

THE MAGAZINE FOR THE HOMEBREWER AND BEER LOVER

ZYMURGY

PUBLISHED BY THE AMERICAN HOMEBREWERS

ASSOCIATION INC.

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SUMMER 1988

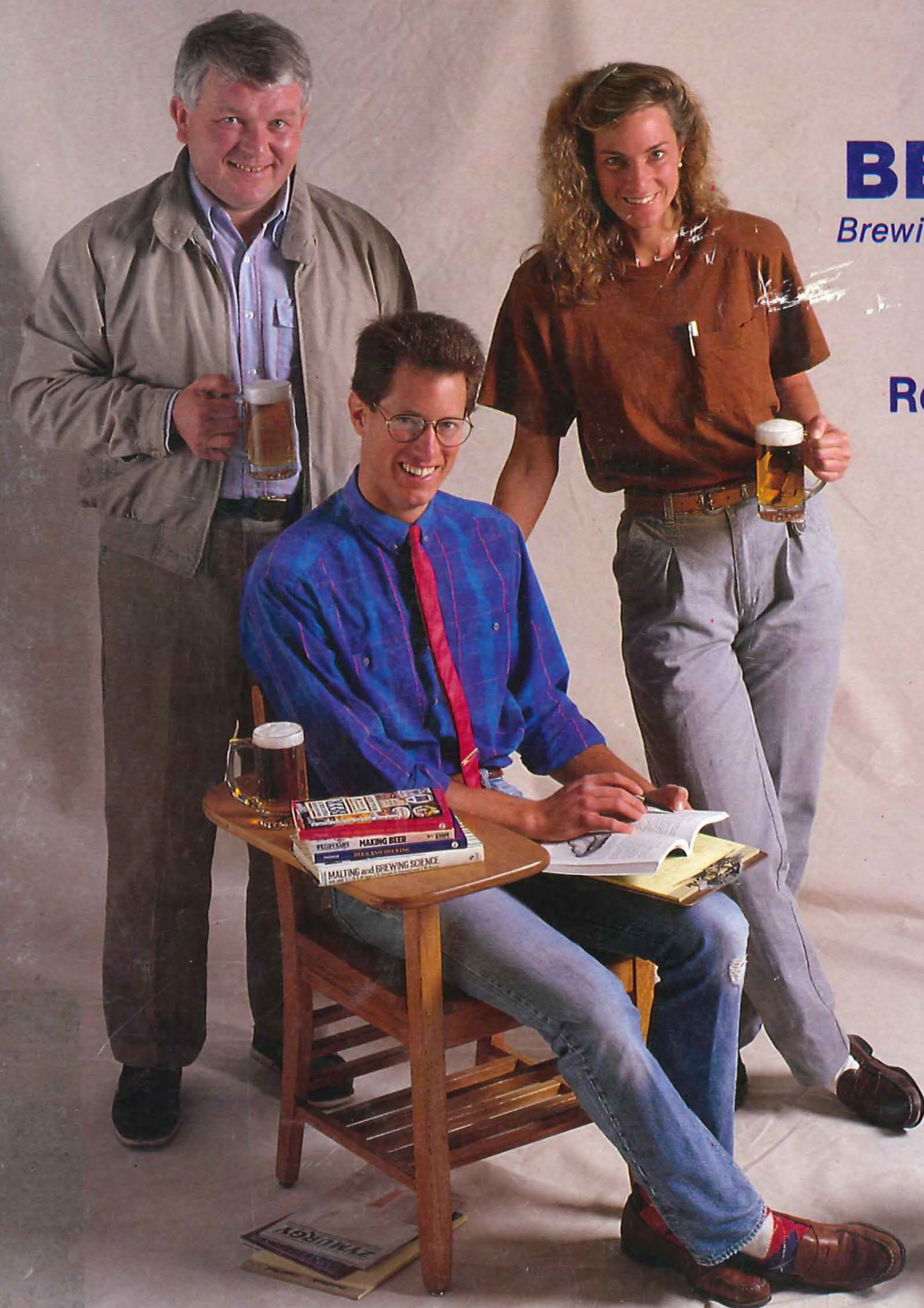
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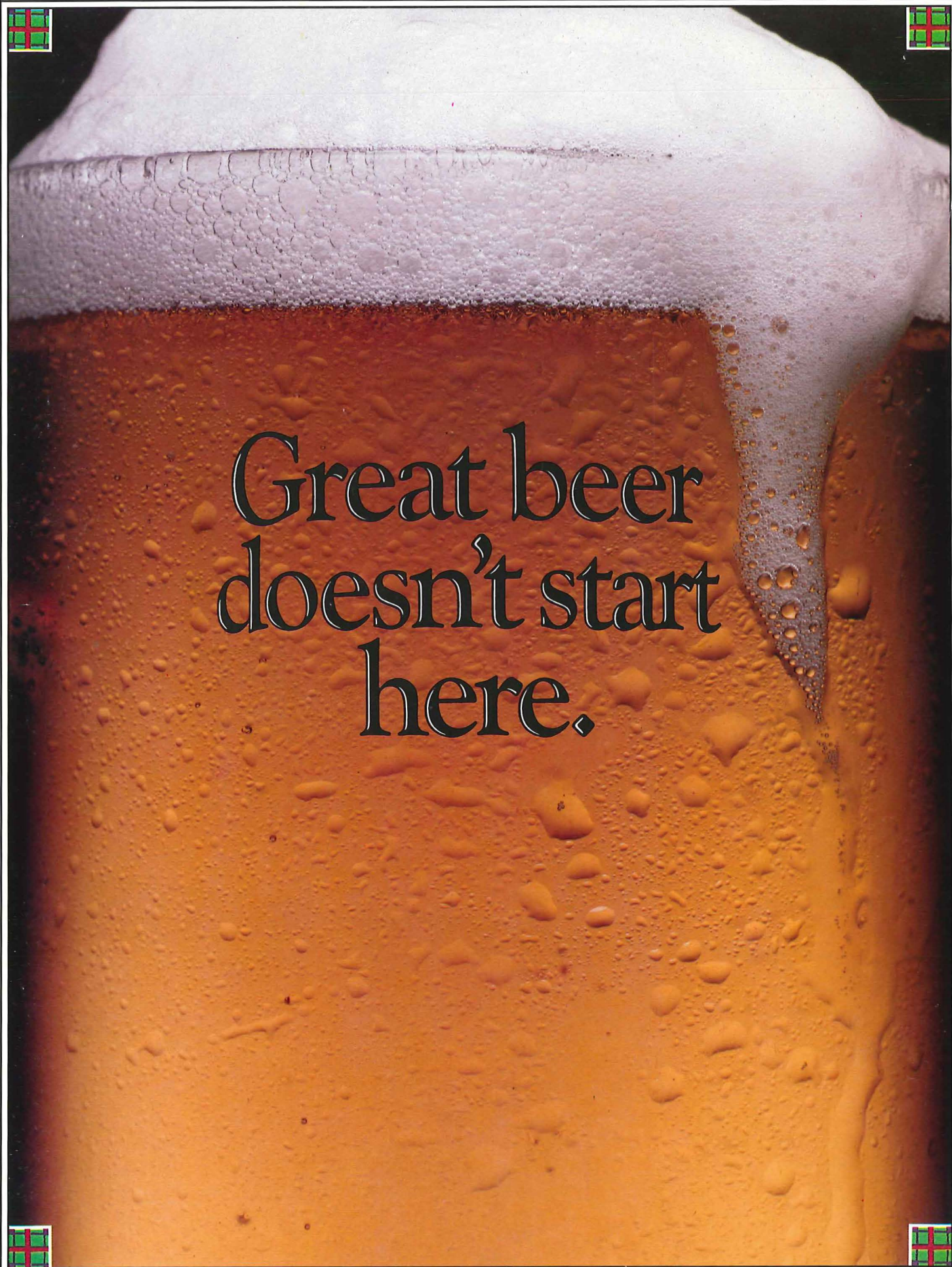
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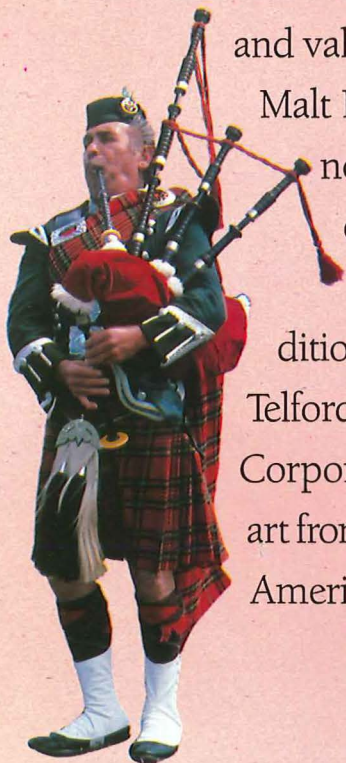
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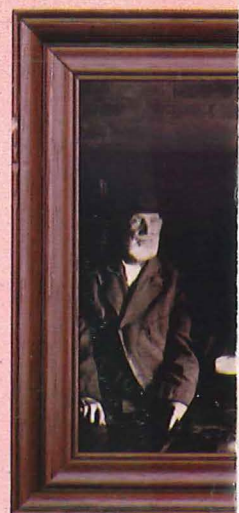
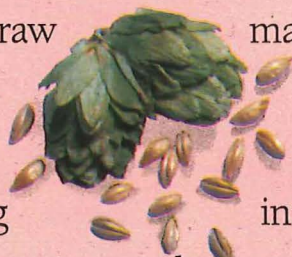
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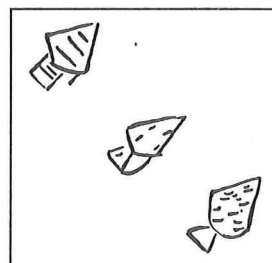
SUMMER 1988 CONTENTS

SPECIAL ARTICLES

- 17 Beer 101**
Brewing in the Classroom
By John C. Berry
- 22 Beer and the Origin of Cereal Grain Agriculture**
By Solomon Katz, Ph.D.
- 31 Pilgrimage to Chico**
A Visit to Sierra Nevada Brewing Co.
By Paul Farnsworth
- 36 Practical Tips for Homebrewers**
By Peter Blum
- 37 Scrubbing the Wort and Other Feats**
A homebrewer looks at professional methods
By Dave Miller
- 42 Roast, Roast, Roast Your Grains**
Excerpt from The Brewer's Workbook
By Randy Mosher
- 45 Principles of Beer Dispensing**
By L.Z. Creley
- 47 Vegetable Brews**
By Ralph Bucca



Page 13
Frank Camandy gets beer direct from the source.



Page 24
Sumerian beer symbols



Page 51
Summer brews

REGULAR FEATURES

- | | | |
|---------------------------|----------------------------|--------------------------|
| 5 Editorial | 19 Jackson on Beer | 55 World of Worts |
| 6 Association News | 21 AHA Sponsors | 56 Dear Professor |
| 8 Dear zymurgy | 49 For the Beginner | 59 Reviews |
| 12 Brew News | 51 Winners Circle | 61 Homebrew Clubs |

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EDITORIAL

CHARLIE PAPAZIAN

Your Right to Brew

Lots of people would love to take the privilege of brewing away from each and every one of us. In 1978, President Jimmy Carter signed a bill legalizing the homebrewing of beer in the United States. Now, 10 years later, the states of New Jersey, Georgia, Utah, Alaska, Oklahoma, Arkansas, Alabama, Missouri, West Virginia, South Dakota, Delaware and Michigan still prohibit homebrewing, despite efforts by homebrewers to decriminalize our hobby.

Those who are obstructing the way are the same kind of people who are in the national news today encouraging the quadrupling of excise tax on commercial beer (often referred to as "sin tax"), required printing of warnings on commercial beer labels (such as "Alcohol is a drug and may be addictive") and singling out and quadrupling occupational taxes on commercial brewers.

Consider this: There is no difference to a lot of people between homebrewed beer and commercially brewed beer — it is an alcoholic beverage. Well, there is one difference. A lot less homebrew is being made compared to the 178 million barrels of commercially made beer consumed last year in the United States. Homebrew is not enough to bother with — right now.

I've heard predictions of the boon it would be to homebrewing if excise taxes on commercial beer were increased (as they have been in Canada and the United Kingdom). Wrong. Maybe in the short term there would be more interest in homebrewing (to make cheaper beer). But with the present attitude taken by influential antialcohol people, if homebrewing ever did enjoy immense popularity we would see some very similar legislation restricting our right to homebrew.

We are looking at the very real possibility of some serious regulations on our right to brew. Special taxes may be levied on ingredients such as hops, malt and yeast. How about registration of homebrewers, or worse yet, regulations restricting the alcohol content of our homemade beers? From our perspective these things sound absurd and unenforceable. Besides, you might think, "Who cares, I'll brew it anyway." Yes, quite a few homebrewers would continue, but with regulatory

intimidation the art and hobby would suffer a serious decline. A decline in interest in homebrewing, and a decline in interest in quality beer.

Regulation would be a complete subversion of the respect we homebrewers have developed for beer qualities and the responsible enjoyment we encourage. Our legitimate and responsible enjoyment of beer with food or with celebration would no longer be recognized.

If you don't think this is possible, consider this: it happened in 1923 and it still persists in 12 states. In 1923, homebrewing was banned. People still brewed beer, but the respect for quality homebrewing and responsible enjoyment did not make a comeback for more than 60 years.

In 1988, our right to brew cannot be taken for granted. The most important point is that it is essential for us to stay informed of the issues that influence our privilege to enjoy beer. They are the same issues that can and will affect our right to brew. We must stay informed and persist in taking responsibility in helping others learn about the qualities of beer and brewing, as well as encouraging responsible use of beer as an alcoholic beverage.

The homebrewing community will have to become politically active only when we have not had the foresight and fail to take on the responsibility of being informed.

Stay informed. Foresee what could happen to your right to brew. Maintain a brewer's responsibility to improving the quality of beer and the quality of life.

THE ASSOCIATION OF BREWERS MISSION STATEMENT

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

ASSOCIATION NEWS

DEBBIE SMITH

Welcome to Association News, a new feature of **zymurgy** designed to keep you informed about activities of the American Homebrewers Association and its members. One of our most important commitments is to strengthen communication between the AHA staff and the Association's 6,000 members. In order to do this, we have initiated three additional ways to keep in touch.

Association News. This feature will be in each issue of **zymurgy**.

AHA Forum. Designed as a member forum, this meeting will be held in conjunction with the AHA National Conference. The agenda includes an announcement of the newly appointed Board of Advisers, a presentation on AHA programs and activities, and an open forum where AHA members can discuss ideas.

AHA Board of Advisers. The Board of Advisers has been established to support the AHA Staff in outreach to members, to learn about your ideas, concerns and needs. We are pleased to announce the following members of the Board of Advisers:

Judy Ashworth, Dublin, Calif.
Scott Birdwell, Houston, Texas
Andy Cebula, Arlington, Va.
Fred Eckhardt, Portland, Ore.
George Fix, Arlington, Texas
Jeff Frane, Portland, Ore.
Don Hoag, Saginaw, Minn.
Michael Jackson, London, England
Bill Murphy, Brookline, Mass.
Charlie Olchowski, Greenfield, Mass.

National Homebrew Competition

The AHA Staff is gearing up for the National Homebrew Competition. Last year's competition included more than 700 entries and this year we anticipate more than 1,000 entries.

The numbers are staggering—3,000 bottles of beer to unpack, store at the right temperature, record and judge. It's an awesome competition and one of which the AHA Staff is very proud!

AHA National Conference

We are looking forward to hosting AHA members and guests at the 10th Annual AHA Conference. Beer enthusiasts from around the world will gather at the Denver Regency in June. At this year's conference we will celebrate the AHA's 10-year anniversary with a number of special activities. We are busy gathering 10 years of AHA memorabilia for display, and the staff is busy gathering fuel for roasting Charlie Papazian at the Anniversary Banquet.

Travels of Charlie

Charlie has been on the road, or rather in the air, this spring, attending homebrewing and beer-related events. He has traveled more than 12,000 miles to six American cities from coast to coast. "I certainly enjoy all the brews that I'm offered, but the most important reason for me to get out and about is to meet homebrewers and members of the AHA. In our 10th year the association has made a commitment to listen to members. I want people to share their ideas about where the hobby of homebrewing should go and how the association can better meet members' needs."

With barely enough time to compost his hop garden and brew new batches of beer at home, Charlie's schedule has taken him to Portland, Ore., to attend the Oregon Brew Crew Regional Homebrew Conference; San Diego to address a convention of beer wholesalers about homebrewing and microbrewing; Orlando, Fla., for the

Home Wine and Beer Trade Association annual conference; Los Angeles for stories for **zymurgy's** 1988 Special Issue; Phoenix to judge homebrew and address homebrewers at their annual state meeting; and Kansas City to attend the Homebrew Alliance's annual conference.

"It's always good to be home and brew a batch of beer—but I really enjoy meeting and talking 'beer' with homebrewers, wherever they are. I hope to be making more visits to homebrew clubs and other homebrew gatherings throughout the year."

Why do you Brew?

How long have you been brewing? What types of things do you like to see in **zymurgy**? Two thousand AHA members were asked these and other questions in a survey mailed out in early March. The staff is in the process of analyzing the overwhelming survey responses. Results of this survey will be used to enhance programs and activities to better serve AHA members. Look for survey results to be published in **zymurgy** later this year.

Sanctioned Competition Program

Based on recommendations and suggestions from a number of members, a new Sanctioned Competition Program is now in place. Since announcing the new program in February, we have had five AHA sanctioned competitions and a number of them are in process. Competition dates are announced in the **zymurgy** calendar of events and outcomes are listed in Brew News. Information on the new program is available from our office. We encourage you to try it; we think we got rid of the undesirable flavor.

National Beer Judge Certification Program

The National Beer Judge Certification Program (BJCP), co-sponsored by the American Homebrewers Association and the Home Wine and Beer Trade Association, recognizes individuals who have a firm understanding of the brewing process, flavor components in beer, and the historical development of different world beer styles through written examination, flavor evaluation and hands-on experience. The program includes five status levels: Recognized, Certified, National, Master, and Honorary Master (temporary designation for those serving on the BJCP Committee). More than 240 individuals have taken the three-hour examination since the program began in May 1985. This year five people will be recognized at the AHA Conference for being the first to achieve National Judge status. They will be presented with certificates of accomplishment and a silver BJCP pin at the Thursday luncheon.

Thanks to Edme, the English malt extract manufacturer, these five men will be given financial support for expenses to the conference. Edme also has funded the BJCP National Judge pins. Richard Holt, Edme sales director, said "I am delighted for Edme to be a sponsor and I believe the BJCP will help advance the interest of homebrewing in America, and will give a greater understanding and pleasure to all who participate in it."

Following are the five judges to be recognized at the conference.

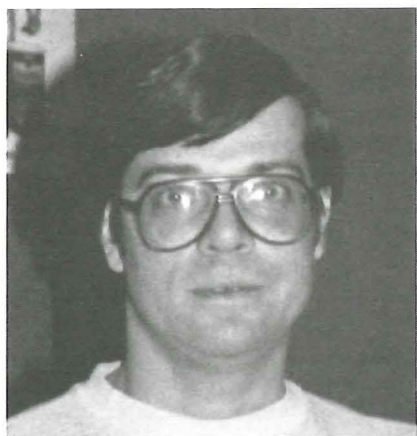


PHOTO BY CHARLIE PAPAZIAN

Scott Birdwell, a homebrewer

for 10 years, is owner of DeFalco's Home Wine and Beer Supplies in Houston, Texas, and is a member of the Foam Rangers Homebrew Club. His experience as coordinator for the Dixie Cup Competition for the past five years has "brought home to me the importance of consistency and standards in the judging process."

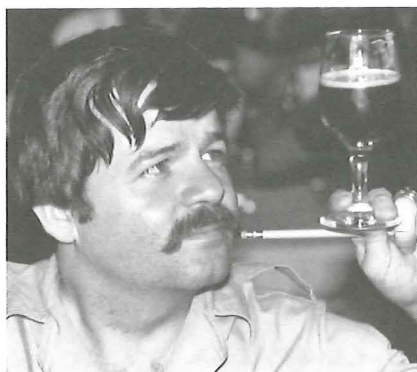


PHOTO BY DAVID BJORKMAN/NATIONAL NEWS SERVICE

Richard Gleeson is a paralegal professional in Center City, Philadelphia, Pa., and a member of the Homebrewers of Philadelphia and Suburbs (HOPS). He is celebrating the fifth anniversary of throwing his first batch of homebrew down the drain. That experience convinced him of the need to study and network with other homebrewers instead of simply following directions on the can.

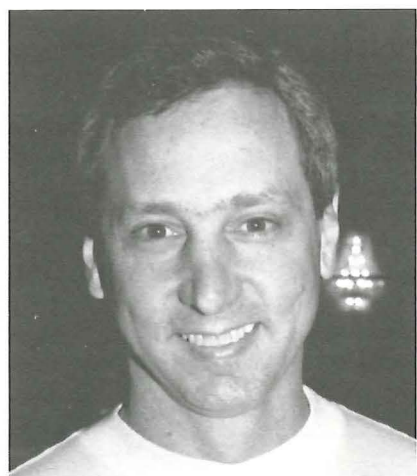


PHOTO BY CHARLIE PAPAZIAN

Bill Pfeiffer is public school administrator for the Taylor School District in Michigan and has been an active brewer since 1979. He has won

numerous awards for both beer and winemaking excellence, and often lectures on topics related to beer and brewing at the University of Michigan.

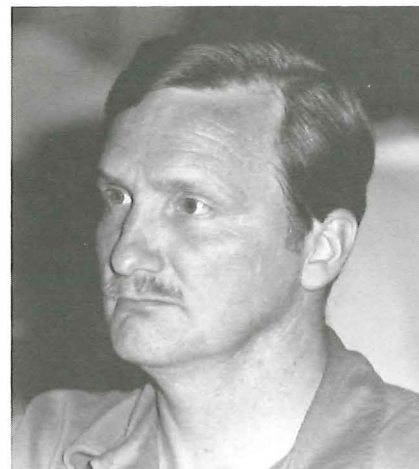


PHOTO BY DAVID BJORKMAN/NATIONAL NEWS SERVICE

Dave Norton, a firefighter in Kenosha, Wis., has been brewing for five years, and his father was a brewer during Prohibition. "I was always intrigued with the activity that made my Dad do something he shouldn't be doing."

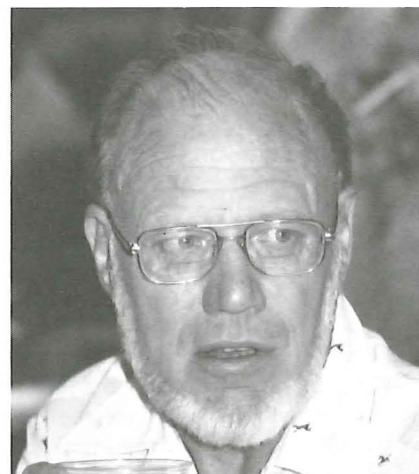


PHOTO BY DAVID BJORKMAN/NATIONAL NEWS SERVICE

Ted Whippie, a retired wood scientist in Newtown, Conn., is a member of the Underground Brewers Homebrew Club. Ted is a lifelong beer drinker, going back to wartime 3.2 percent Navy beer. For five years he has homebrewed beers that regularly place well in competitions. He was one of the first BJCP test takers.

DEAR ZYMURGY

OUR READERS

Keeping Cool

The following is a letter to Greg Walz, author of "Boiling Methods and Techniques," published in zymurgy Winter 1987 (Vol. 10, No. 5).

Dear Greg,

Bravo! It's amazing how often the simplest answer is overlooked when one is involved in the complexities of a problem. You, my friend, have supplied the answer to one such problem for me. I refer to your article in the winter edition of *zymurgy*.

If you look at a map of Louisiana you will see that Lafitte (named after the pirate) is almost due south of New Orleans. This puts me about a 25-minute boat ride from the Gulf of Mexico. The majority of the time we have high temperatures and high humidity — great for bacteria. This causes me considerable apprehension because it sometimes takes six to eight hours for my wort to cool enough to pitch the yeast. I have tried many methods of cooling the wort, with varying success, but never thought of getting the top-off water ice cold before adding wort to the primary!

I use artesian spring water that is sodium free, polished by micron sieves, activated carbon, and ozonated. I believe this to be pure enough, so I don't boil. By the time I finished boiling my wort the freezer-chilled water was 40 degrees F. This, combined with the hot wort, brought the primary temperature to a near perfect 80 degrees F. Ready to pitch! No waiting time! I relaxed, didn't worry, and after pitching the yeast had a homebrew in your honor.

Thanks from Cajun land,
Dennis Rapp
Lafitte, Louisiana



Solstice Ale label designed by Jeff Bates, Bellingham, Wash., for Steven Smith of Seattle.

Holiday Brew a Hit

Dear *zymurgy*,

My first year of brewing has just ended. To celebrate, I brewed a special batch of spiced ale (with cinnamon, honey, ginger and orange peel).

The enclosed label was designed by my friend Jeff Bates of Bellingham, Wash. Both the label and the beer were big hits during the holiday season. I think a tradition has been born.

Sincerely,
Steven Smith
Seattle, Washington

P.S. The symbols at the top of the label are old alchemy symbols for amalgam, water and fermentation, from left to right. TLC is Tender Loving Care. PFM is Pure F___ing Magic.

