

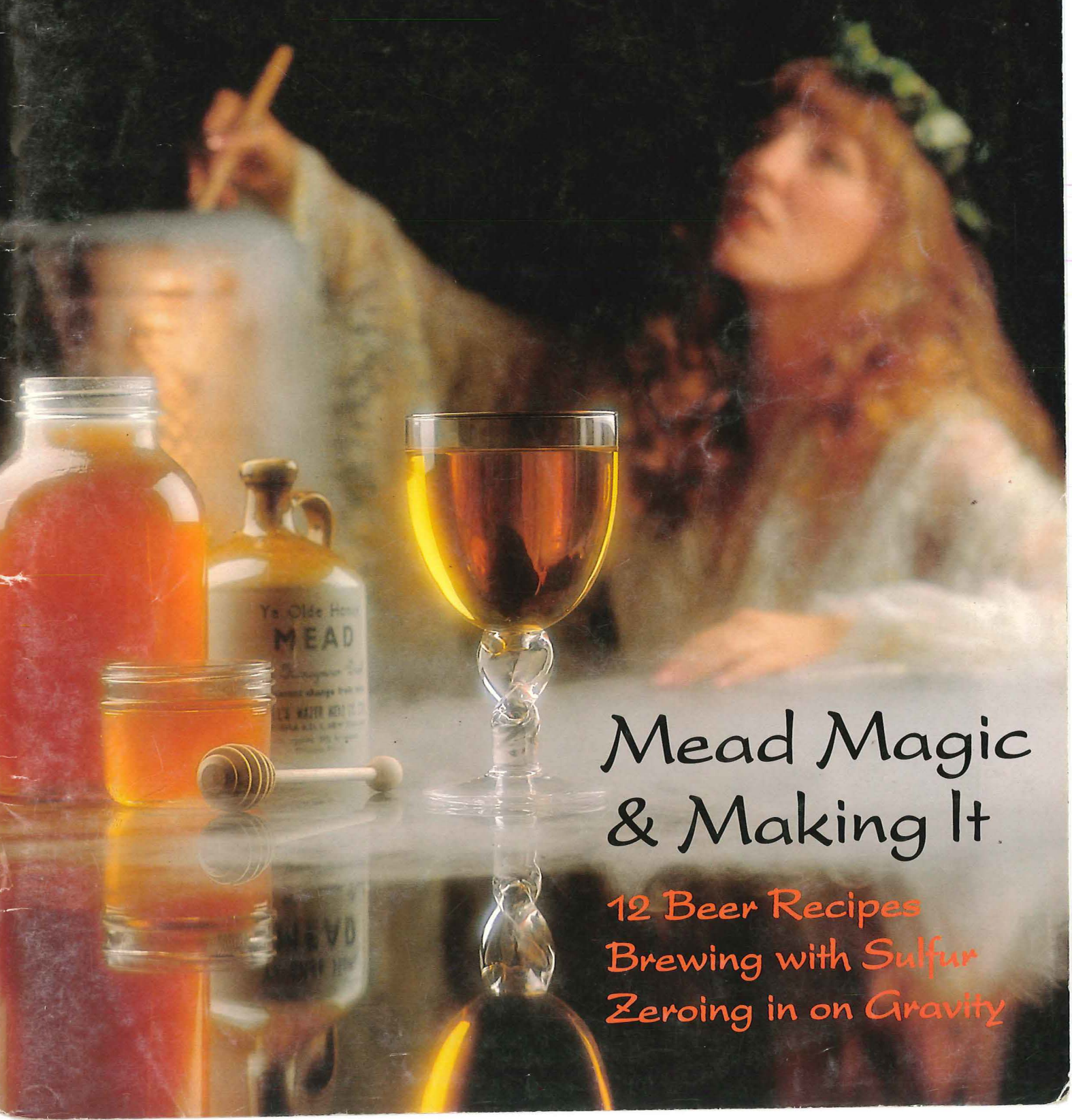
Zymurgy

FOR THE HOMEBREWER AND BEER LOVER

Vol. 15, No. 3
Fall 1992

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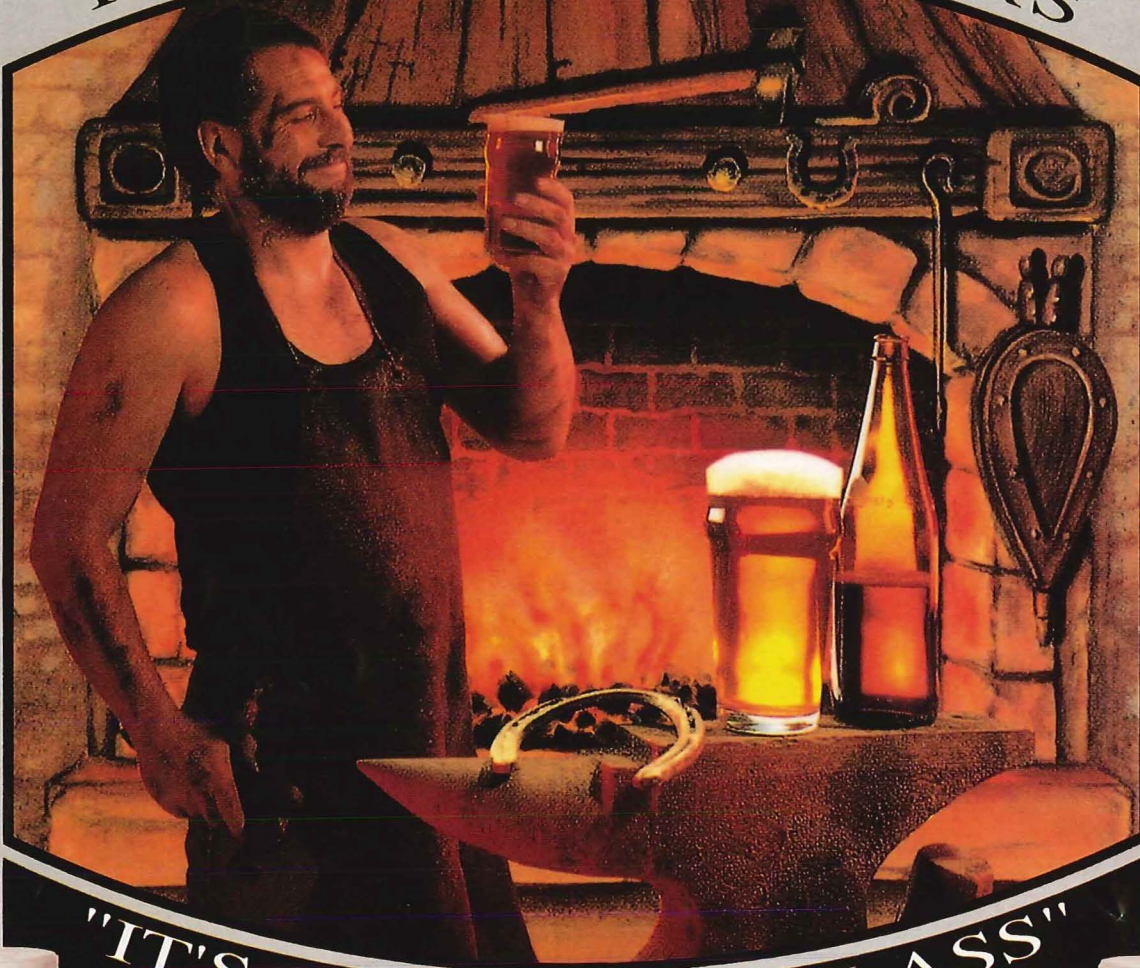


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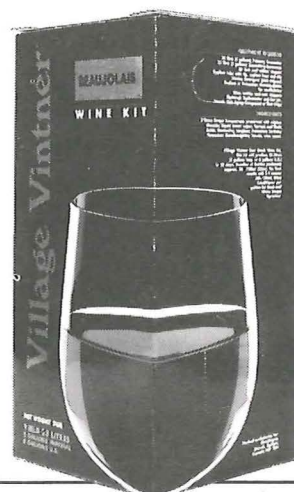
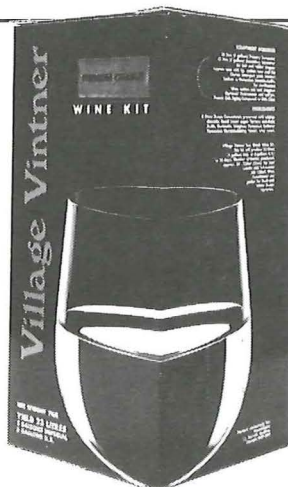
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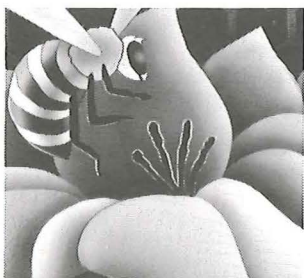
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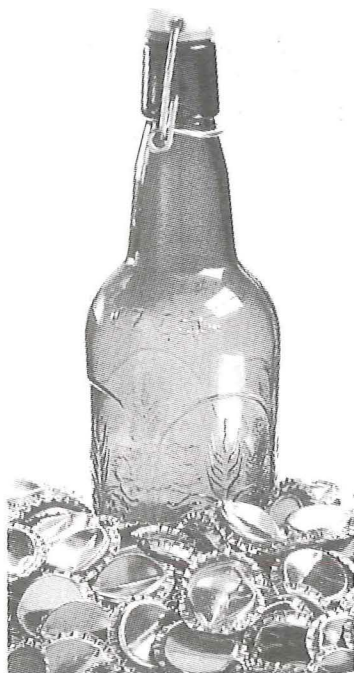
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To promote public awareness and appreciation of the quality and variety of beer through education, research and the collection and dissemination of information; to serve as a forum for the technological and cross-cultural aspects of the art of brewing;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

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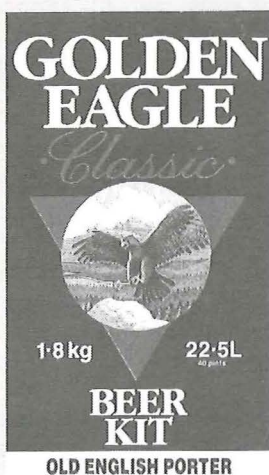
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EDITORIAL

CHARLIE PAPAZIAN

BEER IS MY BUSINESS, AND I'M LATE FOR WORK.

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Melbourne, Denver, St. Louis, Boston, San Francisco, Buffalo, Washington, D.C.,

Frankenmuth (Mich.), Houston, Portland (Ore.), Cincinnati, Vancouver, Toronto,
Montreal, Ottawa.



These are the destinations I or a representative of the American Homebrewers Association have or will visit in 12 months or so.

Every time I leave my home, locking the door behind me for three to six days, I can't help humming Willie Nelson's "On the Road Again." It's an upbeat tune, full of anticipation of things to come. Have no doubt about it, I enjoy hanging around my hometown of Boulder, Colo. In fact, the more I'm away, the better it feels to be back. I relish the rare times when I might have more than two consecutive weekends at home. After all, everyone knows you can't be making *homebrew* unless, of course, you're at home.

But let's get back to that song I'm humming. The stress of preparing for another journey is behind and neatly in order, both at the office and in my luggage. I'm out the door driving 30 minutes to the airport. I always get a spectacular view of the Rocky Mountains and the peaks of the Continental Divide 40 miles to the west. *I'm on the road again.* Checked in, I'm soon jammed into my window seat, three across, usually asleep before takeoff, usually skipping the notoriously gourmand airline food.

My beer sojourns always seems to take me to the heartland of homebrewing. Despite the archaic and insidious antialcohol sentiment pervading our country, it is encouraging to know that, yes, America does have a heart. In fact I can confidently attest that my journeys have shown this country to have many hearts—centers that emanate genuine feelings, are practical and have respect for beer as an alcoholic beverage.

Had I been new to these sojourns, the diversity I encounter might be bewildering. But beer is my business. For 15 years I've noted, very joyously and respectfully, that diversity in the world of beer enhances the sci-


ence, art and enjoyment of our lifestyles. It no longer bewilders. It awes and inspires.

There is no greater means to assess the heartbeat of beer and brewing than to speak to and be spoken to by homebrewers and beer enthusiasts. Fifteen years of immersion into this spirit has not minimized the priority I and the staff of the American Homebrewers Association place on getting out there, face to face, glass to glass and chink to chink.

Representing a balanced blend of homebrewing and beer appreciation on these pages of *zymurgy* is an ongoing affair. We seek to reassure, comfort, inspire, befuddle, project, allure, reflect, debate, review, inform, muse, reform, affirm, explain, clarify, represent, evoke, humor, discover, explore and retain the diversity of homebrewers and their interests with regard to beer and brewing. As staff, we know we have our work cut out. For us the challenge is ongoing and fulfilling. But please excuse us when we ask that you pour us only a small taste of your very best (the one in your hand, of course). There's a line in back of you.

Perhaps I've been gone a week, maybe only a few days. The snow needs shoveling, the grass needs mowing or the leaves need raking. I unpack, though I don't put my luggage carrier in storage. Tomorrow when I arrive at the office things will be in order atop my desk. Little and big piles labeled, staff memos, correspondence, urgent—needs first attention, publications to read at my convenience, phone messages and that box of beer one of you has sent.

I've slept through the alarm. No time for breakfast. It's a 20 minute drive to AHA HQ. Beer is my business, and I'm late for work.

Kinney Baughman, you're late too. Thanks and I'll meet you at work. 

DEAR ZYMURGY

OUR READERS

Help For Beginners

Dear *zymurgy*,

I re-read Rob Brook's article "Beginner's Luck" (*zymurgy* Summer 1991, Vol. 14, No. 2) this morning; last night my first batch was bottled. About three weeks ago, before I brewed this batch, I read the article for the first time. It makes more sense now and I got a lot more out of it the second time around.

Prior to brewing this first batch I, too, devoured the beginner's section (and the intermediate section once my beer began fermenting) of Charlie Papazian's *The New Complete Joy Of Home Brewing*. However, there's nothing like doing it yourself to really understand what's going on, what you did right and wrong and what you'd change next time. For example, in the book it did not say just *how long* it could actually take for the hot wort and water to cool to 78 degrees F. I thought it would happen real quick and was surprised to see it took hours. When I re-read the article, that point (and some others) jumped out at me.

This first batch could be classified as a definite learning experience and may or may not be either successful or tasty—we'll soon see. I've given up using the plastic fermenter that came with the homebrewing kit I bought for a five-gallon glass carboy. The plastic fermenter was a waste and made brewing my first batch troublesome! I'm going to try prechilling bottled water, too. My next batch will be made with Wyeast liquid yeast. I've started getting ready for batch No. 2 (an English mild—gotta start with something my wife will enjoy) and I'm still enthusiastic and excited, even if batch No. 1 has me secretly questioning its survival!

While I'm waiting to uncup my brew, I'm relaxing, not worrying and having to settle for a store bought brew. Thanks again for the great article—I got a lot of good ideas out of it.

R.D.W. and H.A. HB.,
Greg Gustafson
Golden, Colorado

Remember M.A.L.T.

Dear *zymurgy*,

I was thinking about the mashing process and the different optimum temperatures required for activity of the alpha and beta amylases when it occurred to me that there is a simple and very appropriate acronym (and/or mnemonic) to remember which way to go—high or low temperature. It may help to achieve the desired alcoholic or body characteristics during the mashing step for the beer in the making.

I and other judges and beer drinkers have often been confused when making a beer or providing recommendations about which way the temperature should go to make the beer more full-bodied or more alcoholic as appropriate. The acronym is simply M.A.L.T., which

stands for More Alcohol, Lower Temperatures. Less alcohol and therefore more body is inferred from the opposite, i.e., by using high temperatures. There, I told you the rule was appropriate—although I am sure that other brewers must have thought of this before I did. Perhaps other brewers and judges will find it useful.

Yours sincerely,
Gary Spedding
Reisterstown, Maryland

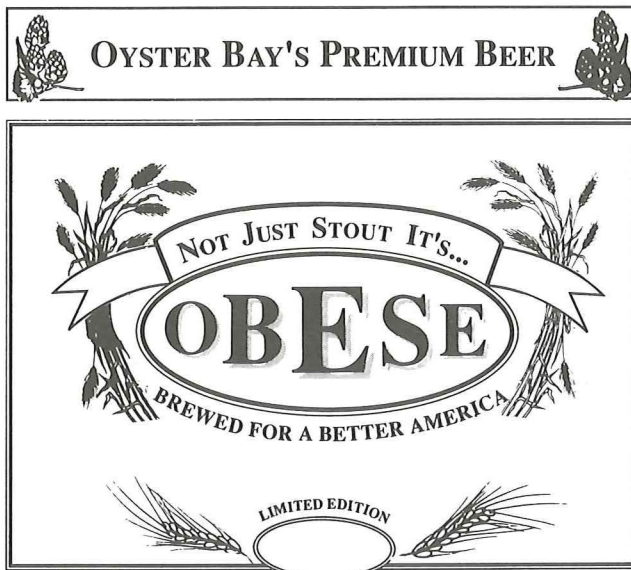
Tryin' to Relax

Dear *zymurgy*,

It is time to spread my wings and buy my own subscription to *zymurgy*; I have been borrowing the magazine of a friend who recently got me started brewing. I enjoy your publication very much and find it useful especially for a beginning brewer. I enjoy your reviews of the different extracts available.

However, I must laugh at your slogan "Relax, don't worry." With the first batch I brewed I ruptured the water pipes in my wall using the jet spray bottle washer. (This happened right in the middle of bottling.) I also couldn't get a siphon started from my carboy because I ran the racking tube through a rubber stopper and didn't allow air into the bottle. I sucked out nearly one-half gallon of beer before I figured it out. The best part is I kept rinsing my mouth out with overproof rum and I was really ripped by the end of the bottling session. All in all the beer turned out great. When I bottled my fifth batch the power went off and I finished by flashlight. Relax, I don't know, but I sure do love to brew now and I will brew forever.

