewing problem. I'm not worrying, but I am concerned. The problem is too high terminal gravity. According to recipes in *The Complete Joy of Home Brewing* and other references, my homebrew never quite ferments out as far as it should. My original gravities are pretty close, but the final gravities indicate I may be doing something wrong. For instance, for a recent batch of Pilsener, my OG was 1.048, but after two weeks of active fermentation, it was only down to 1.020 (the recipe specified a TG of 1.008).

The following information is provided to assist you in making a diagnosis. I'm using high-quality malt extract syrups (and sometimes powders) like Alexander's and Northwestern. I use predominantly Whitbread lager yeast, sometimes Red Star. My water is naturally soft, but I preboil it anyway and aerate it well before sparging. I pay scrupulous attention to sanitation and have never had any sanitation-related problems. I always rehydrate my yeast for 10 minutes in 105-degree-F (40.5-degrees-C) water before pitching. I also add commercial yeast nutrient during the boil.

For the above Pilsener, I pitched at 78 degrees F (25.5 degrees C) and fermented in glass at 65 to 70 degrees F (18.5 to 21 degrees C). I know that's a little warm for a lager, but it's the best I can do in the winter when the heat is on. After 15 days it was 1.020 and didn't budge for three days. There were no little bubbles ascending and it was clear, so I kegged it. It'll probably be the sweetest Pilsener ever made, with all those dextrins or unfermented fermentables left in the beer!

So what gives? Lazy yeast? Something procedural? Malt extract mashed too hot? Let me know what you

think. Now that I've gotten all this off my chest, I'm definitely not worried. It's mostly academic (you are a professor, Hb.D) and after all, my homebrew tastes great. That is the bottom line, isn't it?

Thanks for your time. If you're ever in the area, drop by for crabs and homebrew!

Mit Fahrverg-brewin',
Dave Mohan
Glen Burnie, Maryland

Dear Dave,

Aeration, rehydration of yeast, quality malt ... you've done it all. I just wonder whether your wort simply won't naturally ferment any more. One way to test this is to put aside about a pint of wort in a sterile bottle or laboratory flask, pitch a higher dose of yeast and affix a fermentation lock. Force ferment it in warmer than normal conditions, say 75 to 80 degrees F (24 to 26.5 degrees C). After it has completed fermentation take a hydrometer reading and note the specific gravity. This is done by professionals and is sometimes called the "limit of fermentation." The "limit" is usually a bit more attenuated than the real thing, but gives you a clear indication of how far off the optimum you are.

As an added experiment you could do a second pint at the same time, but aerate this one more than you do the bulk and limit ferment. If there is a vast difference, then your aeration procedures need attention. This is what I suspect, that is, if there is a problem.

No problemo,
The Professor, Hb.D.

IT JUST KEEPS BUBBLING

Dear Professor,

I'm in the process of making my second batch of beer. However, since I'm

on the verge of worrying (a cardinal sin, if I understand your thesis in *The New Complete Joy of Home Brewing*), I thought I'd better write for some advice or reassurance—whichever is appropriate.

On Jan. 17, I began fermenting a lager made from a 3.3-pound can of John Bull lager (hopped) and about 2 1/2 pounds of DME, along with some hops and a package of dry lager yeast. On Jan. 20, I transferred it from the primary fermenter to a five-gallon carboy and put a waterseal on it. Two months later it was still fermenting—not violently, but quietly and persistently, with thin streams of small bubbles rising to the top to produce a quarter-inch ring of bubbles. The temperature in the room was in the 65- to 75-degree-F (18.5- to 24-degrees-C) range most of the time, sometimes cooler, sometimes even warmer.

My question is, has something gone wrong or does it normally take this long for fermentation to complete? Somehow I thought it didn't take this long. Should I be thinking about transferring the brew to a clean container (how long before the sediment starts to give an off-flavor to the beer)?

I look forward to hearing from you.

Sincerely,
Sid Silvester
Taylors, South Carolina

P.S. Is there a way to tell which imported beer bottles, if any, can be used for bottling homebrew? I've got some Beck's, St. Pauli's and Spaten, but I don't know whether any are worth keeping.

Dear Sid,

Hmm. Just keeps on fermenting, eh? Sounds like not enough aeration of the wort prior to pitching or, and more likely, your dried yeast may have been contaminated with a little wild yeast. Wild yeast will continue to ferment things that

normally would not be fermentable by pure beer yeast strains.

Worried? Don't be.

Taste the beer. It's gonna be all right. After a month of fermentation at 65 to 70 degrees F (18.5 to 21 degrees C) I'd be pretty comfortable bottling the brew with 2/3 cups sugar rather than 3/4 cup. I think that if you took a reading over a week's time, you would see negligible gravity change.

Solution: Next time change your yeast brand.

Per your p.s., virtually any bottle that is recapable is okay for homebrewing. I think I have a very eclectic collection and have bottled in them all.

*By the way, I didn't write *The New Complete Joy of Home Brewing*. That scalawag Papazian did, so don't go trying to pin anything on this learned professor.*

*Eclectically,
The Professor, Hb.D.*



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Mini Pubs malt extracts, made from 100 percent malted barley and no added sugar, are now available in the United States. Mini Pubs offers nine styles of hopped kits: lite beer, lager, Pilsener, Scottish export, traditional ale, nut brown ale, Irish stout, porter and dry. One can of extract makes six U.S. gallons or five imperial gallons. For more information write to Stuff for Suds, PO Box 1280, Maple Falls, WA 98266-1280, or call (800) 525-8382.

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Three New Lallemand Yeasts

Three Lallemand brewing yeasts are now available in five-gram packets through G.W. Kent. German Konig lager yeast, a non-flocculant, ferments within five days at 77 degrees F (25 degrees C). It can be used to ferment worts between 45 and 86 degrees F (7 and 30 degrees C), but flavor characteristics of the yeast change between the temperature extremes. It produces a clean beer with a yeasty character.

Windsor English ale yeast gives a dry, clean beer that is estery to both the palate and nose with a slight yeast flavor. This yeast ferments within four days at 77 degrees F (25 degrees C). Windsor ale is a top-fermenting yeast with some flocculating characteristics. It is best used at traditional ale temperatures after rehydration.


Nottingham Beer yeast settles out quickly and firmly. This high-flocculating yeast

produces clearer beer. For more information write to G.W. Kent, 3691 Morgan Rd., Ann Arbor, MI 48108, or call (313) 572-1300.

New Australian-Made Morgan's Beer Kits

Morgan's offers three new kits to homebrewers. Morgan's Brewing Co. of Australia has introduced a range of brew kits to United States and Canadian markets. The kits are made from 100 percent Australian malted barley and contain no preservatives or syrups. The retired head brewer of one of Australia's largest breweries directs the brewers and maltsters in formulating Morgan's kits. Their three beer kit flavors are lager, draft and bitter.

The traditional pale Australian lager, lightly hopped with a crisp hop fragrance, has an EBC of 7 and IBU of 18. The draft is a darker beer that has a fine close head, full body and full hop taste with a 9.5 EBC and a 21 IBU. The bitter is a pale golden beer with a good head and the fresh bitter taste and nose of quality hops. The EBC is 7.5 and IBU is 26.