Weight vs. Measures

Dear *zymurgy*,

I would like to comment on a statement made by Diane Keay in her article "Many Choices In Making Better Beer" (*zymurgy*, Fall 1987 Vol. 10, No. 3). She states, "Or use dry malt extract as a direct substitute for corn sugar in any recipe—cup for cup and pound for pound." I think that she is only half right.

In the first place, a cup of extract weighs 0.6 pounds and a cup of corn sugar weighs 0.5 pounds. That's a ratio of 6:5 on a weight basis. So much for cup for cup and pound for pound. Furthermore, on an equal weight basis corn sugar has more alcohol-producing potential than malt extract.

In the Professor's answer to David Genschaw's question about using malt extract for priming (*zymurgy*, Spring 1987 Vol. 10, No. 1), he recommends a ratio of 5:3 on a volume basis, which works out to a 2:1 ratio on a weight basis. This makes more sense to me and is the ratio I use successfully when substituting extract in recipes calling for corn sugar.

Another minor point—I always proceed on a weight basis. A cup of something is not a very scientific measurement and can be 5 to 10 percent off because of air pockets, packing, non-standard cups and carelessness.

Sincerely yours,
Paul F. Lewis

Your observations are accurate, for the ingredients you measured. We measured the same and came up with a cup of corn sugar weighing 0.38 pounds and a cup of dry malt weighing 0.28 pounds. It appears that different

malts and grades of corn sugar have different densities. For a beginning brewer simplicity and ease of calculations are somewhat more inspiring for those first few batches of beer. No bad beer is made either way. For simplicity one can generally substitute 1 1/4 cup "spray dried" light malt extract for 3/4 cup corn sugar.

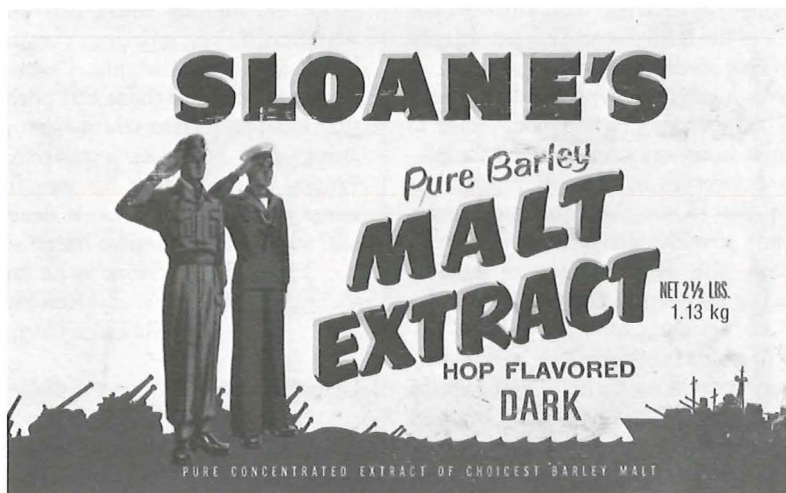
—Editor

Homebrew Clearing House

Dear **zymurgy**,

Two things mentioned in Dear Professor hit home with me. The first was flat beer (I live in central Florida), which has happened more than once. Looking back to my notes, I found it correlates to my using unboiled tap water. Thanks for the tip. A second letter mentioned "banana yeasts." A batch of amber ale I made last March with Red Star ale yeast tasted like bananas. I'll never use Red Star again. On the other hand, having a banana tree in my yard, I fed a couple of quarts of my undrinkable "Banana Brew" to my tree—surprisingly it produced bananas that tasted like. . . Naaa. Now that 10 months have passed since brewing this batch, I chilled a couple of bottles and found no trace of bananas. Now I'm upset that I fed so much to my tree.

One final note—this is a second request for **zymurgy** to act as a clearing house to form homebrew clubs. I'm 30 years old, married, have two kids and have been homebrewing for three years. I don't have time or money to search out other homebrewers in my area. The nearest homebrew shop is 60 miles away and I know of no other homebrewers in my town. My guess is that at least one other person



Sloane's Malt Revisited

Dear **zymurgy**,

Thanks for your great magazine, but you missed one in the Winter 1987 issue. Stan Pryszazny of Alberta had written you about a can of Sloane's Malt Extract, and you said your research indicated that Sloane's was manufactured only until sometime in the 1930s.

Enclosed is a battered can of Sloane's. My shop carried this brand until it became unavailable about a year ago. I didn't have a can left to send you, so this one was donated by my friendly competitor, Leonard Cox, who owns Leonard's Wine and Beer Supply in Hesperia, Calif.

Sloane's was about the last of the old-style Prohibition extracts. The malt quality wasn't remarkable, but the label was great. A World War II soldier and sailor stand at attention, surrounded by the bristling guns of tanks, artillery and a warship. The label doesn't say a word about beer.

This was a popular extract with American workers in the Middle East. Presumably, the Arab customs officers read the label describing Sloane's as "a body builder for infants and children and very helpful for the nursing mother," and didn't know it was for making homebrew. We

never lost a shipment of Sloane's to Saudi or Kuwaiti customs.

Maltingly yours,
Sam Wammack
The Home Brewery
Fontana, California

Dear **zymurgy**,

I've sent you a can of Sloane's Dark Malt Extract. You can brew with it, put it in a museum or smoke it if you want. I got mine when I first stocked my store a year and a half ago. It came from Wines Inc. in Akron and I originally had full cans of light and dark. It was being discontinued at the time. Also purchased and still in stock was Gold Medal Stoutex (also included) made in Vancouver, B.C. With nothing more than idle curiosity I have been including each of these in my brews as sugar-replacing fillers and they seem to have been fine. I made one batch recently with one each of Gold Medal Stoutex, Sloane's Dark, Premium Dark, and a 2.2-pound Mountmellick Stout Kit (also discontinued). With some finishing hops it was nice, old-fashioned, low-budget dark beer.

Have a good one,
Jim Plitt
Stone's Throw
Morgantown, West Virginia

Editor's note: See Colonel John's review of Sloane's on page 59.

around here (probably more) subscribes to **zymurgy**. You know who it is, have the address and communicate with five issues of **zymurgy** a year. I may live a block away from this person. Advertising in the local paper to form a homebrew club won't help—they subscribe to the other paper in town. But I know they read **zymurgy**. Doesn't it make sense that you could further the Renaissance of Homebrewing by getting us together?

An article could be written explaining this mission along with a participation/release form. Then I could receive a list of others in the area and the rest is up to me. I realize that this could be a major undertaking, but all participants are subscribers to **zymurgy**—so you already know they're committed to the American Homebrewers Association, homebrewing and the advancement of both.

Even if you need to have a nominal charge to cover computer time, paper and postage, I think you'll have an overwhelming response—and will meet, "...the collection and dissemination of information..." in the Association of Brewers mission statement.

Now, at the close of this letter, I will crack a bottle of homebrew in the hopes that **zymurgy** in its infinite wisdom will find a way to accomplish this important step in the advancement of homebrewing.

Sincerely,
Dan Stedem
Lakeland, Florida

Access to our membership list is available to members. Contact our circulation director for details on how you can reach AHA members in your area.

— Editor

Finding Small Carboys

Dear **zymurgy**,

I am writing in reference to the letter from William Wilson Beckett Jr. published in the Winter 1987 issue of **zymurgy**. A number of years ago I obtained several two-gallon carboys

from a friend who works for the railroad. Evidently these are used in water coolers on passenger trains and in the caboose of freights. I know of no regular outlet for these but perhaps a few local inquiries could turn something up. So "take a railroader to lunch." I use mine for exactly the same purpose Mr. Beckett describes, i.e., small experimental batches.

Hope to be helpful,
Ron Hudson
Salt Lake City, Utah

Dear **zymurgy**,

In the Winter 1987 issue of **zymurgy**, W.W. Beckett Jr. was interested in obtaining 2 1/2- to three-gallon glass containers for experiment-

at liquor stores are sold in four-liter wine bottles and they are slightly larger than a gallon.

- You can make a smaller batch of beer for those who want to experiment or desire a smaller quantity of beer.

- Airlocks can be easily screwed on to these four-liter bottles.

Pat Greene
Fortuna, California

Dear **zymurgy**,

I have some information for William Beckett on smaller carboys. I have observed a three-gallon carboy being used by a northern California bottled-water company named Advanced Environmental Systems. The

carboy has a rectangular shape with a built-in handle, but is plastic rather than glass. If you wish to contact the company, their Tracy office phone number is (209) 836-4545.

Sincerely,
Thomas Altenbach
Tracy, California

Dear **zymurgy**,

In response to William Beckett Jr.'s letter in the Winter 1987 issue concerning the availability of small carboys, I have seen three-gallon carboys at a hardware shop in Manhattan, and was later quoted a retail price over the phone of \$13.95 each. They said they keep them in stock. The name of the store is

Berger's Hardware Co., 574 Ninth Avenue, New York, NY 10036; phone: (212) 563-3981. I cannot say whether this merchant will be willing to ship. It might be worth it to inquire, if only to locate their supplier.

Sincerely,
Joseph Kubera
Staten Island, New York

Pointers on Priming

Dear **zymurgy**,

In reading brew-club newsletters and various homebrew-oriented magazines, I have been amazed to see various writers seriously endorsing the Prohibition-era technique of add-



Flightless Fury Brown Ale label created by Stephen Carroll, Lansing, Mich., on a Macintosh computer.

ing with half five-gallon recipes. I don't know where he can obtain these smaller carboys, but I have an idea about how to do the half batches. Do the 2 1/2 gallon primary fermentation in a 5-gallon carboy. After two to three days when the initial fermentation collapses, rack down and top up into two four-liter wine bottles. These two bottles handle your 2 1/2 gallons just about right. This method will produce about a case of beer. The advantages of this method are:

- All fermentation and lagering will be in glass, which allows effective clean-up and easy observation.

- The four-liter wine bottles are easily obtained. Many of the approximate one-gallon bottles of wine found

ing priming sugar by the 1/2 teaspoon to each bottle. I was sure that someone would comment on the inherent dangers and inefficiency of this procedure, but nobody has. . . until now.

1. This is a pain in the "patootie" (whatever that is). Forty-eight to 50, 1/2-teaspoons of sugar is messy, time-consuming and dangerous to the health of your beer (see below).

2. Sugar is not, repeat not, to be considered sterile. So why don't we use a dirty spoon (to add to the "complexity" of the beer you are going to bottle)?

3. The Spring 1987 (Vol. 10, No. 1) issue of **zymurgy** included a column endorsing the 1/2-teaspoon sugar per bottle with the added twist of using a funnel. Unfortunately, nothing was said about sterilizing either funnel or sugar. . . tch tch tch. But hey, we all make mistakes, don't we? All I have to do is taste the batch of brown ale that I loaded up with lacto-b to restore my humility!

4. In the same column, an alternate method of priming was discussed. This advocated sterilizing sugar by dissolving in very hot water. But then, alas, went on to recommend stirring to thoroughly mix the sugar solution into beer. Homebrew is subject to sufficient opportunity for oxidation without stirring more oxygen into it at bottling time!

Therefore, I suggest that readers consider priming beer by the simple technique of sterilizing priming sugar by stirring it into boiling water immediately upon removing from heat source. Either chill, cool or add to small quantity of beer as you rack it into "priming container" prior to bottling.

The important and simple goal is to get the sterilized priming solution into a container, then add beer to solution. Racking the beer into priming solution will thoroughly stir them, without adding oxygen or (possibly) an undesirable "tenant" to your beer.

Cheers, from a California Amateur
Zymurgist,
Bill Kalberer
The Chico HomeBrew Shop
Chico, California

P.S. I like **zymurgy** almost as well as zymurgizing at home! You do a good job.

Beer Samples

Dear **zymurgy**,

I have been reading the excellent analyses of beer flavors in the Troubleshooting Special Issue of **zymurgy** and the transcripts of the 1987 national conference. Gustatory sensation can only be partially appreciated through the printed word. However, I would love to see a collection of beer samples demonstrating the common flavor defects (too bad the wonderful name "St. Egregious" has been taken).

A standard ale or bitter could be brewed with diacetyl, fusel alcohols, sulfur flavors, esters, oxidation and other intentional problems, or perhaps some of the compounds could be included in separate containers to be added to the standard beer in known quantities. This would require a sophisticated laboratory and capacity for making pilot-size batches of beer, but it might be a commercially viable product. I would be willing to pay for the opportunity to definitively identify elements of beer flavors, and I am sure homebrewing clubs would be customers for such a product.

I think one of the major sources of off-flavors in homemade beers comes from lack of attention to trub elimination. Rapid cooling of boiled wort, settling of hot and cold brew trub with decantation of the clear wort has been a major improvement in my process. I experimented with a batch of dark lager, fermenting the clear wort and the fraction with a high concentration of settled trub separately. The high trub fraction had a weaker larger

bubble krausen completely covered with dark brown greasy, shiny foul-tasting gunk. Secondary fermentation activity ceased within a week compared to two months for the clear fraction. The flavor was markedly and unpleasantly astringent and definitely inferior compared to the very respectable clear fraction. Trub elimination seems underemphasized in homebrew literature.

Sincerely,
Chuck Jackson
Bellevue, Washington

Gregory Noonan has developed a collection of beer samples and will be giving a talk about them at the 1988 AHA National Conference. Also, we're in the process of arranging for an article on trub elimination.

Thanks for the great ideas.

—Editor

Homebrew Pen Pal

Dear **zymurgy**,

A favor. I would like to hear from AHA members in Germany and share brewing knowledge and experience gained during our overseas hardship duty in a distant and foreign land.

My address is: Charles Smith, ACSSPO, 21st Supcom, APO, NY 09325. I work in Kaiserslautern and live in Landstuhl.

Thank you very much.

Sincerely,
Charles F. Smith
LTC, U.S. Navy
Winner, 1987 Bock

MOVING?

Please indicate your new address in the space below and affix your present mailing label here.

Name

Address

City

State / Province

Zip / Postal Code

Country

Mail to: American Homebrewers Association,
PO Box 287, Boulder, CO 80306-0287 USA.

BREW NEWS

MIKE SANDROCK

NATIONAL MICROBREWERS CONFERENCE

The National Microbrewers Conference, the only event of its kind aimed specifically at micro- and pub-brewers, is taking place Aug. 31 to Sept. 3 at the Drake Hotel in Chicago. Featured speakers include Fritz Maytag, Anchor Brewing Co., and Dan Carey, brewmaster and consultant. For more information contact the Institute for Fermentation and Brewing Studies, PO Box 287, Boulder, CO 80306, (303) 447-0816.

MIDWEST BREWERY TOUR

The Institute for Fermentation and Brewing Studies is putting together a tour of 10 Midwest breweries that range in size from a 1,000-barrel brewpub to a 50,000-barrel regional

brewery. The tour will start Aug. 26 at August Schell Brewing Co., New Ulm, Minn., and end Aug. 30 at the Drake Hotel in Chicago the day before the Microbrewers Conference begins. For more information contact the Institute for Fermentation and Brewing Studies, PO Box 287, Boulder, CO 80306, (303) 447-0816.

HOMEBREW HITS THE AIRWAVES

Two northern Minnesota homebrewers are bringing the gospel of homebrewing to the thirsty masses via KAXE radio in Grand Rapids. Jerry Bourbonnais and Steve Benson host a monthly show called "The Brewpot" that covers every aspect of beer and homebrewing from basic ingredients and equipment to histories and recipes of the more obscure beer styles of the world.

The show started out as a fund-

raiser in the fall of 1986, and became a regular feature of Jerry's monthly air shift because of popular demand. "We are always looking for some interesting new product or other development to add a little spice to the show," said Steve, who has 15 years experience in homebrewing, and has taught classes and written articles on the subject.

One possible future development would be recording "The Brewpot" for distribution to other areas. For further information write to Jerry or Steve in care of Northern Community Radio-KAXE, 1841 E. Highway 169, Grand Rapids, MN 55744.

THE MOST EXPENSIVE PINT IN THE WORLD

England's Harold Merrett, 75, is selling three pints of Prince's Ale that were made in 1929 when the future King Edward VIII visited the Burton-upon-Trent headquarters of Bass. He expects to get about \$900 a pint.

In 1972 two bottles of Prince's Ale sold for about \$1,500, and four years later the price went up again, prompting Harold to test the water by putting his ale on the market.

"Only 300 bottles were produced for the Prince of Wales in 1929, and it is just about the rarest drink in existence," Merrett said. But he won't be hopping mad if they don't sell. "I've had the bottles for a long time and I won't mind if I don't get rid of them."

ANGOLA MOVES TO THE BEER STANDARD

Because the local currency is largely worthless, most foreign companies in Angola, a former Portuguese colony on the southwest coast of Af-



Steve Benson (l) and Jerry Bourbonnais (r), sending the gospel of homebrewing out over the airwaves in Grand Rapids, Minn.

rica, pay their employees mainly with imported beer.

The beer is then traded on the black market for fruits, vegetables and meats in *candongas*, open-air markets on the edge of the large towns. Government officials value the local currency, the *kwanza*, at 29 for \$1. But in the *candongas*, the rate soars to 2,000 *kwanza* per dollar.

"Our messengers always go to Rio or Lisbon for their holidays," one international aid worker said. By selling two cases of beer on the black market, Angolans can earn enough *kwanza* to buy a round-trip airline ticket to Lisbon.

Wonder what a case of homebrew would be worth?

ODD NAME FOR NEW BREW

The Bull Mastiff Brewery, founded in 1987 in South Wales, has a strong ale called "Son-of-a-Bitch."

Homebrewer Bob Jenkins blames his dogs, which are bull mastiffs, for the odd names. The dogs are featured on the brewery logo. Besides Bull Mastiff Bitter and Best Bitter, Jenkins barks out Ebony Bitch.

The brewery is using the former Monmouth Fine Ales plant, and produces four barrels of brew a week.

COLORADO CHEMIST WINS HEINEKEN AWARD

Thomas Cech, a biochemist at the University of Colorado at Boulder, has been named winner of the Heineken Award, the most prestigious scientific prize in The Netherlands.

Named for the late Dutch philanthropist and brewery magnate, H.P. Heineken, the award carries a cash prize of \$130,000 and is given every

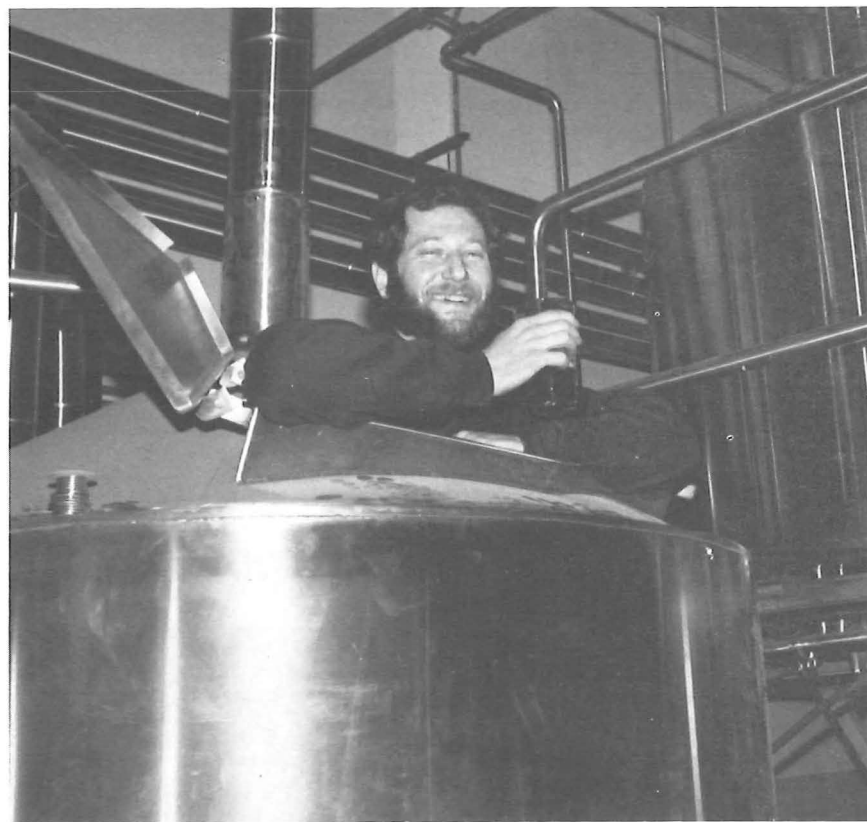


PHOTO BY CHARLIE PAPAZIAN

It doesn't get any fresher than this! Brewmaster Frank Camandy soon will be brewing a Berliner Weisse style of beer at Heathman Bakery and Brewpub in Portland, Ore.

three years. Two of the eight recipients of the award have gone on to win Nobel Prizes.

"The day I received the phone call from Holland, I celebrated with a case of Heineken and Champagne," Cech said. "I'll use some of the award to buy Boulder Beer and a little bit of Heineken."

Cech said beer has been important to biochemists for a long time. "The early Heinekens were biochemists concerned with improving cultures of yeast."

BOTTOMS UP, COMRADE

Glasnost must be working — for the first time a Soviet beer is being exported to the West.

Zhiguli, the most popular beer in the Soviet Union, is available in half-liter bottles. This "everyday" beer is brewed and bottled in a state brewery in Moscow.

The Soviet brewing industry is the fourth largest in the world, but the roughly 1,000 breweries are unable to

meet the demand in a country where beer drinking is on the rise.

THE GREAT BRITISH BEER FESTIVAL RETURNS TO LEEDS

The Great British Beer Festival will be Aug. 2 to 6 at the Queens Hall in Leeds, the site of the 1981 and 1982 festivals. This year's event will feature more than 200 real ales, wide selections of real perry (cider made with pears) and cider, an array of foreign beers, entertainment and pub food.

For more information write CAMRA, 34 Alma Rd., St. Albans, Herts AL1 3BW, England.

PLASTIC BOTTLES TO BE STAMPED FOR EASIER RECYCLING

The plastics industry will spend about \$4 million coding plastic beverage bottles with a stamp to allow for easier recycling. About 70 percent, by

weight, of the 22 billion large-sized beverage bottles made from polyethylene terephthalate, or PET, potentially will carry the code. Currently 20 percent of all PET bottles in the United States are recycled.

AMERICAN MEAD ASSOCIATION GOING STRONG

The American Mead Association will publish an expanded *Meadmakers' Journal* in October, and send

out two informal *Meadmakers' Letters* in March and June.

The association's newsletter is informative, well-written and worthwhile. Articles in the most recent issue include "Virginia Winemakers Target Market," "American Mead—A Call to Quality," the history of mead in the Americas going back to pre-Columbian times, and recipes, books, publications and organizations of interest to mead lovers.

The association is a non-profit organization dedicated to promoting the production, consumption and

appreciation of mead. Anyone signing up as a member will receive all the publications for the year, regardless of which month the \$10 membership fee is sent. For memberships and subscription information, contact the American Mead Association, PO Box 206, Ostrander, OH 43061.

BAVARIAN BREWERS ASSOCIATION ELECTS PRESIDENT

Franz Inselkammer of the Ayinger Brewery in Bavaria has been

Lyon's Brewery Depot Down . . . But Not Out

On the night of Dec. 21, Judy Ashworth's Lyon's Brewery Depot in Sunol, Calif., burned to the ground. The tavern, housed in a hundred-year-old building, was well known for a wide variety of draft American craft brews, and its fine atmosphere. The uninsured building was gutted.

In an effort to raise funds to revive the Depot, the Livermore, Pleasanton and Danville Lions Club held a Judy Ashworth Beer Tasting Benefit on Feb. 14 at the Sunol Valley Golf Club.

Twenty-six breweries, mostly micros and brewpubs, were represented at the beer tasting. Boulder Brewing Co. of Colorado and Young's Brewery of England were the only brewers from outside California at the tasting. The list of California breweries represented includes Saxton Brewery, Santa Cruz Brewing Co., Hogshead Brewpub, Tied House Brewery and Cafe, Anchor Brewing Co., Xcelsior Brewery Inc., Sierra Ne-



Judy Ashworth at the original Lyon's Brewery Depot, Sunol, Calif.

vada Brewing Co., Sherwood Brewing Co. (Saxton's brewpub), Thousand Oaks Brewing Co., Stanislaus Brewing Co., Triple Rock Brewing, Buffalo Bill's Brewpub, Napa Valley Brewing Co., Mendocino Brewing Co., Pacific Coast Brewing Co. (a brewpub slated for Oakland), Nevada City Brewing Co., Truckee Brewing Co., Kelmers Brewhouse, San Francisco Brewing Co. and the new Setter Buttes Brewery.

Homebrew clubs such as the Gold City Brewers, Butte City Brew Crew and the Shasta County Sudsers supplied homebrew for tasting while Morendell Distributors provided glassware and breweriana for display and auction.

The real feature of the auction was the seven-barrel (217-gallon) polished stainless-steel cellar tank from Cross Distributing Co. The \$1,500 tank was auctioned for \$500 to John Senkevich of

Xcelsior Brewery Inc.

Live music was yet another attraction of the benefit. The jazz group Nutville, blues band The Rhythm Hearts, rhythm and blues band Anchor Brewery Hysters and recording artists the Miller Brothers all gave live performances.

Volunteer servers were members of Judy Ashworth's Lyon's Brewery Connoisseurs Club, who number about 3,000.

All in all, the benefit was a huge success, raising about \$17,000 to rebuild the Depot. A separate benefit was held a few weeks previously by the Livermore Valley Vintners. Hopes are that the tavern will open for business once again this summer.