Anonymous



Label by Dan Visentin, Oyster Bay, N.Y.

Teaspoon Weights Vary

Dear *zymurgy*,

I'm writing about your article, "Beer From Water—Modify Minerals to Match Beer Styles," in *zymurgy* Winter 1991 (Vol. 14, No. 5). My concern is not so much that some recommended ion concentrations might be debatable. It is that some of the teaspoon measurements given in Table 2 seem to be significantly off.

When working on a similar article for *The Beverage People News*, I asked Rick Larson, a friend from the

Sonoma Beerocrats, to do a series of teaspoon measurements on his triple-beam balance scale. We wanted to know as accurately as possible what teaspoons of salt, Epsom salts, gypsum and powdered chalk actually weigh. Because of the possibility for some variation, he was to take 10 measurements, totalling and averaging the results.

Salt presented the least problems. Ten teaspoons totaled 51 grams, an average of 5.1, not far from the 5.3 given in *zymurgy*.

Epsom salts, however, ranged from a high of 4.7 grams to a low of 4.2, within an average of 4.4 grams, higher than the article's suggested 3.4.

Gypsum was also at variance. In this case (as with chalk), recognizing the tendency to "fluff" and "compact," Rick took "normal," "fluffed," and "compressed" measurements. The results for gypsum were normal, 3.4; loose, 3.1 and compressed, 3.9. *zymurgy* said 4.8 grams, a considerably higher figure than any of Rick's.

The biggest divergence, however, arose with powdered chalk. Rick's results were normal, 3.3 grams; loose, 3.0 and compressed, 3.6. The *zymurgy* article indicates 1.8 grams, far below Rick's bottom figure.

I'm not sure how the authors generated the figures they used in the article, but some of the differences are substantial and could affect brewers trying to "fine tune" the brewing water.

Sincerely,
Byron Burch

Santa Rosa, California

continued on page 10



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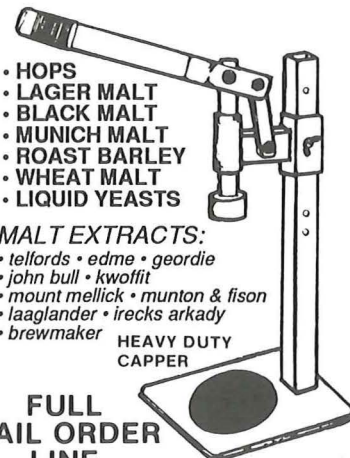
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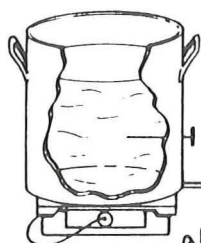
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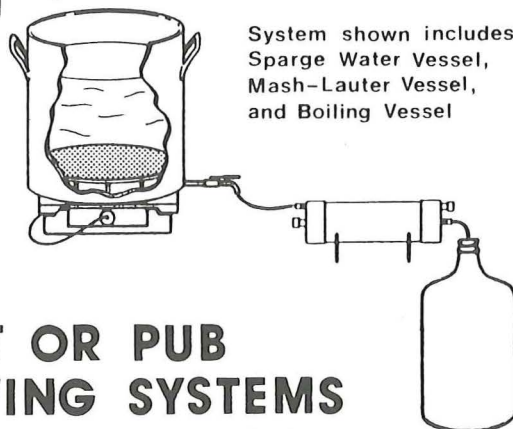
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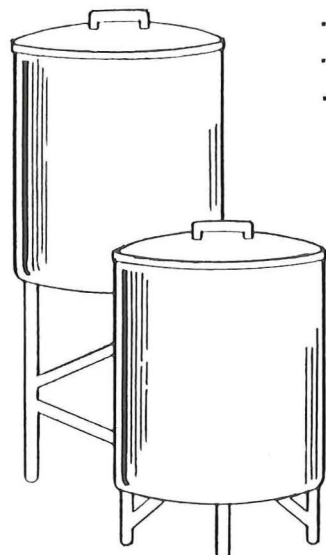
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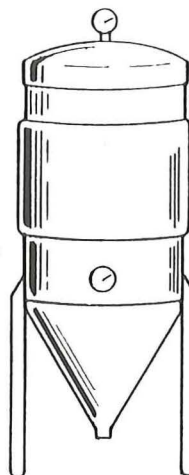
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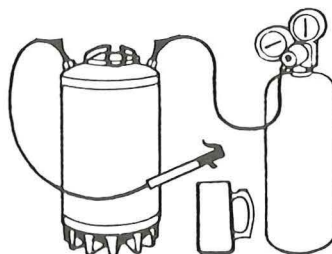
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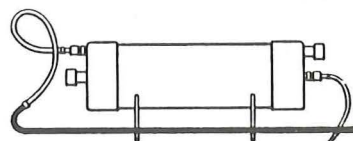
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continued from page 8

Author's Note: As mentioned in the article, teaspoon measures can be highly varied depending on how tightly the powder is packed, the grind, moisture and purity of the powder. The authors arrived at the weight of

one teaspoon of powdered chalk by computing its value from the ion contributions of one teaspoon of chalk given in Dave Miller's *Complete Handbook of Home Brewing*, along with the ion contributions of one gram of chalk given in Gary Bauer's article in the 1985 All Grain Special Issue

(Vol. 8, No. 4) of *zymurgy*. The authors also weighed a teaspoon of chalk and found the weight to be 2g. The discrepancy further underscores the importance of using weight measures, rather than volume measures.

Glenn Colon-Bonet
(303) 229-6639

Correction

Table 2 of "Beer From Water, Modify Minerals to Match Beer Styles" in Winter *zymurgy* 1991 (Vol. 14, No. 5) contained incorrect calculations. The calculations for Epsom salts did not include the water of hydration ($7H_2O$). The corrected table appears below.

Table 2

		One Teaspoon Weighs ††	One Gram Per One U.S. Gallon Adds	One Teaspoon Per Five U.S. Gallons Adds
Table salt*	NaCl	5.3 g	Na 104 ppm Cl 160 ppm	Na 110 ppm Cl 170 ppm
Gypsum	CaSO ₄ ·2H ₂ O	4.8 g	Ca 62 ppm SO ₄ 148 ppm	Ca 59 ppm SO ₄ 142 ppm
Chalk	CaCO ₃ **	1.8 g	Ca 107 ppm CO ₃ 159 ppm	Ca 39 ppm CO ₃ 57 ppm
Epsom salts	MgSO ₄ ·7H ₂ O	3.4 g	Mg 26 ppm † SO ₄ 103 ppm †	Mg 18 ppm † SO ₄ 70 ppm †

*Use only non-iodized salt without additives, read the label.

**CaCO₃ is insoluble in neutral or alkaline water. It must be added to either the mash or kettle.

†These are the only figures that were changed from the original chart.

††Accuracy in determining weights by volume teaspoon measurements is somewhat variable, especially with gypsum and chalk, which are light powders. For best accuracy the chemicals should be weighed.

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KAREN BARELA



Ed Busch Honored

The 1992 AHA recognition award was presented to Ed Busch of Sommerville, N.J., for outstanding achievements in the homebrewing community. Busch was instrumental in helping pass a law on Nov. 7, 1991, making homebrewing legal in the state of New Jersey. Busch is a member of the AHA Board of Advisers, a certified BJCP judge, president of MASH (Mid-Atlantic Sudsers and Hoppers) homebrewing club and a great homebrewer. Busch struggled for the legalization of homebrewing in New Jersey for six years and bumped up his efforts this past year. After the law was passed he generated newspaper articles in New Jersey and throughout the country giving homebrewing and beer lots of positive publicity. In April, Busch made history by organizing the first New Jersey Freedom To Brew Competition. He was presented a plaque during the National Conference awards luncheon in June in front of 400 admiring peers.

Annual Advisers Meeting Produces Results

Nine of 12 members of the AHA Board of Advisers met in June during the National Conference in Milwaukee, Wis. Scott Birdwell, Ed Busch, Steve Casselman, Fred Eckhardt, George Fix, Jeff Frane, Don Hoag, Charlie Olchowski and John Sterling were present. They were joined by AOB and AHA staff members Charlie Papazian, AHA president; Karen Barela, AHA vice president; James Spence, AHA administrator; Elizabeth Gold, *zymurgy* editor-in-chief; Linda Starck, advertising manager; and

Matthew Walles, marketing director. The agenda included membership services, the National Competition, the National Conference, AHA finances, *zymurgy* and much more. Two committees were formed to implement ideas and changes, one for the 1993 Competition and one for the 1993 Conference. The Board also voted on bylaws that clarify the role of the Board and its relationship to the AHA. The meeting set many long and short-term goals to work toward. It was exhilarating for the staff to be surrounded by a room full of enthusiastic, supportive, constructively critical and productive Board members. We are looking forward to the next year in homebrew land.

Beer Judge Certification Program Committee Votes

The BJCP committee met in Milwaukee, Wis., in June to discuss the BJCP program and to clarify long-range goals. Two new committee members are John Dale, Neshank Station, N.J., and Russ Wigglesworth, San Francisco, Calif., appointed by the AHA to serve as AHA representatives. They are replacing Bill Pfeiffer of Wyandotte, Mich., and Phil Fleming of Broomfield, Colo., long-time members of the Committee who resigned to pursue other homebrew and judging activities. The Home Wine and Beer Trade Association, co-sponsor of the BJCP program, also has two representatives, long-time committee members Dave Norton of Kenosha, Wis., and Byron Burch of Santa Rosa, Calif. During the meeting Norton, Burch, Dale and Wigglesworth were joined by several others including Co-Directors Jim Homer and Pat Baker; Associate Director Alberta Rager; AHA staff members Charlie Papazian, Karen Barela and James Spence. Scott Birdwell sat in for Rob Bates, HWBTA president as an additional representative of the HWBTA.

The committee discussed the point distribution system for the AHA National Competition and for large regional competitions. Discussions also centered on exam procedures and the possibility of needing to add an additional certification level above Master Judge to the program in the future. Decisions that resulted in any bylaw changes will be reflected in the BJCP program booklet. The booklet was reprinted after the June meeting. Anyone interested in receiving a revised copy can contact James Spence at PO Box 1679, Boulder, CO 80306-1679, (303) 447-0816.

Up and Coming



Did you notice the changes in the title page of this issue? Elizabeth Gold, formerly managing editor of *zymurgy* and director of Brewers Publications, was named editor-in-chief of *zymurgy* in June. She will continue as director of Brewers Publications. Charlie Papazian, former editor-in-chief, now holds the title of publisher of *zymurgy*. The change reflects the responsibilities Gold has already been carrying for the magazine. Gold has 10 years of experience in science writing and publishing and has been instrumental in bringing quality changes to *zymurgy*. She has helped bring *zymurgy* to the forefront of the homebrewing industry.

BJCP Judges Honored at the Conference

The following judges were honored at the AHA National Conference in June: Rob Bates, Roman Davis, Phil Fleming, Brad Kraus, George Martin, Eric McClary, Jackie Rager, Marlene Spears and Keith Symonds. Fleming, from Boulder, Colo., and Kraus, from Sante Fe, N.M., proudly join four other judges (Scott Birdwell, Chuck Cox, Judy Lawrence and Richard Gleeson) at the Master Judge level. (Dave Norton, who is currently serving on the BJCP committee, technically holds the title of honorary master judge, however, Norton also has earned the title of Master Judge. His master judge title will resume when and if Norton is no longer on the BJCP committee.) Bates from Reno, Nev., Davis from Charlotte, N.C., Martin from Poughkeepsie, N.Y., McClary from Carson City, Nev., Rager from Lenexa, Kan., Spears from Woburn, Mass., and Symonds from Greenwich, Conn., have all advanced to the

National Judge level. Qualifications for National Judge require a minimum score of 80 percent on the exam and 20 experience points, 10 of which must be judging points. Qualifications for Master Judge require a minimum score of 90 percent on the exam and 40 experience points, 20 of which must be judging points. It is quite an achievement to have more than 750 people registered in the BJCP program. These outstanding judges truly exemplify all that the program represents. During the AHA recognition luncheon attended by 350 people, Davis, Martin, McClary, Rager and Symonds were presented with a hand cast silver National pin. (Bates and Spears were not present but they later received a pin by mail.) Fleming and Kraus were each presented with a hand cast gold Master pin. The pins were designed especially for the BJCP program by a Boulder, Colo., artist. Congratulations to Fleming, Kraus, Bates, Davis, Martin, McClary, Rager, Spears and Symonds. We hope they inspire other judges to follow in their steps.

National Competition Facts, Figures, Fantasies

We thought you might be interested in a view from behind the scenes of the 1992 National Competition. As you read this, keep in mind a few of our goals for the National Competition, maintaining and improving the quality of the competition as it continues to grow, having manageable, well-run multiple sites, developing registration systems, developing manuals for organizers, volunteers and judges and enhancing consistency in judging. In order to achieve these goals, the 1992 competition required a tremendous effort from all of the people who were involved.

Planning began immediately after the 1991 competition ended. From July through December 1992, 60 hours of staff time were devoted to the competition. Beginning in January 1992, the AHA staff was joined by the volunteers at each of the four judging sites in planning, organizing, making software changes, lining up judges and mail-

"WHEN AMERICA'S GREAT BEERS ARE POURED TOGETHER, SAMUEL ADAMS RISES TO THE TOP."

"There are great beers being brewed in America now. And when you pour nearly 500 of them in one room, one beer comes out on top: Samuel Adams Boston Lager.

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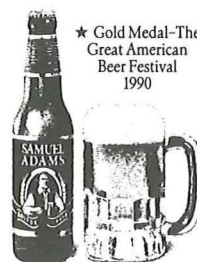
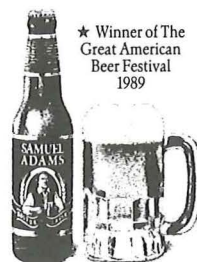
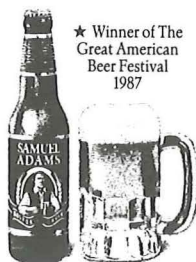
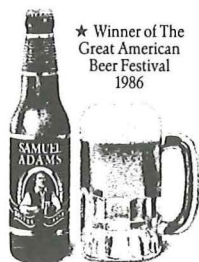
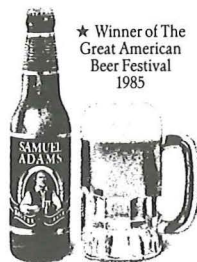
Lager won a Gold Medal again. So I can honestly say that every year it's been entered, Samuel Adams has been chosen the Best Beer in America. No other beers have ever won such awards five years running.

"The truth is, I brew Samuel Adams to be the best beer anywhere in the world. I craft brew it with only the four classic ingredients: pure water, lager yeast, two-row malt and Bavarian

hops. That's all. It's so pure, it even passes the Reinheitsgebot, Germany's strict Beer Purity Law. And its rich, complex taste is why Samuel Adams is the only American beer imported into Germany.

"So you can drink whatever you're drinking now, and be a good beer drinker. Or drink my Samuel Adams Boston Lager... and be America's Best Beer drinker."

James Koch
Boston Beer Company



ing information pieces. Up to and including the first round, the AHA staff worked 374 hours while the eight key volunteers at the four sites estimated they worked a total of 920 hours. Next came mailing the results of the first round. To keep almost 2,400 entries organized and get the correct information to those whose beers went on to the second round, it took a team of four people 74 hours. We figured it took about 1.85 minutes per entry to complete the envelope stuffing and mailing process. Organizing four sites resulted in a three-page document on *planning* the stuffing procedure. We also have file folders filled to capacity on all other aspects of the competition. Once the first-round results were in the mail we took a quick breather before organizing the second and best-of-show rounds. For the second and best-of-show rounds, the AHA staff and a few key volunteers put in another 90 hours, with 40 hours added post conference to mail the results to winners who weren't present. Also, there were approximately 150 judges who participated in 26 judging sessions across the county. Each session lasted about three hours for a whopping total of 11,700 judging hours! Still with me? The final figures fall something like this: 638 hours from the AHA staff, 920 hours from volunteers plus the 11,700 judging hours for a total of 13,258 hours to complete the 1992 National Competition. These numbers add up to about 5.5 human hours per beer! Yes, it's a big job but we had a lot of fun doing it. By the time you read this, we will be well on our way to investing hours for the 1993 National Competition.

Great American Beer Festival or Bust

Thinking with their beer palates the Greater Topeka Hall of Foamers homebrew club of Topeka, Kan., has organized a *GABF or Bust* bus trip to the Great American Beer Festival. This kind of action captures the spirit of true brew enthusiasts, and we salute the efforts of the Greater Topeka Hall of Foamers club for chartering a bus, reserving hotel rooms and receiving a group rate on

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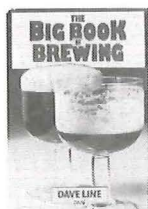
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tickets (available for 15 or more people). When asked about getting this trip together, Rob Elder said, "The Great American Beer Festival is a party that gets into your system and won't let go. Once you've been, you know you have to return again and again and again. I wanted my friends in the club to experience what I've been raving about for years." If your club is interested in organizing a similar trip, there is still time to put one together for the Oct. 2 and 3 GABF. Call the AHA for details.