Morgan's plans to expand the range of kits to include more beer styles, a ginger beer and a cider pack. For more information write to the U.S. marketing agent at Jonmer Inc., 3300 W. Mockingbird Lane, Suite 800, Dallas, Texas 75235, or call (214) 956-9888. 

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

Kurt Denke

Good beer is simple. Oh sure, it's possible to spend years of intense study getting into the biochemical aspects of the brewing process, but none of that is essential to the art and joy of making good beer. Beer was brewed from the Stone Age to the industrial revolution more on the basis of brewing lore and tradition than of brewing science. Malt, hops, yeast and water, as well as a sense of art, are still the essential ingredients to making good beer.

The principle of parsimony says that, generally speaking, simple explanations for phenomena are more likely to be true than are complex explanations. While the principle is not a law in the scientific sense, and is full of exceptions, it is an elegant and helpful rule that most of us employ, consciously or not, in organizing and using our knowledge of the world. In brewing, the principle of parsimony has a couple of corollaries: (1) What is simple is often beautiful and (2) simple information is more useful than complex information.

For an example of the latter corollary, consider the automobile. I have taken on the task of restoring a 1950 Studebaker Champion—the famous bullet-nose car. Next to it in my driveway sits a 1984 Ford Land Behemoth wagon. The Studebaker, from end to end, is a simple car and a joy to work on. Everything bolts on, everything is mechanical and everything can be repaired by a complete neophyte in auto repair like me. The Land Behemoth wagon, however, is another matter. It's all packed with electronic gizmos, unrepairable sealed-unit devices and digital built-in diagnostic signaling equipment.

The manual for the Studebaker tells how to take apart, clean and repair virtually everything on the car, while the manual for the Land Behemoth wagon calls for the use of unheard-of tools and techniques that, while snazzy, are beyond my means and knowledge.

Guess which manual is more useful? Simplicity can be a great virtue because it allows us to understand what the heck we're doing in meaningful terms.

Of course, as beer lovers we place great value on complexity in our finished product. However, the best method for achieving that stunning aroma and appearance is often quite simple—let the yeast worry about the biochemistry. Simple construction and simple techniques have given both my Studebaker and my beer a big nose.

The simplicity of the beer kit is a great thing for homebrewing. If we did not have simple ways of introducing people to the potentially complicated process of brewing, this hobby would be much less popular. How many of us would have started making beer if we'd had no malt extract on which to rely, and had to absorb all of the information necessary to make a full-blown mash on the first batch? How many dismal failures would each of us have had

to endure before we enjoyed a single glass of good beer? It's a frightening thought.

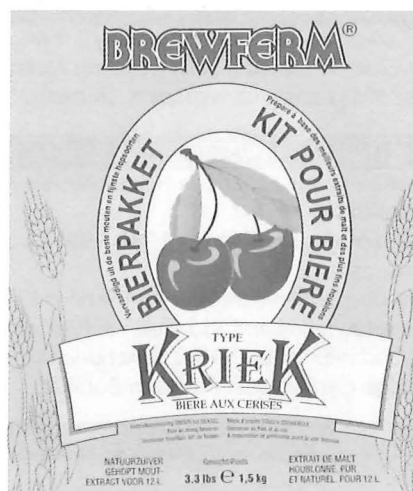
BREWFERM KRIEK

To my knowledge, the Brewferm Kriek

kit is the only Belgian fruit-beer kit on the market, which makes it an intriguing prospect. At double the price of an average beer kit, it made my wallet jump and scream, but I decided to give it a try anyhow.

I should point out initially that the composition of the Brewferm Kriek kit is not exactly traditional for the style.

Instead of cherries, the label indicates that some form of cherry flavoring has been used, and there is no indication on the label whether the malt extract is a straight barley malt product or whether it is from a combined wheat-barley malt mash. The extract includes glycerine, probably to enhance mouthfeel, and citric acid, probably to simulate the tangy lactic acid flavor of a Belgian-style cherry beer. The yeast, so far as I can tell, appears to be a run-of-the-mill ale yeast. I gave it a try because all the other Brewferm kits I have sampled have been excellent.



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Rather than make 12 liters of beer with the contents of the can and one-half kilogram of sugar, as the label suggested, I downsized the recipe to 2 1/2 gallons and eliminated the sugar, like so:

Ingredients for 2 1/2 gallons:

- 1 can (3.3 pounds) Brewferm Kriek kit
ale yeast (supplied with kit)
- 3/8 cup dried malt extract (for priming)

- OG: (estimated) 1.048
- FG: 1.013

The extract has a truly remarkable red color, rather like transmission fluid (yum!). I boiled the full volume of the wort for five minutes, then force-cooled it and pitched the yeast. After thorough fermentation, I batch-primed and bottled it.

The finished beer was a sort of pinkish-to-slightly-brown color. It had a bit of a fruity cherry aroma, but the cherry character seemed much diminished in the flavor. Hop bitterness was appropriately mild, and the body seemed quite full despite the low gravity. All in all, this kit is a good try at producing a rather difficult and eccentric style of beer.

COOPER'S BITTER



15-5

Of all of the kits I have ever seen, Cooper's has the distinction of having the most repulsive and ill-conceived leaflet of instructions under the lid. I recall that earlier Cooper's kits actually contained a drawing of a light-bulb-heated "sweatbox" in which to cook the poor beer to death as it fermented. The manufacturer still suggests this practice but has eliminated the drawing. Nonetheless, the product itself has always been good. I eliminated the sugar and downsized the recipe, brewing like so:

Ingredients for 3 gallons:

- 1 can (3.75 pounds) Cooper's Bitter kit
- ale yeast (supplied with kit)
- 1/2 ounce Golding hop pellets
- 3/8 cup dried malt extract (for priming)

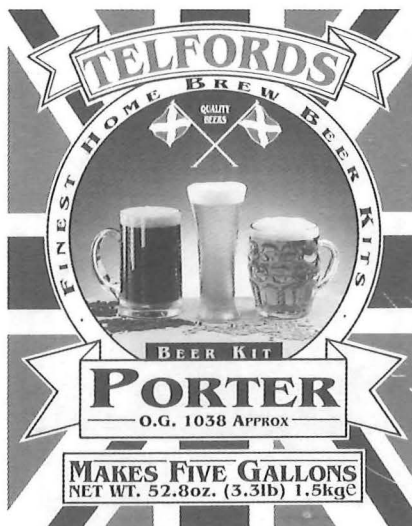
- OG: (estimated) 1.045
- FG: 1.013

I mixed the extract with water to make 3 gallons, then boiled the full volume of the wort for 10 minutes, force-cooled it and pitched the yeast. After the initial fermentation died down, I added the Golding hops to the fermenter and bottled a week later.

The finished beer was a dark reddish-brown color, rather deep for a bitter. This was probably attributable both to my using more malt extract per gallon than recommended and to a bit of caramelization in the extract production. The beer was rich in grainy aroma and flavor with some caramel and roasted notes. The bitterness was mild and the body light-to-medium, comparable to many commercial British draft bitters. Overall, the beer was very pleasant and well-balanced—just don't build that accursed sweatbox and you'll enjoy this one.