Individual contributions to help rebuild the tavern can be sent to Lyons Brewery Depot, c/o Mark Carpenter, Anchor Brewing Co., 1705 Mariposa St., San Francisco, CA 94107, or c/o DeWayne Saxton, Saxton Brewery, 11088 Midway, Chico, CA 95926.

elected to a three-year term as president of the Bavarian Brewers Association. About half of the 800 brewers in Bavaria are members of the association, and the group represents 85 percent of the beer produced in Bavaria.

The association's main concern is supporting the preservation of the Reinheitsgebot, the Bavarian Beer Purity Law that dates back to the decree of Duke Wilhelm IV in 1516. It is the world's oldest pure food law, allowing beer to be brewed only with water, malt, hops and yeast.

INSTANT BEER

University of Georgia microbiology professor M.K. Hamdy has discovered a way to convert the materials used to make beer into a powder that does not lose the quality or flavor of regular beer. The yellow powder is mixed with water to produce a glass of foamy beer. Hamdy is seeking a patent on the technique.

COORS FIGHTS LABELING BAN

The Adolph Coors Co. filed suit in Denver District Court saying the ban on listing alcohol content on its labels violates the First Amendment. The Federal Alcohol Administration Act allows alcohol content to be listed on labels for wines and distilled spirits with over 14 percent alcohol content, but only for 3.2 percent alcohol malt beverages. Several of the nation's large brewers oppose Coors' move.

FIRKIN PUBS PUT UP FOR SALE

David Bruce surprised the brewing world by putting his 11 London pubs up for sale for about \$10 million. The selling price includes nine in-house breweries and a new pub at Brentford, but not the brand names "Bruce's Brewery" and "Dogbolter," which are being offered separately.

It had been expected that Bruce would make a stock offering on the London Exchange, but he chose to sell rather than become a pin stripe chairman sitting behind a desk, according to reports. About 30 firms have expressed interest in buying the pubs,

which sell more than three million pints of beer a year.

Bruce and his wife, Louise, first started brewing in 1979 at the Goose and Firkin. His pubs have been compared to the intergalactic bar in the film "Star Wars."

"Building it all up has been fabulous, but now I've got it, and I don't like what I've got," Bruce said. "As the responsibility grows I have less and less fun."

SIEBEL SONS' ACQUIRED BY ABM-STURGE

J.E. Siebel Sons' Co. has been bought by an affiliate of the Biospecialties Group of the ABM-Sturge Division (formerly ABM Brewing and

Food Group) of Stockport, Cheshire, England. Both firms have long been suppliers of specialty products for the brewing industry. Siebel will continue to operate as a separate company.

MILLER SENDS WATER

The Miller Brewing Co. sent fresh drinking water to residents of Pittsburgh whose water had been contaminated by a recent million-gallon diesel-oil spill on the Monongahela River. Miller donated 8,000 cases of 16-ounce beer bottles filled with water.

WATER TEST AVAILABLE

The National Testing Laboratories is offering a comprehensive water

ZYMURGY CALENDAR OF EVENTS

- June 5-11: American Beer Week
- June 7: AHA National Homebrew Competition, Denver, Colo.
- June 8-11: AHA 10th Annual National Homebrew Conference, Denver, Colo.
- June 10-11: Great American Beer Festival, Denver, Colo.
- July 16-17: Amateur Vintners and Brewers show at the 1988 Wisconsin State Fair. All entries must be preregistered by July 8. Contact Jerry or Mary Uthemann at (414) 321-8934 for more information.
- Aug. 8: Deadline for entering the Second Annual Oregon State Fair Beer Competition. The competition is open to all Oregon amateur brewers. Send entries to Jackman-Long Building, 2330 17th St. N.E., Salem, OR 97310. For more information call Jim Hensel at (503) 244-3232.
- Aug. 27-30: Tour of Midwest breweries. Contact the Institute for Fermentation and Brewing Studies, Box 287, Boulder, CO 80306-0287, (303) 447-0816.
- Aug. 30-
- Sept. 3: National Microbrewers Conference, Chicago, Ill.
- Oct. 21: Fourth Annual Microbrewery Tasting, Houston, Texas. Call Scott Birdwell at (713) 523-8154 for details.
- Oct. 22: Fifth Annual Dixie Cup Homebrew Competition, Houston, Texas. Entry deadline is Oct. 19. For details call Scott Birdwell at (713) 523-8154.

Beer Judge Certification Program Test Schedule

- June 10: Denver, Colo. For details call Debbie Smith, AHA, (303) 447-0816.
- July 9: Weston, Conn. For details call Pat Baker at (203) 227-8028.
- Sept. 3: Chicago, Ill. For details call Debbie Smith, AHA, (303) 447-0816.

analysis kit designed to measure 83 different EPA-listed contaminants for less than \$100. For information call 1-800-458-3300, or write to National Testing Laboratories, Department Z 0109A, 6151 Wilson Mills Rd., Cleveland, OH 44143.

SMALL BREWERY UPDATE

VANCOUVER, B.C. — The grandfather of the brewpub movement in North America, Horseshoe

Brewery and Troller Pub, closed Sept. 15. When it opened in 1982, laws required that a roadway exist between the tavern and the brewery.

EUGENE, Ore. — Eugene Ale was introduced with an initial run of 750 cases. The brew was created by John Karlik, owner of the Eugene City Brewing Co., and is being produced by Montana's Kessler Brewing Co. until financing is obtained to build a brewery in Eugene.

CHICAGO, Ill. — Sieben Brewing Co./River North Brewery became the first microbrewery in the Windy City when it opened in September. The original Sieben Brewing Co. was started in 1867 by German immigrant Michael Sieben. During Prohibition the brewery was run by notorious mobsters John Torrio and Dion O'Banion.

HONOLULU, Hawaii — The Koolau Brewery, located near the Honolulu airport, opened in February. Initial production capacity will be 20,000 barrels, and president Jim Brock said he hopes to reach a capacity of 40,000 barrels by the end of the year. The brewery is producing Koolau Lager, which will be sold only in Honolulu.

ALBUQUERQUE, N. M. — The Albuquerque Brewing and Bottling Co., New Mexico's first brewery since the 1930s, opened in February. The brewery is producing small quantities of Michael's Golden Ale.

MILWAUKEE, Wis. — Sprecher Brewing Co. completed an expansion that allows for on-premise bottling in a new 16-ounce non-returnable package. Estimated production capacity is now 7,000 barrels annually.

ATLANTA, Ga. — Two Atlanta companies are in the process of establishing Georgia's first microbreweries. Worth Brewing Co. is planning a facility that will produce 10,000 barrels a year of specialty beer. Microbrewery Research Inc. plans to open a pub with its own brewing operation, if an exemption is allowed to the law requiring the use of wholesalers to distribute beer.

INDIANAPOLIS, Ind. — The first brewery in the city in 40 years, Nap Town Brewing Co. plans to open a facility this summer that will produce 2,000 barrels of Main Street beer a year.

SANTA MONICA, Calif. — The City of Angels Pub/Brewery opened for business the middle of January. They brew and serve four beers: Heavenly Gold, Angel Amber, City Light and a seasonal beer.



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A BREWER'S RESPONSE

OUR READERS

Beer 101

The following article addresses a subject that was brought up by AHA marketing director Daniel Bradford in a talk at the 1987 AHA National Conference, and by Jay Hersch in this column in the Fall 1987 issue (Vol. 10, No. 3), "How to Create New Homebrewers."

The single line jumped out at me from the newspaper: "History, Enjoyment and Brewing of Beer. Tuesday 7 to 9 p.m." This was quite a change from the usual university leisure class offerings, such as crafts, dance and languages. As an experimenter in homebrewing for the past 15 years, I knew I had to enroll in the class, if for no other reason than to satisfy my curiosity.

The idea for this course came from James Hintze, who is a professor of German at Louisiana State University in Baton Rouge. A long-time homebrewer himself, Hintze wondered why a beer-tasting class, like several successful wine-tasting classes, shouldn't appeal to an audience. When he proposed his idea to the LSU Union Leisure Classes Director, she asked, "Where have you been all this time?"

So, armed with lecture notes in one hand and a cooler with several bottles of homebrew in the other, Hintze met his first class with great expectations mixed with a slight amount of trepidation. He needn't have worried, however. He was greeted by a group of beer lovers who were as eager to learn about

JOHN C. BERRY

beer as he was to teach about it.

Sensing this enthusiasm, he began by pouring a round of his excellent homebrew for the class to sip while he embarked on his first lecture, which concerned the history of beer. This illuminating discourse was followed in the five succeeding classes by lectures on the brewing process, etiquette and folklore of beer, and nutrition and health.

Based on my experiences as a homebrewer, I was curious to see how Hintze would reconcile a process that is time-variable with a once-a-week class schedule. We began by mashing and sparging the malted grain the first week, boiling the liquid with hops and pitching the yeast the second week, bottling the fermented wort the third week, and tasting a "wee sample" the fourth. Amazing, I thought to myself; we stayed on schedule, and the brew is delicious!

Over the six-week period we also tasted many commercial beers, rapidly gaining an appreciation and preference for almost anything other than most domestic best-sellers. This may sound snobbish, but we proved this to ourselves with a blind tasting of several of America's leading brands.

The collective ardent interest of our class was apparent from the beginning. Several people brought "munchies" to class to go along with the beer; Sally surprised everyone

"Armed with lecture notes in one hand and a cooler with several bottles of homebrew in the other, Hintze met his first class"

by bringing tasty homemade loaves of bread she had baked using the lees from the fermenting vessel from the previous week's brewing. Helen, a flight attendant with Delta Airlines who flew to Germany weekly, brought back five-liter taper kegs of genuine German beer for our enjoyment. I brought in from my "garage lager" a few bottles of 1981 vintage homebrew that had survived the intervening years in admirable condition. Perhaps the greatest contributor to the class was Tim, who offered the back room of his popular restaurant/bar for our classes. The final class meeting found us discussing ways to continue our exploration of beer and brewing. First, Hintze suggested a field trip to Abita Brewery, the only mi-

crobrewery in the state. This deceptively small operation in Abita Springs, just north of New Orleans, was conceived two years ago by a couple of homebrewers who were convinced they could brew a better-tasting beer, and sell it. They were correct on both counts.

Second, we planned a beer-tasting session in the near future for those who would be exercising their new-found brewing skills. Third, several class members petitioned Hintze for a "Beer II" class, in which advanced brewing techniques would be explored.

The course had several positive results. The number of homebrewers in the area increased. A local progressive hardware store began stocking beermaking supplies. An

engineering contractor in the class and Hintze started designing what Hintze envisions as the ideal homebrewing setup. (Could this lead to the second microbrewery in Louisiana?)

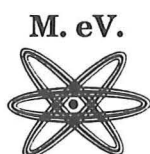
The interest this class showed in his favorite subject was "particularly gratifying," noted Hintze. "The study of the making and enjoyment of beer has historically taken a second place to that of wine, and I am glad to have the opportunity to let people know about the distinctive qualities of this noble and age-old drink."

This classroom approach to advancing the cause for a better glass of beer could well be imitated in other communities. And, as Jay Hersch declared in a previous *Brewers Response* (zymurgy Fall 1987 Vol. 10, No. 3), the personal involvement of an experienced person is a key ingredient in the making of a brewer. Given the unqualified success of this first class, I foresee the same "formula" being used in training palates and homebrewing skills of many potential homebrewers to come.

John C. Berry, a homebrewer for the past 15 years, is a computer system consultant for Louisiana Department of Public Safety. Berry started brewing with Blue Ribbon Malt Extract, baker's yeast and granulated sugar in a stoneware crock.

If you are interested in teaching a homebrew class, write the American Homebrewers Association, PO Box 287, Boulder, CO 80306, for a pamphlet on the subject (free to AHA members, \$1 to non-members). Please enclose a self-addressed, stamped envelope with your request.

A Brewer's Response is a column where zymurgy readers can respond to an article, presentation, or just a topic of interest to the homebrewing community. Manuscripts should be between 500 and 1,500 words in length (typed, double spaced) and sent to A Brewer's Response, AHA, PO Box 287, Boulder CO 80306.



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JACKSON ON BEER

MICHAEL JACKSON

Hunting Black Velvet in Vienna

The great wine writer, Cyril Ray, once implored his readers never to trust a girl who wore black knickers. I have not been able to establish whether there is any foundation in this advice, although I have tried hard enough.

Cyril Ray also said that the most seductive of alcoholic drinks was Champagne, and I am inclined to believe him. I have many times been seduced by, if not with, Champagne. It is a wonderful drink, especially when blended with dry stout.

I recently was seduced by the unlikely story that a Champagne cellar in a castle in Vienna was being used as a place to brew dry stout. I was seduced to the point where I bought a plane ticket with my own money so I could spend a weekend in Vienna investigating the story.

However noble a sparkling wine may be, it is not Champagne unless it is produced in the region of Rheims and Epernay. It is *Sekt* (Champagne) if it is made in the German-speaking world. The first thing I was able to establish was that *Sekt* was, indeed, being matured in the cellars of the castle (more of a *Schloss* really—a stately home). Unfortunately, the *sekt*-maker only rented cellar space, to which the castle's owner, Baron



Henrik Bachofen von Echt, did not have the key.

"It's a pleasant *Sekt*," he assured me, "but it doesn't blend well with my stout." Baron Henrik was more interested in his stout. Sir Henry's Stout, he calls it.

Sir Henry's is a genuine top-fermenting stout in what might be called an Anglo-Irish style. The product still is in something of an evolutionary stage, but at the time of my visit it was being brewed from an original gravity of 1.055.

I found it full-bodied and hearty, with chocolate and raisin notes in both the aroma and palate, and with a long, bitter finish. It is a delicious brew with (at a lower gravity, of

course) a hint of Russian Imperial. It is rough filtered, but a proportion of living yeast remains in the beer.

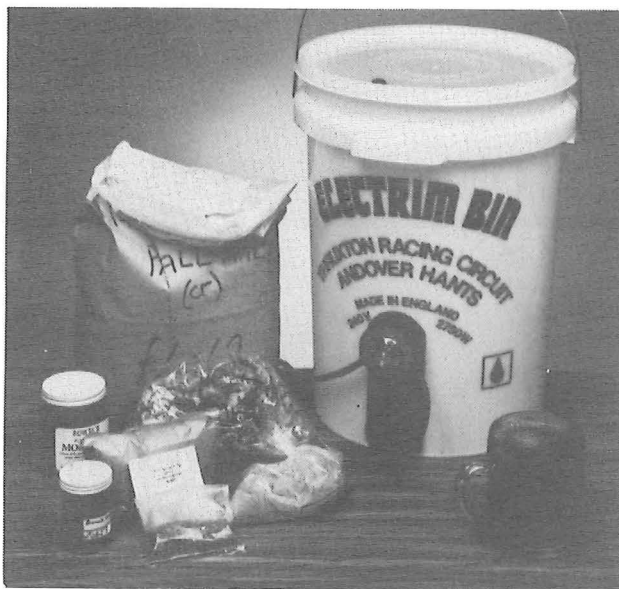
Sir Henry's is quite widely available, both on draft and in the bottle, in Vienna and elsewhere in Austria, and is sold by some tied houses of the Gösser brewery.

Apart from his chateau-bottled stout, "Sir Henry" was, when I visited him, also brewing a top-fermenting beer in the style of a German *Altbier*. This is called St. Thomas Bräu, after the local church. It has a gravity of 1.050. It is a deep, copper color, has a soft, dry palate, a full body; and some fruitiness. It is served unfiltered as a *Zwickelbier* at the tasting room and restaurant of the little brewery in the Vienna suburb of Nussdorf.

From Vienna, the trams run to Nussdorf or "nut village," after its walnut trees. This has for some generations been the home of the von Echt family, who trace their history beyond the Hapsburgs. For several generations, too, the von Echts have been brewers.

From the Danube at Nussdorf the valley rises steeply. There has been a settlement here since Roman times. Foundations of a Roman fortress on the river form the basis for the von Echt cellars, which now burrow into the side of the valley.

Above the cellars, the valley rises and the hillside forms a wooded garden, running up to the *Schloss*



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itself, an overgrown, shuttered building in Imperial yellow. Although parts date from the 12th and 13th centuries, the principal structure, with its two wings joined by one central building, was constructed in 1805.

Behind the house is a sizable 19th century brewing building. This was the original Nussdorfer brewery, and it was owned by the von Echts. In the postwar period of rationalization, they sold out to Bräu A.G., the company that today

dominates the Austrian brewing industry (with names like *Schwechater, Kaiser* and *Zipfer*). The Nussdorfer brewery ceased to operate, but as part of the deal the von Echts gained a very small stake in Bräu A.G.

Perhaps this helped them retain their interest in brewing. The family is involved in a business selling crown corks, bottles, kegs and other brewery supplies. When the present baron acceded to his title, he decided that — on however

small a scale — he would like to go back into the actual business of brewing.

Bräu A.G. was not interested, but their rivals, Styrian Breweries, were. A senior executive at Styrian Breweries had spent some time in Britain, where he had acquired a taste for stout.

After years of concentrating on various types of pale lager, Austrian brewers are beginning to realize that there also is a small market for specialty products, and Styrian decided they could add a stout to their portfolio. Baron von Echt undertook to make one, put up a new "Nussdorfer Brewery" sign on the facade of the cellars and equipped them with a small plant bought from the British suppliers, SPR of Lancashire.

When I visited him, he was making about 10 barrels per brew and charging his kettles two or three times a week. With one employee, this meant that one day of the week could be set aside for filling, another for cleaning.

Although the brewery has been in operation little more than year, he is already talking about increasing its capacity and employing a second man.

The next time I visit the Baron, I hope he has the keys to the *Sekt* cellars, so I can put to the test his pessimism about the prospects for a decent Black Velvet. Meanwhile, if you happen to be in Vienna, I suggest you see what they are serving in the tasting rooms at the Nussdorfer Brewery.

Leave some room, of course, for a Viennese chocolate cake. The one at the Sacher Hotel is the classic, though some connoisseurs favor Demel's. My own preference is for Cafe Landtmann. Chocolate cake goes wonderfully well with Champagne.

Nor, scandals aside, should you miss the young *heurigen* (this year's) wine in the Grinzling neighborhood. If you find a girl in black knickers, you've had better luck than I.

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Beer and the Origin of Cereal Grain Agriculture

SOLOMON KATZ, Ph.D.



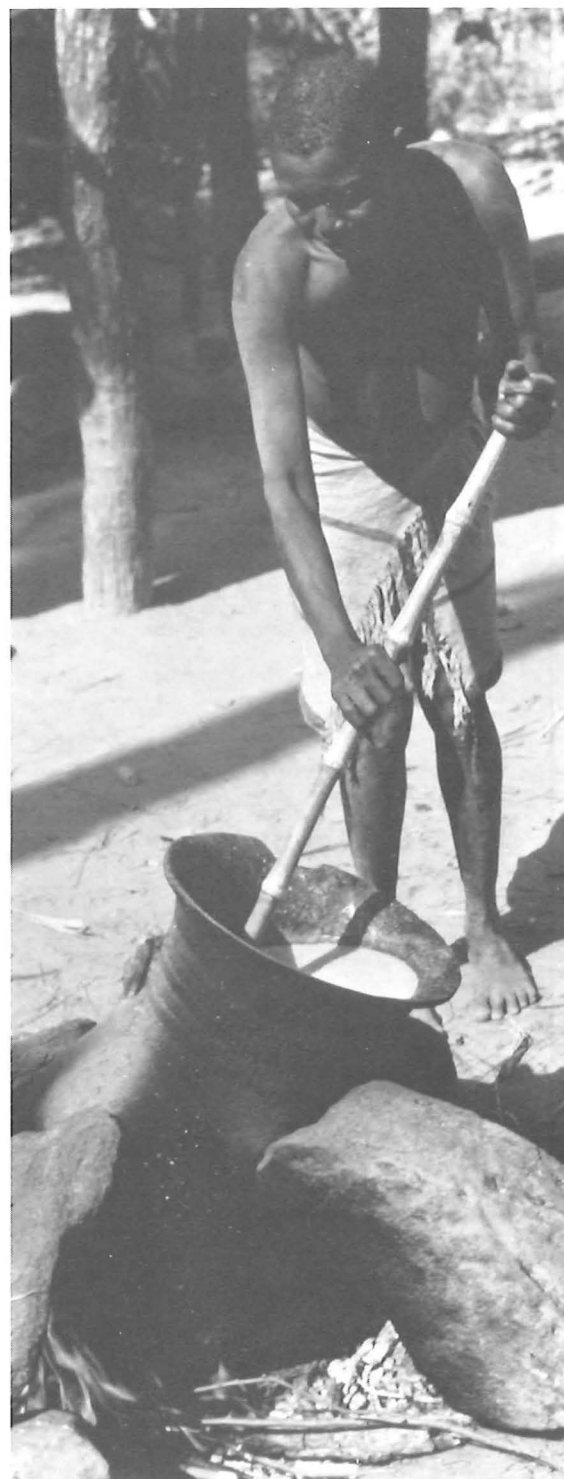
Among the most crucial human traditions are those related to subsistence: the acquisition, processing and consumption of food. One general pattern in the evolution of subsistence traditions can be observed worldwide. The domestication of plants marks a turning point in the relationship between foods and food-processing techniques. Plants that came under cultural control tended to become more and more important in the diet.

At the same time, the allocation of time to agricultural tasks (seeding, weeding, harvesting) led to the neglect of a

wide range of seasonal wild foods that once were collected. The net result is that as the number of plant species consumed has decreased over the past millennia, the number of recipes to prepare plants had increased. This has led to the formation of elaborate food traditions and rituals that have been passed down as cultural adaptations from one generation to the next, just as genetic adaptations to wheat and dairy products were biologically transmitted between generations (Figure 1). So variety was maintained and the nutrients necessary for healthy human survival were stabilized.

Origins of Food Production

Two arguments have emerged regarding the origin of



The Kofyar farmers of Nigeria prepare millet beer in narrow-necked clay jars. Consumed by women and children as well as men, this beverage supplies a significant part of the total caloric intake. (Photograph courtesy of Robert McC. Netting.)

“Beer would have had sustaining powers well beyond any other food in their culture except animal proteins.”

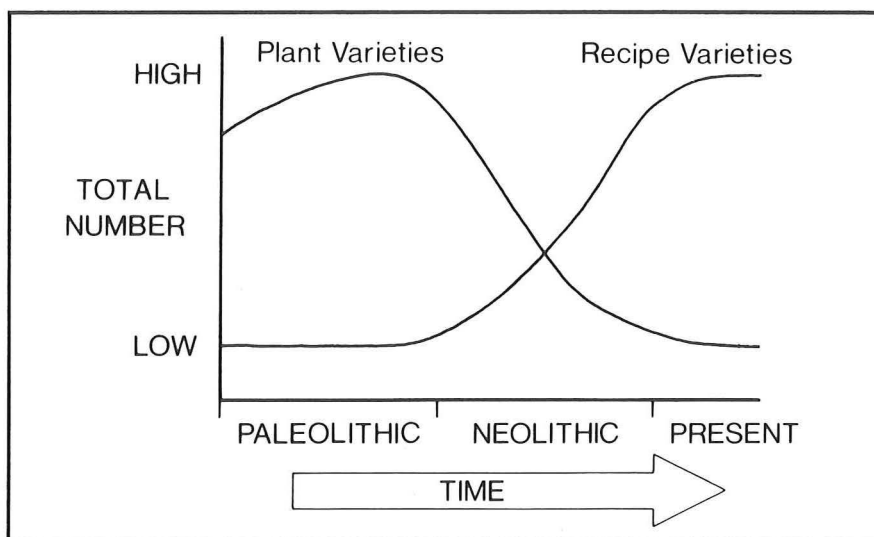
domestication. Over the last two decades, many archaeologists have theorized that as climatic conditions changed at the end of the last glaciation, the Pleistocene period 9,000 years ago, groups in the Near East, and especially in the Levant, gradually became more dependent on one wild resource—the easily collected and stored wild cereals. In some very favorable locations, wild foods were so readily available that groups such as the Natufians were able to remain year round in the same location, either in caves or in large open sites, e.g., villages such as Ain Mallaha (Eynan) in Israel and Mureybit in Syria.

With sedentary life came a growth in population that eventually put pressure on the supply of major food sources, including the wild cereals. This pressure resulted in migration of part of the population into less favorable areas without good stands of wild wheat and barley. In order to obtain a sufficiently large quantity of these staple foods, the migrants began to experiment with the propagation of these species. Need eventually led to the practice of keeping seeds and planting them.

Current archaeological evidence does not support this hypothesis. Not only was there an apparent *decrease* in the consumption of wild cereals during the period when the initial experiments with their cultivation and propagation must have taken place, but domestication apparently took place within areas with an abundance of wild resources. Moreover, even after cereals and pulses (legumes) were fully domesticated, they formed only a very minor part of the

diet. A heavy dependence on crops such as wheat, barley, lentils and vetch is not evident archaeologically until hundreds of years after their initial appearance.

Our own explanation for the beginnings of cereal cultivation is consistent with the biocultural model for



the evolution of cuisine. The key element in this explanation, the event that “primed the pump” and led people to choose to invest energy in the collection and propagation of wild wheat and barley, was the discovery of new food processing techniques—the sprouting and fermentation of these grains.

Fermentation: The Key to Alcohol and Nutrition

Suppose that the consumption of a food produced an altered state of

Figure 1
During the Paleolithic period, hunters and gatherers utilized a wide variety of plant species. With the beginning of food production in the Neolithic, certain plants began to increase in importance, gradually becoming dominant. But while the number of plant species consumed declined, variety was maintained in the diet through an increase in the numbers of recipes used to prepare plant foods.