GABF Members-Only Tasting

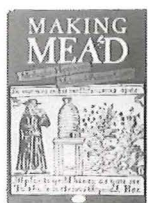
Back for a second year after a successful debut in 1991, the GABF members-only tasting will be Saturday, Oct. 3 from 2 to 5 p.m. This private tasting is open only to AHA and Institute for Brewing Studies members, the press and participating breweries. We close the doors to the general public and allow our members the opportunity to experience the festival in a calm,

uncrowded atmosphere surrounded by other members, professional brewers and 700-plus great beers. You can take advantage of your status as a member and rub elbows with a few hundred of the world's most enthusiastic beer lovers. Who knows, you might just bump into Stu Tallman, the 1992 Homebrewer of the Year who won a trip to the festival sponsored by the GABF. Attendance requires proof of AHA or IBS membership and a ticket stub from the GABF. For more information, call or write the Association of Brewers, PO Box 1679, Boulder, CO 80306-1679, (303) 447-0816, FAX (303) 447-2825.



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AOB Staff Gets Alcohol Server Training

Karen Barela, AHA vice president, and Jeff Mendel, director of the Institute for Brewing Studies, attended a two-day course in Denver, Colo., to become certified trainers in the TIPS® program. TIPS, Training for Intervention Procedures by Servers of Alcohol, is a training program that shows how to promote responsible drinking and teaches intervention strategies to prevent overdrinking. TIPS builds on the knowledge and experience (or people skills) you already possess and suggests ways to support responsible consumption of alcohol. TIPS suggests stopping intoxication before it starts, creating an environment that promotes responsible drinking, techniques to intervene effectively if needed and using powers of observation and common sense to ensure responsible consumption of alcohol-containing beverages for yourself and your guests. Barela and Mendel each passed an exam to become certified TIPS trainers and have already trained five members of the Association of Brewers staff including Teresa Brackett, David Edgar, Elizabeth Gold, James Spence and Matthew Walles. All of this is part of our effort to educate the staff and spread the word about being individually responsible for one's actions in relation to beer as an alcohol-containing beverage.

Traveling Tales

Charlie Papazian was off to Cleveland, Ohio, in late May to meet with several area homebrew clubs, including members of D.R.A.F.T. (Dayton Regional Amateur Fermentation Technologists), C.H.U.G.S. (Columbus Homebrewers Understand Good Stout) and the S.N.O.B.S. (Society of Northeast Ohio Brewers). Dan and Pat Conway along with Great Lakes Brewing Co. hosted the event that attracted more than 70 homebrewing fans. The next day Papazian was in Pittsburgh, Pa., meeting with members of T.R.A.S.H. (Three Rivers Alliance of Serious Home-brewers) and others in a local beer establishment. This was all a prelude to the Home Wine and Beer Trade Association conference over Memorial Day weekend. Papazian was joined in Pittsburgh by Karen Barela and Linda Starck, who attended the Conference on behalf of the AHA. Barela and Starck were able to meet several T.R.A.S.H. members during a reception at the HWBTA conference, where T.R.A.S.H. members shared several excellent homebrews and meads. June 9 through 13, seven AHA/AOB staff members were in Milwaukee Wis., for the AHA National Conference, including Papazian; Barela; James Spence, AHA Administrator; Elizabeth Gold, *zymurgy* editor-in-chief; Linda Starck, advertising manager; Teresa Brackett, AOB accounting manager; and Matthew Walles, marketing director. Papazian finished off the month of June with a trip to New Jersey and an appearance at the Zip City Brewing Co. where he met with area homebrewers. In July, Barela visited Portland, Ore., and the Oregon Brewers Festival to begin preparations for the 1993 National Conference. Whenever the AHA staff travels, they are always interested in meeting homebrewers and visiting shops and breweries.

1993 Conference Set

Final dates for the 1993 AHA Conference are July 26 through 30 at

the Marriott Hotel in downtown Portland, Ore. The Oregon Brewers Festival will be July 30 through Aug. 1. The dates for these Conferences have changed from the dates printed in the *zymurgy* Summer 1992 (Vol. 15, No. 2) issue.

zymurgy Welcomes Contributors

zymurgy welcomes ideas, outlines, proposals or manuscripts on

the subject of beer, cider, mead, sake and brewing. Direct inquiries to Elizabeth Gold, editor-in-chief, *zymurgy*, PO Box 1679, Boulder, CO 80306-1679.

Survey Results

Results for the 1992 readers survey which appeared in *zymurgy* Summer (Vol. 15, No. 2) will be in the Winter 1992 issue.

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Just Brew It! 1992 AHA National Conference Fills Milwaukee

Take more than 400 homebrewers, a few days in one of the world's great beer meccas, mix them in a rolling boil of ideas and innovation, add fun early and late and *Just Brew It!* The 1992 AHA National Conference in Milwaukee was a vigorous ferment of the homebrewing community's imagination. With an eye on the future of beer itself, this was about more than just beer. AHA founder and President Charlie Papazian, summed it up: "It's mostly about people."

Some of homebrewing's dedicated got things under way June 9, at Milwaukee's grand Marc Plaza Hotel, where they met for a preconference Wisconsin brewing and malting tour.

Don Hoag of the Northern Ale Stars and an AHA Board of Advisers member, said the tour's highlight came at Milwaukee's Lakefront Brewery. "Commercial brewers have been so forthcoming with information. It makes you proud to be a part of the brewing community," he said. Lakefront's proprietors, Jim and Russ Klisch, are exemplary commercial brewers who haven't lost sight of their beginnings as homebrewers.

And Steve Fried, a former homebrewer and current brewer at McGuire's Irish Pub and Brewery, Pensacola, Fla., gave an impassioned view of homebrewing and how it relates to the future of beer during his opening talk. "The American public's image of beer is changing," Fried said. "Homebrew and the higher art of beer culture are on the rise." He sees the role of homebrewers as educators who work with microbrewers to espouse the philosophy, "drink less and taste more."

"We're fast becoming one big family," Fried added, urging homebrewers and microbrewers to work closely to promote the positive aspects of beer to a public receiving a lot of bad alcohol-related and beer-related information from an increasingly intolerant prohibitionist movement.

Maybe a large part of that future belongs to beer in partnership with food. The Conference continued an

AHA tradition of good meals and good beer. *zymurgy's* Brewgal Gourmet, Candy Schermerhorn, offered an inspired view of cooking with beer. "We're trying to get people to understand what *real* beer is," she said of her writings and demonstrations with husband Mark.

"What food would I want to eat with this beer right now?" Schermerhorn urged the audience to ask. This "first response" should lead to many flavorful meals, so long as you remember the Brewgal's No. 1 rule: Never drown the flavor of the food with an overpowering beer. You may not taste a mild-flavored fish like turbot if sauteed in porter. Steam it with garlic, ginger, soy sauce and porter for a more subtle influence. "Enhance it," she advised, "Use common sense and keep plenty of beer in the kitchen."

Schermerhorn urged homebrewers to use beer as a substitute for water in dishes with chocolate, potatoes, bread and other baking. Pure malt extract adds richness to marinades and sauces. "The cooking is every bit as much an individual thing as the brewing," she said.

Schermerhorn was joined by author Fred Eckhardt and *Top Shelf Magazine* food editor Lucy Saunders. The Wisconsin Milk Marketing Board donated cheese for the gourmet cheese and beer tasting. Six of Wisconsin's world-class cheeses were paired with microbrewery beers to play up their best attributes—a study in classic affinities.

Eckhardt explained a good way to make beer and cheese the best they can be. "The heavier beers go better with cheese," he said. Body, hoppiness, mouthfeel, flavor and textural elements of beer are key to a happy union of flavors of brew and curd.

As the crowd savored delicate Wisconsin Havarti with Sprecher's Weizen and the rich, malty Lakefront East Side Dark with a full, creamy-textured Bavarian blue-veined Brie the

GREG GIORGIO

Homebrewers enjoying Club Night/Expo activities.

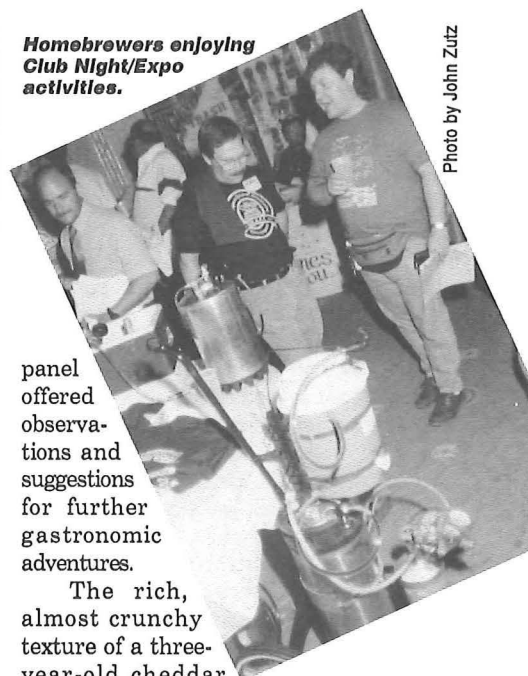


Photo by John Zutiz

panel offered observations and suggestions for further gastronomic adventures.

The rich, almost crunchy texture of a three-year-old cheddar with a hoppy-malty Red Feather Pale Ale from Chambersburg (Pa.) Brewing Co. was an inspired match of extreme flavors and textures and too rich for some tasters.

Martin Lodahl and Mike Sharp each chaired sessions with tastings of wild Belgian lambics. From milder, fruit-flavored styles like the Lindermann's products to the decadent Cantillon gueuze and a homebrewed framboise by Sharp, tasters experienced one of the extremes of brewing art, a challenge to taste and create. Sharp admitted these beers are hard to approximate at home, but he believes strongly in traditional methods of fermentation, aging in seasoned oak barrels and supplementation with selected *pediococcus* and *lactobacillus* strains to gain true lambic character.

The commemorative beers, Wild Rose Frambozen and Dirty Rose, a sour brown Flanders-inspired version, helped homebrewers understand the uniqueness of Belgian specialties. Veteran Belgian-style homebrewer Michael Matucheski offered these full, fruity, winelike gems for Friday's awards banquet and as a parting gift. *Brettanomyces* lovers rejoice!

Homebrewers were given information and encouraged to create anything in the beer spectrum by energetic, comprehensive discussions about yeast by George Fix, down-home practical advice by John Judd and Don Hoag, successful kegging procedures (and a nice Pilsener) by Dave Miller and inexpensive filtering tips from Steve Daniels.

And create they did—2,400 beers and more than 13,000 work hours in judging, shipping and coordinating for the National Homebrew Competition. Preliminary judging was held in Boulder, Boston, Chicago, Portland and San Francisco before second-round action in Milwaukee.

Second-round judges calibrated their palates with a standard beer and got down to a final analysis and sometimes were hard pressed to reconcile entries within seven points. As judges agreed to disagree about such difficult categories as smoked beers, experience and knowledge are hard to discount. National Judge R. Bruce Prochal had to stand firm. "We'll get a consensus," he told his panel when pondering a Bamberg-style rauchbier. And in the end the winners were clear.

Pitting each category's standout brew against one another for best of

show may be the toughest reconciliation of all. Amazingly, the best-of-show panel came to a unanimous conclusion. The 1992 Homebrewer of the Year was Stu Tallman who took the honors for the second year with Munich Dunkel. "You'd be mighty hard pressed to find any commercial beers as good as these," Ted Whippie declared. The judges were sorry they could only choose one.

Meadmaker of the Year went to Byron Burch, 1986 Homebrewer of the Year. The first ever Ninkasi award honoring the brewer who accumulates the most points in final-round judging went to Steve and Christine Daniel of League City, Texas. Top prize for hard cider went to Charles Castellow of Edmonds, Wash., and sake laurels were won by Tina Long of Sacramento, Calif.

Club honors, by a whisker margin of one point, went once again to Sonoma Beerocrats with the Boston Wort Processors right there for second place and the Boulder, Colo., Hops, Barley and the Alers in third.

Club night saw a wealth of homebrewed treasures as members traded shirts and stories, sharing a lot more than beer. But, oh, the beer! Barley wines, stouts, nutmeg mead, Kölsch, "quadruple" bock, hard ciders, smoked

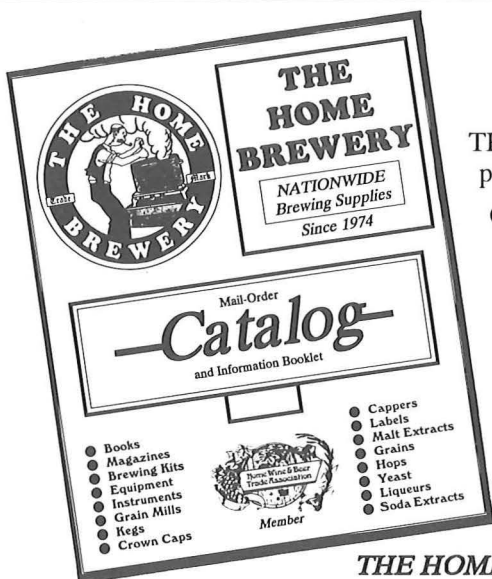
Russian imperial stout and a very hot Scotch bonnet chile beer. Wisconsin clubs, the Beer Barons of Milwaukee and Kenosha's Bidal Society, gave a warm welcome to visiting brewers and hospitality rooms carried on into the night.

You never know what the next AHA Conference may offer. As homebrewer Steve Casselman said, "Next year I'm going to simulate beer" in a sort of "virtual Papazian beer," as he termed it. After the helium-charged keg he poured in Milwaukee, anything's possible. As Casselman told the audience, "Only you can change the world."

Just Brew It! Beer and Brewing Vol. 12, transcripts of the Conference are available from *Brewers Publications*. ☐

Greg Giorgio, a freelance beer and wine writer from Altamont, N.Y.,

has been a homebrewer and AHA member for five years. A certified beer judge, Giorgio is a member of the Industrial Workers of the World.



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American Homebrewers Association 1992 National Competition Winners

BEST OF SHOW

HOMEBREW OF THE YEAR

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Munich Dunkel
Round-trip travel and accommodations have been awarded to the Homebrewer of the Year to visit the Great American Beer Festival XI in Denver, Colo., Oct. 2 and 3.

NINKASI AWARD (HIGH-POINT HOMEBREWER)

Sponsored by JV Northwest, Wilsonville, Ore.
Steven J. and Christina Daniel—League City, Texas
14 points total

MEADMAKER OF THE YEAR

Sponsored by the Home Wine and Beer Trade Association
Byron Burch—Santa Rosa, Calif.
"Alberta Frost"
Sparkling Mead

CIDERMAKER OF THE YEAR

Sponsored by Mayer's Cider Mill, Webster, N.Y.
Charles Castellow—Edmonds, Wash.
"Hard Core XXX Cider"
Sparkling Cider

SAKEMAKER OF THE YEAR

Sponsored by Hakusan Sake, Napa, Calif.
Tina Long—Sacramento, Calif.
Sake—Japanese Rice Beer

CLUB HIGH-POINT TROPHY

Sponsored by DeFalco's Wine and House Beer, Dallas, Texas
1st: Sonoma Beerocrats—Sonoma, Calif.
2nd: The Wort Processors—Boston, Mass.
3rd: Hop, Barley and the Aler's—Boulder, Colo.

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BARLEY WINE—82 ENTRIES

Sponsored by EDME Ltd., England
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"Foghorn Leghorn Barleywine"
2nd: Rob Brunner—Windsor, Colo.
"Robert the Bruce"
3rd: Harry Clayton—Seymour, Conn.
"Old Boots and Panties"

BELGIAN-STYLE SPECIALTY—81 ENTRIES

Sponsored by Manneken-Brussel Imports, Austin, Texas
1st: White
Mark Richmond—Springfield, Ohio
"Hoe Garden—Mow Lawn"
2nd: Dubbel
Rick Larson, Paddy Giffen—Sebastopol, Calif.
3rd: Belgian Strong Ale
David Suda—Boulder, Colo.
"No. 35"

BROWN ALES—120 ENTRIES

Sponsored by Premier Malt Products, Grosse Pointe, Mich.
1st: American Brown
Randy Grempe—Callistoga, Calif.
2nd: American Brown
Charlie Milan—Baton Rouge, La.
"Stars and Stripes Brown"
3rd: English Brown Ales
Ron Page—Middletown, Conn.
"The Brown Cow"

ENGLISH STYLE PALE ALE—188 ENTRIES

Sponsored by Wynkoop Brewing Co., Denver, Colo.

1st: Classic English Pale Ale
Kevin Johnson—Pacifica, Calif.
"Salutation No. 4"
2nd: India Pale Ale
Robert Drouth—Madison, Wis.
"IP-ALE-X"
3rd: India Pale Ale
Rick W. Guthrie—Livermore, Calif.
"Wolf Dog IPA"

AMERICAN STYLE PALE ALE—144 ENTRIES

Sponsored by Northwestern Extract Co., Brookfield, Wis.
1st: American Pale Ale
Bill Draths—Chicago, Ill.
"Dan Ale"
2nd: American Pale Ale
Michael Chronister—Norristown, Pa.
"Third Mild Ale"
3rd: Cream Ale
Steven J. and Christina Daniel—League City, Texas
"League City Cream Ale"

ENGLISH BITTER AND SCOTTISH ALE—87 ENTRIES

Sponsored by Jasper's Home Brew Supply, Litchfield, N.H.
1st: English Ordinary
John Arends—Callistoga, Calif.
2nd: English Special
Ross Hastings—Edmonton, Alberta, Canada
"Amber Ale IV"
3rd: English Special
Alex Puchner—Hermosa Beach, Calif.
"Bitter Again"

PORTER—150 ENTRIES

Sponsored by The Cellar, Seattle, Wash.
1st: Brown Porter
Dennis Kinvig—Toronto, Ontario, Canada
"Coal Porter"
2nd: Robust Porter
Jack Spence—Alexandria, Va.
"Peters Porter"
3rd: Robust Porter
John Arends—Callistoga, Calif.