TELFORD'S PORTER

There are few porter kits on the market, which is a shame considering that this style,



practically rescued from the grave by the small brewery-homebrewing movement, is so well-liked. Telford's Porter, according to the labeling, is made with black malt and roasted barley. I gave it a whirl:

Ingredients for 3 gallons:

- 1 can (3.3 pounds) Telford's Porter kit
- ale yeast (supplied with kit)
- 1/2 ounce Fuggle hop pellets
- 3/8 cup dried malt extract (for priming)

- OG: (estimated) 1.042
- FG: 1.018

I mixed the malt extract with water to make 3 gallons, then boiled the wort for 10 minutes, force-cooled it and pitched the yeast. After the initial burst of fermentation slowed down, I added the Fuggle pellets to the fermenter, and after another week or so I bottled it. The finished beer had a dense black appearance and a prominent roasted grain aroma. It was moderately, but not aggressively, hopped and had just a bit of a dry tannic character. The body was quite full but there was little residual sweetness. It reminded me of Yuengling Porter, an old regional favorite from Pottsville, Pa., but with just a bit more hoppy and grainy flavor. Yahoo! Great beer, great kit!

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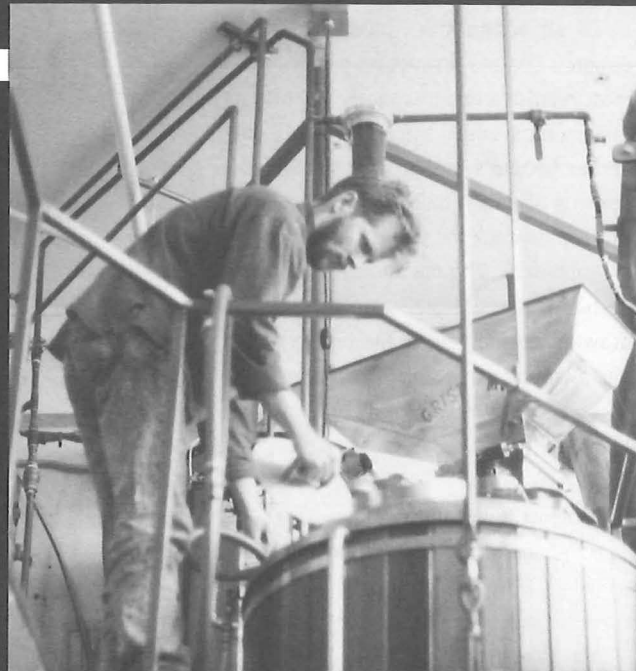
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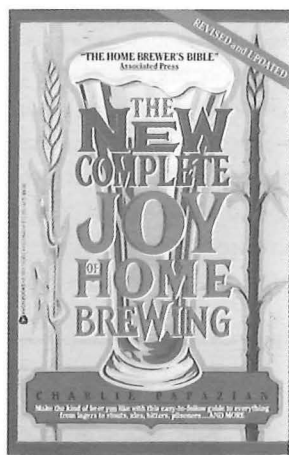
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REVIEWS

THE NEW COMPLETE JOY OF HOME BREWING



The title here should be *Relax, Don't Worry, Have a Homebrew*. The key word is "homebrew." When I was young (earlier in the century) homebrew was a dirty word that referred to pale, anemic, acidic, sour, cidery, alcoholic brew made in a crock from Blue Ribbon Malt Extract and Fleischmann's bread yeast. It was aged behind the old wood stove for at least three days then bottled with a teaspoon of sugar in a quart bottle, which, if it didn't explode, was ready to drink in five days. Today, thanks to my friend Charlie Papazian, homebrew is synonymous with the finest of beer. One could even say that America's best beer is brewed at home, and it is due primarily to Papazian's contributions over the past 15 years.

The Joy of Home Brewing (Log Boom Brewing, 1976), Papazian's first effort, was humorous but lacking in scientific

detail. Of course, the "Goat Scrotum Ale" recipe helped, but goat scrotums are usually not available on the open market, and they lack the necessary depth and volume for brewing the usual five-gallon batch. Moreover, the goats of America never much favored such use of their anatomical parts.

The Complete Joy (Avon, 1984) was a step beyond the outer limits of homebrewing, overshadowing all others. You could still brew Goat Scrotum Ale, but now you could make Winky Dink Maerzen and Naked Sunday Brown Ale, plus many others. But sadly you might never find the page with the recipe again—no index. Not a few people were lacking in the kindness to inform Charlie of his negligence in that matter, but wailing and gnashing of teeth were no use in persuading Avon to add an index.

Now, we are pleased to inform you, *The New Complete Joy* (Avon, 1991) is blessed with an index, and the recipes abound: Goat Scrotum Ale (p. 199), Winky Dink (p. 187), and one of my favorite Charlie beers, Armenian Imperial Stout (p. 210). I suppose it would be churlish to point out that the recipe for my very favorite Charlie beer of all time is missing. I speak, naturally, of the famous Blitzweizen Barley Wine Lager, brewed for the 1986 AHA conference in Estes Park, Colo.

The New Complete Joy of Home Brewing puts it all together, and you can, too. All the information you need to start homebrewing is here, plus whatever is necessary to improve your brewing, as

you pass from beginning to intermediate levels and move to the advanced. At that point Charlie tells you where to go for graduate-level information as you work your way to a doctorate in homebrewing.

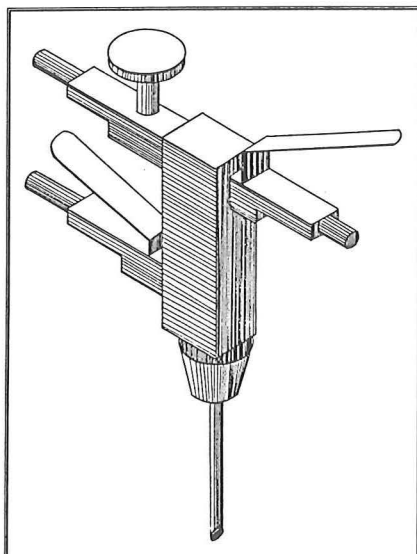
Charlie Papazian is ineligible for the Homebrewer of the Year award, but he has my vote for Homebrewer of the Century. Prohibition would have been a total failure if this book had been around in 1919.

The New Complete Joy of Home Brewing by Charlie Papazian (Second Edition, 1991 New York: Avon Books, 398 pp., illustrated, publishers suggested retail price \$9.95)

—Fred Eckhardt

BENJAMIN MACHINE PRODUCTS BOTTLE FILLER

The semiautomatic counterpressure bottle filler is here; at least in terms of sound effects. Purging the air from empty beer bottles has never been as much fun as with this device. I'm sure this is the official filler of the National Rifle Association. The secret of the great sound effects has to do with the spring-loaded air valves used for the CO₂ inlet and the CO₂/foam outlet. The basic design is a food-grade plastic block with a series of holes drilled into it, then threaded to accept the three valves and a hose barb fitting that surrounds the fill tube and holds a soft rubber stopper. A stainless-steel tube is jammed into a smaller



hole that connects the CO₂/foam outlet to the CO₂ and beer inlet hole.