Beer in Mesopotamia

The most ancient documentary evidence for beer production is written in the Sumerian language on tablets from Mesopotamia that date to the third millennium B.C. There is a good chance that the world's oldest written recipe is for beer! A highly detailed description of the brewing process is related as part of a myth that tells how Enki, the third-ranked god in the Sumerian pantheon, prepared a banquet for his father, Enlil, the second-ranked god. A second recipe is found in a hymn to the beer goddess Ninkasi, whose name is translated as "the lady who fills the mouth." Lexical texts contain long lists of very specific terms related to brewing techniques. Rations of beer (as well as barley) were issued to those attached to the estates of Sumerian temples and palaces, ordinary laborers receiving about one liter per day. In general, we can say that beer was an important food that was integrated into the mythology, religion and economy of the Sumerians.

The purely personal pleasure that these people took in beer drinking is summed up in the following song, written to celebrate the building of a tavern. The toast in the second verse quoted here is addressed to the tavern keeper, who is apparently a woman:

"Let the heart of the gakkul (fermenting) vat be our heart!"

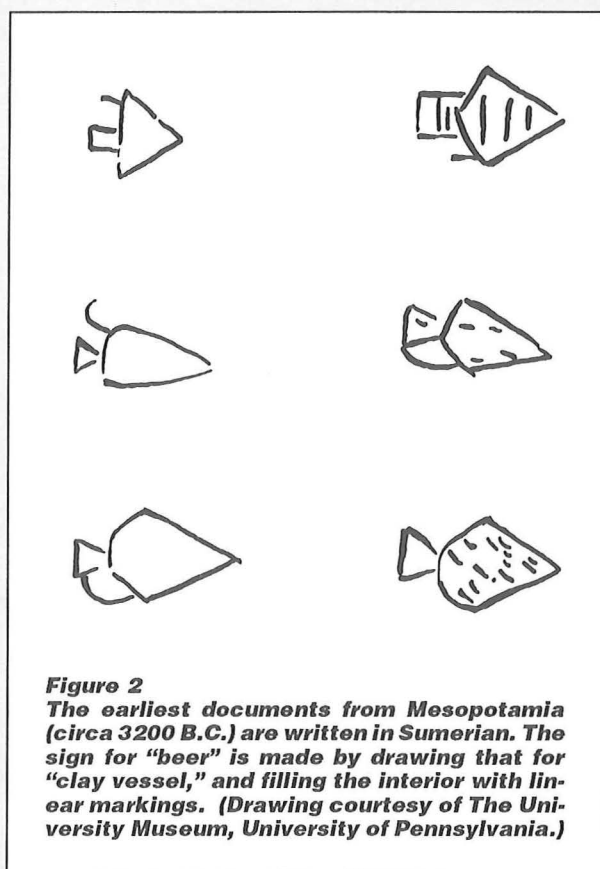


Figure 2
The earliest documents from Mesopotamia (circa 3200 B.C.) are written in Sumerian. The sign for "beer" is made by drawing that for "clay vessel," and filling the interior with linear markings. (Drawing courtesy of The University Museum, University of Pennsylvania.)

*What makes your heart
feel wonderful,
Makes also our heart feel
wonderful.
Our liver is happy, our
heart is joyful.
You poured a libation over
the brick of destiny,
You placed the founda-
tions in peace and
prosperity.
May Ninkasi live together
with you!
Let her pour for you beer
and wine,
Let the pouring of the
sweet liquor resound
pleasantly for you!
In the...reed buckets there
is sweet beer,
I will make cupbearers,
boys, and brewers
stand by,*

*While I turn around the
abundance of beer,
While I feel wonderful, I
feel wonderful,
Drinking beer, in a bliss-
ful mood,
Drinking liquor, feeling
exhilarated,
With joy in the heart and a
happy liver—
While my heart full of joy,
And my happy liver I cov-
ered with a garment
fit for a queen!*

(Civil 1964)

Pictorial representa-
tions show the vessels
used to brew and store
Sumerian Beer. All have
similar shape, with long
narrow necks and a
pointed base. This form
also appears on the most

ancient (pictographic)
tablets, and is translated
as "clay container" by
Margaret Green of The
University of Pennsylva-
nia Museum of Archaeol-
ogy/Anthropology's
Babylonian Section. A
clay container sign with
dashes inside refers to
beer (Figure 2). The beer
was consumed from gob-
lets, or from jars through
long straws. The earliest
example of this kind of
scene, on a stamp seal, is
from Tepe Gawra, and
extends the period for
which we have direct evi-
dence of beer drinking to
circa 4000 B.C. (Figure 4).

The use of straws has
sometimes puzzled mod-
ern authors. One expert
on the history of technol-
ogy interprets them as
evidence that the beer
was of "doubtful quality."
Leaving aside the ques-
tion of what constitutes a
good-tasting beer, a study
of traditional methods of
brewing in Africa pro-
vides a very practical
explanation of the
straws. The Sumerian
texts describe both fil-
tered and unfiltered
beers. In drinking unfil-
tered beer a straw would
have been necessary to
penetrate below a layer of
hulls and yeast floating
on the surface. Most
straws were probably
made from reeds, but the
wealthy used pure gold
straws such as the one
found in the tomb of the
lady Pu-abi at Ur. Pu-
abi's straw was lying next
to a silver vessel that pre-
sumably contained her
daily ration of beer.

awareness or consciousness that was noticeable, but that did not have serious toxic side effects such as motor impairment. Now suppose that this food also had a second, imperceptible effect, a substantial improvement in nutritional value over the unprocessed cereal grains. This is exactly what happens when barley and wheat are fermented into beer.

We suggest that among the factors that led to the domestication of wild cereals were the following. First, the motivation for a change in behavior (an allocation of time and labor to the collection and eventually to the propagation of cereals) was provided by a noticeable phenomenon—the “high” that people obtained from beer. Second, individuals and groups who consumed beer were better nourished than those who consumed wheat and barley as gruel or who ignored these wild resources.

Beer would have had sustaining powers well beyond any other food in their diet except animal proteins. In biological terms, beer drinkers would have had a “selective advantage” in the form of improved health for themselves and ultimately for their offspring. Third, cereals were a desirable resource because of the ease with which they could be harvested, transported and stored from year to year. In the following section we will examine the first two factors.

It is important to note that many of the traditions surrounding successful food strategies become highly ritualized. One consistent pattern is the enormous amount of ritual practice and attention given to foods that have a mind-altering or psychopharmacological effect. Almost invariably, individuals and societies appear to invest great effort and even risk to pursue the continued consumption of a food with a mind-altering property. Because the behavior associated with the search for such foods is so intense, however, it can lead to social disorder. Thus, religious and social traditions have developed that serve to control these foods by prescribing and proscribing them as a part of ritual practices and specified social occasions.

Given the importance of mind-altering foods during historic times, it seems highly likely that they were discovered and used at a relatively

early point in human evolution, and played a significant role in its unfolding: a disruption in the supply of these wild foods would have posed serious problems, solved by the transition from Epipaleolithic food collection to Neolithic cultivation.

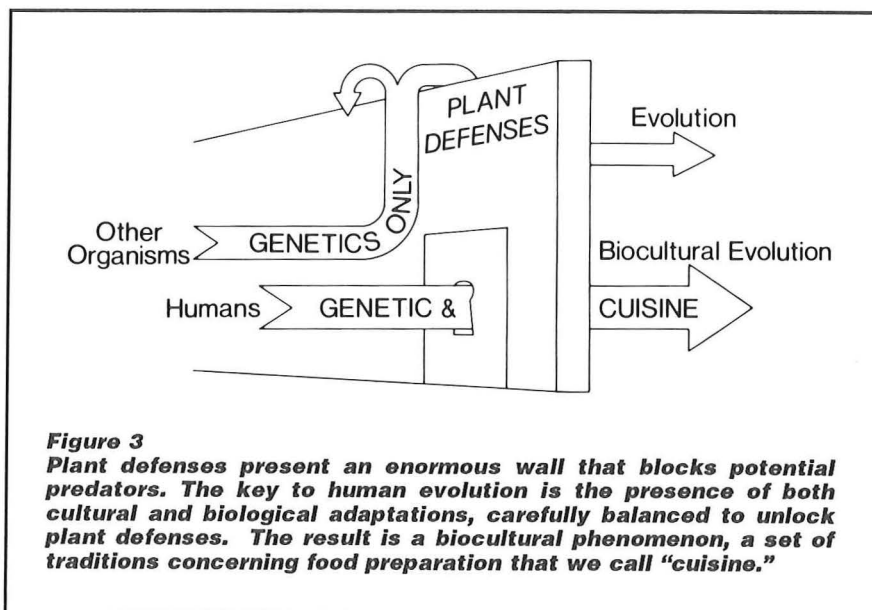
The most consistently sought-after beverage with psychopharmacological effects seems to be alcohol. The combination of its initial elevating effects on the emotions, its perception-altering qualities and the fact that it is easily metabolized and usually non-toxic make alcohol an ideal psychopharmacological substance, or drug. In traditional societies, beer with a low alcoholic content is characteristically associated with a number of secular and nonsecular occasions. These include the formation of groups for labor (harvesting, large-scale construction tasks); ritual ceremonies, including those marking rites of passage such as a marriage or a funeral; and social gatherings. Within the Near East, there is ample evidence that beer played an important role in the economy and ideology of the Sumerians.

The enormous nutritional potential provided by cereal proteins and vitamins made the cultivation of crops biologically as well as economically profitable. Both wheat and barley are largely composed of complex carbohydrates, with approximately 13 to 20 percent protein and a small amount of fat. As a food source they are limited

in several ways. First, both of these cereals have low levels of the essential amino acid lysine. Without lysine, most of the remaining amino acids in wheat and barley cannot be synthesized into usable protein by the human body. Because yeast synthesizes its own lysine and the lysine content of yeast is two to three times higher than the relative lysine content in cereal grains, the growth of the yeast in the brew supplements the critically low levels of lysine originally contained in the grains.

Second, barley (but not wheat) has low levels of the essential sulfur-containing amino acids. Third, B vitamins (riboflavin, niacin and thiamine) are present in both wheat and barley, but not in sufficiently high levels to meet basic nutritional needs. Vitamin B enhancement has been studied in the traditional beers of modern South Africa, which are based on sorghum (“Kaffir beers”) cereal grain which, like barley, is rich in amylase and convertible starch, precursors to sugar for brewing (see recipe by Professor Rebecca Huss-Ashmore, page 26).

Fourth, these grains, in particular wheat, are high in the concentration of substances called phytates that bind essential minerals like calcium and prevent their absorption in the digestive tract. Fifth, cereal grains also contain tannins. Some grains, such as sorghum, contain sufficient tannins to be irritants to the stomach. However,



yeast breaks down the tannins, making them more digestible.

It is yeast that converts the cereal grains from a nutritionally limited source of proteins and vitamins into an outstanding source of human nutrition. Both brewing and the making of many types of bread involve the growth of yeast cells. Yeast produces a rich source of lysine, significantly improves the B-vitamin content of the mixture and decreases the concentration of phytates, thereby permitting the absorption of more essential minerals such as calcium. Some vitamins that are enhanced are not available from other plant sources. The major disadvantage of yeast is that the adult human can consume only about 20 to 25 grams of yeast nucleic acid per day. Beyond that level a build-up of serum uric acid occurs that may cause high blood pressure, gout and kidney abnormalities.

Wild yeast is present in the air. The simple exposure of a mixture of

cereals and water, whether in the form of a thin gruel or a thicker dough, will result in the implantation and growth of yeast cells. The critical step that differentiates bread from beer is the addition of diastase enzymes that convert the cereal starches into sugar, which is eventually turned into alcohol by the yeast. Traditional brewing techniques increase diastase levels through the addition of malt, or sprouted grain.

Thus, the first step of the malting process is to soak the cereals in water. A substantial amount of diastase enzymes forms in the root tips. Wheat is not as efficient as barley in this respect, but barley produces enough diastase to break down the starch of an almost equal quantity of wheat. The value of a mixture of wheat and barley is that wheat adds the sulfur-containing essential amino acids that barley is low in. If the process of growth is allowed to continue, the amount of diastase present begins to

decline. The sprouted cereal is, therefore, left to parch in the sun or is artificially heated until lightly toasted. As a result the rootlet dies, but the diastase enzyme levels remain high.

Once the cereal has dried out, the softened hull is easily ground. When the ground malt is added to a mixture of cereal and water, the conversion from starch to sugar begins. This process is known as "mashing." Hydrolyzed starches, obtained from heating water and raw cereal grains into a porridge, are most susceptible to the effects of the diastases, so that the barley diastases are often mixed into a cooked porridge of water and cereal grains.

During fermentation, the maltose feeds the yeast so that it grows. This process will produce alcohol (rather than some other metabolic product) if two other conditions are met: the fermentation medium must be both acidic and anaerobic (without oxygen).

Acid conditions can be maintained by allowing the porridge to sour overnight through the introduction of lactic-acid-producing bacteria found in the air. Once such bacteria are found, they can be kept alive as a starter along with the yeast, and transferred from an old brew to a new one. Anaerobic conditions are also relatively easy to obtain. When the yeast begins to grow, carbon dioxide forms and bubbles up to the surface.

It should be noted that beer and bread are not nutritionally equivalent. The optimum growth of yeast requires the full transformation of sugar into carbon dioxide and water. If alcohol is produced, yeast growth declines. There is, therefore, an inverse relationship between the amount of sugar converted to alcohol and

Traditional Methods of Bread and Beer Making

The production of beers in Africa today has been studied by Professor Rebecca Huss-Ashmore, who has collected detailed recipes for brewing. The processes used in making unfiltered sorghum beers with properties quite similar to beers made of barley are remarkably simple. They do not require elaborate technology, although considerable knowledge is necessary to carry out the process successfully. In the mid-1950s, when traditional beers were still very popular, the average amount consumed by the Sotho people was two liters per person per day.

Joala Strong Bantu (Sotho) Beer

Use 1 to 2 parts maize to 1 part sorghum. Place all or part of the sorghum in a pot of water. Leave it until it starts to sprout. Then spread it out to dry in the sun on mats or sacks. It should be in a very thin layer. Turn it frequently to make sure it dries thoroughly and doesn't mold. This is the malt.

Pour the rest of the grain in hot water, enough to make a thin gruel. Leave it to set overnight, or until it sours. It may take up to two days if the

weather is cool. Then boil the sour gruel for approximately two hours. At this stage, the mixture is a sour porridge called *setoto*, which can be drunk.

To make *joala*, cool the *setoto* and add the malted sorghum (usually ground first on a stone). (To speed up this second fermentation, modern housewives add dried yeast at this point). Leave for several days in a large pot or bucket. The mixture should become sparkly and noticeably alcoholic. It is usually filtered through a sieve or a woven grass bag before drinking.

the nutritional value of the resulting cereal product. Under optimal brewing conditions, the oxygen supply is carefully regulated and the resulting beer will contain up to 9 percent alcohol. Traditional brewing methods, however, are less controlled, allowing air to reach the mixture. As a result, the alcohol concentration is 5 percent or less, leaving plenty of sugar to be converted into protein. For example, Sotho sorghum beer contains about 3.5 percent alcohol. On the other hand, bread production requires heat, which kills the yeast and stops the enhancement of the protein content.

It is generally agreed that the simplest method of cooking cereals is to prepare a gruel, a mixture of the broken-up cereal particles (probably including the husks) and water. Evidence shows that the Natufians in the southern Levant collected wild cereals, and the containers they used would have been of an organic material — skin bags or perhaps baskets or wooden vessels. A second method of preparation might involve sprouting the cereal by soaking it in water. The process of soaking has been widely used to make toxic plants palatable (for example, acorns in the Near East), and it seems highly likely that it was in common use during Paleolithic times. If cereals were steeped, the germination process would have broken the seed coat, made it easier to grind up the cereal for gruel, and enhanced the taste as well.

The key step in making beer would have been the addition of sprouted and ground cereals to water. If this special gruel was heated and then allowed to stand overnight or longer, wild yeasts would have started the fermentation process. In the Middle East, where daily summer temperatures can exceed 120 degrees F, there would have been little need to heat the brew. Even in winter, putting the mixture in a sunnyspot would provide adequate heat for the yeast to work during the day, and at night it might have been placed near a fire.

Given the steps involved in preparation, the making of gruel must have preceded the invention of bread as well as beer. Unleavened breads require only that a thick mixture of pounded cereal and water be heated. Such breads are, however, rather



Tiriki men drinking beer through flexible reed straws. For the Tiriki, a Bantu-speaking group living in Kenya, beer drinking was traditionally an important part of all-male social occasions. (From Peoples of Africa, ed. James L. Gibbs Jr. Copyright © 1965 by Holt, Rinehart and Winston Inc. Reprinted with permission.)

tasteless, and lack the nutritional advantages of leavened bread. Their popularity in the Middle East and India in recent times may be related to the spread of religions that prohibit the consumption of alcohol: the baking of unleavened breads provides a means of preventing any fermentation from occurring. In any case, as cereals formed a higher proportion of the diet we can be sure that they were consumed in a variety of forms, since the amount of beer a person can consume is usually limited by social norms, if not by physiology.

The Critical Role of Beermaking

The essential difference between bread and beer as a means of exploiting cereal grains is that brewing yields alcohol. One major advantage of bread (in addition to the fact that it does not contain alcohol) is that it can be made faster than beer. It is also more portable, and can be carried on long journeys. Both foods may well have been used by Epipaleolithic hunters and gatherers, but in unknown quantities.

Bearing in mind these uncertain-

ties, we can return to our initial question: Under what conditions would the consumption of a wild plant resource be sufficiently important to lead to a change in behavior (experiments with cultivation) in order to ensure an adequate supply of this resource? If wild cereals were in fact a minor part of the diet, any argument based on caloric need is weakened. It is our contention that the desire for alcohol would constitute a perceived psychological and social need that might easily prompt changes in subsistence behavior. This type of need would be present whether beer was but one of a series of cereal-based foods that made up a significant part of the diet, or was an occasional food in a diet composed primarily of animal and/or other plant foods.

Direct evidence that beer consumption led to the domestication of barley and wheat is lacking. Such evidence might eventually be found in the form of sprouted cereal grains from an Epipaleolithic or early Neolithic site, but the chances for preservation of cereals in this form are low, given the fragility of seeds with a broken hull. Beer drinking may also prove to be detectable in human skeletons. As noted above, one physiological disadvantage of yeast is that consumption above a certain level causes a build-up of serum uric acid. The inflammation of the joints associated with gout is in fact caused by the deposition of urates (uric acid salts) in and around the joints. If the urates leave any kind of permanent mark on the bone itself, it may eventually be possible to identify Neolithic beer drinkers from their skeletal remains, especially in the case of the older members of a population.

The argument for the early development of beer making is compatible with one aspect of the archaeological record that has long puzzled scholars: the rarity of carbonized seeds at sites that have abundant chipped and ground stone artifacts associated with cereal cultivation and processing. Beer making does not necessarily include any process that exposes cereal grains to fire; it could be an everyday activity and yet produce not a single carbonized seed. In fact, given the present evidence, we would have to argue that the wild and early culti-

vated cereals were most likely to have been consumed either as uncooked gruel or as beer.

The historical and ethnographic records provide evidence of the value placed on beer. Within the area where cereal domestication took place, the Near East, the earliest written records as well as representational art testify to its importance. Studies of modern traditional groups in the Old World demonstrate the simplicity of the technology, and the ease by which critical steps might have been discovered. Ethnography also indicates the extent to which alcohol and other drugs were prized and incorporated into the social, economic and religious systems of most cultures.



Figure 4
A sealing from The University Museum's excavations at Tepe Gawra in northern Iraq provides the earliest direct evidence for beer drinking in Mesopotamia, circa 4000 B.C. (Photo courtesy of The University Museum, University of Pennsylvania. Negative # 138806.)

A brief hypothetical sequence for the domestication process might include the following steps.

1. The scattered but sometimes abundant wild cereals were gathered by groups living in the natural habitat zone of wheat and barley.

2. After initial use of the cereals in a gruel or porridge, the technology of brewing was developed in a series of steps including: the accidental sprouting and drying of the cereal, which assisted in the removal of the hull or seed coat; discovering the sweet taste of the sprout; the use of

sprouted, dried and ground cereals in a gruel that was left to stand for some period; the observation that the "old" gruel did not spoil, but instead tasted sweet and had distinct effects on the mind and emotions.

3. Alcohol gained importance to the society because of its social uses. Of course, alcohol could have been made from other foods such as honey or fruit. A cereal-based brew, however, would have had two benefits, one readily observable by the members of the community and one hidden: it would have allowed the rare and seasonally restricted sweetening agents to have been used for foods other than alcoholic beverages, and it would have added a new high-value food to the diet.

Once alcohol had been incorporated into specific social and/or ritual events, maintaining a supply of the plants necessary for the preparation of this beverage would have some importance. When the supply of wild cereal was inadequate, experimentation with these plants (cultivation, propagation) was begun in order to increase yields. Thus, cultural values and traditions would have encouraged behavior that maintained the cereals from generation to generation until they were fully under human control, or "domesticated." Based on present archaeological evidence, this process probably occurred *within* the natural habitat zone, when the supply of wild cereals was disrupted for an unknown reason. Should new excavations securely place the earliest domesticates *outside* the natural habitat zone, such experimentation should have served to ensure a supply of cereals in the immediate vicinity of new settlements.

To summarize, it is possible with a careful assessment of the facts about nutrition to propose behavioral sequences that could parsimoniously explain the facts discovered by archaeologists. Careful analysis of nutritional biochemistry can lead to generalizations about the human diet and its relations to biocultural evolutionary processes. This yields the hypothesis that the early intensification in the use of barley and wheat, leading eventually to their domestication, could have stemmed from the desirability of alcohol-containing

beers. Under controlled circumstances, alcohol could provide a cultural and social advantage. Unlike other alcohol-yielding brews that were probably available to people at this time, beer would have also had an enormous biological advantage. It enhanced the original nutritional quality of a readily available plant to a level almost comparable with that of meat. Finally, we leave each reader with one last test of any hypothesis, its plausibility. Given a choice of gruel, bread or brew, which would you rather have with your next meal?

Solomon H. Katz, Ph.D., is a professor of anthropology at the University of Pennsylvania and director of the Krogman Center for Research in Child Growth and Development. He has been conducting scholarly research into the biocultural evolutionary basis of cuisine over the last 15 years. He received considerable encouragement for the present paper from his son, Noah, who presented him a complete brewing outfit for his birthday (for experimental purposes).

Editor's Note—This paper is a condensation by Solomon H. Katz, the senior author, of a paper by himself and Mary M. Voigt, originally published in Expedition Vol. 28(2), pp. 23-24, 1986, the journal of the Museum of Archaeology/Anthropology at The University of Pennsylvania. It contains a new and expanded section on the nutritional advantages of beer that was not in the original paper. Dr. Katz is especially indebted to Rachel Walach for her help in editing the condensation of the original paper. All copyrights reserved by the author.

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Pilgrimage to Chico

A Visit to Sierra Nevada Brewing Co.

There I was in Roseville, Calif., in the foothills of the Sierra Nevada, when it dawned on me that Sierra Nevada Pale Ale is made in Chico. Quick, where's the map? Chico was only 60 miles away but it was Sunday and the brewery was closed! On Monday a phone call got me the usual story about limited public tours once a week, but I muttered the magic incantation "Burton-on-Trent" and was immediately transferred to Paul Camusi, one of the owners. I explained I was a brewing microbiologist, raised in Burton, used to work for Trumans, and the tone changed. "Come on by, glad to meet with you, but I warn you we are only a little microbrewery," he said.

With father-in-law as chauffeur and the trusty 3/4-ton Ford for a limousine, we set a northbound course over the flat sea of the central valley. We passed decaying farms, rice paddies, dams and levees with the Sierra range standing like some huge dam keeping all this water away from the rest of the country. (After visits to neighboring Nevada and Arizona I'm impressed by what a good job they do!)

Chico could be described as a "charming, sleepy, valley town," but only by the local Chamber of Commerce. It has one

PAUL FARNSWORTH

main street, one square with bandstand, and buildings representing the architectural style of each decade since 1880 all mixed together. An art deco movie theater in pink and turquoise with plastic sphere on concrete spires adjoins a wooden plank store with porch and hitching rail.

The outskirts have commerce that supports the farming community and reflects the shape that agriculture is in: John Deer dealers, rice silos and light industry, but all somewhere between well used and

dilapidated. Chico State, a massive school, (*Playboy* magazine's No. 1 party school), provides 30,000 students with "education" and "life experience" in this fading bucolic setting and keeps the town from disintegration.

We found the exit and the dirt road but after 100 yards I was beginning to doubt my navigation. After another 200 yards off-road, I was about to turn around when I spied a 20-foot pile of old kegs and a stack of wooden pallets outside two old metal farm buildings. Through a wide hole in the wall I saw a circular stainless-steel tank with an inverted funnel on top, steam and a little round guy in a beer T-shirt, jeans

and rubber boots; sure signs of a brewery! I rolled down the window and the glorious aroma of boiling Cascades and warm malt filled the cab. This was it!

When I visited the now defunct New Albion brewery in Napa, I thought I had seen the world's most unlikely brewery setting. Sierra Nevada is a close second, and only because there were no cats in the bottling room and the springs in the office couch had not come completely through the fabric.