ENGLISH AND SCOTTISH STRONG ALE—81 ENTRIES

Sponsored by Wine and Hop Shop, Denver, Colo.
1st: Strong Scotch Ale
Jim Campbell—San Jose, Calif.
"A Peek Under the Kilt Ale"
2nd: English Old Ale/Strong Ale
Dale James—Fresno, Calif.
"What the Heck's that Flavor? Strong Ale"
3rd: English Old Ale/Strong Ale
Donald S. Gosselin—Winthrop, Mass.
"Old Buck"

STOUT—205 ENTRIES

Sponsored by BME Extract Co., Staten Island, N.Y.
1st: Imperial Stout
Dick Van Dyke—Park Forest, Ill.
"Rose's Russian Imperial Stout With Mayo"
2nd: Classic Dry Stout
Randy Grempe—Callistoga, Calif.
3rd: Classic Dry Stout
Paul Hale—East Northport, N.Y.
"Oast House Oatmeal Stout"

BOCK—140 ENTRIES

Sponsored by Yakima Valley Hop Growers, Yakima, Wash.

1st: Doppelbock
Steve Dempsey—Fort Collins, Colo.
"Scintillator"
2nd: Doppelbock
Vern and Darlene Wolff—Esparto, Calif.
"Doppeltillator Bock"
3rd: Doppelbock
Brian and Linda North—Franklin, Wis.
"Bock & Roll I"

BAVARIAN DARK—50 ENTRIES

Sponsored by Crosby and Baker, Westport, Mass.

1st: Munich Dunkel
Stu Tallman—Rochester, Mass.
"StuBrew"
2nd: Munich Dunkel
Steven J. and Christina Daniel—League City, Texas
"Accidental Dunkel"
3rd: Munich Dunkel
Ross Herrold—La Porte, Ind.
"Herroldbrau House Dark"

AMERICAN DARK—15 ENTRIES

Sponsored by Bress Malting Co., Chilton, Wis.

1st: Craig Belfus—Milford, N.J.
"Dark Amber"
2nd: Steven J. and Christina Daniel—League City, Texas
"Sun Tanned and Bland"
3rd: Christopher Hansen—San Luis Obispo, Calif.
"Tweeners Dark"

DORTMUND/EXPORT—38 ENTRIES

Sponsored by DeFalco's Wine and House Beer, Dallas, Texas

1st: Norman Dickenson—Santa Rosa, Calif.
"Grain-n-Beerit"
2nd: Gregory Walz—Pittsburgh, Pa.
"Walz' Export"
3rd: Bill Murphy—Brookline, Mass.
"Wortmunder Export"

MUNICH HELLES—43 ENTRIES

Sponsored by Wines Inc., Akron, Ohio
1st: Brian and Linda North—Franklin, Wis.
"Meltdown Lager"
2nd: Steven J. and Christina Daniel—League City, Texas
"W.I.T.H.I.M. II"
3rd: Chris Harding—Ketchum, Idaho
"Back to Basics Lager"

CLASSIC PILSENER—87 ENTRIES

Sponsored by California Concentrates, Acampo, Calif.

1st: German
Patrick Drgans—Buffalo, Minn.
"Distinctly Deutsch Pilsener"
2nd: German
James Cannon—Williamsburg, Va.
3rd: Bohemian
Richard Rosen—Andover, Conn.
"The Bohemian Beat"

AMERICAN LIGHT LAGER—83 ENTRIES

Sponsored by Coors Brewing Co., Golden, Colo.

1st: American Premium
Steven J. and Christina Daniel—League City, Texas
"Butt-Scratcher"

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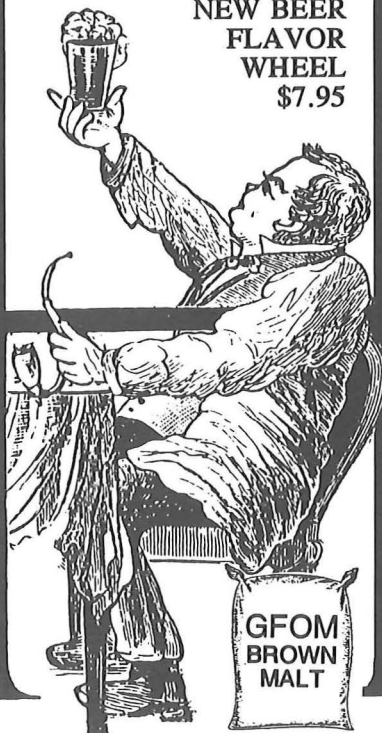
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MALT**

- 2nd: American Standard
Steven J. and Christina Daniel—
League City, Texas
"Butt-Weiper"
- 3rd: American Wheat
Jim Lopes—Fresno, Calif.
"Brick of Peat 'n Wheat"

VIENNA/OKTOBERFEST/MÄRZEN—87 ENTRIES

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

- 1st: Vienna
Keith Weerts—Windsor, Calif.
"Vienna Lager"
- 2nd: Vienna
Ray Taylor, Maureen Taylor, Neil
Gudmestad, Marty Draper—
Fargo, N.D.
"Amber Waves"
- 3rd: Märzen/Oktoberfest
Thomas J. O'Connor III—Rockport,
Maine
"Oktoberfest 1991"

GERMAN-STYLE ALE—82 ENTRIES

Sponsored by Great Fermentations of Santa Rosa, Calif.

- 1st: Dusseldorf-Style Altbier
Tom Young—Loyalton, Calif.
"Fat Horse"
- 2nd: Kölsch
David J. Rose—Yountville, Calif.
- 3rd: Kölsch
Donald Weaver—New Freedom, Pa.

FRUIT BEER—110 ENTRIES

Sponsored by The Purple Foot, Milwaukee, Wis.

- 1st: Fruit Beer
Dan Robison—Salt Lake City, Utah
"Leftover Strawberry Ale"
- 2nd: Fruit Beer
Daniel Jodoin—Livonia, Mich.
- 3rd: Fruit Beer
Thom and Diane Tomlinson—
Boulder, Colo.
"Roseanne's Blackberry Ale"

HERB BEER—83 ENTRIES

Sponsored by Marin Brewing Co., Larkspur, Calif.

- 1st: Herb Beer
Eric McClary—Carson City, Nev.
"Chile Garden Pils"
- 2nd: Herb Beer
Wayne Greenway—Oakland, Calif.
"Wet Dream Ale"
- 3rd: Herb Beer
Ron Page—Middletown, Conn.
"Thai House"

SPECIALTY BEER—109 ENTRIES

Sponsored by Beer and Wine Hobby, Woburn, Mass.

- 1st: Specialty Beer
Bob Barson—Chicago, Ill.
"1991 Christmas Ale"
- 2nd: Classic Style Specialty Beer
Rob Lillard—Lyons, Colo.
"Old Maple Dog"
- 3rd: Classic Style Specialty Beer
Neil Gudmestad, Ray Taylor—
Fargo, N.D.
"Rye Porter"

SMOKED BEER—36 ENTRIES

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

- 1st: Bamberg-Style Rauchbier
James Cannon—Williamsburg, Va.
"Beech Beer"

- 2nd: Bamberg-Style Rauchbier
David Woodruff—Sebastopol, Calif.
"Hermil's Hearth"
- 3rd: Other
Tom Altenbach—Tracy, Calif.
"Alt 'n' Bock Rauchbock"

CALIFORNIA COMMON BEER—84 ENTRIES

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

- 1st: Phil Rahn—Cordova, Tenn.
"Memphis Steamer"
- 2nd: Rob Reed—Kokomo, Ind.
"Northside Lager"
- 3rd: Larry Fergison—Brooklyn, N.Y.
"One Eye Steam Beer"

WHEAT BEER (ALE)—101 ENTRIES

Sponsored by the American Homebrewers Association, Boulder, Colo.

- 1st: German-Style Weizen/Weissbier
Eric Warner—Lafayette, Colo.
"Supai's Weissbier"
- 2nd: German-Style Dunkelweizen (dark)
Rick Larson—Sebastopol, Calif.
- 3rd: German-Style Weizen/Weissbier
Harry Clayton—Seymour, Conn.
"Weizenbier"

TRADITIONAL MEAD—35 ENTRIES

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

- 1st: Sparkling Mead
Byron Burch—Santa Rosa, Calif.
"Alberta Frost"
- 2nd: Still Mead
Mark Quade—Port Arkansas, Texas
"But Will You Love Me Tomorrow"
- 3rd: Still Mead
Micah Millspaw—Oakdale, Calif.
"Anjuli's Wildflower Mead"

MELOMEL/CYSER/PYMENT/METHEGLIN—90 ENTRIES

Sponsored by American Mead Association, Ostrander, Ohio

- 1st: Sparkling Mead
Vern and Darlene Wolff—Esparto, Calif.
"Forbidden But Plum Good"
- 2nd: Sparkling Mead
Dave Resch—Colorado Springs, Colo.
"Mix and Match Mead"
- 3rd: Still Mead
Walter Dobrowney—Saskatoon,
Saskatchewan, Canada
"Mead No. 14"

CIDER—36 ENTRIES

Sponsored by Mayer's Cider Mill, Webster, N.Y.

- 1st: Sparkling Cider
Charles Castellow—Edmonds, Wash.
"Hard Core XXX Cider"
- 2nd: Specialty Cider
Steve McLaughlin—Orwell, N.Y.
"Linda's Lumbar Cherry Cider"
- 3rd: Specialty Cider
Robert Gorman—Waltham, Mass.
"Summer Dew"

SAKE—12 ENTRIES

Sponsored by Hakusan Sake, Napa, Calif.

- 1st: Tina Long—Sacramento, Calif.
Sake—Japanese Rice Beer
- 2nd: Jim Long—Sacramento, Calif.
Sake—Japanese Rice Beer
- 3rd: Fred Eckhardt—Portland, Ore.
Sake—Japanese Rice Beer

BREW NEWS

JAMES SPENCE

Drunk Driving Findings

The Traffic Injury Research Foundation reports the following findings in "The Hard Core Drinking Driver," a study of alcohol and traffic deaths in 1988.

- 46 percent of drivers fatally injured in the United States in 1988 tested positive for alcohol. Of these drivers, 81 percent had blood alcohol concentrations of 0.10 or more.
- About one in five drivers on the road on weekend nights have been drinking.
- Most of these drinking drivers have relatively low blood alcohol concentrations—86 percent are below 0.10.
- Relatively few individuals drive after consuming large amounts of alcohol. Roadside surveys show less than 1 percent of drivers on the road on weekend nights have blood alcohol concentrations in excess of 0.15.
- Drivers with high blood alcohol concentrations constitute only 1 percent of those on the roads on weekend nights, but they account for half the fatalities.

Thus, the majority of drinking drivers on the road have low blood alcohol concentration but very few drivers involved in fatal crashes do; in contrast, while very few drivers on the road have BACs in excess of 0.15, a significant proportion of those involved in fatal crashes do.

Children Nowhere Near Beer

The Ohio House passed a bill making it illegal for persons younger than 18 to purchase non-alcoholic beer. Rep. Johnnie Maier Jr. sponsored the bill saying, "At a time when we are confronted with a serious problem of substance abuse in our society, it is important that we are sending the right message to children about drinking. It is important we are not allowing practice in

the minor leagues for future substance abusers. The so-called non-alcoholic beer is in fact practice beer for our children. The product sends a message to kids that it's cool to drink, that it's the adult thing to do and that having a beer in your hand is the right image." Maier added that he believes non-alcoholic beer is a great product for adults.

Cow Tippling

Greenwich, Conn., rancher Fred Grant feeds his prize cattle beer, saying it makes the meat more tender. Grant started his 36-acre ranch in 1975 and fed his cattle several different experimental diets over the next seven years. The ranch now produces Brae Beef, an organic, additive-free meat that contains about 3.3 percent fat, significantly lower than the 10 percent fat content in the leanest grade sold in supermarkets. In addition to beer, Grant feeds the cattle turnips, dandelions and garlic. The beer? Budweiser. And, no, Grant doesn't get the cattle drunk.

Fishing Tip of the Month

Julian Barnes won the Ninth Annual Worm Charming Championship, a contest in May to coax earthworms to the surface in the village of Blackawton, England. Barnes charmed 53 worms to the surface in 15 minutes. The rules state that charmers may not turn over the soil or sprinkle any fluid on the ground that they themselves would not drink. Barnes' recipe for worm charming? Two pints of Wiggle X (a festival ale brewed for the occasion by the Blackawton Brewery), one can of Guinness and five gallons of homebrew.

Homebrewers En Masse

A statistical analysis of AHA membership by Charlie Papazian, American Homebrewers Association president, shows that there are

more homebrewers per capita in Alaska than the rest of the states. Colorado has the next highest homebrewers per capita, followed by Vermont, New Hampshire, Maine and Wyoming.

AHA SANCTIONED COMPETITIONS

Winterfest '92

Las Vegas, Nev., hosted Winterfest '92 on Feb. 9 where Bradford Hogue of Ash Grove, Mo., won best of show of 113 entries with his pale ale.

Fur Rondy

The Anchorage Fur Rendezvous in Anchorage, Alaska, drew 97 entries. A doppelbock brewed by John Eldridge of Eagle River took best of show at the Feb. 13 competition.

March in Montreal

Dave Kimber of Toronto, Ontario, won best of show at the March in Montreal competition in Montreal, Quebec. Kimber's brew beat 40 other entries at the Mar. 7 contest.

St. Patrick's Porter and Stout

Chris and Liz Stamp of Rock Stream, N.Y., won best of show at the St. Patrick's Day Porter and Stout Competition organized by the Ithaca Brewers' Union. Their Sweet Ace of Spades Stout beat 76 other entries at the Mar. 14 competition in Ithaca, N.Y.

March Mashfest

Stan Pierce of Boulder, Colo., topped 130 beers to win best of show at the March Mashfest competition on Mar. 14 in Fort Collins, Colo.

Hudson Valley Competition

The Second Annual Hudson Valley Homebrewers Homebrew Competition had 166 beers entered.

CALENDAR

OF EVENTS

'92 - '93

SEPTEMBER

- 12 East Enders, Summertime Blues, **AHA Sanctioned Competition**, Ajax, Ont. Entry is Aug. 29. Contact Erich Mann at (416) 427-9324.
- 19 Vailfest, Vail, Colo. Contact Deborah Ramsey at (303) 476-1000.
- 25 Kenosha Bidal Society Sixth Annual Competition, HWBTA Sanctioned Competition, Kenosha, Wis. Contact David Norton at (414) 654-2211.
- 26 Trub 4 - Brews and Blues, **AHA Sanctioned Competition**, Durham, N.C. Contact Jeb Sturmer at (919) 544-6222.
- 26 Common Ground Fair Homebrew Competition, HWBTA Sanctioned Competition, Windsor, Maine. Entry deadline is Sept. 23. Contact Michael LaCharite at (207) 729-0225.
- 26 All About Ales Competition, **AHA Sanctioned Competition**, Toronto, Ont. Contact Dennis Kinvig at (416) 536-1016.
- 27 Fest Brew Competition, co-sponsored by St. Stan's Brewery and S.A.A.Z. Homebrew Club, Modesto, Calif. Contact Ray Call at (209) 478-6170.

OCTOBER

- 1 Best of Fest, **AHA Club-Only Sanctioned Competition**. Entry deadline is Oct. 1. Call the AHA at (303) 447-0816.
- 2-3 Great American Beer Festival XI, Denver, Colo. Call the Association of Brewers at (303) 447-0816, PO Box 1679, Boulder, CO 80306-1679, or fax (303) 447-2825.
- 3 1992 Oktoberfest Best Bier Competition, **AHA Sanctioned Competition**, Waldoboro, Maine. Contact Dennis Hansen at (210) 594-8073.
- 4 Bidal Society Regional Homebrew Competition, HWBTA Sanctioned Competition, Kenosha, Wis. Contact Dave Norton at (414) 694-7591.
- 16-17 Ninth Annual Dixie Cup Competition, **AHA and HWBTA Sanctioned Competition**, Houston, Texas. Contact Scott Birdwell at (713) 523-8154.
- 17 DLB Homebrewers Homebrew Competition, **AHA Sanctioned Competition**, Westlake, Ohio. Entry deadline is Oct. 13. Contact Peter Wilson at (216) 933-1589.
- 17 Northern New England RHBC, HWBTA Sanctioned Competition, Portland, Maine. Contact Mark Peters at (217) 737-8755.
- 25 Michael Jackson Brew Ha Ha, **AHA Sanctioned Competition** plus homebrew trade show, sponsored by Sherlock's Home, Minnetonka, Minn. Contact Bill Burdick at (612) 931-0203.

NOVEMBER

- TBA Connecticut Regional Homebrew Competition, HWBTA Sanctioned Competition, Norwalk, Conn. Contact Keith Symond at (203) 637-3446.
- 7 Taste of the Great Lakes Conference, **AHA Sanctioned Competition**. Entry deadline is Oct. 2. Contact Fred Scheer at (517) 652-3882.
- 8 HOPS-BOPS, **AHA Sanctioned Competition**, Philadelphia, Pa. Contact Bob Grossman at (609) 547-7980.
- 14 Ithaca Brewers Union Fall Classic Open Homebrew Competition, **AHA Sanctioned Competition**, Ithaca, N.Y. Contact Dwight Beebe at (607) 753-6654.
- 14 BJCP Exam, Ithaca, N.Y. Contact Dwight Beebe at (607) 753-6654.
- 30 The New England Fall Regional Homemade Beer Competition, HWBTA Sanctioned Competition, Deerfield, Mass. Contact Charlie Olchowski at (413) 773-5920.