To test this filler I actually followed the manufacturer's instructions except that my beer hose was three-sixteenths-inch interior diameter instead of one-quarter inch. The beer temperature was around 38 degrees F (3.5 degrees C) and the CO₂

pressure was set for 15 psi by my gauge. My stock of bottles includes 12-ounce Dos Equis, Grolsch swingtops, 1/2-liter European bottles and 25-ounce Australians. The stopper on the fill tube fits nicely into the top of all the bottles and you only need to keep a hand on the filler to keep it from popping off.

Now the fun begins. Rat-tat-tat! Sgt. Rock is back. With a few quick alternating squeezes on the gas valves the bottle is purged. The beer-in valve is metal and full volume is reached between a one-quarter and one-half turn. The valve handle is small and a minor pain to turn once your hands become wet, but still better than the needle valves on other fillers. After the beer is flowing you need a gentle touch on the CO₂/foam-out valve to keep it flowing.

Unfortunately, the fill tube is short for my bottles and filling the first half bottle needs to be slow to control foaming. And because the gas bleed rate is directly controlled by hand pressure it takes some concentration to keep the foam level con-

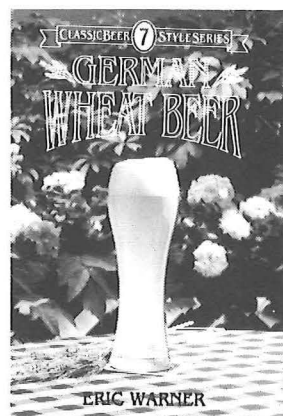
sistent. Once the fill tube is in the beer it only takes a second or two to fill the rest of the bottle. By releasing the bleed valve the filling stops almost instantly. Finally, turn off the beer inlet valve and give one more quick squeeze to the bleed valve trigger and the filling is complete. With a longer fill tube (about 8 inches) this would be a very fast machine.

Besides a longer fill tube, I believe a few other changes would improve this filler. First is in the design. I would prefer that the CO₂ inlet and the beer-in line be separate. That way the beer will not as easily flow back into the CO₂ inlet valve. (But I did use a hose that was one-sixteenth of an inch smaller than recommended.) The major drawback with the air valves is that the casing is cast aluminum and should not be exposed to alkaline-based cleaners. The manufacturer recommends only hot water to clean and iodine to sterilize, but if it isn't really clean it isn't going to be sterilized. With a separate beer line the beer going into the

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bottle would be as clean as the beer coming out of the keg. The beer line by itself could be cleaned with caustic.

I know the brewing industry uses acid cleaners but I do not know of any homebrew retailers who carry such cleaners. The only other method that comes to mind is to boil the filler for about 30 minutes. Even if it is not clean, the bugs should be dead. I also would prefer that beer line be 100

percent stainless steel or brass and the fittings to the beer valve and the CO₂ inlet valve be one-quarter-inch male flare, which would make it compatible with the rest of the system.

In terms of evolution, this counterpressure bottle filler is an adaptation in the right direction. The manufacturer is Benjamin Machine Products, 1121 Doke Dr., Unit No. 7, Modesto, CA 95351. If the price is right and the fill tube is lengthened, this piece of equipment is a solid investment. Manufacturers suggested retail price: \$49.95.

—Bill Hasse

YELLOW DOG PALE ALE

You can tell that Yellow Dog unhopped amber malt extract kit is unique from the first time you see it. Yellow Dog extract comes in a brown cardboard box housing a plastic bag that contains the malt extract syrup.

If you look closely at the label you will see another unique aspect. Yellow Dog was designed by Sam Wammack from 87 percent two-row Klages malted barley, 12 percent malted wheat and 1 percent chocolate malt. The grains are crushed together and given a single infusion mash at 160 degrees F (71 degrees C).

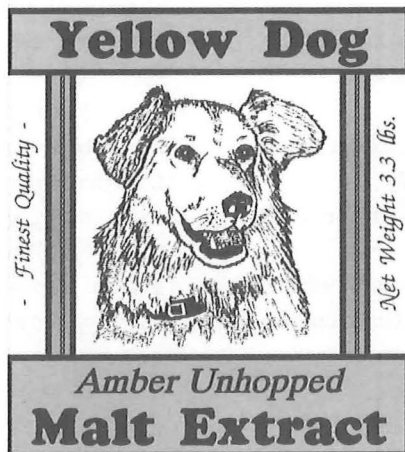
This amber extract is suited for brewing

a variety of beers. The Home Brewery catalog lists recipes for Yellow Dog Pale Ale, Brown Dog Brown Ale, Kraut Dog Oktoberfest and Black Dog Porter, all using

the Yellow Dog kit for their base. Different grains and hops produce the styles.

I decided to brew the Yellow Dog Pale Ale and followed the directions very closely, deviating only in adding the finishing hops. Rather than steeping the Williamette hops I dry hopped by adding just three-

quarters of an ounce of hop pellets to the primary fermenter. I left a little more headspace in the carboy than usual to avoid clogging the blow off. I was cautious to strain the boiling hops from the wort before adding it to the carboy (I once had hop pellets clog the blow-off tube).



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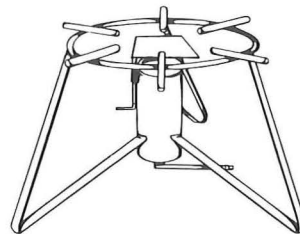
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The deep brown color of the finished beer was a bit dark for pale ale, but it had a nice full body with rich malt flavors. The finish was strong in hop bitterness with the lingering nutty flavor of the chocolate malt. I could detect a slight saltiness at the very end of the beer (I suspect this came from the yeast nutrients). The hop and malt aromas blended to give the beer an almost floral bouquet.

I enjoyed this beer very much. It was clean and rich with well-balanced flavors and a long finish. My only criticism is in the use of yeast nutrients. This recipe should have more than enough nutrition for a healthy yeast starter without the added nutrients. Cutting them out would eliminate the slight salty flavor caused by the combination of yeast nutrients and mineral salts leaving only the clean pale ale characteristics.