Paul Camusi, a yuppie-looking man in his early 30s, came out to meet us and presumed my carpenter father-in-law to be the Burton brewer. This



Ken Grossman (l) and Paul Camusi (r), proud owners of Sierra Nevada Brewing Co.

straightened out, he took us through the brewery. He was pleasant, accommodating, open and all the other nice things I can think of to say. He showed us everything, talked about everything and we spent four hours playing around.

The two owners, homebrewer college friends, were able to borrow

\$100,000 from their families! They built the brewery over 18 months, using plans from UC-Davis and steel tanks from the boneyards of fading local industries. They scaled up their homebrew recipe, (2 pounds 2-row malt per gallon, 4 ounces of Cascades for 5 gallons) to make 500-gallon batches and off they went.

They brewed 12 batches, all of which they dumped, and "that's how we learned," said Camusi.

One thousand pounds of pale malt is transferred by auger from a storage silo and crushed in a two-roller mill. A 12-foot diameter stainless-steel mash-tun with a false bottom is used to hold the grains for 60 minutes at 153 degrees F. This is sparged at 170 degrees F and pumped to a similar vessel with an old hopper turned upside down to form a conical roof.

A 90-minute boil with half a trash can full of hops (they use Clusters in the boil) is followed by a trash can full of leaf Cascades and a 30-minute soak. Actually the hopping rates are carefully controlled, as is everything else in the process. Hopping rates are calculated for each batch of hops and each change of hops is carefully weighed. After this the wort is run through an old dairy chiller, air is injected and fermentation done in open steel tanks 6 x 6 x 4 feet, with the temperature kept around 70 degrees F for two days and 60 degrees F for a third.

After three days, this beer is mixed with one or two other vats and held for two weeks at 32 degrees F in tall cylindrical steel tanks. One bucket of yeast from the primary is saved and used to pitch the next brew; no washing, no starter cultures, and they have used the same yeast this way for 18 months. When fermentation slows drastically they send off to Siebel labs for a new inoculum of strain No. 96 and off they go again.

After cold conditioning, the beer is "plate and frame" filtered and two gallons of yeast and sugar are added. The beer is either put into old Anheuser-Busch kegs or bottled on an old line from some brewery long gone. Their other brews are done the same way—same yeast, same temperatures. Specialty malts (crystal and/or chocolate) are added to the grist and extra hops (Nuggets, Chinook, Clusters and Northern Brewer) to the Celebration Ale.

In the covered alley between the two metal buildings is the

(continued on page 35)

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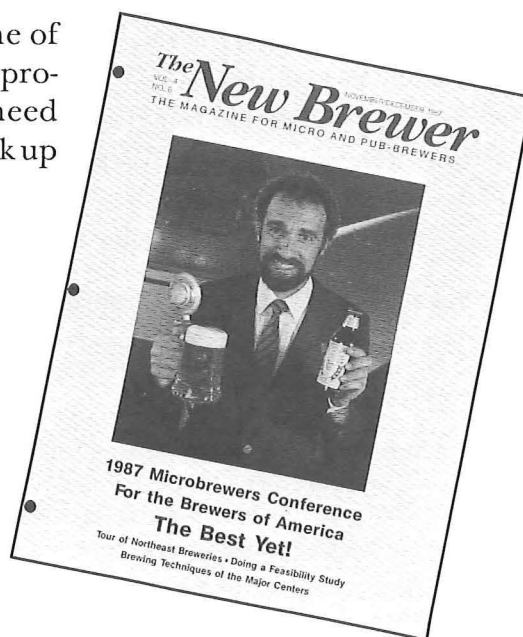
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Pilgrimage to Chico

(continued from page 32)

"hospitality center" with taps for draft pale ale, plastic cups and a view of the little warehouse. We tarried awhile, sampled and marveled. We talked business; wonder of wonders not only do they make exquisite beer but in year two they broke even and the next year made a significant profit. I cornered the director of marketing (who was also the entire sales staff). "What do you do to be this successful?" I asked. He thought for a while and said "Well. . . I don't know."

We said reluctant goodbyes and drove back down the dirt road, avoiding a 40-foot tractor trailer picking up beer for Denver, and made for home. As we rolled southward again, the peaks of the Sierra were now crowned with storm clouds but it still seemed a sunny day. The flavor of the enterprise competed in my memory with the flavor of the beer. Here among the ruins of a once great farming region was a little brewery using traditional methods to make perhaps the best beer in the country. The inspiring thing is that these guys knew no more about brewing when they started than we do; all it took was doing it.

We rode along musing for awhile, father-in-law chauffeur and I. "Well," he said out of the silence, "I guess your new brewery will need a carpenter?" He is a nice man. We began to list all the relatives—and their assets.

Postscript

At the time this article went to press, Paul Camusi reported that the brewery is having a hard time keeping up with orders despite four new 2,000-gallon tanks. All the walls are up for a new brewery, which will include a pub. It will be equipped with used equipment bought and transported whole from Germany, and with some custom-made vats. It should be completed sometime this fall.

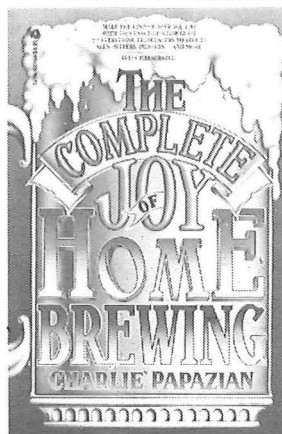
Paul Farnsworth was born and raised in Burton-upon-Trent, where he thought fresh air was supposed to smell like boiling wort and the only jobs available were at the breweries. He attended London University where the economic reality of student life forced him to make his own beer. He then moved straight to San Diego where he

did research at the University of California and thought all Americans lived by the ocean and had palm trees in their gardens. A recent move to Texas cured this and drove him into becoming a certified beer judge! He now lives in San Antonio, teaching fermentation science at the University of Texas and still seeking the perfect ale recipe.

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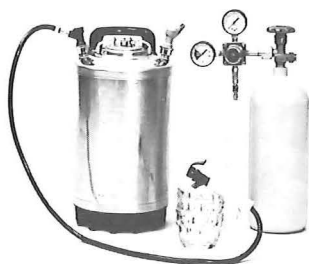
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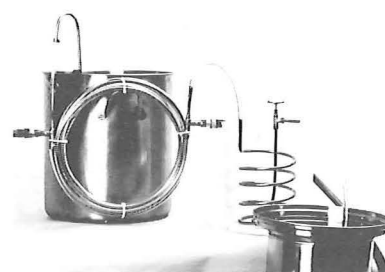
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Homebrewing and

Practical Tips for Homebrewers

A Professional's Look at Homebrewing

For more than 20 years my main job has been the brewing of small batches. For the last 17 years it has been for the Stroh Brewery Co. in Detroit, which has twin experimental units with eight-gallon kettles. This is about twice the volume that goes into the usual five-gallon home fermenter, and yields close to three cases of beer per unit.

PETER BLUM

The objectives of a homebrewer and the technical staff for a brewery are different, but many of the problems that occur in the home also had to be solved in commercial pilot plants.

My first reaction to homebrewing was quite negative. Part of this was

caused by exaggerated claims of some early supplier advertisements. These combined promises of lower cost and great quality with gratuitous disparaging comments about commercial beers. We all like something different now and then and some want it always, but there is a very good reason why our beers are not stronger, darker or more bitter. Large brewers would all be out of business if we brewed what 5 or 10 percent of the public drinks. When we do brew such a beer, it turns out to be a tough sell because people want it in a foreign label.

Knowing the complexities of brewing from malt enzymes to yeast management, claims for easy good beer are just silly. Not that brewing is so difficult, but doing it consistently requires more than good attitude. All of us in the industry had to learn some lessons the hard way, by making mistakes, and we know of some cases where the mistakes were very serious.

A second reason for my feelings was the primitive nature of the home process. There is no temperature control, no microbial control, no microscope or pH meter, spotty sanitation, no specification and poor reproducibility. Nobody would know the yeast addition rate in million cells per



Peter Blum, Detroit, Mich.

(continued on page 38)

Professional Brewing

Scrubbing the Wort and Other Feats

A Home-brewer's Look at Professional Methods

The situation faced by the commercial brewer is far different from our own. While we must work with primitive equipment, the large brewing companies have the latest and most sophisticated technology at their disposal. How many times have you said to yourself, "If only I could control my fermentation conditions (or whatever) as easily as the pros do!" True enough. I am not going to argue that the homebrewer is not at a disadvantage in this area. But I am going to try to balance the picture by pointing out the constraints that professionals face.

The first area where commercial brewers have to cope with limitations

Dave Miller, St. Louis, Mo.

DAVE MILLER

is in materials. In the good old days, the most intractable ingredient was water. Many classic styles of beer were created mostly because water was a fixed entity which all other materials, and the entire brewing process, had to accommodate. For example, Anton Dreher set out to brew lager beer in Vienna, and found that

he could not get a proper mash with the types of malt used in other brewing centers. He developed Vienna malt, and the amber beer based on it, out of sheer practical necessity.

These days, it is possible to start with just about any water supply and brew almost any style of beer. However, there are other limitations that arise from economic considerations, and these are just as pressing today as

(continued on page 39)



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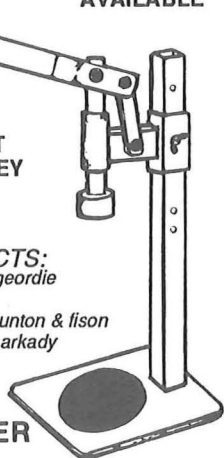
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(continued from page 36)

milliliter wort, whether a fermentation reached the potential endpoint, or the bitterness in ppm isohumulone. It would be a return to the 18th century, when brewers had little more than a thermometer, a simple hydrometer and their common sense. At least homebrewers do not keep their wives out of the basement for fear of upsetting the yeast by the female cycle.

It was not until I had the opportunity to help judge homebrews, get to know suppliers and talk shop with homebrewers that I started to appreciate their sincere efforts. In turn, as homebrewers gained experience, the complexity of the process brought greater respect for the uniformity of commercial beers.

I would like to offer some suggestions for consideration. They are steps I would try if, instead of going to work to brew, I were retired and brewed at home, and wanted to offer my beer to Detroit-area homebrewers, my friends and colleagues, the Motor City Mashers.

Mashing

The technically difficult job of grinding, mashing and lautering at home should not be attempted until a reproducible fermentation regime and a satisfactory finishing and sanitizing procedure have been developed. These objectives are challenge enough; there is nothing wrong with being a home kettle man, fermenter and cellar man, or woman.

Hops

Personally, I would only use hop pellets, unless I could get hops from a brewery, and then only for a special brew. Leaf hops, like other aromatic spices, deteriorate rapidly in small samples, especially at room temperature. Hop pellets are a real help in maintaining bittering qualities.

Wort Cooling

Rapid cooling of hot wort prior to adding yeast in breweries is a big help in saving time and avoiding infection. The coil-type heat exchanger comes closest to the desired process. Just be sure to clean it well with a strong sanitizing solution, followed with

plenty of hot water, and a cold water rinse prior to reusing. I would prepare a heavy wort, say 18 degrees P (1.074) and dilute it with one-third the volume to 12 degrees P (1.048) with chilled water. The use of ice water also is a big help when preliminary cooling is being done without a coil. It is very advisable to cool down from about 100 degrees F to about 60 degrees F in a hurry and add the yeast.

Yeast Addition

When yeast is added to wort in a brewery, it is already in an active state ("roused") to overcome the lag phase. The yeast is given some wort a few hours prior to pitching. Cooled wort is such a perfect medium that time is critical, assuming one's yeast is of sound quality. A simple way to accomplish this is to quickly cool a small pitcher of wort after a half-hour boil, add the yeast and stir occasionally. The yeast needs oxygen at that stage, as well as at pitching.

Fermenting Temperature

The fermenting temperature is one of the hardest factors to control at home, and has one of the largest effects on flavor, given uniform wort and a clean process. Personally, I would invest in a small used refrigerator and plug it into the type of timer sold in hardware stores to automatically provide household lighting. A procedure can be worked out by trial to maintain a wort temperature between 60 and 70 degrees F.

My last bit of advice is to try for a beer that is not way out in color and flavor, and try for consistency before attempting other and perhaps more exotic brews. If you vary more than one item in the process, it becomes difficult to assign cause and effect. Beers that are very bitter or dark may well hide faults, but one does not learn from them. The opposite is also true. The typical commercial lager should not be attempted until stronger beers have been brewed, because every little flavor shows up.

Peter Blum is pilot plant manager and historian at Stroh Brewery Co. in Detroit, Mich. He is also a member of the Motor City Mashers homebrew club.



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(continued from page 37)

they ever were. Kihm Winship has shown how black patent malt was developed to meet an urgent need to cut the grain bill for porter. (See *zymurgy* Summer 1987, Vol. 10, No. 2, pages 28-29.) But the same factors that led to the creation of black patent loom equally large today.

For example, most homebrewers know that Anheuser-Busch uses rice in its premium brands, Budweiser and Michelob. It is not so well known that Busch, the company's popular-priced brand, uses corn. The beer lacks the pronounced "hominy taste" of many other corn beers, such as the old Falstaff. Corn was chosen because of its lower cost, yet the brewers have to minimize flavor differences caused by this material. They want as much as possible for all their beers to have the typical "house flavor" signature. This arises from a blend of aromatic hops but even more, in my estimation, from their proprietary yeast strain. This has been well described by George Fix (see *Beer and Brewing*, Vol. 7, pp. 153-170). To prevent "grainy" notes from overpowering this very delicate house flavor, they scrub their wort.

Wort scrubbing, as I call it, involves a number of processes, some of which are trade secrets I could not reveal even if I knew what they were. One part of the process that is not a secret is flowing the hot wort over an open cooling plate while filtered sterile warm air is blown across the surface. This maximizes the evaporation of the sweet, cornlike dimethyl sulfide (DMS) and other volatile components. DMS is derived from malt, not corn, but aromatics derived from adjuncts are removed by these processes at the same time. As a result, all Anheuser-Busch products have a similar delicate aroma and flavor, despite differences in the grain bill.

Now, what does this have to do with us? Well, for one thing, it demonstrates that process is just as important to the flavor of the finished beer as the materials chosen. Just as Dreher used his malting expertise to accommodate his water supply, so the modern brewmaster must often use technical proficiency to overcome constraints forced on him by economics.

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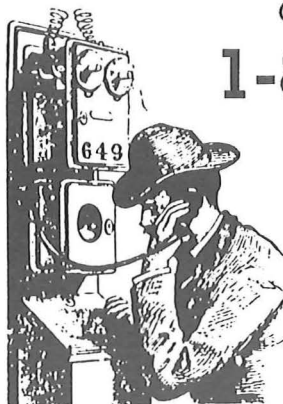
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Two examples: first, the influence of wort gravity on hop utilization. Extract brewers often make do with small kettles and boil only a couple of gallons of wort with their hops. The high gravity of the wort lowers hop utilization considerably, and recipes must be adjusted to compensate. Note that use of the alpha acid or Homebrew Bittering Units system will not help here: it only specifies how much bitterness goes into the boiler, not how much remains in the beer.

Another example: use of a wort chiller affects flavor by maximizing the cold break and preventing the multiplication of "wort spoiler" bacteria, but most directly by lowering the level of DMS in beers based on pale lager malt, or on extracts made from same. The longer the wort remains hot, the more DMS will be created. This is generally undesirable because DMS is one of those cases where more is not better. At low levels it gives a rich malty note to a beer, but at higher levels it takes on a cooked-vegetable quality that is unpleasant.

The practical point, then, is that a beer's flavor cannot be fully explained by the recipe. Details in the process can make the difference between a prize-winning brew and an also-ran. We homebrewers should pay as much attention to our methodology as we do to our ingredients.

On the other hand, there is also a philosophical point that might be raised. I mentioned the old Falstaff, with its strong "hominy" character. Most professional brewers would regard this as a defect, and eventually Falstaff adopted some more sophisticated brewing techniques and "cleaned up" their wort. The result was a drop in sales: that "corny" taste was one of the things that customers expected, and liked, in that beer. (At one time, Falstaff was the number one seller in the St. Louis market.) One man's defect is another man's flavor.

In conclusion, we can learn from the professionals' emphasis on process, but we should also remember that it has sometimes backfired on them. We choose materials according to their flavors, and that is really the best way to brew. We should appreci-

ate our freedom from extraneous considerations in creating our recipes.

Note — The author gratefully acknowledges the help of Karl Markl, chief flavor chemist at Anheuser-Busch, who provided some of the technical information in this article. However, the author alone is responsible for any factual errors, and for all opinions expressed.

Dave Miller has been a homebrewer for the past 12 years. He is a former Homebrewer of the Year (1981) and has won many other awards, including first place in the Munich category at the 1987 AHA competition. Dave serves as vice president of the St. Louis Brews and is in charge of their technical programs. Besides articles for zymurgy, he writes a monthly column for the club newsletter. He is the author of *The Complete Handbook of Home Brewing*, which will be published by Garden Way this year.



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The Brewer's Workbook

Roast, Roast, Roast Your Grains

Roasting your malt at home is a simple process that can add great depth of flavor to your beers. Freshly roasted malt, like freshly roasted coffee, has a much better flavor than the store-bought varieties. In fact, many types of malt commonly used in the past are now unavailable to the homebrewer, but excellent versions may be easily made in your oven at home.

By controlling two simple variables—time and temperature—you can make anything from Munich to chocolate, and anything in-between. The accompanying chart shows the malt types you can make by roasting at various times and temperatures.

Theory of Grain Roasting

Very simply, heating malt brings about chemical changes, creating the numerous flavors of toasting and roasting, along with the development of color.

Roasting involves a number of reactions collectively known as non-enzymic browning, also called Maillard browning. This is the basic caramel reaction, involving the combination of amino acids (protein fragments) with sugars and other carbohydrates. These reactions only occur above the boiling point, and create a huge range of flavors, each associated with a particular combination of amino acid/carbohydrate. The colors are caused by compounds called melanoidins, which are complex, polymeric, non-volatile brown pigments.

RANDY MOSHER

The aromatic chemicals formed from the union of amino acids and carbohydrates in the browning are numerous and very powerful. The most important ones, flavorwise, are cyclic organic compounds containing oxygen, sulfur and nitrogen. Of these, the most important group is the pyrazines. They display a wide range of flavors, including “roasted nutlike,” “earthy vegetable,” “mashed potatoes,” “popcorn,” “roasted,” “toasted” and on and on. Other groups of flavor chemicals from roasting include pyranones, pyridines, furanones and pyrroles. Some of these compounds are tastable at levels as low as 0.002 parts per billion. These aromatics form at different temperatures, so two malts of the same color, roasted at different temperatures, may not possess the same spectrum of flavors.

Because there are so many individual flavors associated with different malts, it is clear that a small amount of a dark malt will not produce the same flavor as a large amount of a moderately colored malt, even if the total amount of color is the same. This can create a tremendous difference in flavor between beers of the same color, and is an important fact to remember when formulating recipes. Munich light beer is much better and more true to style when made with all Munich malt [which has a European Brewing Convention (EBC) color of 16] than with a small amount of roast

malt such as crystal. The flavor just doesn't compare. Porter, when originally brewed, was made from a malt called “brown malt” (EBC 100 to 200) rather than black patent malt, suggesting that it originally had a different flavor from what we know now.

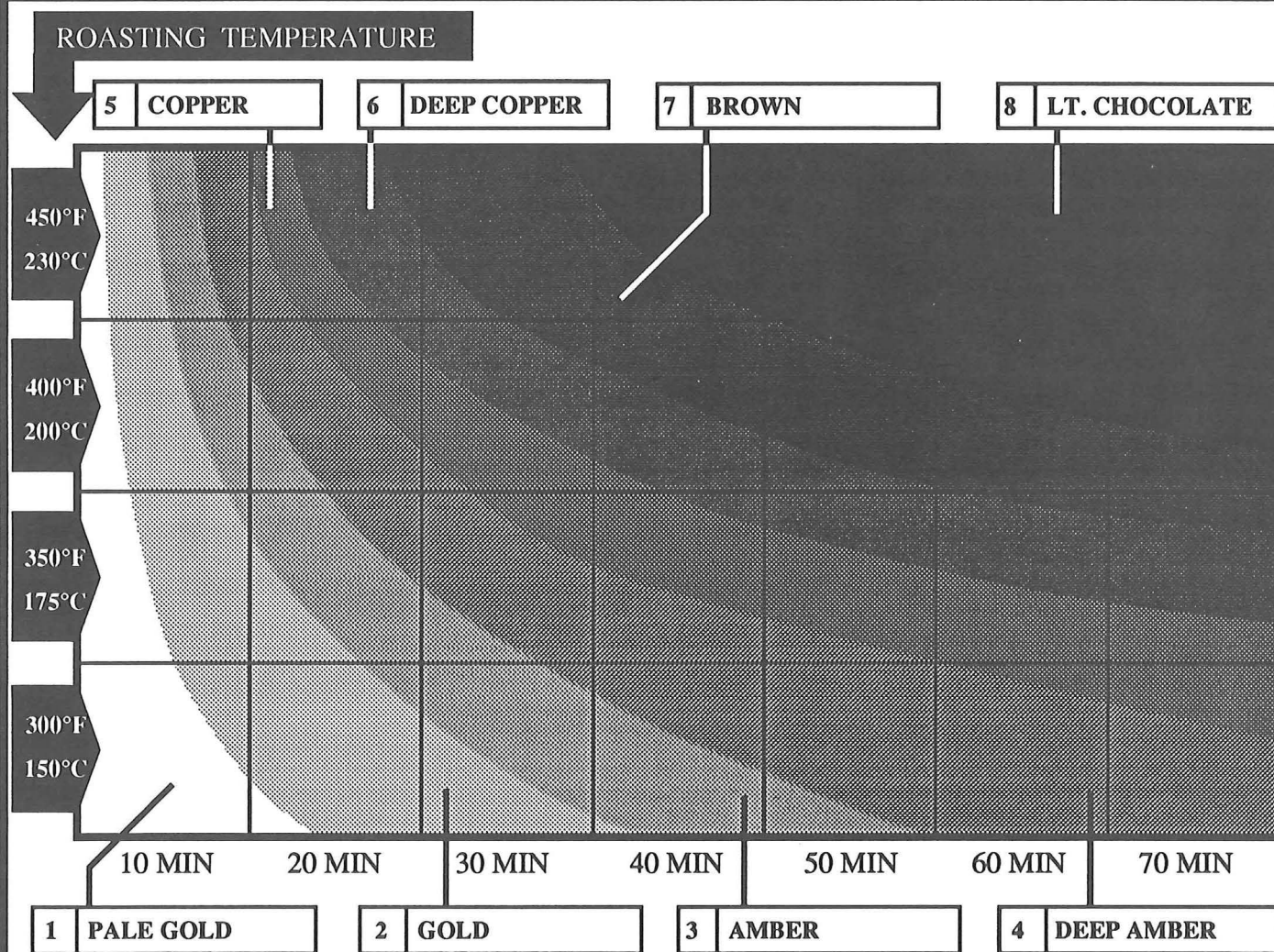
Be aware that the high temperatures of roasting will destroy the enzymes present in malt. This is of concern only when using large percentages of roasted malts such as Munich, which takes roughly twice as long to reach complete starch conversion as lager malt.

Technique for Roasting Malt

Start with pale ale malt, preferably, or lager malt. Do not grind before roasting. Spread it out in a shallow baking pan like a cake pan or cookie sheet. It shouldn't be more than an inch deep. Preheat your oven to desired temperature. Put the pan with the malt in the oven. Use a timer, or note the starting time. Stir as you see fit, roasting all the malt evenly. Follow the chart for times and temperatures for various types of roasted grains.

Toaster ovens work just as well as big ovens, but of course they don't hold as much. The control should be set on “bake” as opposed to “broil.” In a toaster oven, malt may scorch more easily than in a big oven, so watch carefully.

Be sure to check the progress of your malt as you approach the finish time. Take a few grains out of the oven and bite through the middle to check



#	COLOR	UNITS	FLAVOR
1	PALE GOLD	10	Aromatic, malty. Not toasted-tasting. Enzymes still active. Yellow-gold color.
2	GOLD	25	Malty, caramelly, rich. Not toasted-tasting. Limited enzyme activity. Brilliant gold color.
3	AMBER	45	Lightly toasted taste. Nutty, malty, caramelly. Enzymes pretty much inactive. Orange.
4	DEEP AMBER	75	Pronounced toasted flavor. Nutty, toffee-like. Reddish-copper color.
5	COPPER	125	Very strong toasted flavor. Nutty. Dark ruby-copper color.
6	DEEP COPPER	200	Roasted flavor, not toasted. Lingering, smooth, porter-y, coffee-like. Ruby Brown.
7	BROWN	300	Sharply roasted flavor. Smooth, rich, lingering. Ruby brown.
8	LT. CHOCOLATE	500	Very rich, smooth, roasted taste. Dark ruby brown.

ROASTING PROCEDURE

- 1 Preheat oven to desired temperature. Be sure oven is set on "bake", not "broil". Regular or toaster ovens are OK.
- 2 Use whole malt—pale or lager. Put desired amount on cookie sheet or cake pan. Spread out to less than 1" deep.
- 3 Place in oven for the appropriate time. Check progress by biting through malt kernels as you approach the end.

- 3 Remove when done. Store in a cool place, in an airtight container.
- 4 To use, simply grind as you would any other grain. Using more than one roasted grain type in a recipe will give the beer a richer, more complex flavor. Even very light roasting makes malt taste better.

the color. When you get what you want, remove grains from oven.