DECEMBER

- 1 Barley Wine is Fine, **AHA Club-Only Sanctioned Competition**. Entry deadline is Dec. 1. Call the AHA at (303) 447-0816.
- 19 St. Louis Brews Happy Holiday Homebrew Competition, **AHA Sanctioned Competition**. Entry deadline is Nov. 25. Contact Jerry Dahl at (314) 822-8039.

1 9 9 3

FEBRUARY

- 27 Homebrew Competition of New England, HWBTA Sanctioned Competition, Westport, Mass. Entry deadline is Feb. 19. Contact Leslie Reilly at (508) 636-5154.

APRIL

- 18-21 Institute for Brewing Studies National Micro- and Pubbrewers Conference and Trade Show, New Orleans, La. Call the IBS for details at (303) 447-0816.
- TBA **AHA National Competition**, Nationwide Judging Sites. Call the AHA for details at (303) 447-0816.

JULY - AUGUST

- 26-30 **AHA National Conference**, Portland, Ore. For more information call the AHA at (303) 447-0816.
- 30-1 Oregon Brewers Festival, Portland, Ore. For more information call Widmer Brewing Co. at (503) 281-2437.

To list events, send information to **zymurgy** Calendar of Events. Deadline for the Winter Issue is Oct. 16. Competition organizers wishing to apply for AHA sanctioning must do so at least two months before the event. Contact Karen Barela at (303) 447-0816, FAX (303) 447-2825, PO Box 1679, Boulder, CO 80306-1679.

Gerald Holl's porter won best of show at the Mar. 28 competition in Kingston, N.Y.

1992 U.S. Open

Roman Davis organized the Second Annual U.S. Open Homebrew Competition on April 11 in Charlotte, N.C. The competition judged 111 entries in 16 categories. David Cyr of Carrboro, N.C., won best of show with an American pale ale.

New Jersey Freedom to Brew Competition

Gene Muller of Westmont, N.J., won best of show at the New Jersey Freedom to Brew Competition in Hillsborough, N.J. The April 4 competition drew 78 entries.

Second T.R.A.S.H. Competition

The Second Three Rivers Alliance of Serious Homebrewers Homebrew Competition drew 100 entries on April 11. Greg Walz of Pittsburgh won best of show with his German Pilsener at the Pittsburgh, Pa., competition

MICRO AND PUBBWERIES

(Information provided by the Institute for Brewing studies.)

OPENINGS

United States

Microbreweries

Alabama: Birmingham Brewing Co., Birmingham

Colorado: H.C. Berger Brewing Co., Fort Collins

Idaho: Beier Brewing Co., Garden City

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

Michigan: Detroit and Mackinac Brewing Co., Detroit

New Hampshire: Frank Jones Brewing Co. Ltd., Portsmouth

New Mexico: Russell Brewing Co., Santa Fe

Oregon: Full Sail Brewing Co. at Riverplace, Portland

Brewpubs

California: Gold Coast Brewery, Huntington Beach

Colorado: Wild Wild West Gambling

Hall and Brewery, Cripple Creek
Florida: Hops Grill and Bar (No. 3), Palm Harbor

Idaho: Harrison Hollow Brewhouse, Boise; Treaty Grounds Brewpub, Moscow

Maine: Lobster Deck Restaurant/Kennebunkport Brewing Co., Kennebunkport

Nebraska: Jaipur Restaurant and Brewpub, Omaha

New Mexico: Eske's: A Brewpub/Sangre de Cristo Brewing Co., Taos

New York: Rohrbach Brewing Co., Rochester

Washington: Leavenworth Brewery, Leavenworth

Canada

Brewpubs

Ontario: Vinifera, Toronto

CLOSINGS

United States

California: Brewhouse Grill, Mammoth Lakes

Oregon: Oregon Trail Brewery, Corvallis

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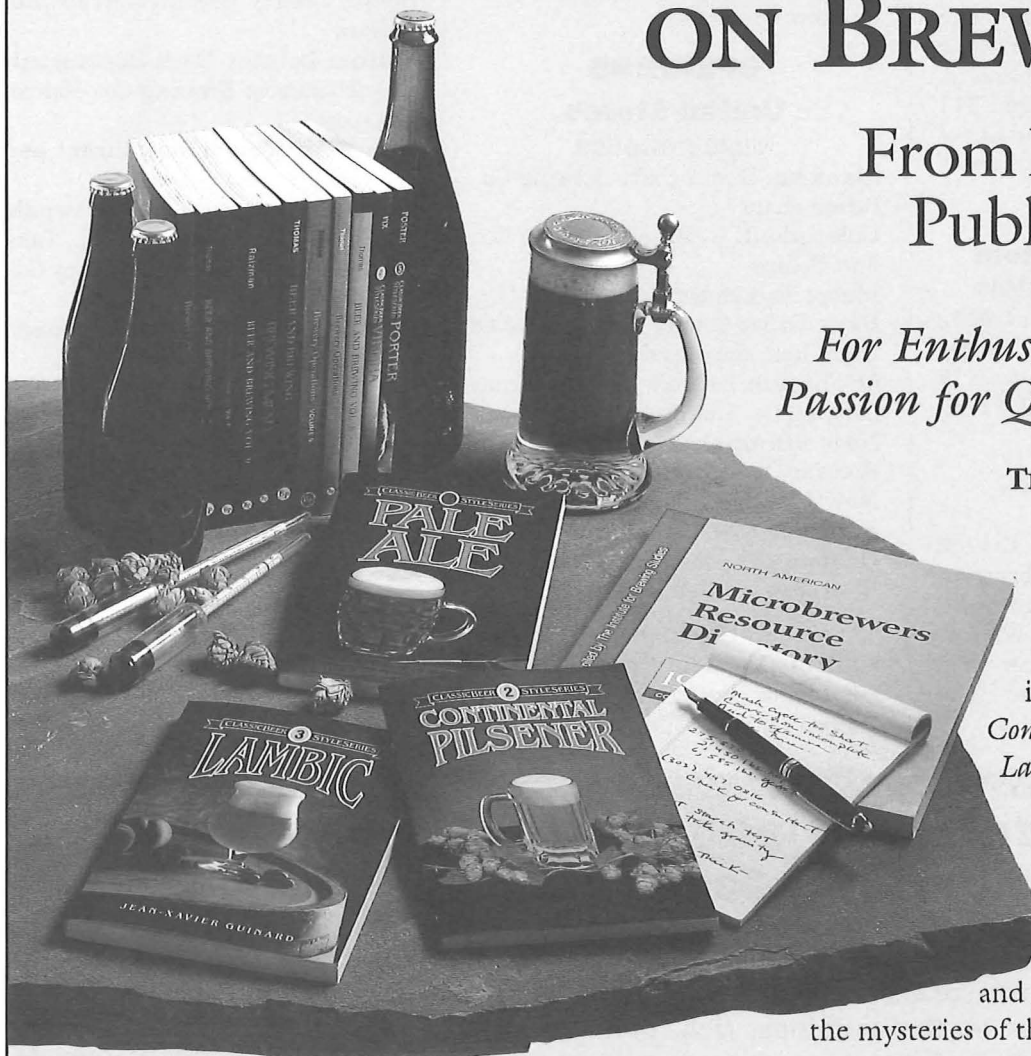
← Crisp Maris Otter won 1st place at this year's National Malting Barley Competition. →

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JACKSON ON BEER

MICHAEL JACKSON

How Scot's Yeast Made a Belgian Classic Ale



At the time I was about 16 and underage. I sneaked a pint of Draught Bass in a railway station bar before boarding my train home.

I had been seen in the bar by a fellow passenger, who had now entered the same compartment of the train. He produced from his coat pocket a bottle of Bass and started to lecture me on the relative merits of the two versions of this product.

The one with the red label was, he explained, pasteurized; the blue-label version was not. Or was it the other way round? I forget; it was 1958.

I thought my fellow passenger was, at best, mildly crackers; at worst, a potential molester of teenage boys. The odd thing is that I still recall the incident, more than 30 years later.

I don't remember the man's face, or exactly what he said, but the subject of his dissertation lodged somewhere in the back of my mind.

I wonder who he was? The natural conditioning of beer was not an issue at the time, and the term "real ale" had yet to be coined. It was a Proustian moment.

Natural conditioning of beer was

still not an issue when, in 1964, I had my first bottle of Trappistenbier in Belgium. I remember the name Trappistenbier—I think it was embossed on the bottle—but not the specific abbey.

Nor was I, at this first sampling, aware that there were six Trappist abbeys that made beer. I can be sure of the date, because I remember where I was working at the time.

In addition to its malty sweetness, fullness of body and alcoholic strength, the beer had what I now know was a yeast-bite. I began to look for abbey brews and to visit Belgium whenever possible, enjoying the extraordinary beers and hearty food.

Only gradually did it dawn on me just how many Belgian beers were bottle conditioned. In their authentic form, some Belgian styles must be bottle conditioned.

I have in mind particularly the true gueuze, the production of which depends upon a refermentation in the bottle. In this respect, it resembles Champagne.

Anyone already familiar with Belgian specialties knows that natural conditioning is usually indicated on the label by the phrase, "refermentation in the bottle." In Flemish, *in de fles*. In French, *en bouteille*.

All Trappist beers, and many of their imitators, are bottle conditioned. The monks argue that Trappistenbier is an appellation of origin and not of style, but I argue with their wisdom in taking this view.

To my mind, a combination of attributes have created, at the very least, a Trappist family of beer types and bottle conditioning is one of them.

Another Belgian classic style that is usually bottle conditioned is the summertime saison. This style has never been easy to find and I was pleased to see Saison Regal among the products being offered by the new mail order company, The Beer Cellar.

Of course, all bottled beers were once made in this way. Just as lager making never altogether dominated the western fringes of Europe, so filtration did not seem essential or affordable to the more rustic small brewers of Belgium.

Bottle conditioning remained much more extensive in Belgium than anywhere else.

In recent years, there has been a new appreciation of some regional specialties in Belgium itself, and the number of bottle conditioned beers has increased.

About 30 percent of the Belgian beer market is taken up by specialties, most of them top fermenting (and therefore, in British terms, "ales"). Among those, well over half are bottle conditioned.

While Britain is the only nation with a really significant number of draft real ales, Belgium is its match in the bottled counterpart. Although Britain's cask-conditioned ales each have their own character, the Belgian bottled products offer a more colorful diversity.

I suggest this not to pit one European nation against another in these sensitive times, but in the spirit of *vive la difference*!

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Ron Downer, Owner & Brewmaster

1500s; British soldiers helped make English and Scottish-style ales popular in Belgium during two world wars.

A fascinating example of this interplay concerns one of the world's great bottle-conditioned brews, Duvel.

I suppose the episode began with the foundation of the now-famous brewery in Breendonk, about halfway between Brussels and Antwerp, in 1871.

In the early part of the present century, between the world wars, the brewery established a strong relationship with one of the world's great brewing scientists, a Belgian, Jean De Clerck (1902-78).

At the time, Scotch ales were fashionable in Belgium. McEwans were exporting a bottle-conditioned ale. De Clerck decided to "take apart" this ale by examining its yeast.

This turned out to comprise between 10 and 20 strains. De Clerck took out the strains he considered most useful, cultured them up and used them to ferment an

experimental dark ale at the brewery in Breendonk.

When a brewery worker tasted the beer, he is said to have commented: "That is the devil of a brew!" Whether that story is true or not—and I give it the benefit of the doubt—the brewery called the beer Duvel when they decided to put it on the market. Duvel is a corruption, so to speak, of devil in Flemish.

After World War II, golden lagers of the Pilsener type began to gain ground in Belgium. Most specialty brewers settled for trying to make a Pilsener.

The brewery in Breendonk did this, too, but they also had a better idea. They began to experiment with a golden version of Duvel, still as a strong, bottle-conditioned ale. Once again, De Clerck was involved.

The dark Duvel was replaced by a golden product in 1970, and this gradually began to win over drinkers. I first tasted it during the 1970s, and was astonished. I had never tasted a golden beer with such intensity and complexity of aromas and flavors.

No matter what brewers say, that no beer remains unaltered over the years, at least the changes in available varieties of barley and hops have to be taken into account.

The makers of Duvel used to produce their own malt, but no longer do. They have carried out further selection and propagation of their "borrowed" yeast to make it precipitate better.

Has the beer improved or diminished in character? That is like trying to decide whether Muhammed Ali could have beaten Mike Tyson.

It certainly remains a remarkable beer. A malt made to an unusually pale specification is used; the starting gravity is 1.056 and the hops are Saaz and Styrian Goldings.

Dextrose is added before primary fermentation to boost alcohol and further attenuation. This effectively upgrades the original gravity to 1.068.

The original McEwans symbiosis of strains has over the years been narrowed to two yeasts and both are used in primary fermentation. The

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brew is divided into two separate batches, one for each yeast.

These two batches are not of equal sizes. This procedure is just one of the many peculiarities that make Duvel such a distinctive beer.

After primary fermentation comes a secondary, in different vessels and at lower temperatures for three days. Although Duvel is an ale, it then has four weeks of lagering.

It is then filtered and given a priming of dextrose and a dosage of just one of the two original yeasts. The original gravity has at this point been boosted to the equivalent of 1.073.

The brew is then bottled and kept for 10 to 14 days at 71.6 degrees F (22 degrees C) for its third and final fermentation. Even then, the cycle is not over.


The bottled product is kept for a further five to six weeks at 102 to 106 degrees F (39 to 41 degrees C) to stabilize the beer. Even then, some buyers keep it three or four months more in a cool, dark place.

Duvel is usually served chilled at 45 to 46 degrees F (7 to 8 degrees C), though it also expresses its flavors well at a natural cellar temperature. It has an alcohol content of 8.5 by volume and a very distinctive, delicate, fragrant fruitiness, reminding me somewhat of Poiré William, the brandy made in Alsace.

Duvel is a protected brand name of the Breendonk brewery, run by the Moortgat family. Of what style is this beer? It is a style of its own.

Belgium has many imitators, but they can make their intentions clear only by adopting similar names: Deugniet (Rascal), Sloeber (Joker). There was one called Ketje (Urchin) and there is another rather pointedly called Judas.

When I ask the great British brewers why they do not give more attention to bottle-conditioned ales, they say this method is too difficult and who would drink them?

I wonder how many have tasted McEwan's yeast in its Belgian illegitimate offspring? 

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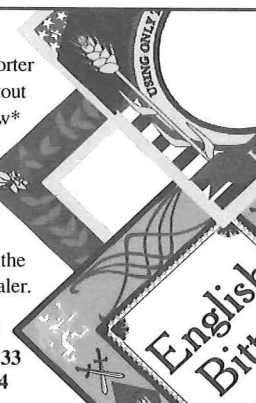
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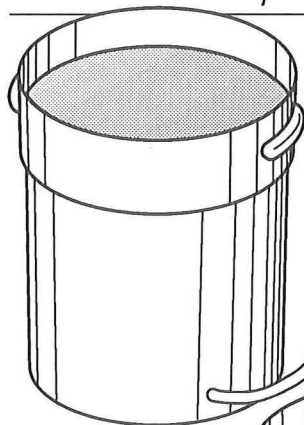


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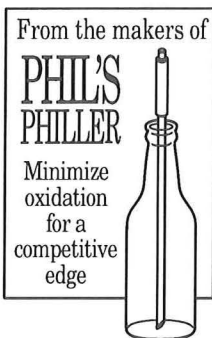


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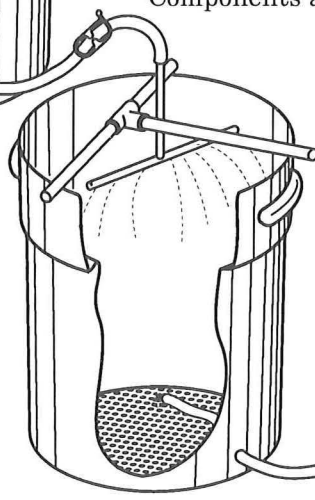
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CANDY SCHERMERHORN

Homebrew Adds *Zing* to Buffalo Wings

The favorite feast of many, Buffalo wings were reportedly created by a savvy bar owner in Buffalo, N.Y., as an incentive for patrons to consume lots and lots of brew.

Deep fried, salty and generously sauced with fiery cayenne pepper, the original chicken wings could burn the hair off your chest—from the inside! Terms such as "suicide hot" are often used to describe the intensity of these tasty morsels.

From their humble beginnings, Buffalo wings have grown in popularity so much that bars are just one of the places they can be found. Italian mom and pop pizzerias now offer buckets of wings to go with their pizza and grocery store delis sport huge signs announcing their sale.

Eating Buffalo wings does not have to be an exercise in pain control. Cayenne is not the only flavor they can be sauced with. The fire can be adjusted at will and the flavor can be downright irresistible with a little help from the very thing they taste best with—beer. Marinating the wings in beer before frying and coating them with a homemade beer sauce can transform them into a culinary extravaganza.

Once we have established that the wings do not have to be prepared with commercial sauces we find there is no limit to the variety of flavors we can infuse the wings with. From superspicy barbecue sauces to Hawaiian fruit-and-chili dressings, the only boundary is your imagination.

The following recipes are based on the traditional fried version.

However, for those who possess a "fear of frying," the wings can be baked (400 degrees) or grilled until crispy on the outside, tender on the inside. Sauce and serve as you would fried wings.

If you are frying the wings, do not skip the step of patting them dry to avoid splattering. When cooking large batches of wings—which will invariably happen when word gets out about these wings—layer them in a large bowl with lots of paper towels.

Keep in mind that if you want to cauterize the insides of your mouth, just add more of the inflammatory factor in each recipe—chili. Likewise, you can reduce the amount of chili so that small children and grandparents can eat them unscathed.