Ingredients for five gallons:

- 6.6 pounds (2 boxes) Yellow Dog malt extract

- 1 cup whole crystal malt (remove at 170 degrees F, 67.5 degrees C)
- 1 packet Burton water salts
- 1 packet yeast nutrients
- 3/4 ounce Chinook hop pellets
- 1/2 teaspoon Irish moss (15 minutes)
- 3/4 ounce Kent Goldings pellets (five minutes)
- 3/4 ounce Williamette pellets (dry hopped)
- 1 package Wyeast American liquid ale yeast (activated 24 hours prior to brewing)

- Original gravity: 1.048
- Final gravity: 1.016

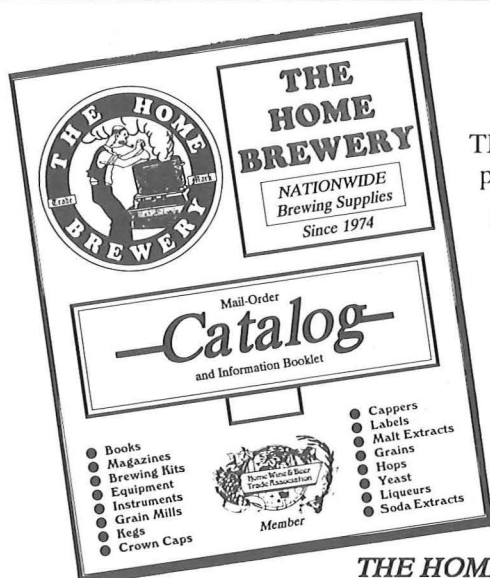
Brewer's Specifics

Add crystal malt to one quart of hot water. Bring to 160 degrees F (71 degrees C) and hold for one-half hour. Remove grains and add the remaining

liquid to one and one-half gallons of hot water. Add two boxes of Yellow Dog Malt, one packet of Burton water salts, one packet of yeast nutrients and three-quarters ounce of Chinook pellets and boil for 45 minutes. Add one-half teaspoon of Irish moss for the last 15 minutes of the boil and three-quarters ounce of Kent Goldings pellets for the final five minutes. Add 2 gallons of cold water to a 5-gallon carboy and strain the boiled wort into the carboy. Add three-quarters ounce of Williamette pellets to carboy. Cool to between 70 to 80 degrees F (21 to 26.5 degrees C) and add activated yeast culture. Ferment for 10 days to two weeks and bottle using three-quarters cup corn sugar in one pint of boiled water.

For more information contact The Home Brewery, PO Box 730, Ozark, MO 65721. Manufacturers suggested retail price for 3.3 of extract: \$8.25.

—Phil Spreier



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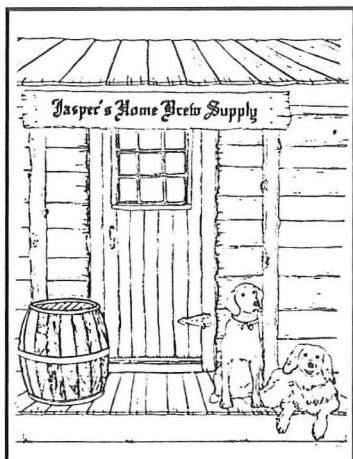
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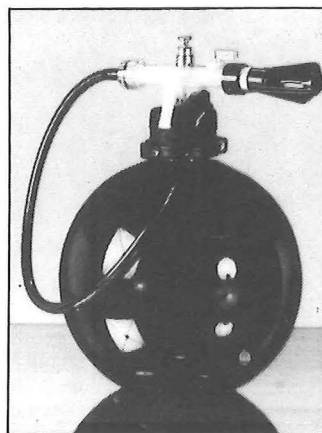
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Richmond, VA 23221-3502
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Blacksburg, VA 24060
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Let's Brew
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WASHINGTON
Brewer's Warehouse
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The Cellar Home Brew
14411 Greenwood N.
Seattle, WA 98133
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Jlm's 5¢ Home Brew Supply &
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Liberty Malt Supply
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Green Bay, WI 54301
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The Malt Shop/
Kettle Moraine Vineyards
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Cascade, WI 53011
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The Market Basket
Homebrew & Wine Supplies
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Brookfield, WI 53005-1510
(414) 783-5233

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Nort's Worts
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The Wine & Hop Shop
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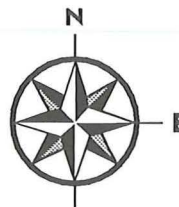
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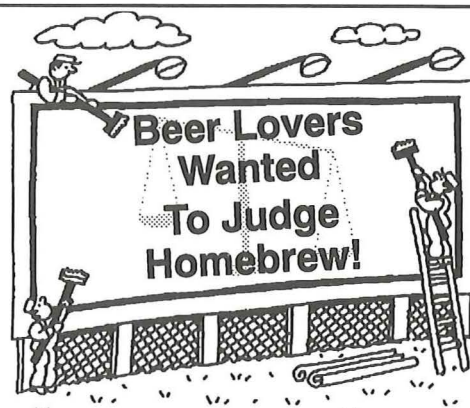
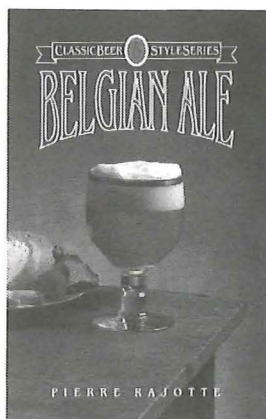
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HOME BREW CLUBS

James Spence

This issue's club news is from clubs in Division 4 which includes Alaska, Arizona, California, Colorado, Hawaii, Japan, Nevada, New Mexico, Oregon and Washington. For contact information, see the individual club listings in "New Clubs" and "Veteran Clubs." If you have any changes or questions regarding your club's entry, please contact James Spence at (303) 447-0816, PO Box 1679, Boulder, CO 80306-1679.

Deep Wort Brew Club, Colorado Springs, Colo.

The Deep Wort club has about 45 active members. Club meetings focus on sampling and critiquing each other's brewing efforts. Other meeting activities include demonstrations of brewing equipment and techniques, the selection of club entries for the AHA club-only competitions and exchange of brewing-related information. Recently the club adopted a "beer of the month" approach where a specific style of beer is featured each meeting. Club members are becoming increasingly involved in the AHA National Competition and the other AHA-sponsored events. If you're visiting the Colorado Springs area give them a call.

Y.E.A.S.T. (Yakima Enthusiastic Ale & Stout Tasters), Yakima, Wash.

Membership has reached 16 members and grows by one or two each month. Brewery tours, a river float, hop farm tours and group brews are some of the activities planned for this summer and fall. Club efforts have resulted in the Central Washington State Fair opening a homebrew category for the first time. We hope to make this a sanctioned event within the next few years. The summer picnic at Rimrock was a huge success with quite an assortment of fruit beers, a chili ale and lots of activity. We encourage all Yakima-area brewers to meet with us. Whenever you're in the area give them a call.

Maltose Falcons Home Brewing Society, Woodland Hills, Calif.

The club now has nearly 300 members and continues to grow. The Sunfest at Catalina Island Aug. 8 featured the Maltose Falcons Brews Band entertaining locals, visitors and Falcons present for beer, barbecue and a summer beach party. Maltose Falcons Mayfaire and Los Angeles County Fair Regional Homebrewing Competitions each attracted more than 100 entries in 1992. Annual club officer elections in July produced five new officers in addition to five that were re-elected, including President Bruce Brode.

San Luis Obispo Brewing Society (SLOBS), San Luis Obispo, Calif.

All members should plan on coming to the Christmas party. Call Howard for information.

Hop, Barley & the Ale's, Boulder, Colo.