After roasting, the malt should be kept in a cool, airtight place, as the flavor compounds are highly volatile, and will dissipate quickly if given an opportunity. It's best not to store roasted grains very long, though. Roast the day you brew, if you can, for the freshest, richest roasted grain flavor. As with all malt types, don't grind them until right before you brew.

Homemade Crystal Malt

The processing of crystal malt is dramatically different from other malt types. It is produced by heating the undried or "green" malt to mashing temperatures of 155 degrees F (68 degrees C) and letting stand to allow the grain to actually mash in the husk. This creates a large percentage of long-chain dextrins, which are unfermentable by yeast. This is why crystal malt adds richness and body to beer.

After standing in the mashing range, the temperature is then raised to allow color and flavor development. When the sugary mass cools, it turns to a glassy state, giving the grain its name. Dextrin malt is similar, but is dried at low temperatures to prevent color development.

Procedure For Crystal Malt

1. Soak pale or lager malt in spring water or dechlorinated tap water for 24 hours.

2. Place in a deep baking pan, such as a bread pan, and heat slowly in an oven to a temperature of 150 degrees F. Hold for an hour or more.

3. Raise oven temperature to 170 degrees F, and hold for half an hour.

4. Raise oven temperature to 350 degrees F, and hold until desired color is reached. This could take a couple of hours.

5. Allow to cool thoroughly before grinding.

Tips for Roasting and Brewing

When using large amounts of roasted grains in a recipe, compensate by using some high-nitrogen malt such as 6-row, just as you would when co-mashing unmalted cereals.

Always keep a record of time and temperature of your various types of roasted grains.

Make sure your oven thermometer is accurate or buy a good quality, oven-proof one you can trust. Also, it may be useful to know how long it really takes for your oven to preheat.

Use your roasted grain as soon as possible after roasting. This ensures the freshest possible flavor.

Even very pale beers can benefit from a little roasted grain. Use a pound or so and roast it for just five to 10 minutes or so. This will develop some nice malty flavors without affecting the color very much, and is well worth the trouble.

Use a spectrum of various roasted malts in your beer for the fullest possible flavor.

Authentic Munich malt is made by heating wetted malt at a low temperature before raising to roasting temperatures. I suggest soaking the whole malt for no more than an hour, heating to 160 degrees F (71 degrees C) for 15 minutes, then raising to roasting temperatures for as long as it takes to dry out and become a very pale amber color.

Beer Color and Grain Color

Once you have roasted your grain, then what? You need a way to use it in recipes to get the type of beer you want.

Predicting the color of beer is accomplished much the same way as figuring hop bitterness. Each grain type may be assigned a number based on its color. In the system shown here, this number is based on the EBC figures published in the major brewing textbooks. These are pretty straightforward, and operate in a linear manner—a 50 is twice as dark as a 25, and 5 times as dark as a 10, and so on. The numbers for the more common grain types are listed here:

Corn, rice	0
Pilsener, lager	2
Pale ale	5
Mild ale	7.5
Munich	8.5
Wheat malt	16
Amber	60
Light crystal	85
Brown	160

Dark crystal	190
Chocolate	1000
Roast barley	1200
Black patent malt	1350

On the roasting chart in this article, color units (EBC) are listed for the various roasting levels, ranging from 10 to 500. These are directly comparable to the color numbers listed above.

To calculate beer color, simply multiply the color times the number of pounds for each different grain type, add up the total for the batch, then divide by the number of gallons you're brewing. This will give you a number between 5 and 500. Listed below are some beer color numbers and what they mean.

5	— Very pale beers, such as U.S. and German Pilseners
10	— Light lager beers with a touch of gold, such as Dortmunder
15	— Pale amber beers such as light pale ales, or dark pale lagers such as Munich
20–25	— Medium amber beers such as bitter, Marzen and darker pale ales
30–40	— Darker amber beers such as Vienna
50–75	— Dark lagers and brown ales
150–250	— Porter
200–350	— Stout

So there you have it. A whole new roasty toasty nutty malty world of fabulous beer flavor. Happy roasting!

Now in his fifth year of homebrewing, Randy Mosher is author and designer of *The Brewer's Workbook*, to be published by Brewers Publications this fall. Currently he is creative director for a Chicago advertising agency. Before homebrewing took over his life, he enjoyed other hobbies including wild mushroom collecting and woodworking. He and his wife, Nancy, live in Chicago. Randy will be participating in the AHA's 10th Annual National Homebrew Conference in Denver, Colo., as a featured speaker.

Principles of Beer Dispensing

The following article is the first part of a chapter from the Service Application Manual of the Refrigeration Service Engineers Society, an educational trade association serving the heating, ventilating, air conditioning and refrigeration service industry. The second half of the chapter will appear in a later issue of zymurgy. Information on seminars, training courses, and the complete Service Application Manual is available from RSES International Headquarters, 1666 Rand Rd., Des Plaines, IL 60016-3552. RSES has updated the version that appears here. However, we felt that the older version more directly addressed our readers' needs and interests. The article has been reprinted with permission.

— Editor

Beer is a food product and must be handled as such. It is a carbonated malt beverage that is aged and processed in the brewing to its peak of perfection. It is then packaged in bottles, cans and barrels, and distributed directly from the brewery, or through wholesalers to the retailers. As with all food products, the manner in which it is handled, from the time it leaves the brewery until it reaches the consumer, will determine its final taste appeal and acceptance by the con-

L.Z. CRELEY

sumer. Temperature plays an important role in maintaining the original brewery taste and quality.

Beer, as it comes from the cold brewery cellars, is the finished product of the brewmaster's art. When filled off in barrels in a cold racking room, it becomes the draft beer dispensed in the tavern. This beer is not pasteurized and contains live yeast. If it is permitted to warm up, a secondary fermentation will start and, in time, develop a sour taste and haze in the beer. This action starts between 45 and 50 degrees F. Therefore, it must be kept cold at all times, preferably between 38 and 40 degrees F. A peculiar characteristic of draft beer is that once secondary fermentation starts, it cannot be stopped, even though the temperature is again reduced to 38 degrees F. The rate at which the secondary fermentation progresses will be reduced at the lower temperature.

Bottled and canned beer are pasteurized to render the yeast inactive. This process will prevent souring and permit the beer to be exposed to room temperatures for a reasonable length of time, but packaged beer will not keep forever. Like all processed food products, packaged, pasteurized beer will deteriorate in taste and appearance with age. Again, the tempera-

As with all food products, the manner in which beer is handled will determine its final taste appeal and acceptance.

ture at which it is stored will determine the period during which it will retain its brewery goodness. The higher the temperature of exposure, the shorter will be its shelf life. All stocks of beer must be rotated. The oldest beer must always be used first so that none of it gets too old.

The average freezing point of beer is 28 degrees F; but beer will super cool when standing and exposed to low temperatures. Records indicate beer has been cooled to as low as 10 degree F without forming ice; however, by shaking or jarring the beer at this low temperature, freezing occurs immediately when the temperature rises to the normal freezing point of 28 degrees F.

During freezing, the extract separates from the water and remains separated when the beer is thawed. After an average light freeze, the container of thawed beer can be turned over to remix the extract with the water and alcohol and the beer will return to normal. When a deep freeze or multiple freezing occurs, dextrins may be thrown out of solution, forming stringy flakes or jellylike deposits that will not go back into solution. Such beer cannot be reclaimed.

Technically, the average specific gravity of beer is given as 1.015 and the specific heat as .92. For practical field applications in computing refrigeration loads, it is general practice to use the weight of beer as 8.5 pounds per gallon, as compared to 8.33 pounds per gallon for water. Also, the accepted specific heat of beer is the same as for water; namely, 1 BTU per pound per degree F change in temperature, and containers are neglected.

Carbonation

Carbonation, natural or artificial, is impregnated in beer by the brewmaster to give a balanced and pleasing taste. Too much CO₂ gas dissolved in the beer will give it a gassy taste — too little will result in a flat taste. Therefore, the original carbonation must be protected all the way to the consumer. Packaged beer usually contains from 2.5 to 2.7 volumes of CO₂ gas to one volume of beer, while draft beer usually contains from

2.4 to 2.5 volumes of CO₂ gas. The pressure exerted by the carbonation in the beer varies directly with the temperature of the product. The higher the temperature, the higher the pressure.

Because packaged beer, in general, is conveyed to the consumer in individual sealed packages, protection of its carbonation is not of great concern. Draft beer must be dispensed through special equipment, and proper temperatures and pressures are of vital importance in maintaining the original carbonation.

The primary purpose of maintaining uniform pressure in a barrel of beer while it is being dispensed is to protect the original carbonation in the beer. It is to prevent a loss of the original taste appeal created by the desired carbonation. The pressure supplied to the barrel must balance the internal pressure exerted by the carbonation and this pressure must be kept constant during the entire period through which the barrel is on tap.

The pressure media used for dispensing draft beer is air and CO₂ gas. Either may be used with satisfactory results if the beer is on tap for only a few hours, but if the beer is on tap for longer periods (for example, overnight), CO₂ is the best pressure medium to use.

Referring to the proven laws of physics we find the "Law of Partial Pressure of Gases," which states that when several different kinds of gases are released into a given room, each gas seeks its own pressure balance. This explains why gases diffuse or mix uniformly when released in a given space. Each gas expands to form its own pressure balance throughout the room.

When air is used to dispense draft beer, the CO₂ gas forming the carbonation leaves the beer and seeks its own pressure balance in the air which is made up of unlike gases. The process is slow but, in time, reduces the carbonation to a point where the beer takes on a flat taste. This condition is particularly noticeable just before the barrel is emptied. The degree of flatness is determined by the length of time the beer is on tap. The longer the beer is on tap the greater will be the decarbonation. In addition, the purity of the air and possibility of contamina-

tion of the product must be considered.

When CO₂ gas is used for pressure, it will balance the pressure of the CO₂ gas forming the carbonation, because it is a like gas. No decarbonation will result and the beer will retain its original flavor all the way to the end of the barrel. It must be noted that the use of CO₂ has limitations. If the pressure used exceeds the carbonation pressure of the beer by more than two or three pounds, over carbonation will develop toward the end of the barrel, giving the beer a gassy taste and the beer may draw wild. This condition again depends upon the time the barrel is on tap.

With properly designed dispensing equipment the average installation will give best results by using CO₂ gas for pressure.

Cleanliness

Beer is a delicate food product that is readily susceptible to contamination. Cleanliness is of utmost importance not only in the brewery but through all phases of handling, right up to the glass set before the consumer. All equipment handling beer must be designed for ease in cleaning.

In the brewery, every effort is made to maintain cleanliness of the equipment and containers, as well as the premises, to prevent infections by wild yeasts and bacteria that might change the character of the beer. Such cleanliness must be maintained wherever the beer is stored and served.

It is essential to keep the establishment clean, neat and inviting, to bring the consumer in, and to pay attention to the out-of-sight places, such as under the bar, back of the bar, basements, restrooms, and inside of the bottle and draft beer dispensing equipment. If neglected, objectionable odors can develop at these points, and odors affect consumer acceptance.

Glasses in which beer is served must be "beer clean." This means the glasses must not only be sterile, but they must also be free of all surface film. Grease, or other film on the glass, will break down the foam rapidly, and result in complaints of flat beer and poor appearance. The beer or dispensing equipment are usually blamed for this fault.



From Your Garden Vegetable Brews



hroughout history, humans have fermented something to quench thirst and ease the pain of life. Most commonly known plants used were fruits, notably grapes to make wine, and barley, which ferments into beer. However, humans being curious creatures, they have tried to ferment many other plants, flowers, roots, etc., to obtain an alcoholic beverage.

What we are concerned with here are brews fermented from the vegetables of summer gardens, such as pumpkins, peas, corn and carrots.

Peas

Pea Shell Ale or Beer was found in an 18th century Universal Receipt Book of British origin. The following formula is an exact quote.

"No production of this country abounds so much with vegetable saccharine matter as the shells of green peas. A strong decoction of them so much resembles in odor and taste, and infusion of malt (termed wort) as to deceive a brewer. This decoction rendered slightly bitter with the wood

RALPH BUCCA

sage, and afterwards fermented with yeast, affords a very excellent beverage." The method employed is as follows.

Pea Shell Ale/Beer

"Fill a boiler with the green shells of peas, pour on water til it rises 1/2 inch above the shells and simmer for three hours. Strain off the liquor, and add a strong decoction of the wood sage, or the hop, so as to render it pleasantly bitter; then ferment it in the usual manner. The wood sage is the best substitute for hops, and being free from any anodyne property, is entitled to a preference. By boiling a fresh quantity of shells in the decoction before it becomes cold, it may be so thoroughly impregnated with saccharine matter as to afford a liquor, when fermented, as strong ale."

A modern version of Pea Shell Ale/Beer might be as follows:

Boil 5 pounds of pea shells for two hours in 2 gallons of water. Then add

1 ounce hops and boil for another hour. Strain off the liquid and add ale yeast when cool. I would check the specific gravity with a hydrometer and adjust with corn sugar before pitching the yeast.

Corn

From the Americas came corn or maize, a plant unknown to Europe until the 16th century. Because corn is a staple, it also has been brewed as an alcoholic beverage. In Colombia it is called *chicha*, using a certain type of corn called *maize blando* exclusively. There are different levels of *chicha* quality and strength; the finest being *chicha flor* (our equivalent of moonshine). This is how it is made there.

Chica

Soak the *maize blando* after it has been milled in a stone mortar in dilute cane molasses (*aguamiel*, "honey-water"), ferment in a wooden cask for 12 days, boil down to a doughlike substance called *masato*, and further ferment in *aguamiel* for another 12 days.

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duced the everyday liquor called *chicha de mitaca*, and there was always a separate still going to produce the weak maize beer, *runchera*, which is usually spiced with herbs like *anillo*. Some brewers have their own secret additions. One used pepper and lime to hone the thickness of the brew. Others use such bizarre ingredients as powdered bone, rat's skull and cowhide. These practices encouraged the Colombian government to outlaw *chicha* in 1948. However, *chicha* brewing still flourishes as homebrew did during Prohibition in the 1920s.

A North American version might be as follows:

Sweet Corn Brew

Ingredients

- 1 1/2 pounds dried sweet corn
- 1 pound 6-row pale malt barley
- 1 package ale yeast
- 3 pounds dried malt extract
- 3 gallons water

Soak the corn in 2 quarts of cold water for two days, bring 1 gallon of water to boil and add the malt extract and boil for one hour. In another pan bring 1 pint of water to boil and add the barley, soak for 10 minutes and then add to the malt extract. Now add the soaked corn and add the rest of the water. When cool, add the yeast. Ferment in a primary fermenter for six days. Strain into a secondary fermenter and allow to mature for six months.

Carrots

Carrots are something you might have a lot of in a successful garden. This recipe may help.

Carrot Blast

Ingredients

- 5 pounds carrots
- 1 cup dried malt extract
- 1 gallon water
- 2 1/2 pounds corn sugar
- 2 1/4 teaspoon acid blend
- 1/2 teaspoon yeast energizer
- 1 package Champagne yeast

Scrub clean the carrots and cut off the tops and rootlings. Cut into pieces and put into nylon straining bag. Boil in the water until tender, strain, but

do not press the juice. Pour the juice over the sugar and malt and add the carrot bag and other ingredients except the yeast; add yeast the next day. Stir daily. After specific gravity reaches 1.040 strain off liquid and discard the carrot pulp. Ferment in secondary for three weeks and then rack again. Bottle in three months or when clear.

Pumpkin

Pumpkin brew is the answer of what to do with all your leftover pumpkins after Halloween. I'm not sure of the origin of this brew, but I figure it must have something to do with using up pumpkins after making pies and jack-o-lanterns. They just aren't too exciting to eat as a vegetable. Pumpkin makes a bland brew that calls out for the addition of some other flavoring such as herbs or spices; however, here is a basic recipe.

Pumpkin Brew

Ingredients

- 4 to 5 pounds pumpkin
- 2 1/2 pounds light malt extract (hopped)
- 2 1/2 gallons water
- 1 package Champagne yeast

Wash and cut open the pumpkins, remove the seeds and stringy stuff, roughly peel the skin and run the pumpkin meat through a food grinder. Boil the water and add the malt extract and boil for one hour. Put the pumpkin mush in a large nylon straining bag and put in a primary fermenter. Add the wort and the yeast when cool. Ferment all for one week and strain the liquid into a secondary fermenter, lightly press the pumpkin pulp juice also into the fermenter. Rack after three weeks and bottle in two months.

Ralph Bucca, of Fort Washington, Md., has been a homebrewer since 1972, specializing in unusual beers and wines. This interest was developed while working as a reference specialist at the Library of Congress. Ralph has been a ribbon winner at several AHA competitions. He is also president of BURP, the Washington, D.C., brew club.

FOR THE BEGINNER

SCOTT BIRDWELL

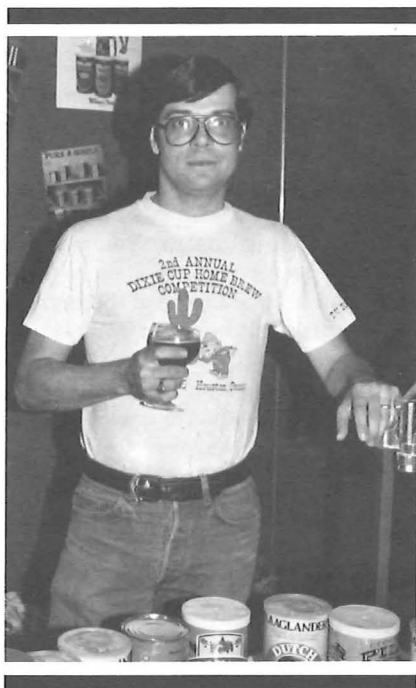
Hopped vs. Unhopped Malt Extract

Greetings, again, from the Lone Star State. Or should I say, "Howdy, from the land of Houston Homebrew!" In this issue I would like to discuss a question that has triggered a mild controversy among homebrewers for several years: the pros and cons of brewing with hopped malt extracts *vs.* unhopped malt extracts.

First, let us examine the advantages of using hopped malt extracts. Most first-time homebrewers begin their hobby with hopped extracts. This is for a very good reason. Hopped malt extracts are simply easier to use than the unhopped varieties. A simple 10- or 15-minute boil in a gallon or two of water is all that's really necessary to produce a decent beer, even the very first time you brew. This is the main reason that most shop owners and mail order houses start their novices out with hopped extracts. They are virtually "idiot proof."

After all, we want you to come back and brew more beer! If you mess up your first batch, you are not likely to be inclined to return for more ingredients. You don't have to concern yourself with such variables as which hop variety to choose, the quantity and length of boil.

Hopped extracts are faster than unhopped extracts. While a boil of only 10 to 15 minutes will produce a good brew with hopped extracts, it is advisable to boil unhopped extracts for well over half an hour in order to



Scott Birdwell, Houston, Texas

infuse the bitterness of the hops you add to the wort. I generally recommend 45 minutes to an hour. Many of the British homebrew kits instruct one to bypass the boiling stage entirely. For sterilization and clarity reasons, we strongly advise everyone to boil their wort for at least a few minutes, and you will still save a considerable amount of time over the unhopped extract method.

There are a lot more hopped extracts from which to choose. Over the last five to 10 years, the number of hopped extracts made available to the

American homebrewer has greatly outgrown the number of unhopped extracts. Checking over the shelves in my shop, I count 59 varieties of hopped malt extracts (syrops and dried malts) and only 26 varieties of unhopped extracts.

Many of these 26 varieties have been around for a number of years, while the majority of the hopped varieties are relatively new. Every couple of months it seems there are new brands and varieties and almost invariably they are hopped, generally in the form of kits. These are simply hopped malt extracts packaged with a packet of dried brewing yeast and accompanying "dump and stir" instructions. The current market trend is definitely toward more and more hopped extracts.

While hopped malt extracts typically cost a little more than the equivalent unhopped extracts, there generally is a slight savings after you add the cost of the hops (and sometimes yeast, too) necessary to bring the unhopped extracts up to the same bitterness as the hopped extracts. Let's face it, the malt extract companies have a lot more buying power when it comes to purchasing hops than homebrew retailers and wholesalers! Thus, in the long run, it's possible to save a little bit of money by buying hopped malt extract over the unhopped varieties.

Finally, you must consider the quality of hops available to you at your homebrew supplier. Unfortunately, many homebrew supply outlets sim-

ply do not take good care of their hops. I have seen hops packaged in clear bags, left at room temperature and exposed to the light. Stored under these conditions, the hops don't keep fresh for very long. If this sounds familiar, maybe you should buy the hopped extract and forego the stale yellow-brown remnants that started out as hops. (Or maybe you should find a supplier who cares enough to buy an old refrigerator to keep his hop supply as fresh as possible). It's better to use hopped malt extract than unhopped extract and stale hops.

On the other hand, if your hop supplier stocks and maintains quality hops, it is my experience that you can make a beer with fresher hop flavor and aroma with unhopped extract infused with fresh, green hops than relying on the freshness found in a can of hopped extract. That can of hopped extract has undergone a concentrating process thousands of miles away and then was stored on shelves in various warehouses. Freshness must suffer under such conditions. As with most food products, your results will be improved by using a less processed product and adding fresher ingredients.

This point brings up the major advantage to using unhopped extracts: control. When using unhopped malt extracts, you select the hop vari-

ety, you select the quantity used and you determine the balance between bitterness and aroma by deciding at what stages of the boil to add the hops. You are not at the mercy of the extract manufacturer to choose the appropriate varieties and quantities. The manufacturer will choose hops depending on local availability and price. This may not suit your particular tastes.

By using unhopped extract, you control the hop flavor from beginning to end. In other words, unhopped extracts afford you, the brewer, much more creativity in the brewing process. You can vary the flavors in the final product tremendously by changing the hop varieties, increasing and decreasing quantities, and varying the hop boiling times.

Because there is so much more creativity associated with adding your own hops, there is a corresponding feeling of satisfaction and accomplishment when your recipes are from "scratch" than the "cake mix" approach of the kit beers. You may feel that the beer you make is more yours if you have added more of the ingredients yourself rather than if you simply heated a can of prepared mix for a few minutes and then added yeast. A good analogy here is that of baking a cake. A mix is very good way to learn the basics of baking a cake, but after

you've learned the ropes, don't you feel more proud of yourself if you baked the cake from scratch? Likewise with homebrewing, there is more of you in the scratch recipes than the "dump and stir" batches. On the other hand, if you just want the simplest way to make decent beer, the kits are perfect for you.

As far as economy and selection go, one can still get around these. Some of the larger, better established shops offer light unhopped extract in bulk (either in 55-gallon or 55-pound containers). Many times this malt is cheaper than the canned hopped extracts. Also, light unhopped extract is essentially a processed version of pale malt, and pale malt is the basic building block for all beers.

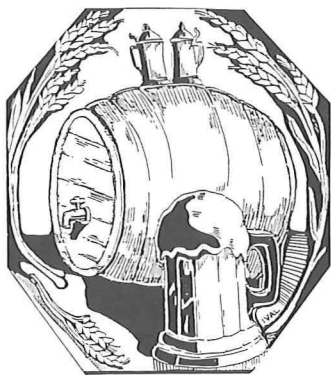
What I'm getting at here is that you can make any kind of beer you want with a good-quality light, plain extract, a selection of specialty grains such as Munich malt, crystal, chocolate, roast barley) clean brewing yeasts and good-quality hops. You can make light lagers, pale ales, bocks, porters and stouts, all from a light malt extract base. The possible combinations can make for an endless variety of beer styles. You are limited only by your imagination.

Finally, I would like to say that it is not an either-or question here. You can add extra bittering hops to hopped malt extracts, and invariably a half ounce or so of aromatic hops will enhance any hopped extract. You also can mix hopped and unhopped extracts in your recipes. It is said that "variety is the spice of life" and homebrewing is no exception.

Scott Birdwell has been brewing beer since 1978 and currently owns and operates DeFalco's Home Wine and Beer Supplies in Houston, Texas. He is a founding member of the Foam Rangers homebrew club and is the organizer of the Dixie Cup Homebrew Competition, the largest regional homebrew competition in the country. Scott is currently serving as vice president of the Home Wine And Beer Trade Association and is a member of the American Homebrewers Association Board of Advisers.

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ere are the last four categories from the 1987 competition. I thought you might like to finish up your summer brewing with the lighter, more refreshing beers.

By the time you read this, the 1988 competition will be under way. Hopefully this year will draw an even bigger turnout for both the convention and competition. I hope to see you there.

PALE ALE

Second Place

Gary Brown
West St. Paul, Minnesota
"Great Baddow Bitter"

Ingredients for 5 gallons

- 6.6 pounds John Bull light malt extract syrup
- 1/2 pound crystal malt
- 3 ounces black patent malt
- 1 ounce Northern Brewer hops (60 minutes)
- 1 1/2 ounces Cascade hops (30 minutes)
- 1 ounce Fuggles hops (30 minutes' steep after boil)
- 1 teaspoon gypsum
- 1 teaspoon Irish moss (15 minutes)
- 2 packages Edme ale yeast
- 1/2 cup dextrose to prime

- Original specific gravity: 1.042
- Terminal specific gravity: 1.020

- Age when judged (since bottling): 2 months

Judges' Comments

"Alcohol and maltiness overwhelm the nose, though the hops are perceptible; a superb crystal clear beer, a bit dark for a bitter though not out of the category. Malt/hop balance is pretty good but alcohol overbalances this beer. Very nice overall, a little dry on the finish."

"Gentle but nose-worrying bouquet. Deep, nice color. Clear. Pinpoint bubbles. Nice Belgian lace.