I share three of my very favorite versions of the wings here—Chew Dynasty Oriental, Texas Grande Picante and Blazing Firehouse Mustard wings.

Chew Dynasty Oriental Wings

These ginger spiked, zingy Buffalo wings are enveloped in a captivating sauce of beer, soy and garlic.

- 2/3 cup Pilsener-style beer
- 3 tablespoons orange juice concentrate
- 1 tablespoon dark soy sauce
- 1 teaspoon finely grated fresh ginger
- 1/2 teaspoon Chinese five-spice powder (available in Oriental

section of grocery stores)

- 1 clove garlic, finely minced and mashed
- 3 tablespoons cornstarch
- 36 whole chicken wings, cut up oil for frying

(1) Blend the first seven ingredients. Marinate the chicken wings in the mixture for four to six hours.

(2) Drain the wings and thoroughly pat them dry. Heat the oil to 375 degrees in a deep pan. Fry the wings a few at a time until crispy and cooked through. Place on paper towels to drain. Keep hot in a warm oven.

Oriental Wing Sauce

- 1 1/2 cups Pilsener-style beer
- 1/3 cup soy sauce
- 1/4 cup water
- 2 tablespoons red curry paste (found in Asian stores)*
- 1 teaspoon dark sesame oil
- 1 tablespoon oil
- 1 teaspoon Szechwan pepper-corns (optional)
- 1 large clove garlic, thinly sliced
- 1 small onion, finely minced
- 2 tablespoons cornstarch

(1) Combine the first five ingredients and set aside.

(2) Heat the oil over medium heat. When hot, drop in the pepper-corns and garlic and sauté briefly. Strain out the garlic and pepper-corns and set aside. Sauté the onion in the remaining oil until limp and translucent.

(3) Lightly crush the pepper-

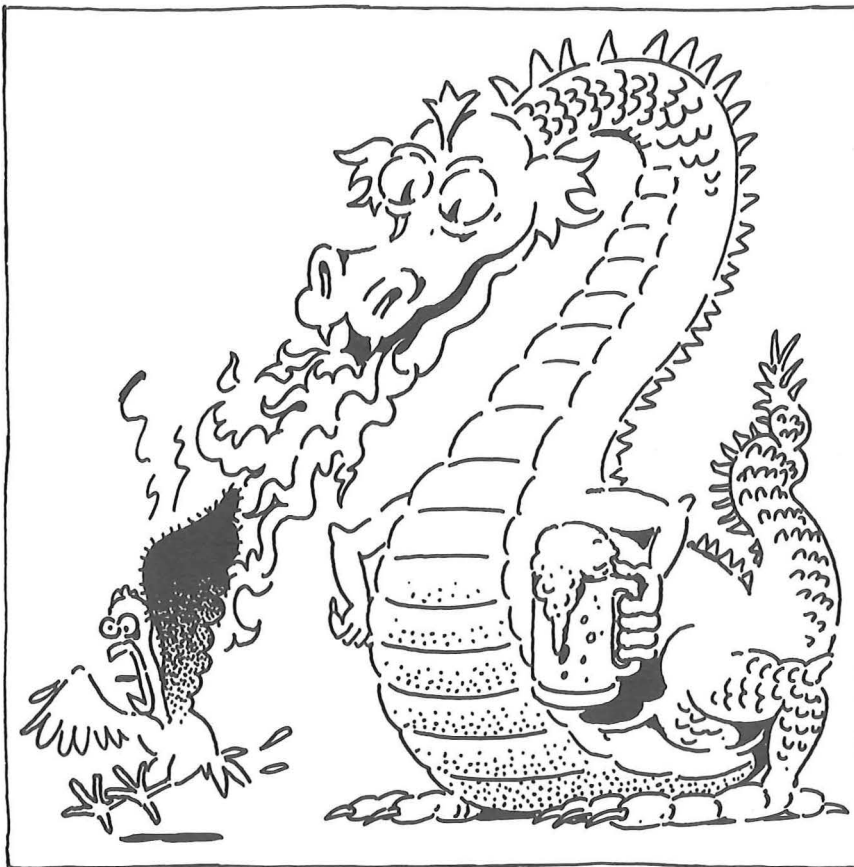


Illustration by Bill Kastan / No Coast Graphics

corns and stir them along with the garlic, onions and cornstarch into the beer mixture. Whisk until the cornstarch is dissolved. Cook over medium heat, stirring constantly, until thickened.

(4) Pour the hot sauce over the fried wings and serve immediately.

*If unavailable, substitute 2 level teaspoons of finely crushed red pepper flakes, 1 teaspoon lemon juice and 2 cloves finely crushed garlic.

Texas Grande Picante Wings

These crispy-fried wings are complemented with a glowing picante sauce.

- 2/3 cup Homebrewed Steak Sauce (recipe follows)
- 2 cloves garlic, minced and mashed
- 1/2 - 1 teaspoon red chili flakes
- 3 tablespoons cornstarch
- 36 chicken wings, cut up
- oil for frying

(1) Blend the first four ingredients and marinate the chicken wings in the mixture.

(2) Drain the wings and pat dry. Heat the oil to 375 degrees in a deep pan. Fry the wings a few at a time until crispy and cooked through. Place on paper towels to drain and keep hot in a warm oven.

Picante Wing Sauce

- 1 1/2 cups tomato juice
- 1/2 cup American light lager
- 1/2 - 1 1/2 teaspoons hot red chili powder
- 3 tablespoons red wine vinegar
- 3 cloves garlic, minced and mashed
- 1 teaspoon paprika
- 1/2 teaspoon liquid smoke (optional)
- 1/4 - 1/2 teaspoon salt (optional)

(1) Simmer all the ingredients on medium heat, uncovered, for 40 minutes. Stir frequently.

(2) Pour the hot sauce over the fried wings and serve immediately.

Blazing Firehouse Mustard Wings

These golden wings are dressed in a pungent mustard sauce that will open even the worst stuffed noses.

- 2/3 cup brown ale-style beer
- 1/3 cup honey, warmed
- 2 cloves garlic, finely minced and mashed
- 1/8-1/4 teaspoon cayenne
- 3 tablespoons cornstarch
- 36 chicken wings, cut up
- oil for frying

(1) Blend together the first five ingredients. Marinate the chicken wings in the mixture for four to six hours.

(2) Drain the wings and pat dry. Heat the oil to 375 degrees in a deep pan. Fry the wings a few at a time until crispy and cooked through. Place on paper towels to drain and keep hot in a warm oven.

Mustard Wing Sauce

- 2 cups brown ale-style beer
- 1/3 cup dry mustard powder
- 1/3 cup firmly packed brown sugar
- 1 teaspoon hot mustard powder or hot chili powder
- 1 tablespoon butter
- 1 small onion, finely minced
- 1 teaspoon hot mustard powder or hot chili powder
- 1 tablespoon butter
- 1 small onion, finely minced
- 2 tablespoons cornstarch

(1) Combine the first four ingredients and set aside for 35 minutes.

(2) Heat the butter over medium heat. When hot, sauté the onion until limp and translucent.

(3) Stir the onions and cornstarch into the beer mixture. Whisk until the cornstarch is dissolved. Cook over medium heat, stirring constantly until thickened.

(4) Pour the hot sauce over the fried wings and serve immediately.

Homebrewed Steak Sauce

This sauce has been featured here before, but is a necessity for the Texas sauce. It lends itself nicely to all types of meats and sauces.

- 1 1/2 cups beer (your choice)
- 1/3 cup dry sherry
- 1/4 cup honey
- 1/3 cup mild vinegar (rice, red wine or cider)

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- 1/3 cup dark soy sauce (cooking soy sauce, very strong-flavored)
- 1/2 teaspoon liquid smoke (hickory or mesquite)
- 1/2 medium yellow or white onion, coarsely chopped
- 4 large cloves of garlic, peeled
- 1/2 cup raisins
- 1/4 teaspoon of red chili flakes (more or less to taste)
- 1 tablespoon freshly grated orange zest
- 1/2 teaspoon each of fresh ground black pepper and coriander seed

Combine all ingredients in a blender and blend until smooth. Pour the puree into a medium saucepan and bring to a low simmer. Simmer for 20 minutes, remove from the heat and cool.

Give these a try, I guarantee they will earn you a position of infamy in your neighborhood "Buffalo Wing Hall of Flame." ☺

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



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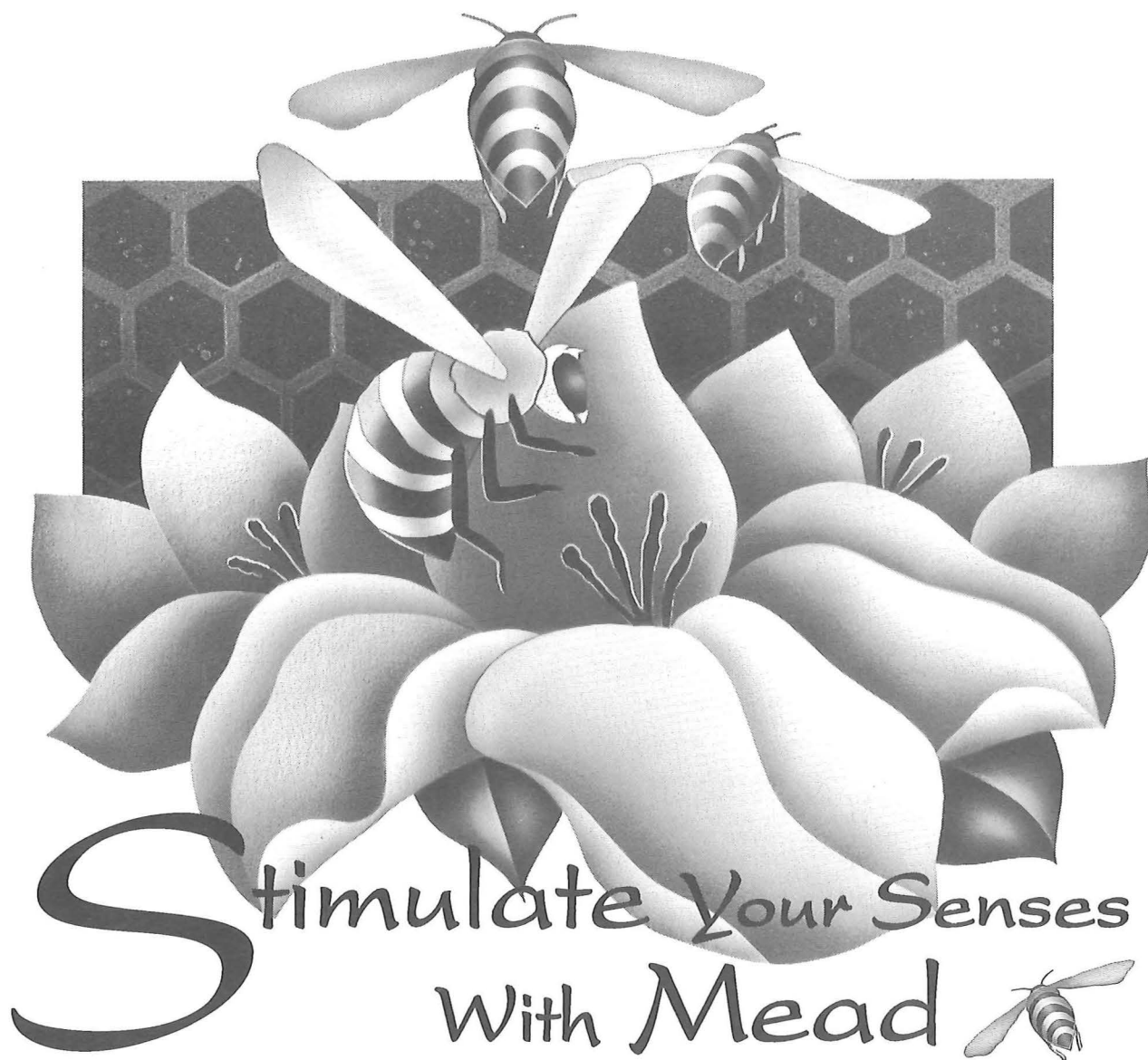


Illustration by Vicki Gullickson

Honey is the most unique, romantic form of sugar to be found. It doesn't need to be subjected to industrial processing to be enjoyed, the flavor is not routine and unimaginative, the aroma is anything but harsh, sterile or uniform. Honey is as variable as the flowers it comes from and as sensuous and magical as the dance of the honeybee. Nature has endowed humankind with a food that is as useful as it is invigorating.

The mythical qualities of honey and mead present us with a true enigma—we can never actually taste what the first mead was like. To this end, the experimentation continues with the discovery of new methods, exotic ingredient combinations and unusual honeys. In spite of the increasing availability of specialty honeys, most

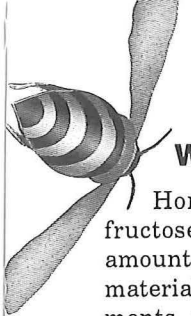
meadmakers stick to the traditional clover or alfalfa honeys in order to produce consistent results.

Using a mild or dark honey is largely a matter of personal preference. The curious and daring may be fated to tolerate an odd-tasting mead or two, but they can also brew up, seemingly by accident, some of the most delightful concoctions. A traditional mead made with a dark honey such as heather, buckwheat or mesquite may take longer to mellow out, but the meadmaker often wants the unique characteristics of the honey to dominate. Some strong-flavored honeys can complement heavily spiced metheglins; others will simply be overwhelmed by the spices. When in doubt, start by using lighter honeys, or test your recipe on a one-gallon batch. If you have a really odd honey, say eucalyptus or tupelo,

make a traditional mead in that one-gallon batch then decide if the flavor and aroma might go well with other ingredients.

Orange blossom, apple blossom, blackberry and honeydew honeys go very well with melomels, mesquite honey and prickly pear fruits are a match made in heaven (see *zymurgy* Summer 1987 Vol. 10, No. 2). Heather, dandelion and goldenrod honeys are good in metheglins as well as all other meads. Wildflower honey is tricky. Depending on the locality, it could contain honey of one or two regional flowers, or everything but the kitchen sink. If you know the flora of the area where the honey was collected, then you have a pretty good idea what kind of honey you are using.

SUSANNE PRICE



Where to Buy, What to Look For

Honey is made up of glucose, fructose, sucrose, water and trace amounts of other materials. Trace materials such as pollen, plant pigments, vitamins and minerals are what give each honey its particular color, flavor and fragrance. The lighter the honey, the fewer trace ingredients it contains. Most honey available in supermarkets has been heated or filtered to increase its shelf life. This practice diminishes the intensity of the bouquet and alters the flavor somewhat. Unfiltered, unheated honey found at local farmers markets, health-food stores and homebrewing shops is the most desirable honey for meadmaking. Always ask whether the honey has been heated or filtered. If you are unable to find untreated honey, the next best choice is unfiltered honey that has been heated to less than 135 degrees F (57 degrees C), the temperature at which crystallized honey becomes fluid.

All honey will crystallize in time and this does not indicate a low-grade honey. If your honey is crystallized, a quick sniff will tell if it has gone bad. Honey left uncovered could attract enough water to start a fermentation by osmophilic and other yeasts that produce a foul odor. (Osmophilic yeasts are so called because they live in solutions that are high in osmotic pressure, such as honey.) Honey older than three or four years that has darkened is oxidized and probably has lost too much aroma to make a good mead.

To Boil or Not to Boil

Many wild yeasts and bacteria naturally present in honey could start to ferment when diluted with water, producing undesirable flavors and aromas. The quicker the yeast that you introduce takes off, the less chance wild yeasts will get a foothold because they can usually tolerate only 4 to 5 percent alcohol. If you boil the honey or add Campden tablets (sodium or potassium metabisulfate), almost all microorganisms are killed, leaving few competing wild yeasts or bacteria.

Campden tablets can be used without imparting any negative flavors, but many meadmakers feel the addition of chemicals should be limited to yeast nutrients. Campden tablets work by liberating sulfur dioxide into the solution, taking about half a day for a five-gallon batch. During this time yeast should not be introduced.

Boiling drives off many subtle volatiles that give honey its wonderfully complex nose. There is a trade-off—what is lost in aroma is gained in sterility and clarity of the final mead. Boiling for 30 to 60 minutes will not only kill off whatever happens to be hanging out in the wort but it also will cause proteins to drop out that might later cloud your mead. One compromise is to heat the honey to just under boiling [190 to 200 degrees F (88 to 93.5 degrees C) or to 160 degrees F (71 degrees C) at the very least], then to chill the wort immediately to a pitching temperature of 80 degrees F (26.5 degrees C). This method will destroy some volatiles but haze-causing proteins should fall out.

For more information, see *Brewing Mead* by Lt. Col. Robert Gayre with Charlie Papazian.

Fruits, Herbs, Spices

It's time for a quick cooking lesson—spices can't bite you unless you bite them back. The rule of thumb for choosing ingredients to add to metheglin or melomel is simply to know your own food preferences. If you like bland foods, don't go wild experimenting with herbs and spices. If you're hot for spicy Italian or tantalizing Thai, find out from your favorite chef what combinations go well in the food he or she prepares. And if you're aiming for a sweet mead, pay particular attention to the fruits or spices in your favorite desserts.

Mead and wine recipes on computer forums such as Homebrew Digest and CompuServe will give a general feel for the kinds and amounts of fruits, herbs and spices to add. Citrus fruits and berries are most common. The usual amount is between five and 12 pounds of fruit for a five-gallon batch. Fruits (except prickly pear) should never be boiled

because the pectin will set giving your mead a hazy appearance. Rather than boil, just pasteurize by bringing the fruit and honey mixture to at least 160 degrees F (71 degrees C). This can be done after a 30-minute boil. Remember that any pulp introduced into the carboy could easily block the blow-off tube and cause an explosion. Strain out the large pieces before pouring the wort into the primary or make five gallons in a 6 1/2 gallon carboy.