In the club's third year, membership already includes 100 folks who enjoy making and sharing homebrewing adventures. Excellent attendance makes each meeting an exciting event, especially with educational and humorous talks by the likes of Russell Schehrer (head brewer, Wynkoop Brewery), Eric Warner (HBA member, President Blue River Brewing Consultants), Charlie Papazian (HBA member, President AHA) and Bruce Joseph (Anchor Brewing). HBA's Holiday Gathering and Summer Campout were both successful events, resulting in many new friendships. In the spring, nine members attended the AHA National Conference in Milwaukee and witnessed club members take two firsts (Steve Dempsey; Eric Warner) and two thirds (Dave Suda; Thom and Diane Tomlinson). They celebrated a third-place club point total and the fact that HBA member Phil Fleming earned Master Judge status in the BJCP. The fun continued when Mark Fagerburg's Pilsener won the Penultimate Pilsener Club-Only Competition and when Steve Klover's wheat beer went on tap at the Oasis (a local brewpub). In the fall, members actively participated in the Great American Beer Festival. HBA members represent every type of brewer, from beginning extract brewers to all-grain brewers. Yearly events include: December Holiday Party; February Fundraiser and August Campout. At meetings you will find friendly brewers, tasty food and delicious homebrew. They love to share their hospitality with visiting brewers, so stop by when you're in Boulder.

Inland Empire Brewers, Upland, Calif.

The IEB is contacting a few homebrewing clubs in the United States, United Kingdom and Australia to develop a "sister club" program to exchange newsletters and enter each other's competitions. If your club is interested, contact John Eichman at (714) 797-6452.

Bay Area Mashers, Oakland, Calif.

The summer potluck at Tim Underwood's was a great success. Aug. 22 and 23 the mashers went on a mountain campout in the Sierras, with hiking, rock climbing and swimming providing release from the weekly urban grind. Plans were made to update and expand the club database, and orders were taken for bulk malt and hops purchases. The members' hop harvest looks great. The Christmas Crab and Brew Fest will take place again, likely the second or third week of December.

Monterey Beer Nuts, Pebbly Beach, Calif.

Monterey Beer Nuts celebrated National Homebrew Day (May 2) by having an all-grain brew demonstration. Much fun and homebrew were had by all.

NEW CLUBS

ARKANSAS

Arkansas Homebrewers Association,

c/o Kurt Schilling, 7914 Forest Rd., North Little Rock, AR 72118, (501) 753-7114.

CALIFORNIA

California Culinary Academy Brewers Association (CCABA),

c/o Mark Anderson, 3644 Ranchford Court, Concord, CA 94520, (510) 687-5041.

High Desert TRUblemakers,

c/o Anthony Lattanze, 42339 Grand Park Ave., Goartz Hill, CA 93536, (805) 722-0521.

Tahoe Homebrewer's Club (THC),

c/o Matt Quella, PO Box 18668, South Lake Tahoe, CA 96151-8668, (916) 544-5592.

FLORIDA

Spacecoast Associates for the Advancement of Zymurgy (SAAZ),

c/o Ric Huber, 4485 Citrus Blvd., Cocoa, FL 32926.

ILLINOIS

The Forest City Brewers,

c/o Thomas M. Butler, 3211 Chadwick, Rockford, IL 61109, (815) 229-5052.

KANSAS

The Derby Brew Club,

c/o Roger Clark, 7136 S. Greenwich, Derby, KS 67037.

MASSACHUSETTS

Hops, Barley & the Ales,

c/o John W. Reed, 19 Whitney Lane, Upton, MA 01568, (508) 529-4470.

Missile Mashers,

c/o Edward Bardsley, 38 Hillside Ave., Lawrence, MA 01841, (508) 681-9064.

MICHIGAN

Michiana Omnilfarious Nomadic Krausenors & Spargers (MONKS),

c/o Todd Keller, 1350 Ferry St., Niles, MI 49120, (616) 683-9162.

MINNESOTA

Mobius Microbrewers,

c/o Mark W. Peery, 400 Wilshire Drive South, Minnetonka, MN 55305-1560, (612) 591-1602.

NEW YORK

Catskill Mountain Homebrewers Club,

c/o Bill & Sue Norotny, 93 Grove School Rd., Catskill, NY 12414, (518) 943-2289.

Stanislaus Area Associated Zymurgists (SAAZ), Oakdale, Calif.

Some club members attended the AHA National Conference in Milwaukee and brought back beer, sausage and new homebrewing information. SAAZ and St. Stans brewery hosted the first annual Fest Beer competition on Sept. 27. Congratulations to member Ray Call for his first-place barley wine in this year's California State Fair. There has been a lot of talk at the club meetings about meadmaking, so there should be a mead tasting before long.

San Joaquin Worthogs, Fresno, Calif.

The Worthogs have seen their membership grow to 45 since the club's inaugural meeting in August 1991. Meetings are on Saturday or Sunday afternoons every other month. The club newsletter is published during the month prior to each meeting. Typical meetings include a technical discussion about the brewing process or ingredients. Also, one to three beer styles are reviewed and commercial and homebrewed examples are tasted. At this writing the membership was looking forward to their second annual Oktoberfest picnic and turbo Nerf football game. The 1992 Fresno Fair Competition was AHA sanctioned and plans to make it one of California's better events is in the works. Congratulations to past President Jim Lopes for his best of show at the 1992 HWBTA Competition.

The Great Northern Brewers, Anchorage, Alaska

The largest homebrewing club in Alaska, the Great Northern Brewers led the fight to legalize their hobby in the state. They hold two AHA-sanctioned competitions every year, at the Anchorage Fur Rendezvous in February and at the Alaska State Fair in August. Meetings feature informal tastings and information sharing, and are held on third Wednesdays, alternating monthly between members' homes and the wine-tasting room at Trader Jim's, 5520 Lake Otis Parkway, Anchorage. The Christmas meeting will be at a member's home. Call club president Jim Roberts (907) 337-9360 for location. January meeting at Trader Jim's (907) 562-7131.

South Sound Suds Society, Olympia, Wash.

The Suds Society is working to arrange a tour of a hop farm in Yakima by way of the Onalaska Brewery and a monthly pub crawl.

The Browbirds of Hoppiness, Pacifica, Calif.

"We are still brewing. Jim won an award."

Foreign Fermentations, Kamakura City, Japan

Crayne and Mary Horton are returning to the Great Pacific Northwest to take up residence in Olympia, Wash. Consequently, the members of Foreign Fermentations have unanimously chosen Rany Ulland as the new presiding officer for the club. The names may change, but the struggle for beer rights goes on in Japan. Finally, the members of Foreign Fermentations would like to bid fond farewell to former club stalwart Mike Nolan who died this spring. Cheers, Mike.

OREGON

Stout-hearted Brewers of the Umpqua Valley,

c/o Paul Moon, PO Box 503, Glide, OR 97443, (503) 496-0119.

PENNSYLVANIA

Lancaster County Brewers,

c/o Paul Pendyck, c/o XYZed Music, 1386 Columbia Ave., Lancaster, PA 17603, (717) 293-1214.

TEXAS

Denton Fermented Brewers Society,

c/o Pat Towner Morrison, 210 South Elm #C, Denton, TX 76201, (817) 383-4399.