The taste is more simple than I expected from the look and scent. Very clean but too simple. Not enough intrigue."

Third Place

Leif Carlson
San Bruno, California
"Ossum Possum Ale"

Ingredients for 5 gallons

- 9 pounds British pale ale malt
- 1 1/4 British crystal malt
- 1/2 ounce Chinook whole hops (90 minutes)
- 1 1/2 Cascade whole hops (90 minutes)
- 1/2 ounce Chinook whole hops (5 minutes)
- 4 teaspoon gypsum
- 1/2 teaspoon Irish moss
- 1 teaspoon ascorbic acid
- 1 package Edme ale yeast
- 3/4 cup dextrose to prime



- Original specific gravity: 1.054
- Terminal specific gravity: 1.022
- Age when judged (since bottling): 2 1/2 months

Judges' Comments

"Very pleasant nose, just right hops. A truly excellent India Pale Ale (IPA) with good color and nice head. It needs more malt to balance the hops and there is a harsh aftertaste that additional malt might alleviate."

"The hop aroma needs to come through more to compensate for the malt and alcohol levels. Deep copper color is right on! Taste of hops is still overshadowed. Dry finish has a twang to it (barely perceptible). The use of higher hopping would put this beer smack dab in the IPA category."

PILSENER

Second Place

Mike Fertsch
Woburn, Massachusetts
"Izzitthewater Pilsener"

Ingredients for 5 gallons

- 4 pounds pale malt
- 3.3 pounds Munton and Fison light malt extract syrup
- 3/4 ounce Cascade hops (60 minutes)
- 3/4 ounce Hallertauer hops (40 minutes)
- 1/4 ounce Hallertauer hops (20 minutes)
- 1/4 ounce Willamette hops (20 minutes)
- 1/4 ounce Willamette hops (1 minute)
- 1 package Red Star lager yeast
- 3/4 cup dextrose to prime

- Original specific gravity: 1.046
- Terminal specific gravity: 1.009
- Age when judged (since bottling): 4 months

Judges' Comments

"Slight haze, not objectionable. Fine-bead head falls rapidly. Sharp hop aroma. Hops predominate. Clean and refreshing. A very pleasant surprise."

"Hint of peaches and diacetyl, but not offensive. Nice balance. Good overall effort but will soon go over the hill."

Third Place

Timothy R. Ness
Hyattsville, Maryland
"Nessbrau"

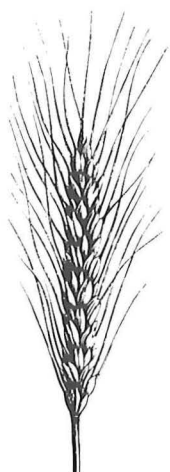
Ingredients for 4 gallons

- 5 pounds 6-row malted barley
- 1 pound flaked maize
- 2/3 ounce Hallertauer hop pellets (60 minutes)
- 1/3 ounce Saaz hops (10 minutes)
- 1 package Red Star lager yeast
- 3/4 cup dextrose to prime

- Original specific gravity: 1.041
- Terminal specific gravity: 1.013
- Age when judged (since bottling): 1 1/2 months

Judges' Comments

"Aroma slightly off. Color perfect. Hazy. Excellent head retention. Tastes like the grain may have been



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sparged too long or gotten too hot during mash or sparge. Could be cleaner. Otherwise, a good effort."

FRUIT BEER

Second Place

Fred LeVere

Des Moines, Iowa

"Jake and Elwood's Blueberry Lager"

Ingredients for 4 gallons

- 3.3 pounds Laaglander light lager hopped malt extract syrup
- 1/2 Laaglander light dry malt extract
- 1 pound clover honey
- 4 pounds blueberries (steeped 20 minutes after boil)
- 1/4 ounce Hallertauer hop pellets (dry hopped in secondary)
- 1/4 ounce Cascade hop pellets (dry hopped in secondary)
- 2 packages Laaglander lager yeast
- 1/2 cup dextrose to prime

- Original specific gravity: unknown
- Terminal specific gravity: unknown
- Age when judged (since bottling): 4 months

Judges' Comments

"Wow! What a great blueberry smell, like pie! Excellent color, deep blue purple, like pie. If anything a bit bitter, but not a fault. This is the best beer I've judged this year. I think it is best of show material!"

"Wow, what an aroma! Usually you can hardly smell blueberries. The color is wonderful and crystalline, the head nice. Exquisitely brewed. Well balanced and clean. Keep up the good work."

Third Place

Russell S. Schehrer

Denver, Colorado

"Barbara's Blueberry"

Ingredients for 5.5 gallons

- 3.3 pounds Munton and Fison light malt extract syrup
- 3 pounds Laaglander light dry malt extract

- 1/2 pound crystal malt
- 2 ounces Cluster whole hops (60 minutes)
- 3/4 ounce Willamette whole hops (1 minute)
- 1/2 teaspoon Irish moss (5 minutes)
- 6 pounds frozen blueberries (thawed and blended. Boiling wort poured on.)
- 1 package Munton yeast
- 1/2 cup dextrose to prime

- Original specific gravity: 1.048
- Terminal specific gravity: 1.015
- Age when judged (since bottling): 2 1/2 months

Judges' Comments

"Blueberries, wow! Slight malt nose. Purplish-blue head and purplish color, awesome, clear. Smooth hops finish, great blueberries, medium body, appropriate, delicious, clean. A great beer, well balanced, smooth finish. I want the recipe!"

"Fruit aroma weak, little else comes through. Nice clean purple-red color. Nice creamy head. This is the best blueberry beer I've ever had! Nice subtle balance. Nice job!"

RAUCH

Second Place

Jason W. Held

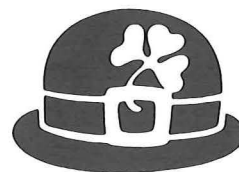
St. Charles, Missouri

"Smoke"

Ingredients for 5 gallons

- 8 pounds smoked 2-row Klages malted barley
- 1 pound Munich malt
- 1/2 pound smoked wheat malt
- 1/2 pound roasted malt
- 1 ounce Hallertauer hops (75 minutes)
- 1 ounce Hallertauer hops (45 minutes)
- 1 ounce Hallertauer hops (15 minutes)
- Brewer's Choice liquid lager yeast
- 7/8 cup dextrose to prime

- Original specific gravity: 1.058
- Terminal specific gravity: 1.017
- Age when judged (since bottling): 2 1/2 months



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Brewer's Specifics

Mash grains at 122 degrees F for one hour. Raise to 158 degrees F for two hours.

Judges' Comments

"Wow, this smells pretty smoky. I'd like it more if it were a little more subtle. Appearance is dark but beautiful. Lovely head. The brew was lighter than I was expecting from the aroma. It's a clean, well brewed beer."

"Strong smoke aroma. Dark color, clear, good head. The flavor is clean but bland. Good clean beer. Could use more hops and less smoke."

Third Place

Todd Hanson
Sheboygan, Wisconsin
"Untitled"

Ingredients for 5 gallons

- 8 pounds 2-row pale Klages malt
- 2 pounds smoked 2-row pale malt

- 1 pound corn grits
- 5 ounces wheat malt
- 2 1/2 ounces caramel 40 lovibond malt
- 1 ounce chocolate malt
- 3/16 ounce Perle hops (90 minutes)
- 1/8 ounce Northern Brewer hops (90 minutes)
- 1/16 ounce Perle hops (60 minutes)
- 3/16 ounce Saaz hops (60 minutes)
- 1/16 ounce Perle hops (30 minutes)
- 1/16 ounce Saaz hops (30 minutes)
- 1/16 ounce Tettnanger hops (30 minutes)
- 1/8 ounce Perle hops (1 minute)
- 1/16 ounce Saaz hops (1 minute)
- 1 package Semplex beer yeast Polish-filtered and CO₂ pressure added for carbonation
- Original specific gravity: 1.056
- Terminal specific gravity: 1.014
- Age when judged (since bottling): 1 month

Brewer's Specifics

2 pounds 2-row malt steeped in 125 degree F water and then smoked in a home smoker until the malt crystallized (about 12 hours).

Mash grains 122 degrees F for 45 minutes. Boost to 155 degrees F for 16 minutes. Rest at 155 degrees F for 45 minutes. Boost to 170 degrees F for 8 minutes.

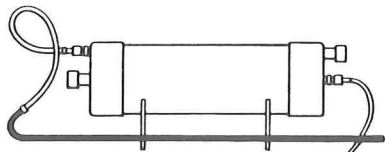
Judges' Comments

"Very light smoke aroma is present. Clear, dark amber in color. Light carbonation. A clean well balanced brew, with only very minimal smoke flavor, minimal aftertaste. An enjoyable brew, but the smoke flavor may be too subtle."

"This has a very subtle smoke quality. If I hadn't known it was a Rauch beer, I might not have picked it out. Exquisite color and lovely head. The smoke comes through better in the flavor. This is a nice well-balanced brew. Subtle enough to drink in quantity without being overwhelmed. Good job."

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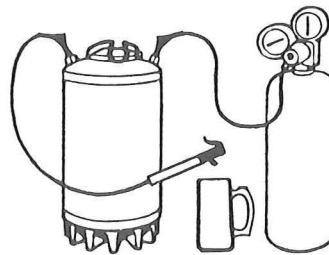
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WORLD OF WORTS

CHARLIE PAPAIZIAN

Contentful Horizon Pilsener



With the light golden hue of a continental Pilsener, assertive (but not puckering) and thoroughly quenching bitterness of hops and a lager malt flavor reminiscent of the often discussed "German beer character," Contentful Horizon Pilsener is certain to satisfy your thirst for a fresh and authentic-tasting continental Pilsener.

Designed with a balance of body and bitterness, the hopping rate is remindful of European golden Pilseners. This beer fills the ticket. Complemented with a fresh bouquet of Tettnanger and Cascade hops, Horizon Pilsener finishes with a memory of commercial beers for which you may have paid dear money. German malt extract, American 2-row malt, and dextrin malt combine to accentuate authenticity.

A setting sun, relaxation, worry-free mind and a tall cool glass of this partially mashed brew will make for your very own Contentful Horizon.

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

Contentful Horizon Pilsener

Recipe for nine gallons

For the mash:

- 10 pounds 2-row American malted barley
- 1 1/2 pound dextrin malt (for added body and head retention)

Note: you may substitute 6.6 pounds (two cans) of Hansberg Dortmunder malt extract and 2 pounds of Laaglander dried light malt extract for the malted grains.

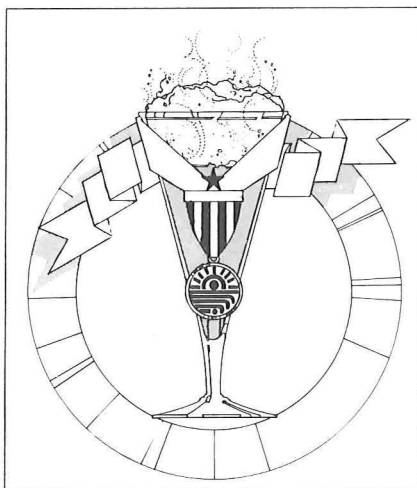


ILLUSTRATION BY STEVE LAWING

For the boil and finish:

- 3 1/3 pounds Hansberg Dortmunder malt extract
- 20 Homebrew Bittering Units for boiling (I used 1 3/4 ounce of Chinook hops)
- 1 ounce Cascade hops for finishing
- 1 ounce Tettnanger hops for finishing
- 1 to 2 packets of Red Star dried lager yeast or liquid lager yeast culture
- 1 1/2 cups corn sugar for bottling
- Original gravity: 1.042 to 1.046
- Final Gravity: 1.010 to 1.014

Add crushed grain to 2 1/2 gallons of water at 130 degrees F. Stabilize at about 120 degrees F and hold for 30 minutes. Add 5 quarts of boiling water to the mash and raise temperature to about 150 degrees F. Hold for 15 minutes. Then add heat (stir continuously while adding heat) and raise temperature to 158 degrees F

and hold for another 15 minutes. Strain and sparge with three gallons of 170-degree water and collect the sweet liquor. Add the malt extract and boiling hops and boil for one full hour. During the final two minutes add the finishing hops.

Strain and sparge wort into cleaned and sanitized fermenters that already have two gallons of cold water. Make up to nine gallons. Add yeast when 65 to 75 degrees F. If a quality liquid yeast culture is used, the quality of this beer may be enhanced at cooler fermentation temperatures (generally around 45 to 50 degrees F).

Bottle with corn sugar when fermentation is complete.

BITTERING UNITS

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 times the number of ounces. For example, if 2 oz. of Northern Brewer hops (9 percent alpha acid) and 3 oz. Cascade hops (5 percent alpha acid) were used in a 10-gallon batch, the total amount of bittering units would be 33: (2 x 9) + (3 x 5) = 18 + 15. Bittering units per gallon would be 3.3 in a 10-gallon batch or 6.6 in a 5-gallon batch, so it is important to note volumes whenever expressing bittering units.

DEAR PROFESSOR

PROFESSOR SURFEIT

The Copper-Cardboard

Dear Professor,

The cardboardy flavor problem mentioned by Bev Robertson in a recent issue could be caused by the copper mashing vessels. In Chapter 17 of *The Practical Brewer* there is a statement that copper levels over 5 ppm. can cause problems. I phoned the author of this chapter, Walter Swistowicz, to get specifics and he told me high copper levels can cause rapid oxidation leading to cardboardy flavors. If too much copper is being picked up in the mash then oxidation could be taking place in the boiler and variations in the later handling would have little effect. A single brew with stainless mashing vessels will settle the questions. Hope this helps.

Regards,
Michael Flemming,
Chicago, Illinois

Dear Michael,

Thanks for sharing results of your research. I might add that a freshly scrubbed, shiny copper vessel will contribute even more to high copper levels in the finished wort. The surface in contact with the brew should be cleaned, sanitized and treated with a protective coating of oxidation (evidenced by that dull copper look) to inhibit copper transfer. This can be done by boiling a slightly acidic solution in the vessel.

*Are you listening, Bev?
The Professor*

Staying Unemployed

Dear Professor,

If we can assume that the number of brewing-related questions in the

*"Work is work,
play is play,
beer is beer
and homebrew
is the best.
Right?"*

universe is finite, then we must acknowledge that someday you may address the final question. I find it disheartening to think that my first meeting with the professor could well be in an unemployment line. To do my part in postponing this day as long as possible, I submit the following:

I've recently purchased some silica gel, and also recently saw it mentioned in the 1987 Special Annual Troubleshooting Issue (Vol. 10, No. 4). What are your thoughts on this product? Does it suffer any detrimental effects if boiled with the priming sugar?

Assembly of my "counterflow wort chiller" is now complete, but yet untested. What are some methods of siphoning from the brewpot without plugging the chiller with hops? I can't decide whether I like the idea of boiling my hops in a bag. Do the holes in

the "Zapap" ever plug up with hops when using the setup shown on page 264 of the *Complete Joy of Home Brewing*?

In "Dear Zymurgy" Fall 1987 issue (Vol. 10, No. 3) mention is made of an article about the Tarahumara Indians and their "tesquino." The editor answers that this article can be found in the Fall 1986 issue (Vol. 9, No. 6). The Fall 1986 issue is Vol. 9, No. 3, and the article does not seem to be in it. I have some friends who have lived near the Tarahumara and sampled their brew. Could you lean over and ask the editor where that article really is?

I've always wondered whether cactus fruit contains any pectin. In the prickly pear mead recipe (Summer 1987, Vol. 10, No. 2) Dave Spaulding suggests boiling the fruit for two hours. This would seem to imply that pectin haze will not be a problem. My method is to singe and peel the fruit, purée in a blender, strain it through cheesecloth and add to the 170-degree "wort." Which method do you think is preferable?

Bottled distilled water sold in supermarkets seems to have a strange flavor. Will this be detectable in beers brewed with either all or part distilled water?

Where can I find the oft-mentioned yet seemingly mythical 6 1/2- or 7-gallon carboy? The bottled water company where I get my 5-gallon carboys says, "huh?"

How does one get yeast off the bottom of a carboy in order to reuse it?

Did you ever make the juniper mead you mentioned in one issue or another?

Could lactic acid be used successfully to reproduce the flavor of lam-

bics, Flanders and other Belgian styles?

Regarding Gregory Noonan's article on decoction mashing featured in the Troubleshooting issue, how can repeated boiling of portions of the mash not result in excessive amounts of tannin being leached from the grain husks?

I hope this barrage of questions has caught you on a slow day and also served to solidify your tenure in the academic hierarchy of brewing.

Forever undergraduate,
Jack Means
Tucson, Arizona

Dear Jack,

Holy smokes, man, how long had you been without a homebrew when you put a pen to this letter? Next time send me installments or chapters!

But work is work, play is play, beer is beer and homebrew is the best. Right? So here I go.

Silica gel. This stuff is an inorganic silica adsorbent that would not be affected by boiling. Furthermore, a homebrewer would get little use from this stuff unless it is added to finished beer that has been filtered. The yeast in homebrew will inhibit its effectiveness. If used, it is best to filter silica gel out of your beer.

Wort chiller intake: Here's a simple method to help avoid siphoning hops and trub into your wort-chiller system: Stir hot wort and develop a whirlpool. Like tea leaves in a cup, the hops and trub will migrate to the center of the pot. Put your siphon intake on the perimeter of the pot of wort. You may also fashion a strainer around the siphon end or seal the end of a copper tube and cut small slots for intakes.

Zapap: Hops are not as heavy, nor do they have the configuration of crushed malt; thus, hops are far less likely to clog a Zapap hop back/lauter tun. I've never had the problem.

Tarahumara Indians: You may have noticed our correction in the winter issue of zymurgy. We should have referred to zymurgy Fall 1980, Vol. 3, No. 3.

Prickly pear pectin: I'm sure prickly pear fruit has pectin in it and you have made a good observation. Theoretically, one might have problems with pectin haze. Let me tell you my experiences. Once I followed the recipe exactly and there was no problem with clarity. Another time I boiled the strained fruit juice with the honey. Not only has the mead not cleared, but

the deep red color was quickly lost in the boil. Because there hasn't been a whole lot of research conducted on prickly pear mead, I can advise you to follow the recipe exactly if you want predictable results. Let me know what results you get so we can add to the reams of research.

Distilled water: Strange flavor? I can only guess that what you are referring to is an absence of flavor. Distilled water used in brewing can be used with malt extracts as is, or, if used with grain brewing, minerals such as calcium sulfate should be added.

Big carboys: Those larger carboys are not used by the water-bottling industry. They are used in the chemical industry to package nitric or sulfuric acids. They do show up from time

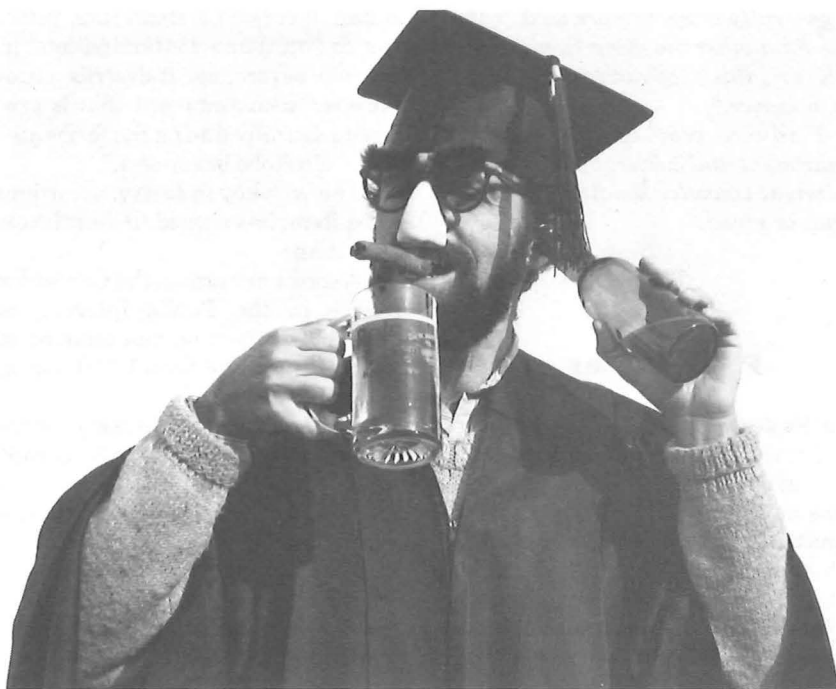


PHOTO BY MONICA FAVRE

"Hello?" Professor Surfeit, Hb.D., telefoams home to the folks in Wurry-phree, Colo.

to time. I have a dozen myself. You can often purchase them from your local retail store.

Yeast off your bottom: Pick up the carboy, swirl the liquid around and pour the yeast out. It is very important to "flame" the lip of the carboy, or swab it with grain alcohol (ethanol), to sterilize the glass that will be in contact with the yeast slurry as you pour it out.

Juniper mead: Nope.

Lactic acid and lambics. The character of lambic beers does not come only from lactic acid. Hundreds of other things are going on with the unique yeast and bacteria strains used in brewing this beer. Gregory Noonan has written an excellent article in the November-December 1987 *The New Brewer* magazine on the brewing of lambic beers. It would be well worth your while getting a copy if you are interested in learning all that has been written in English about this unique Belgian beer.

Tannins in decoctions: Greg Noonan in the 1987 *Troubleshooting* issue of *zymurgy* (page 42) states that "Whenever a mash is direct fired and grist is allowed to burn on the heated surface, harsh tannins will be leached into the extract. Decoctions are especially susceptible to this problem from the point at which heating is begun until boiling ensues. Decoction mashing generally extracts more husk fractions than other mashing techniques. With care, this need not cause a problem, however."

I admire your concern for my employment and career, but next time you might consider sending me beer, money or mead.

*Never a slow day,
The Professor, Hb.D.*

P - U Water

Dear Professor,

I'm thinking of moving to a good old Illinois farm. Good old Illinois farms have good old well water. The farms that I have looked at have water with very high sulfur and iron content.

I have several questions. 1. Is it safe to sanitize and rinse equipment and bottles without the beer picking up any off-flavors (i.e., rotten egg brau)? 2. If not, what can be done as

an alternative? 3. Is there any possible way to treat the water so it can be used for brewing?

Can't wait to hear from you,

Steve Kamp

Palos Heights, Illinois

Dear Steve,

I know exactly what you mean. What a bummer, hey? No, I wouldn't use that water as a final rinse for anything that's going to be in contact with your beer. You might check with Sears, Montgomery Ward or look up "Water Conditioning" in the Yellow Pages. They have systems that can clean up your water, but make them aware that you don't want to end up with a lot of minerals in your beer, particularly sodium ions. There are salespeople who would be glad to make a house call, I'm sure.

You can hook up a system and have it working only when you need it. There are probably several alternatives.

*Stinky-poo brew,
The Professor, Hb.D.*

Poisoned Beer?

Dear Professor,

The Washington Post food section on Jan. 6 carried a small item referring to "urethane contamination" in alcoholic beverages. It describes urethane as "a contaminant that is produced naturally during the fermentation of alcoholic beverages."

The whiskey industry, according to the item, has agreed to limit levels of urethane.

A consumer group, the Center for Science in the Public Interest, is hawking a report on the amount of urethane in "more than 1,000 wines, liquors, and beers..."

I am sure you are already aware of this problem, but I am also sure it would be helpful to all homebrewers to have your authoritative report on how these allegations affect us, if at all.

I look forward to your giving us the word on this topic.

And thanks for all your help in *zymurgy*, Professor.

Faternally,
Glenn W. Nelson
Vienna, Virginia

Dear Glenn,

Great to hear from you again, you old rascal, you.

I did a little investigating and discovered that urethane levels can be quite high in whiskeys, wines and brandies. Some of the measurements are frightening. However, one of my colleagues assures me that of the major domestic beers tested there were no parts per billion of detectable urethane, also known as ethyl carbonate. In spot testing of Canadian beers they found less than 5 ppb in one beer and in a spot test of German beers they found less than 11 ppb in a particular sample. Now this compares with whiskeys tested that had 300 ppb, and one brandy with 12,000 ppb!

The concern over commercially brewed American beers seems to be, at first indications, negligible.

*That's the word for now,
The Professor, Hb.D.*

Bad Plastic

Dear Professor Surfeit,

I have fashioned a lauter-tun for my all-grain brews from a large plastic tub originally sold as a planter in the garden department of many stores. By drilling holes in the bottom, which is then covered with cheesecloth to contain the grain, large amounts of grain can be easily and efficiently sparged. I have only one worry that inhibits my relaxation. Being made for plants, the lauter-tun is not stamped FDA approved, and I don't know what chemicals might be in the hard plastic. What are the chances that I am leaching carcinogens into my wort?

Sincerely,
Thomas Attenbach
Tracy, California

Dear Thomas,

If not stated that it is food-grade and FDA approved, don't take the chance. Either write the company to find out or opt for buying a quality food-grade container at your local homebrew shop, or use a discarded food-grade bucket from your local restaurant.

*Not worth it,
The Professor, Hb.D.*

REVIEWS

COLONEL JOHN



AUSTRALIAN BEER KIT BY JOHN BULL

John Bull beer kits claim 150 years of brewing experience. Australian beer kit contains 3.3 pounds of malt extract, hop extract and a packet of brewing yeast. Instructions are enclosed and more fermentable sugars must be added to make five U.S. gallons.

One hopped kit and two pounds of light dry extract were dissolved in one gallon of hot water and boiled for 45 minutes, then combined with boiled, cooled water in the fermenter. The hydrated yeast was pitched at 80 degrees F and O.G. 1.041.