I prefer to use fruit concentrates and essences for melomels rather than deal with peeling, pitting and continually wiping up. You can find concentrates at homebrew and winemaking stores, supermarkets and through mail-order companies. Some mail-order companies and many health-food stores carry herbal extracts that would be interesting to experiment with, though I don't know of anyone who has used them in mead. Herbal extracts are usually in an alcohol base and should not be boiled.

Spices can be hit or miss if they have been sitting on a shelf over the stove for several years. Buy fresh ones so you can be more certain of their strength. Two to four ounces of fresh herbs or one-half to two ounces of spice are good estimates for a five-gallon batch. To get the most from herbs and spices prepare a tea just before bottling. This allows you to judge the strength of your blend before adding it to the wort, and you can divide the batch up into spiced and unspiced portions.



Suggested Combinations

Christmas potpourri—cinnamon, nutmeg, cloves, rum extract

Italian—basil, rosemary, thyme, oregano

Jamaican nights—cinnamon and berries (raspberry, blackberry, strawberry)

Sweet sleep—chamomile, peppermint, dandelion leaves

Indian curry—coriander (cilantro), cumin, turmeric, ginger

Hops can be added, as in beer, for bittering and aroma but are not necessary. Start with one-half ounce for bittering and one-half to one ounce for dry hopping. Add aroma hops when



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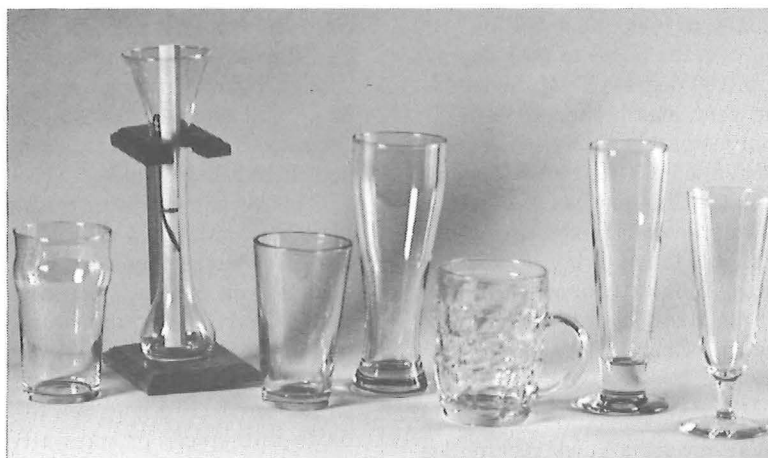
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you pitch and avoid that small chance of infection that could occur by adding them later. As with beer, dry hopping is best done with "noble-type" hops.

Yeast Nutrients

Yeast nutrients are a mixture of salts, minerals, amino acids and vitamins needed for fermentation and not present in honey. They prevent interminable or stuck fermentations but too much of a good thing will leave an unpleasant taste in your mouth. Too much nutrient will cause a biting astringency and metallic flavor. Ammonialike odors can take a few years to age out.

Mead does take a painfully long time to brew. Meadmakers who started out by brewing beer now find their carboys tied up for not two weeks, but two, three or four months and sometimes longer for that struggling yeast that won't quite die at 14 percent alcohol. But don't despair! With the right amount of yeast nutrient, a strong yeast starter and proper conditions, your mead could ferment out in a month or less. Virtually all homebrew shops sell wine or mead yeast nutrient. Some suppliers use a basic yeast nutrient formula based on one by Roger Morse in *Making Mead*. These formulas can ferment out a mead in three weeks at 75 to 80 degrees F (24 to 26.5 degrees C) at a pH of 3.7.

Tartaric, malic and citric acids, also known as acid blend, are not yeast nutrients and adding them is a matter of taste. If you're aiming for a dry citrus mead of lemon and oranges, one-quarter teaspoon total of tartaric and malic acids in five gallons would be plenty. A sweet, still, traditional mead demands one teaspoon of acid blend per five gallons. Acidic fruits like raspberries in a melomel will take a little less.

Vitamins are not particularly necessary, since yeast can synthesize vitamins in the small amounts they require. Large amounts of added vitamins contribute a chemical flavor to the final product. The multivitamin you pop in the morning along with your orange juice won't keep your mead healthy, especially if the pills contain iron, which weakens yeast and increases haze and oxidation of

tannins. Honey usually contains trace amounts of boric acid, manganese sulfate, potassium iodide and zinc sulfate, so the yeast nutrient need not contain these. High-quality peptone is a good source of nitrogen, which lighter honeys especially may lack. Peptone and yeast extract are considered the best natural combination of yeast nutrient by meadmaker Rodney Morris, who has done some research on the subject.

Yeast extract contains tiny amounts of amino acids, phosphorus, potassium and nitrogen, while yeast hulls have unsaturated fatty acids and sterols that give the yeast some alcohol tolerance and can prevent a stuck fermentation if the mead has not been well-oxygenated. Yeasts can continue to ferment at 17 or 18 percent alcohol if yeast hulls, or yeast ghosts, are added. Yeast extract and hulls should be readily available at homebrew supply stores. Finally, the use of pollen as the sole nutrient has been tried with success by Dr. Robert Berthold of Delaware Valley College in the amount of five tablespoons per gallon.

Water Additives

Soft water is best for a mead and will contain some trace elements. Water that is too hard should be boiled then poured off the carbonate precipitates. Gypsum (CaSO_4) can be added to distilled or exceptionally soft water to help acidify the mead wort if phosphates also are present. Irish moss is a good clarifier. Add one-quarter teaspoon during the last 10 minutes of the boil or heat treatment (see *zymurgy* Winter 1991 Vol. 14, No. 5).

Types of Yeast

Alcohol survivability is key to selecting a yeast for mead, especially for high-gravity meads. *Prise de Mousse* (*S. bayanus*), *Montrachet* (*S. cerevisiae* var. *ellipsoideus*), *Tokay*, *Canterelli Champagne* and *Pasteur Champagne* (*S. cerevisiae*) are excellent yeasts for traditional and high original gravity meads. *Epernay* is a wine yeast that is very complementary to melomels. Because ale and lager yeasts have lower alcohol and

sugar tolerances they give less desirable results than wine and Champagne yeasts, although they can produce excellent dry and sparkling meads. Beer yeasts also can be unpredictable in the amounts of phenols they yield in mead.

Killer yeasts, identifiable by the letter K preceding the name or number, work by annihilating competing wild yeasts. It might be helpful to use a killer yeast if the honey has not been boiled; however, all strains of this yeast are prodigious phenol producers. You could end up with a banana or clove-tasting mead or one resembling Band-Aids and plastic, wondering how to pass off this hazardous waste elsewhere. George Fix's article, "Wild Yeast" (*zymurgy* 1989 Special Issue Vol. 12 No. 4) elaborates on killer yeasts.

Other notable yeasts give off phenols over the 100 ppm threshold level. These include *Amateur Brewer*, *Montrachet* and some Champagne yeasts. *Red Star ale yeast* is found to produce phenols in beers at the level of 130 ppm and *Whitbread* at 60 ppm, which is noticeable to some. *Sierra Nevada yeast* does not produce significant phenols. In relative terms, these yeasts could be expected to perform similarly in meads. Phenol levels more than 100 ppm are easier to distinguish in traditional or dry meads where sweetness and spiciness can't hide them.

Another possible source of strange flavors is the yeast starter, which should be prepared using grape juice or apple juice instead of dried malt extract. When using dried yeast, just rehydrate your yeast and make sure to use plenty.

Experiments with Different Yeasts

Ever thought about conducting an experiment to measure the fermentation characteristics of different yeasts in mead? Believe it or not, AHA President Charlie Papazian has done just that, selecting nine wine yeasts that are available in homebrew shops nationwide.

Two control meads with slightly differing amounts of honey and all other ingredients held constant were split into nine batches and allowed to

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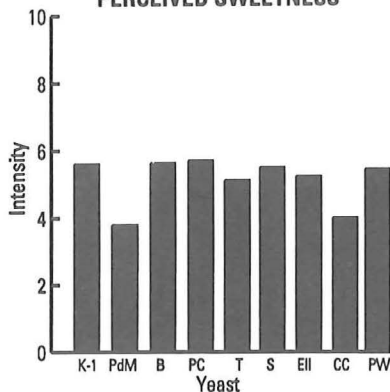
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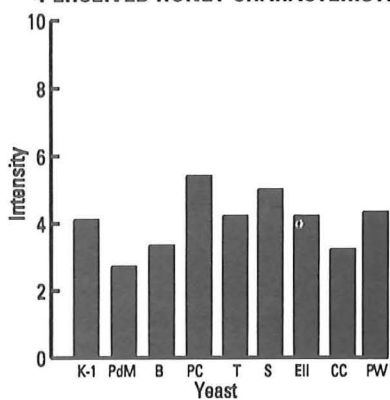
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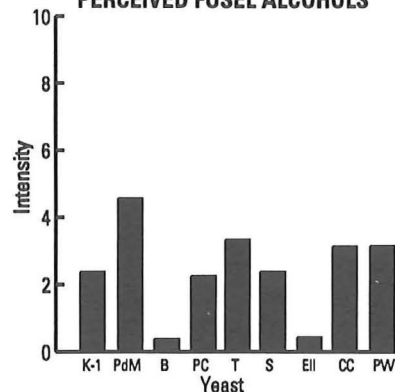
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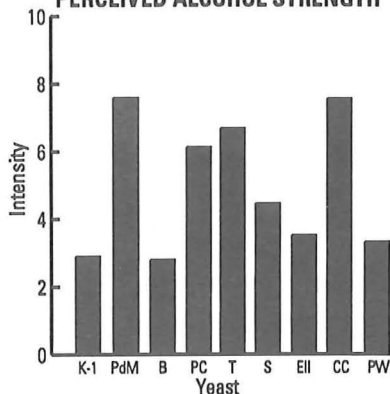
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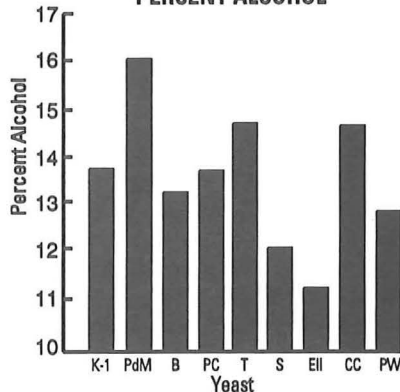
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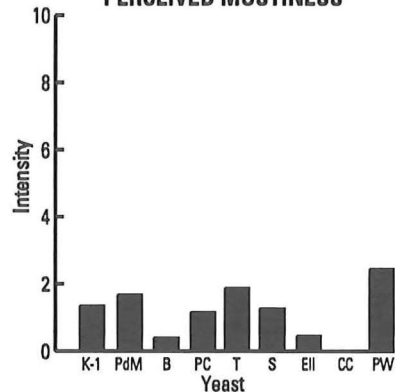
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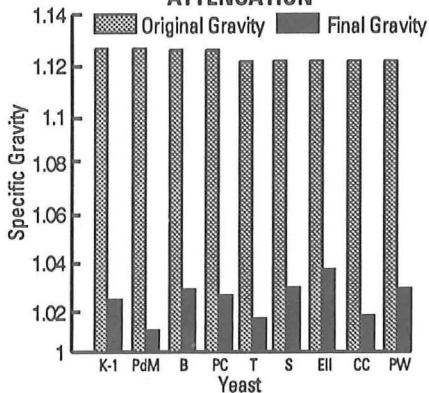
PERCENT ALCOHOL



PERCEIVED MUSTINESS



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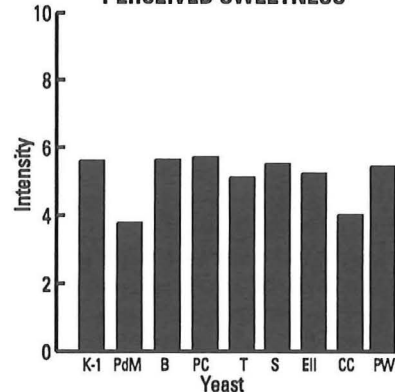
FERMENTATION CHARACTERISTICS OF NINE WINE YEASTS

YEAST TYPE LEGEND

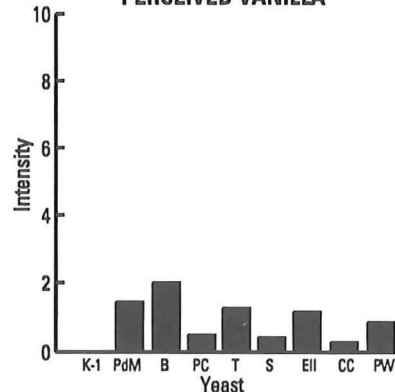
K-1	Killer Yeast (Canada)
PdM	Prise de Mousse
B	Beaujolais
PC	Pasteur Champagne
T	Tokay
S	Steinberger
EII	Epernay-II
CC	Canterelli Champagne
PW	Port Wine

Charts compiled by Charlie Papazian

PERCEIVED SWEETNESS



PERCEIVED VANILLA



ferment out. After fermentation was complete, 10 experienced meadmakers (and homebrewers) were asked to evaluate the meads on the following perceived characteristics: sweetness, honey flavor and aroma, vanilla, winelike qualities, fusel alcohols, mustiness, fruitiness, acidity and perceived alcohol strength.

The bar graphs in the table, "Fermentation Characteristics of Nine Wine Yeasts," rate each characteristic in the different meads on a relative intensity scale, with 10 being the most intense. The graphs do not show high intensities for any one characteristic because all the results were averaged. Intensity levels under one for any particular characteristic indicate that most respondents did not taste or smell the characteristic. Two additional graphs show the actual attenuation and percent of alcohol. Batches with the yeasts K-1, Prise de Mousse, Beaujolais and Pasteur Champagne had original gravities of 1.130, while the meads with the yeasts Tokay, Steinberger, Epernay-II, Canterelli Champagne and Port Wine (University of California-Davis) started out at 1.124 original gravity.

The results show that all of the yeasts except Epernay-II and Steinberger have high alcohol tolerances. Honey flavor and aroma were most evident in Prise de Mousse, Canterelli Champagne and Beaujolais. The perception of sweetness was relatively constant, although Prise de Mousse and Canterelli Champagne scored lower than the others, probably because they were deemed the most acidic and the most alcoholic as well. Perceptions of fruit, vanilla, must and fusel alcohols don't seem to correlate with other aspects, perhaps because the threshold levels for these sensory tests vary greatly with the individual. In my opinion, the data that show the least intensity of any characteristic are the most significant because these indicate virtual consensus among the meadmakers polled.

The following recipe is from Chris Balboni and Jake Miller of Reston, Va. The combination of apricots and nectarines makes for an excellent balance and the sweet aroma is very tempting.

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Apricot-Nectarine Melomel

Ingredients for 5 gallons

- 10 pounds unfiltered clover honey
- 1 1/2 teaspoon gypsum
- 1 teaspoon citric acid
- 12 grams Cordon Brew yeast nutrient
- 5 ounces grated ginger root
- 1 ounce Saaz hop pellets, 3.2 percent alpha acid
- 1/4 teaspoon Irish moss
- 2 packets Vierka dry wine yeast, hydrated for 12 hours in 8 ounces of apple juice
- 5 pounds frozen apricots
- 5 pounds frozen nectarines
- 3/4 cup corn sugar
- Original Specific Gravity: 1.075
- Terminal Specific Gravity: 0.995

Bring 2 gallons of water and the first five ingredients to a boil, then add hops. Boil for 50 minutes. Add Irish moss and boil another 10 minutes. Turn off heat and strain out the ginger. Add fruit and let stand 15

minutes, then strain out the fruit and pour the must, or siphon, to the primary fermenter. Add cold water to make 5 gallons and pitch the yeast once the must has cooled. Rack off the primary after the first week of fermentation. Finishes in 2 1/2 months. Prime with 3/4 cup of corn sugar.

The following is my recipe for a dry, sparkling metheglin.

Zinger Homecoming Champagne

Ingredients for 5 gallons

- 10 pounds alfalfa and wildflower honey mix
- 1 ounce chopped ginger root
- 1 pound corn sugar
- 3 ounces fresh lemon juice
- 1 ounce Willamette hops pellets, 4.5 percent alpha acid
- 1 1/2 teaspoons yeast nutrient
- 2 Lemon Zinger™ tea bags
- 1/4 teaspoon Irish moss
- 5 grams Flor sherry yeast
- 3/4 cup corn sugar
- Original Specific Gravity: 1.080
- Terminal Specific Gravity: 0.995

Boil honey, hops, yeast nutrient, ginger, corn sugar and lemon juice in 2 gallons of water for 50 minutes. Add Lemon Zinger™ tea bags and Irish moss and boil for 10 more minutes. Half fill a carboy with cold water, then strain the boiled wort into it. Pour in enough cold water to make 5 gallons. Cool, then shake vigorously to aerate. Pitch yeast. Ferments in two months at 70 degrees F (21 degrees C). The lemon and honey give a subtle bouquet to this metheglin which has the spiciness of a Gewürztraminer and the festive warmth and sparkle of Champagne.

Resources

Several good books, newsletters, suppliers and organizations can help your quest to brew the mead you want, or to revel in the interminable and intoxicating history of mead. For convenience, be sure to check with your local homebrew supply shop.

Books:

All About Mead by S.W. Andrews contains recipes, procedures, charts and discussions on the subjects of honey and wine yeast. Publisher: Northern Bee Books; Supplier: Beekeeping Education Service.