ONTARIO

Cochrane Homebrewers Club,

c/o Adrian J. Cantin, PO Box 1185, Cochrane, Ontario PO1 1C0 Canada, (705) 272-5335.

The East Enders,

c/o Erich Mann, 67 Brockman Cres., Ajax, Ontario L1T 2L2 Canada, (416) 427-9324.

VETERAN CLUBS

ALABAMA

Birmingham Brewmasters,

c/o Klaus Anderson, 1917 29th Ave. S., Birmingham, AL 35209-2617, (205) 871-2337.

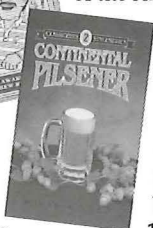
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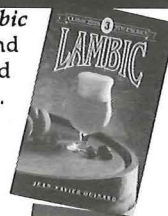
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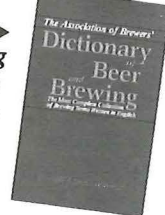
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From the common to the obscure

by Carl Forget.
Brewers Publications
186 pp., \$19.95



Brewing Lager Beer

The all-grain brewing reference book by Greg Noonan.

Brewers Publications
313 pp., \$14.95



Brewers Publications, PO Box 1679, Boulder, CO 80306-1679 (303) 447-0816, FAX (303) 447-2825. Add \$3 P&H for the first book, \$1 for each additional book.

Lower Alabama Lagers,
c/o Maarten van der Giessen, 4701
Seabrook Rd., Wilmer, AL 36587, (205)
649-9436.

Madison Sobriety Club,
c/o Steve Conklin, 311 Red Oak Rd.,
Madison, AL 35758-1540, (205) 461-
8698.

Wiregrass Brewers Clubs,
c/o John Sartwell, Rt. 3 Box 107,
Ozark, AL 36360, (205) 299-3472.

ALASKA

Great Northern Brewers,
c/o James S. Roberts, 3605 Arctic
Blvd. #1204, Anchorage, AK 99503,
(907) 337-9360.

Greater Alaska Suds Swillers,
c/o Roger P. Penrod, 2890 Parks
Hwy., Fairbanks, AK 99709, (907)
479-8795.

Rainbrewers,
c/o Russ Staska, 171 Raspberry Lane N.,
Ketchikan, AK 99901, (907) 247-0767.

ARIZONA

**Arizona Brewers and Vintners
Association,**
c/o Bruce E. Dahlgren, 3713 West
Gelding Dr., Phoenix, AZ 85023, (602)
843-4337.

Brewmelsters Anonymous,
c/o Brian Miller, 202 E. Baseline #242,
Tempe, AZ 85283, (602) 345-2890.

Butthead Mt. Brewers Association,
c/o Perry Davidson, 3525 W. Lois Lane,
Flagstaff, AZ 86001, (602) 774-7513.

Old Pueblo Homebrewers,
c/o Jack Bates, 3463 E. 1st, Tucson, AZ
85716, (602) 325-5739.

Suds of the Pioneers,
c/o Slim Tighe, PO Box 144, Bisbee, AZ
85603, (602) 432-5242.

CALIFORNIA

Barley Bandits,
c/o Dick Reese, 105 S. Glendon St.,
Anaheim, CA 92806, (714) 630-6527.

Bay Area Mashers (BAM),
c/o Doug Ashcraft, 5998 Alhambra
Ave., Oakland, CA 94611, (415) 339-1816.

Big Dog Homebrewing Club,
c/o Gordon Ponce, PO Box 1069,
Livermore, CA 94550, (510) 449-5118.

Brew Angels,
c/o Ken Matzek, 602 S. Church St.,
Lodi, CA 95240, (209) 368-2525.

Crown of the Valley Brewing Society,
c/o Tom Estudillo, 1616 Orangetree Lane,
La Canada, CA 91011, (818) 952-1386.

Draught Board Home Brew Club,
c/o Charles Webster, 33039 Lake
Wawasee St., Fremont, CA 94555,
(510) 487-4274.

Foothill Fermenters,
c/o Dan Bell, 164 Maple St. Suite 5,
Auburn, CA 95603, (916) 823-8373.

Gold Country Brewers Association,
c/o Jim Long, 8385 Jackson Rd.,
Sacramento, CA 95826, (916) 386-2870.

Inland Empire Brewers,
c/o Carl Starkey, 2365 Palermo Ave.,
Upland, CA 91786, (213) 482-0443.

M*A*D Brewers,
c/o Dan Sullivan, 2010 Kingston
Place, Bakersfield, CA 93306, (805)
872-0843.

**Maltose Falcons Homebrewing
Society,**
c/o Bruce L. Brode, 22836 Ventura
Blvd. #2, Woodland Hills, CA 91364,
(818) 884-8586.

Monterey Bay Brewers,
c/o Lynne O'Connor, 106 Hagar
Court, Santa Cruz, CA 95064, (408)
459-0178.

Monterey Beer Nuts,
c/o Franz Broz, 1080 Majella Rd.,
Pebble Beach, CA 93953, (408) 375-0950.

Old Capitol Brewing Club,
c/o Christopher Howley, 418 Mills
Dr., Benicia, CA 94510, (707) 644-5517.

QUAFF,
c/o Rich Link - Beer & Wine Crafts,
460 Fletcher Pkwy., El Cajon, CA
92020, (619) 447-9191.

**Redwood Coast Brewers
Association,**
c/o Michael Byers, 707 Pelton Ave. #108,
Santa Cruz, CA 95060, (408) 426-3005.

San Andreas Malts,
c/o Russ Wigglesworth, PO Box
884661, San Francisco, CA 94188-
4661, (415) 885-1878.

San Joaquin Worthogs,
c/o Dale James, 2217 N. Prospect,
Fresno, CA 93722, (209) 264-5521.

**San Luis Obispo Brewing
Society (SLOBS),**
c/o Howard Gootkin, 1568 Frambuesa
Dr., San Luis Obispo, CA 93405, (805)
541-0713.

**Santa Clara Valley Brewers
Association,**
c/o Bob Hight, 433 California St.,
Santa Clara, CA 95050, (408) 247-6853.

Shasta County Sudsers,
c/o Raymond Ault, 4621 Balls Ferry Rd.,
Anderson, CA 96007, (916) 365-6284.

Sonoma Beerocrats,
c/o Nancy Vineyard, 840 Piner Rd. #14,
Santa Rosa, CA 95403, (707) 544-2520.