The ferment proceeded at 60 degrees F and the beer was bottled, using three-fourths cup of corn sugar after seven days in the fermenter. Terminal Gravity was 1.025 at 60 degrees F.

After three weeks in the bottle, Australian beer was quite clear with a pale color and a small, long-lasting creamy head. The brew had a mild, fruity, alelike flavor and aroma that should improve with aging. I believe

Australian beer could be improved with an extra half ounce of mild boiling hops.

— Colonel John



KANGABROO LAGER BY KWOFFIT

Kangabroo Australian-style lager is made by Kwoffit of England. The four-pound can contains malt extract, yeast and about 10 percent invert sugar.

Complete instructions are on the wrapper for an almost no-boil recipe. Additional fermentable sugars must be added to make six U.S. gallons.

The four-pound can of syrup plus two pounds of light dry extract were dissolved in one gallon of hot water, then boiled for 45 minutes. Boiled and cooled water was added to bring up to quantity and temperature of 80 degrees F and original gravity of 1.040.

Ferment continued to end point 1.012 at 60 degrees F. The brew was bottled on the seventh day and primed with one cup of corn sugar. The review was preceded by three weeks' storage in the bottle.

Kangabroo lager was extremely clear with a very light color and a small, long-lasting, pale head. A clean aroma and flavor made it a very thirst-quenching drink quite in line with some excellent commercially brewed Australian lager beers.

The hopping rate was mild but quite sufficient for most homebrewers. There were no cidery or other unpleasant flavors or aromas to detract from the delights of Kangabroo. I am very pleased to have the chance to make and drink Kangabroo.

— Colonel John



SLOANE'S DARK HOPPED MALT EXTRACT

Sloane's malt extract contains carbohydrates in readily assimilated form, according to the label of this extract, which is no longer available. The company also claimed a teaspoonful three times daily after meals would be found helpful to those who cannot easily digest starchy foods. It is a body builder for infants and children and very helpful for the nursing mother.

"Mix one tablespoonful of Sloane's brand malt extract in a glass of milk, add sugar to taste. This makes an invigorating delicious beverage, and one that has a slightly laxative effect," the label said. "Use a

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teaspoonful of Sloane's malt extract when mixing bread dough to improve your bread."

Recently I came in possession of two cans of Sloane's malt extract, a total of five pounds—just enough to make five gallons of brew. It can no longer be purchased.

I dissolved the five pounds in one gallon of hot water and boiled for 45 minutes. The wort was added to boiled cooled water in the fermenter to reach five gallons at 80 degrees F and O.G. 1.036. Pitched with one package of hydrated Edme yeast, the wort fermented to end point T.G. 1.015 at 60 degrees F in seven days.

After 30 days in the bottle, Sloane's was a rich red color, similar to British strong bitters. A buttery diacetyl aroma was quite evident. Hop bitterness was virtually nonexistent and may have just faded away because of the extreme age of this malt extract.

Are there more cans of Sloane's out there somewhere? Perhaps others have had better luck with it than I did.

— Colonel John

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HOME BREW CLUBS

LINDA DUNHAM

zymurgy always welcomes news and photos of homebrew club members and events. Send information to Linda Dunham, Club News Editor, c/o zymurgy, PO Box 287, Boulder, CO 80306-0287.

NEW CLUBS

Birmingham Brewmasters: At the black beer meeting in February, Klaus Anderson won the tasting. Bill Kelly, treasurer, has opened a checking account in the club's name. The April meeting was a second anniversary party and May will be a "Hail to the AHA" meeting. Congratulations to Katy Sreenan and Robert Moore for winning first place in stouts at the national club competition. Meetings are the first Thursday of the month at the Birmingham Homebrew Shop, 186 Oxmoor Rd. Send correspondence to Ben Meisler, c/o The Rime Co., 500 Robert Jemison Rd., Birmingham, AL 35209.

Deep Wort Brew Club: Dedicated to brewing and drinking beer, the club has disavowed formal structure. However, members are developing expertise in the areas of home mashing and yeast propagation. Contact: Bob Wood, 110 S. Limit St., Colorado Springs, CO 80905, (303)520-0348.

High Desert Homebrewers: Although this club is not new, it is their first submission of news to *zymurgy*. Leonard Cox won the club pale ale competition. The club will sponsor the third annual homebrew competition at the 1988 San Bernardino County Fair. Officers for 1988 are Bob Anderson, president; Melani Caldwell, vice-president; and Sherry Borland, secretary-treasurer. Contact: Scott Bryan, 15107 Burns Dr., Apple Valley, CA 92307.

Three Rivers Alliance of Serious Homebrewers (TRASH): About 50 people got together for the first annual picnic in western Pennsylvania last August. Everyone enjoyed more than 12 kegs of excellent lagers, ales and wheat beers. The club recently met at Chiodo's Tavern where their best brews were sampled and compared to similar styles of commercial beer graciously provided by Sam and Joe Chiodo. Mark Benson, Ron Enrico and Greg Walz assisted Sharryn Donn Campbell at her monthly professional beer tasting sessions for the Pittsburgh Learning Annex. Contact: Greg Walz, 3327 Allendorf St., Pittsburgh, PA 15204.

ARIZONA

Brewmeisters Anonymous: Harry and Kim reported on their California beer trip, and shared Shiner beer from their Texas trip. Bruce demonstrated all-grain brewing. Gerry modeled a T-shirt design. Charles demonstrated his kegging system at a recent meeting. With the help of the Tucson club, Brewmeisters Anonymous hosted the Arizona state homebrew competition in May. Club officers are Alan Toogood, presi-



Members of the Three Rivers Alliance of Serious Homebrewers (T.R.A.S.H.), western Pennsylvania, gathered for their first annual picnic last summer.

dent; Don Robinson, vice president/treasurer; and Harold Gee, secretary/publisher. Contact: Harold Gee, 242 W. Ivyglen, Mesa, AZ 85201, (602)834-3974.

CALIFORNIA

Anza Brewers and Connoisseurs: A number of beers were tasted and rated at the "Winter Beer" meeting in December. Members gathered at Chuck Parmenter's house for a tasting of microbrewery beers from the Northwest in January. Contact: Al Andrews, 5740 Via Sotelo, Riverside, CA 92506.

Barley Bandits: Keith Campitelli provided snacks for the Christmas ale competition and an all-grain Christmas ale brewed for the club by Terry warmed spirits. Annual dues are \$12 and include a 10 percent discount at Fun Fermentations. Contact: Terry Hale, 1822 Howard Ct., West Covina, CA 91792, (818) 330-0416.

Beer Drinkers International: Their newsletter reviews specialty brews, breweries and assorted brew news around the world. A cartoon contest is under way with prizes from Phoenix Imports Ltd. Contact: Bunny Bosak, PO Box 6402, Ocean Hills, CA 92056.

Butte County Brew Crew: Peter Allison shared his slides and tales of a recent tour through Europe and Oktoberfest in Munich. Contact: Bill Kalberer, The Home Brew Shop, 331 Main St., Chico, CA 95928, (916) 342-3768.

Clan de Stein: Jim Knutson, Walt Brown and Ed Keay won prizes at the Maltose Falcon's Oktoberfest. The club "beach beer" and assorted Christmas brews were enjoyed at the Christmas party. Contact: Ed and Diane Keay, 183 Nob Hill Lane, Ventura, CA 93003.

Foam Heads: Bob Palmer hosted a family Christmas party. The club met at Ron Baker's to organize 1988 activities and distribute T-shirts. Plans were made to visit the new City of Angels brewery in Santa Monica with brewer Dennis Miller leading a tour. Contact: Mike Montez, The Brewer's Mart, 16114 Leffco Rd., Whittier, CA 90603, (213)947-5170.

Inland Empire Brewers: Mugs with club logo are available for \$12 each. Commercial and homebrewed Continental light beers were tasted in February. Congratulations to John Meyncke for his first-place win in the Bisbee, Ariz., club's Oktoberfest contest. The club sent 13 entries to the National Club Brew-off in North Carolina. Club officers are Jim Noble, president; John Meyncke, first vice president; Mark Martin, second vice president; and Sam Wammack, secretary/treasurer. Annual dues are \$12. Contact: Sam Wammack, 16490 Jurupa Ave., Fontana, CA 92335, (714)822-3010.

Maltose Falcon Homebrew Society: Members enjoyed a Cajun-Creole fest in January. Glenn Eckert and Russ Fleming demonstrated all-grain brewing in February. City of Angels Brewmaster Dennis Miller spoke at a

March meeting. Members gathered to celebrate spring at Mayfaire. Contact: Maureen Nye, 22836 Ventura Blvd., Woodland Hills, CA 91364.

Redwood Lagers: Beer styles to complement various culinary creations were explored by Brad Gordon. Contact: Brad Gordon, PO Box 323, San Rafael, CA 94915, (415) 459-7401.

San Andreas Malts: Congratulations to Brendan Moylan for his first place in the California State Homebrew Competition. Second- and third-place winners were Gene Jensen, Steve Norris, Grant Johnston, Dave Suurballe, Bob Cutten, Diane Donovan, Tom Heckman and Dave Nehr Korn. Bob Garabedian won a CO₂ rig as first prize in the Holiday Ale Taste-off. Tom Richard placed second and Ed Tringali placed third. Rick Hendricks and Brendan Moylan's kegged beers were tasted at the February meeting. The Oyster Barbecue in April was the year's first big bash. Annual dues are \$12. Contact: Brendan Moylan, PO Box 40744, San Francisco, CA 94110, (415) 994-2771.

Santa Clara Valley Brewers Association: Beer glasses with a silk-screened club logo are available. The third annual Bay Area Brew-off, directed by Bob Hufford, has been officially endorsed by the HWBTA. Bill Kirk and Steve Schwake took first, and Rick Moshin, Bob Hufford and Steve Evers won second and third places at the California State Homebrew Competition. Contact: Rick Moshin, 1876 W. San Carlos Ave., San Jose, CA 95128, (408) 294-7321.

Shasta County Sudsers: Members visited Oscar and Stella Matson's winery for an afternoon of tasting with munchies provided by participants. Annual dues are \$6 per family. Contact: Ray Ault, PO Box 839, Anderson, CA 96007, (916) 347-5475.

Worts of Wisdom: Club officers were elected and bylaws approved at the January meeting. Dan Goulet and Dave TenEyck won third place at the ninth annual California State Homebrew Competition. Dues are \$1 per meeting. Contact: Dick Bemis, c/o The Fermentation Settlement, 1211C Kenwood Ave., San Jose, CA 95129, (408) 973-8970.

CONNECTICUT

Underground Brewers' Club of South-eastern Connecticut: Commercial beers were tasted and rated at the January meeting. Roy and Susan Laing hosted the February meeting where 36 beers were tasted, and members met at Earl Harrington's in March. Contact: Pat Baker, 11 Riverfield Dr., Weston, CT 06883.

ILLINOIS

Chicago Beer Society: A subgroup has been formed to expand the homebrewing base of the Society and to sponsor more homebrew-oriented events in the future. They met recently at Dan Kasen's for their first group mash. Contact: CBS, PO Box 1057 LaGrange Park, IL 60525.

Headhunters Brewing Club: A mid-winter beer contest was held in February. Congratulations to first-place winners John Gunser (also Best of Show), Joe Duhon, Frank Evans, Jeff Wielert, Steve Klafka, Marty Nachel and Michael Howe. Don Byrd won the wine tasting and competition with his famous apple wine. Contact: Greg and Lynne Lawrence, Rt. 1, Box 64W, Sugar Grove, IL 60554, (312) 557-2523.

KANSAS

Kansas City Bier Meisters: Founder of the new Free State Brewing Co., Chuck Magerl, gave a captivating presentation on pub breweries.

"Beer kegging for the homebrewer" was presented by Jackie Rager at the January meeting. Contact: Alberta Rager, 5531 Reeds Rd., Mission, KS 66202, (913) 236-5953.

LOUISIANA

Crescent City Homebrewers: The club ranked fourth in the Dixie Cup Regional Contest. Andy Thomas, Woody Dahl and John Dauenhauer took first places and Harold Hochhalter took a second. Steve Clark cooked five gallons of smoked turkey gumbo as a gift from the club. Contact: John Dauenhauer, 3709 Harvard Ave., Metairie, LA 70006, (504) 455-5700.

MASSACHUSETTS

Boston Wort Processors: Club officers elected for 1988 are Tom Ayres, president; Linda Lane, vice president; Steve Stroud, secretary, Arnie Peterson, treasurer; and Mike Fertsch, Librarian. Arnie Peterson presented his second draft of proposed bylaws and Larry Flint is working on updating the logo. Congratulations to Bill Murphy, Dave Ruggiero and Mike Fertsch for their winning entries in the New England Fall Regional Homebrew Competition. Annual dues are \$10. Contact: Steve Stroud, 15 Dunbar Ave., Medford, MA 02155, (617) 395-6822.

Valley Fermenters: Author Stephen Morris, best known for "The Great American Beer Trek," was guest speaker at a recent meeting. The Valley Fermenters, with Charlie Olchowski serving as organizer, were the host club for the New England Fall Regional Homebrew Competition and Judging. Annual dues are \$10.

MISSOURI

Missouri Winemaking Society: Dave Anderson shared his experience of touring the Tedeschi Winery in Maui. The 1988 Midwest Regional Grape and Wine Conference at the Lake of the Ozarks was well represented by the club. Jim Howard is Wine Fair chairman, and Bacchus and Barleycorn sponsored the 1988 HWBTA International Wine Competition in March. Dr. Bob Goodman gave a presentation on his vineyard management practices at Bacchus Vineyards in Columbia. Paul Hendricks was named new club cellar master. Contact: Bob Bubenik, 7314 Manchester, Maplewood, MO 63143.

St. Louis Brews: Guest speaker Karl Markl of Anheuser-Busch gave a slide presentation on hop utilization and quality control in brewing. Contact: John Standeven, 7314 Manchester, St. Louis, MO 63143.

MONTANA

Zoo City Zymurgists: Club rules are: no member will be allowed to drive home intoxicated; members must be of legal drinking age; underage guests may attend meetings, but may not drink; dues are \$15 per year or \$2 per meeting per person; officers' terms are six months. Troubleshooting was discussed at Jeff and Tami Kenny's house in March. Skip and Susan Madsen hosted the April meeting where Bock beer was sampled. Contact: Dan Hall, 6520 Hwy. 10W, Missoula, MT 59802, (406) 549-9731.

NEVADA

Washoe Zephyr Zymurgists: Three awards will be given by the club annually: a label contest, best homebrewer and best homebrew. The best homebrew award will be presented to the highest rated homebrew from the year's

monthly WZZ meetings. The winner of the best homebrewer award will be determined by the highest average of each member's top three ratings of homebrews from the year's monthly meetings. Contact: Bill and Sue Marble, 11670 Fir, Reno, NV 89506, (702) 972-7438.

NEW JERSEY

Mid-Atlantic Sudsers and Hoppers (MASH): The Christmas party was hosted by Ed Busch, and a "stein" was passed on to the new officers to signify their new posts. 1988 MASH officers are Mark Bernick, president; Bud Libman, vice-president; and Doug Wagley, secretary. Annual dues are \$12. Contact: Ed Busch, PO Box 105, Flagtown, NJ 08821, (201) 359-3235.

NEW YORK

Amateur Brewers of Central New York: Dave Kapral, assistant Brewmaster of Anheuser-Busch Brewery, led a club tour in January. Members attended a beer and wine tasting sponsored by Empire State Brew Masters. Brewing techniques were demonstrated by Bob Googin and Mark Lowry in March. Noted beer critic David Graham introduced eight unique imported and domestic beers at a gourmet beer dinner in April. Annual dues are \$10. Contact: Dick Goyer, 301 Wellington Rd., Dewitt, NY 13214.

American Wine Society: Richard Vine, Ph.D., received the society's prestigious Award of Merit. Richard D. Scheer was named the society's Outstanding Member for 1987. Angel Nardone, executive secretary from Rochester, N.Y., and Claude Soiron, treasurer from West Chester, Pa., were re-elected to the Board of Directors. Contact: Angel Nardone, 3006 Latta Rd., Rochester, NY 14612, (716) 225-7613.

Broome County Fermenters Association: Club officers for 1988 are Sam Bigelow, president; Jim Petrozello, vice president; Brice Feal, secretary; and Tom Elliott, treasurer. Sam Bigelow won first place in the brown beer competition. Dave Petrozello, Frank Haining and Sean Brady took first prizes in three categories of black beers. Winners of the amber beer contest were Mike Franznick, Roger Haggett and Bill Baird. Contact: Brice Feal, 2601 Grandview Pl., Endicott, NY 13760.

Upstate New York Homebrewers Association: Club officers for 1988 are Gary Bouchard, president; Dick Codori, vice president; and Jeff Tonges, treasurer. New Amsterdam Brewery mugs were awarded as prizes for the English bitter mini-contest. Gary Bouchard prepared a yeast experiment to test how various techniques affect the overall taste of beer. Contact: Gary Bouchard, PO Box 23541, Rochester, NY 14692, (716) 377-5525.

NORTH CAROLINA

Triangle Homebrewers League: Mike brought back fresh hops ordered from Oregon. Steve Levison organized an informal experiment to determine differences in fermentation techniques. Officers for 1988 are Mike Barrett, president; Rick Rinehart, vice president; and Steve Levison, treasurer. The club meets each month at a member's house on a rotating basis.

OHIO

Dayton Regional Amateur Fermentation Technologists (DRAFT): A local newspaper recently featured Patrick Pickett and his homebrewing operation. Contact: Patrick Pick-

ett, 109 Oakview Dr., Kettering, OH 45429, (513) 293-3019.

OREGON

Oregon Brew Crew: The annual Christmas potluck party was held at Big John's Deli. Sausages were washed down with Christmas Cheer Beer brewed by Brent Hoffman, Pete Jelinek, Roger Hoffman and Chuck Davidshofer. Karl Ockert organized a brew-in at the Columbia River Brewery as an introduction to all-grain brewing. Contact: Jeff Frane, PO Box 14473, Portland, OR 97214, (503) 231-7620 (evenings), 238-4894 (days).

Heart of the Valley: Members toured the Oregon Trail Brewery and sampled their offerings. Clair and Ark Keith hosted a recent meeting at their mountain retreat. Contact: Greg Storms, 1785 N.W. Arthur Circle, Corvallis, OR 97330, (503) 757-8497.

PENNSYLVANIA

Homebrewers of Philadelphia and Suburbs (HOPS): Congratulations to HOPS brewers with winning entries in the Mid-Atlantic Regional Homebrew Competition: S. Glass, R. Gleeson, J. Muzik, K. Denke and P. Moore, D. Mela, and J. Ullman. Club officers are Charlie Brem, president; Rich Gleeson, secretary; and Dave Mela, treasurer and editor. Annual dues are \$12. Contact: Dave Mela, 6609 Greenway Ave., Philadelphia, PA 19142.

SOUTH CAROLINA

Hopportunity: Malt mashing techniques were demonstrated by Jim Condon and Kay Cope. The winner of the club's first annual bock contest received paid entry into AHA's sponsored competition, a ribbon and beer stein. Officers were elected in February. Contact: Tom King, PO Box 71, Clemson, SC 29633, (803) 638-6331.

TEXAS

Arlington Homebrewers: The Kalamazoo Microbrewery tasting and judging was held in February, as well as the Bluebonnet Brew-off co-sponsored by this club. In March, the club held its third annual Bock-off competition. Six-month dues are \$15. Contact: Herschel Gibbs, 3201 W. Division, Arlington, TX 76012, (817) 860-8430.

Bock 'n' Ale-ians: The club has become even more informal and eliminated dues and elected officials altogether. The beer is flowing and new members are flocking to the club. Al Hymer took a second place for his steam beer in the Dixie Cup contest. Contact: Al Hymer, 1932 W. Huisache, San Antonio, TX 78201, (512) 734-8723.

Cowtown Cappers: Cy Martin took third place for his Continental light in the 1987 Dixie Cup. Randy Buhler was awarded first place as 1987 Masterbrewer. Jo and Nick Gregory hosted the Bluebonnet Brew-off in February. Club officers are Rob Stenson, president; Ron Calhoun, vice-president; Tonia Jackson, secretary/treasurer; and Larry Peplinski, Sergeant at Arms. Contact: Rob Stenson, c/o The Winemaker Shop, 3132 W. Seventh St., Ft. Worth, TX 76107, (817) 877-1277.

Foam Rangers: Congratulations to club winners of the Fourth Annual Dixie Cup Homebrew Competition: Steve Roberts, Steve Daniel, Tim and Susan Davis, Bill Todd-Brown, John Adams, Bob Lewis, David Ramsey, Cary Jensen, H.M. Keith and Cathy Laird, Linda Livesay, Bill Watts, David Lupin, Buck Wyckoff, Peter Lott, Don Wilson, Roy Cross, Henry Ben Dacres, Kenneth Eppler and Caron Carlin. Congratula-

tions to Scott Birdwell and H.B. Dacres for their second-place winnings in the 1988 Bluebonnet Brew-off; the Rangers took fourth place in the club competition. The Eighth Annual Foam Rangers Club Contest was held in February as a preliminary round for the HWBTA nationals. Mike Seidensticker formulated a series of brewing experiments designed to explore the effect of changing a single variable in a basic recipe. Club officers for 1988 are Don Wilson, Grand Wazoo; Mike Seidensticker, Secondary Fermenter; Scott Birdwell, Head Bozo in Charge of Special Events; and Buck Wyckoff, Purser/Scrivner and Brewsletter editor. Annual dues are \$12. Contact: Don Wilson, c/o DeFalco's Home Wine and Beer Supplies, 5611 Morningside Dr., Houston, TX 77005, (713) 523-8154.

North Texas Home Brewers Association: The annual Christmas party was hosted by Rob Bristow. Club T-shirts are available to members for \$7. Annual dues are \$12. Contact: Paul Seaward, Olla Podrida, 12215 Coit Rd., Suite 232, Dallas, TX 75251, (214) 233-7895.

VIRGINIA

Brewers United for Real Potables (BURP): BURPers celebrated the repeal of Prohibition with the "Carry Amelia Moore Nation 76th Memorial Temperance Mission and Contest," presented by Phil Huggill. Contact: John Gardiner, 7915 Charles Thomson Lane, Annandale, VA 22003, (703) 256-5716.

WASHINGTON

Brews Brothers: A feast of opulent offerings, surplus surprises and creative cuisine marked the Third Annual Brews Bros. Beer Banquet. Bro Dale has reserved the freezer in his basement for Brews Bros. perishables, especially hops. Contact: Craig Harris, 324 29th Ave. E., Seattle, WA 98112.

WISCONSIN

Central Wisconsin Amateur Winemakers' Club: A program on yeasts was presented by Marc Lemke at a recent meeting. Stuck fermentation, Champagne versus wine yeasts, the fermentation process, and metabisulfite were discussed. Contact: Tom Bauer, 2509 W. Fifth, Marshfield, WI 54449.

Wisconsin Vintners Association: Bill Tobin took members on a "Wines from the State of Washington" tour at the January meeting. Dave Norton, a National Judge under the National Beer Judge Certification Program, gave a seminar for people interested in becoming a certified beer judge. The annual dinner dance and wine and beer judging were held in February. Contact: John A. Rauenbuehler, 6100 N. Kent, Whitefish Bay, WI 53217.

CANADA

Amateur Winemakers of Ontario (AWO): Ontario hosted the 1987 national Amateur Winemaking competition. The club garnered a total of three firsts, six seconds and six thirds in the competition. Grapeland '88, the club's 20th Anniversary Convention, will be held June 3-5. Subscription rates for the quarterly newsletter are \$6 per year for members of AWO and \$9 for non-members. Contact: Paul Jean Jr., AWO News, 28 Otten Dr., Nepean, Ontario, Canada K2J 1J2.

NEW ZEALAND

Auckland Guild of Winemakers and

Brewers: Alf Stonham gave an interesting talk on wine and beer making. The first printing of a club book of brewing recipes and hints has sold out and will be reprinted. Wine personality Peter Saunders spoke to the club about the process of growing grapes and how it affects the end results. Club officers for 1988 are John Falvey, president; Dave Whitehead, vice president and acting secretary; and Hed Denniston, treasurer. Members traveled to the Pahi Festival and a country festival in Helensville in February. Contact: David Whitehead, 6 Eaton Rd., Hillsborough, New Zealand.

Hamilton Brewers and Winemakers Club: Congratulations to Tony Shaw, who won best beer trophy at the Nationals, and to Keith for all the wine awards. See Terry Rider about emblazoning the club logo on your shirt. Club meetings are on the first Tuesday of each month at the Ruakura Research Centre. Club officers are Max Whitelaw, president; Ron Forrest, secretary; Theo Hallam, treasurer; Barry Whiteley, librarian, and Tony Shaw, editor. Contact: Max Whitelaw, 47 Howell Ave., Hamilton, New Zealand.

Hibiscus Amateur Winemakers and Brewers Guild: Congratulations to John Kruse, novice brewer of the year; Grant Waldrom, novice winemaker and wine of the year; Ron Middleton, beer of the year, winemaker of the year and winner of the Champion of Champions trophy; and Alf Stonham, brewer of the year. The club met with River Valley for a "fun day" potluck in January, and camped over a weekend in February for the Pahi Wine Festival. Members ferried to Waiheke Island for their annual picnic in February. Contact: Ike Ansin, 13 Sundown Ave., Whangaparaoa, New Zealand.

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