**Stanislaus Area Association
Zymurgists,**
c/o Micah Millspaw, 309 S. 6th Ave.,
Oakdale, CA 95361-4032, (209) 847-9706.

Stanislaus Hoppy Coppers,
c/o Wayne Baker, 1907 Central Ave.,
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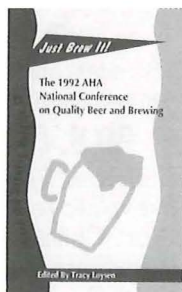
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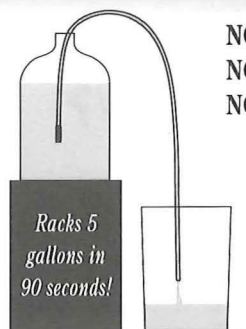
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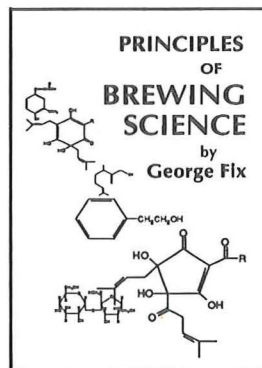
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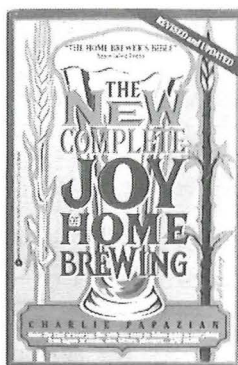


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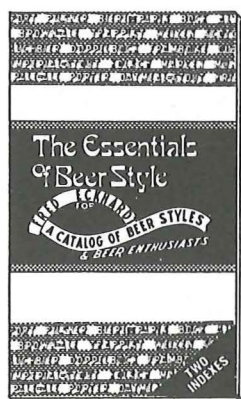
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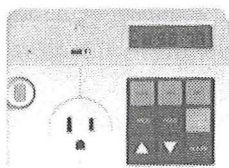
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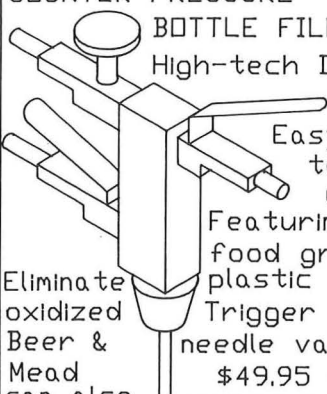
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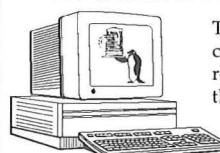
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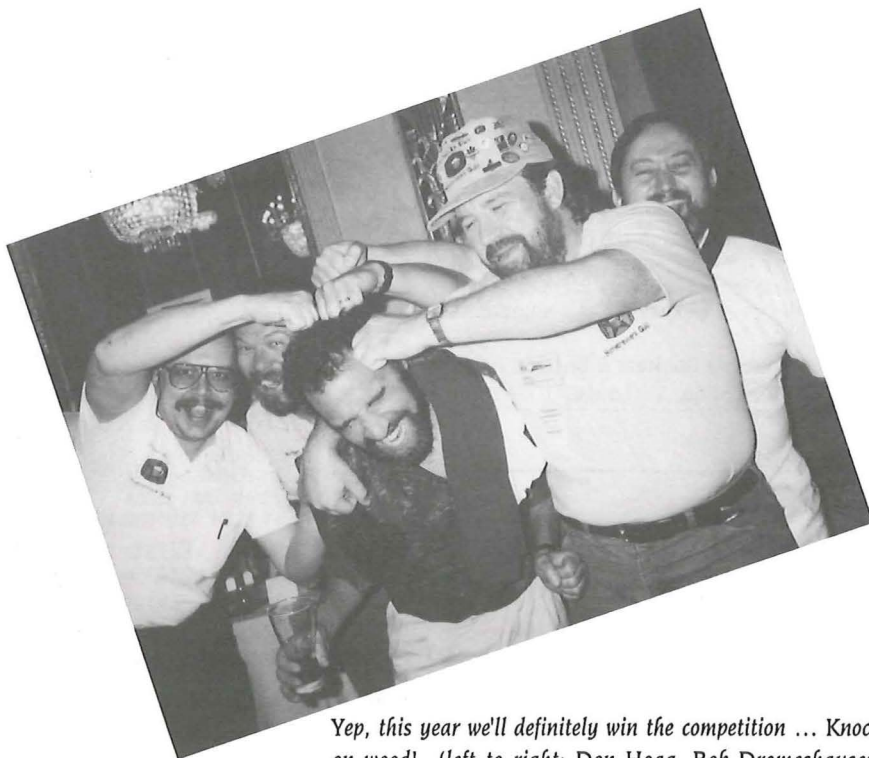
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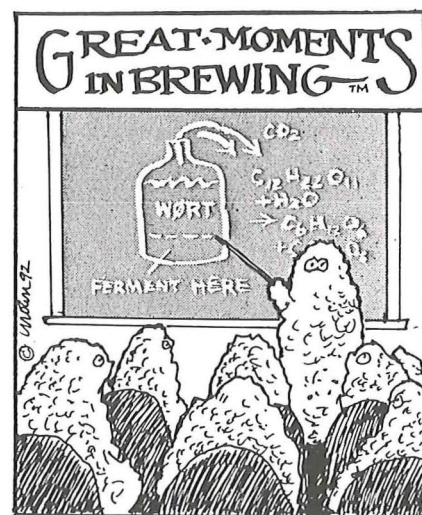
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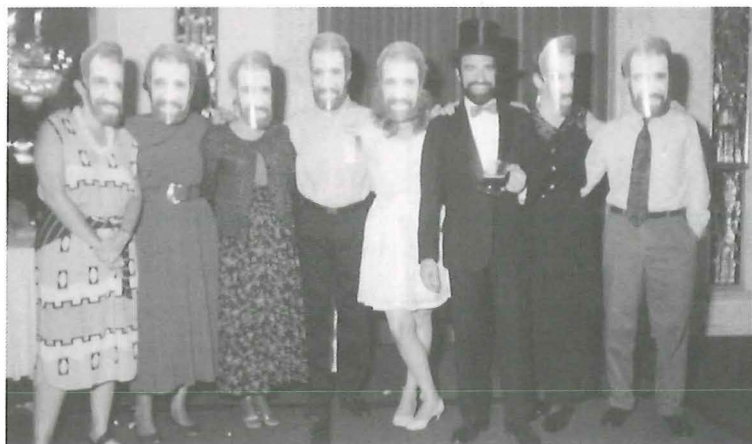
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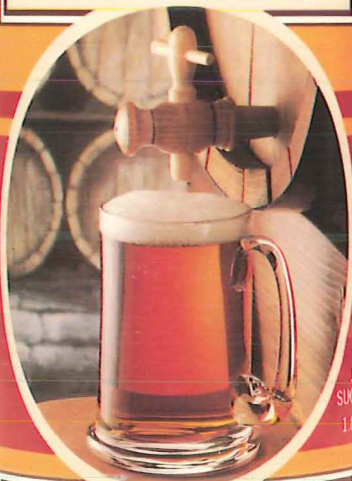
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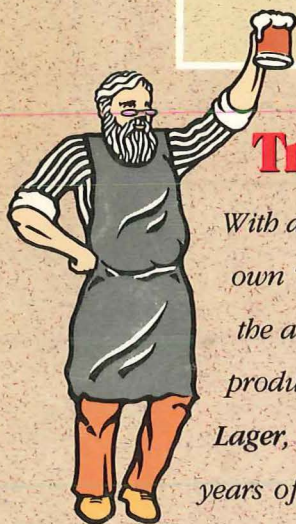
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