Brewing Mead/Wassail! In Mazers of Mead by Lt. Col. Robert Gayre and Charlie Papazian is detailed and literary history of mead (by Gayre) compiled with a concise guide to brewing mead (by Papazian). Publisher: Brewers Publications; Supplier: American Homebrewers Association.

Honey—A Comprehensive Survey edited by Eva Crane is a 600-page survey and collection of writings by noted apiculturists including sections on the biology of honey, honey sources, history and language of honey and on honey wines. Published in cooperation with the International Bee Research Association; Supplier: International Bee Research Association—Beekeeping Education Service.

Making Mead by Bryan Acton and Peter Duncan. The history of mead and some fine recipes, all written with British humor. Publisher: Amateur Winemaker Publications; Supplied at homebrewing and winemaking shops.

Making Mead by Roger A. Morse culls useful information from his master's thesis at Cornell University to present this very complete guide to meadmaking. Includes chapters on honey and its qualities, yeasts, mead equipment and procedures. Publisher: Wicwas Press; Suppliers: Beekeeping Education Service, Association of Brewers, homebrew shops.

The Sacred Bee by Hilda M. Ransome Honey. Wax and fermented honey drinks are the chief topics here. Satisfies the interests of the beekeeper, candlemaker and meadmaker. Publisher: Bee Books New and Old; Supplier: Beekeeping Education Service.



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The Bees of Buckfast Abbey by Brother Adam. The author advocates a strict brewing process using rainwater and aging in oak casks for not less than seven years. While his methods are difficult for homebrewers to replicate, his reputation for fine mead is unmatched. Publisher: British Bee Publications; Supplier: International Bee Research Association-Beekeeping Education Service.

The Closet of Sir Kenelm Digby Knight Opened edited by Anne MacDonell "Sir Kenelm Digby was a man of his times in 1669. He dabbled in naval raiding, philosophy, religion and scientific inquiry as well as meadmaking. This book is his fascinating collection of 106 mead recipes—his own and others collected from friends and acquaintances." - American Mead Association. Publisher: Philip Lee Warner, International Bee Research Association sells a bound transcript of the 1910 edition of this book.

Honey Wines and Beers with Short Historical Notes on these Ancient Beverages by Clara Furness is an excellent beginner's guide with recipes for meads, metheglins, melomels, honey beers and punches, along with some good advice. Publisher: Northern Bee Books; Supplier: Beekeeping Education Service.

Mead Making Handbook, Second Edition by Jane Crouch and Mike Murray includes five recipes with this beginner's manual that gets right to the point. Published in connection with the Asatru Alliance Brewer's Guild. Supplier: American Mead Association.

The War of the Gods: The Social Code in Indo-European Mythology by Jarich G. Oosten is a book for the serious mead researcher and is a study of mead culture and mythology of the Indo-European races. Publisher: Routledge & Kegan Paul.

Organizations and Suppliers:

International Bee Research Association (IBRA)
18 North Road, Cardiff, Wales CF1 3 DY, UK

Beekeeping Education Service/ Wicwas Press
PO Box 817, Cheshire, CT
Dr. Larry Morse, Owner

Herb Research Foundation
1007 Pearl St., Suite 200F
Boulder, CO 80302

Brushy Mountain Bee Farm, Steve and Sandy Forrest, Route 1, Box 135, Moravian Falls, NC 28654. Service and info: (919) 921-2681 Orders: 1-800-BEESWAX. Meadmaking kits, supplies, and books.

Black Fox Meadery, Robert Lasseter, 3645 Sanford Dr., Murfreesboro, TN 37130, (615) 893-5216. Mead kits and other products.

American Mead Association, PO Box 206, Ostrander, OH 43061.

Mead Kits and Other Products:

IMO Homebrew and Meadery Supply, Roy Rudebusch, 2901 Hallmark, St. Louis, MO 63125, (314) 487-2130. Ingredients including pollen, herbs and flowers, supplies, information.

For more supplier sources, see Homebrew Connection and Classifieds.

This article is available in Library 13-AHA/zymurgy/Clubs on CompuServe's Beer and Wine Forum as MEADFAL92.

Susanne Price has been making beer, wine and mead for six years. She graduated from the University of Colorado with a degree in geology and Russian. Now able to speak masterfully in Russian about the origins of mead and its ramifications on the geology of Indo-Europe (none), she maintains a high profile at the Association of Brewers as the shipping clerk.



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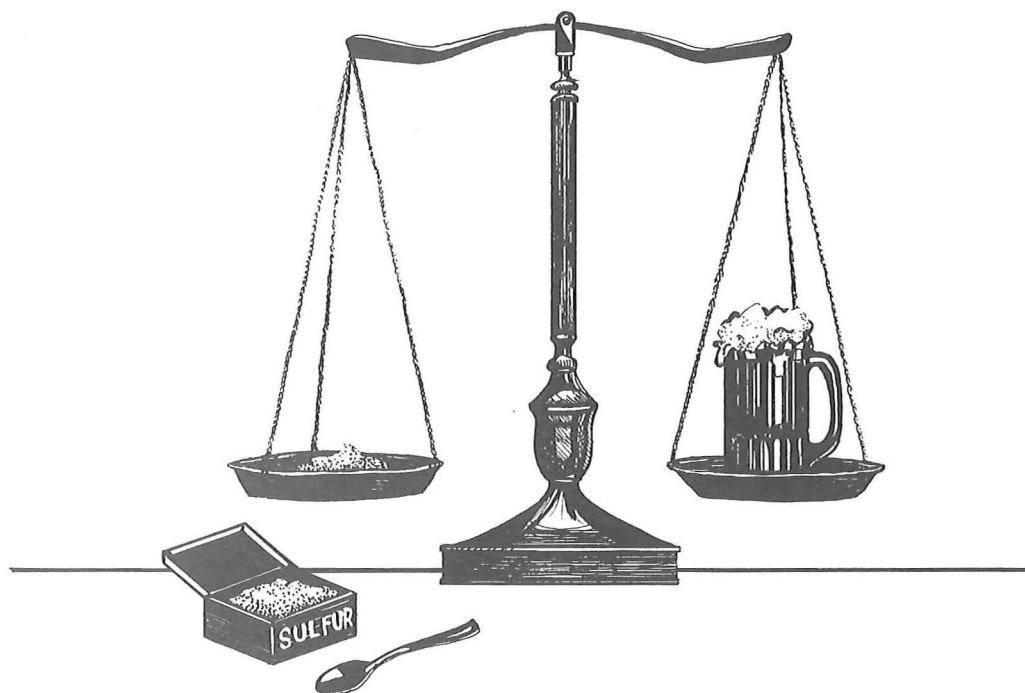


Illustration by Vicki Hopewell

This article will discuss the origin of sulfuric constituents found in beer and analyze their effect on beer flavors. The practical importance of sulfur flavors stems from a number of areas. First, sulfur flavors can arise from bacterial infections, poor malt poor malt quality and other technical brewing errors. Some desirable sulfur flavors are found in many continental lagers. In fact, certain sulfur constituents tend to be excellent discriminators between traditional ale flavors and traditional lager flavors.

Just about every aspect of British ale brewing practice discourages the formation of sulfur constituents in the finished ale. This includes the way barley is malted as well as the type of yeast strain and temperature of the fermentation used, to cite only three examples. In fact, most would regard the presence of sulfury flavors in an ale to be a serious technical defect. The desirable sulfur flavors found in continen-

tal lagers on the other hand, are derived from malt. Moreover, the type of barley varieties used, the way it is malted and brewhouse procedures all contribute to these flavors as do the yeast strains used.

In other lager styles, most notably American lagers, there is some diversity with respect to the intensity of sulfur flavors. The largest commercial brewing company in the United States produces beers with sulfur constituents well below threshold. They do this by taking extraordinary measures during wort chilling. Their beers are almost identical to English ales with respect to their sulfur profiles. On the other hand, certain regional U.S. beers are quite sulfury because of the type of malt used.

The practical significance of the above is the clear fact that brewers will want to know how and why sulfury flavors arise. In some cases

brewers will want to totally eliminate them, while in other cases they are to be encouraged. It is these aspects that are treated in this article.

Sulfur Constituents Relevant to Beer

A number of compounds bearing sulfur are relevant to beer either because they can appear in finished beer, or because they are precursors to such compounds. While there is great diversity, there is one common feature, namely all have powerful flavors with very low thresholds. Most beer volatiles (esters, diacetyl, etc.) have flavor thresholds in the parts per million (ppm), which is milligrams per liter. Sulfur constituents, on the other hand, have thresholds in the parts per billion (ppb), which is micrograms per liter.

Over the last decade there have been hundreds of articles written about sulfur constituents in journals devoted to brewing, and at least 90 percent of them have had dimethyl

GEORGE FIX

sulfide (DMS) as a primary focus. A natural question to ask is whether DMS is really that important to deserve such concerted attention. The answer is yes and no, and the differences are important. On the positive end, DMS always is detected in beers that have sulfuric flavor tones. Moreover, there are also a number of constituents relevant to beer that, as far as practical brewing is concerned, can be regarded as DMS equivalents. These include dimethyl disulfide (DMDS) and dimethyl trisulfide (DMTS) and diethylsulfide (DES).

Of equal importance, DMS is a "tracer element" in the sense that its fate and the fate of its precursors is shared by a large number of other sulfur compounds relevant to beer. Thus, understanding how DMS and its precursors evolve in brewing gives useful insights into sulfur formation in beer in a general sense. In this regard, it is fair to say that the DMS-oriented research in brewing science has affected practical brewing procedures as much as the diacetyl oriented research did in the 1950s.

On the other hand, quoting DMS levels of a particular beer can be misleading. As noted above, DMS in continental lagers can approach two to three times the threshold of 30 to 50 ppb. The same is true of beers that experienced infections from selected gram negative bacteria, but the finished beer flavors will be dramatically different in these two cases.

Also there will be differences in the malt-derived DMS found in beer. For example, many midwestern regional breweries using midwestern six-row malt produce beers with DMS levels well above threshold, yet at the same time, the flavors of these beers will only superficially resemble a German lager of similar strength and color. While DMS plays an important role in all of these issues, clearly other sulfur constituents are responsible for the discernible differences.

Hydrogen sulfide (H_2S) was one of the first compounds to be identified as a fermentation byproduct. Its flavor threshold has been rated

A natural question to ask is whether DMS is really that important to deserve such concerted attention.

at 10 to 30 ppb, and above that threshold it will contribute a stinky tone that sometimes resembles rotten eggs. Most brewing yeasts produce H_2S , but they also have strong enzyme systems capable of reducing it. This reduction is almost always complete, the derivative products typically being scrubbed out with the evolving CO_2 gas during the fermentation. The exception to this occurs when select gram negative bacteria are present in the chilled wort and/or pitching yeast. These bacteria die off fairly early in the fermentation; however, they are capable of producing large amounts of DMS and H_2S before this happens. A lot of this is scrubbed out by evolving CO_2 , but residuals can remain above their flavor threshold. This tends to give cooked corn, rotten vegetable and parsnip tones. In fact, the presence of H_2S is the best way to distinguish between the cases when sulfuric flavors come from infection and when they arise from the malt and wort production procedures used. The very unpleasant aroma of the H_2S and DMS combination is clear evidence of an infection.

Thiols, (which are sometimes called mercaptans), also are found in beer; some may come from hop oils. Sulfur compounds derived from hops also can result when hops are sprayed during cultivation with various insecticides. In the past, many hop farmers in the United Kingdom used sulfur-based insecticides on crops in the field. In a couple of years this caused serious problems, particularly for brewers who used dry hopping in their process. It is my understanding that this practice has been discontinued.

A well-known and carefully documented effect involving sulfur fla-

vor in beer and hops is the light-struck phenomenon. This is a photochemical reaction involving high frequency light sources (wave lengths between 350 and 550 nm or below). The mechanisms are described in my book, *Principles of Brewing Science* (Brewers Publications, 1989), and other technical references. The only thing to add here is that the effect can occur in minutes if beer is exposed to bright sunlight and the skunky flavors that result are highly unpleasant.

The presence of mercaptans in finished beer also has occurred when sulfites have been used as an antioxidant. An antioxidant, K_2S , is potassium sulfide, the most widely used preservative in brewing. Initially, they will complex with staling aldehydes masking the flavors of the latter. This bond, however, is temporary and when broken will release highly unpleasant flavors.

Brewhouse Procedures

Sulfur compounds derived from malt can and usually will be passed on to the finished beer. Adjuncts (cereal grains or sugars) will not contribute sulfur compounds. Two variables dominate in importance. First is the type of malt used, and second is the type of wort boiling and chilling procedures used. In the discussion of these two areas, attention will be focused on DMS. As noted above, many other sulfur constituents are relevant, but the mechanisms governing their origin and removal are similar to those for DMS.

DMS is derived from precursors found in malt. The one relevant to wort production is S-Methyl methionine (SMM), that when heated will break down to DMS plus other products. English mild and pale ale malts have very low SMM levels, typically 1 to 2 micrograms per gram of malt. This is because of the high kilning temperatures used in English malting. Various color malts also will have low SMM levels for exactly the same reasons. Lager malts, on the other hand, can have SMM levels as high as 9 to 10 micrograms per gram of malt. They will



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differ sharply from each other vis-à-vis the other sulfur compounds.

The breakdown of SMM to DMS starts in the boil. With good evaporation just about all of the DMS formed will be removed in the vapor. In theory, all of SMM in wort can be broken down to DMS and then removed in the vapor. In boils of one to two hours only about 70 to 80 percent of the SMM is transformed in this manner. Formulas are available to approximate the actual amount, given the time and temperature of the boil.

Perhaps the most critical period for DMS levels in beer occurs during wort chilling where thermal breakdown of SMM to DMS continues. To prevent bacterial infection, most brewers use a closed cooling system in which case all of the DMS formed will remain in the wort. For example, a 60-minute cooling period where the average temperature is 55 degrees C (131 degrees F) will typically leave 80 to 100 ppb of DMS in the wort if high SMM lager malt is used. If the cooling period is reduced to 30 minutes, then 50 to 60 ppb of DMS are formed. One large commercial brewery "dusts," or sprays, CO₂ in gaseous form through cooling wort and thereby removes a significant fraction of the DMS formed.

Bacterial Activity

Dimethylsulfoxide (DMSO) is another DMS precursor found in malt. It is an oxidized form of DMS. The process whereby DMSO is converted into DMS is of the reduction type. Various microorganisms have the enzyme systems necessary for affecting this reduction, the ones most relevant to beer being gram negative bacteria. Spoilage can occur in chilled wort, the initial stage of the fermentation and during storage.

While the relevant gram negative bacteria tend to be short lived, they all have the ability to create obnoxious sulfur compounds in a relatively short period. It is rare to find viable cells in finished beer, nevertheless their fingerprints can be found if the level of infection is sufficiently high. The causes for various bacterial infections in brewing tend

to be complicated and diverse. Nevertheless, it is my experience that these issues are clear and simple insofar as gram negative bacteria are concerned. They will be relevant if, and only if, unclean brewing conditions prevail. Another relevant point is that DMSO levels in finished wort tend to be high (say 400 to 600 ppb) so there are plenty of materials around for bacteria to create DMS. Moreover, this is true of both ale and lager malts because DMSO tends to be unaffected by high kilning temperatures. For this reason sulfuric flavors found in ale are a sure sign of infection and apparently is why ale brewers tend to react negatively to just about any type of sulfur flavoring in beer.

To cite a specific case, I prepared a 12-degree-Plato all-malt wort using lager malt. The DMS level at the start of fermentation was 60 ppb and the DMSO level was 474 ppb. A lager strain was used to ferment this control sample at 50 degrees F (10 degrees C). The DMSO level remained unchanged while the DMS

dropped to 30 ppb. Another batch of this wort was fermented for which the pitching yeast was inoculated with obseumbacterium at a rate of 10,000 cells per mL (roughly one bacterium per 1,000 yeast cells). In this ferment, the DMSO level dropped from 474 to slightly below 75 ppb. The DMS level increased from 60 ppb to 219 ppb. The flavors (taste and smell) reflected the infection. This includes flavor tones that recall cooked corn with rotten vegetable and parsnip effects also being evident. None of these were present in the control sample.

An increase in the DMS levels also can occur during beer storage, and much more rarely in bottled beer. The culprits are very likely gram negative anaerobic rods generally called pectinatus. Interestingly, it was not until the early 1980s that this bacterium was isolated and classified. Their length ranges from 20 to 32 microns and they are typically 0.7 to 0.8 microns in diameter. Therefore, they usually will pass, at least in part, through a three micron

filter, but are generally removed by one micron filters. They are highly sensitive to chlorine, iodophors and many other sanitizers. Thus, they will never be a problem in clean brewing systems.

Sulfur Flavors Produced by Yeast

That brewer's yeast gets involved in the formation of sulfuric flavors in beer is clear. This is illustrated in the following figure that gives descriptors used by the Siebel Institute of Technology for yeast cultures they sell. Note the striking difference between ale and lager yeast, an effect that is very likely influenced by the higher fermentation temperatures used in the former. The one exception is the strain BRY 207G. This strain is used by some ale brewers (primarily large firms in the United Kingdom) to produce "bastard-lagers," i.e. top-fermented beers that resemble lager in their general flavor profile.

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FIGURE 1

Ale Yeast

Bry 96: A flocculent yeast, it produces a good ale flavor and is well accepted by breweries.

Bry 204: Originating in Europe, this is a typical Trappist beer strain exhibiting flocculent properties and able to produce fully attenuated beers at relatively high fermentation temperatures. The beer produced is typically malty with a balance of phenolic overtones.

Bry 207G: A non-flocculent bottom-settling yeast producing a sulfury odor, very estery and slightly yeasty-sulfury.

Bry 405: A top-fermenting ale yeast that gives quick attenuation and excellent ale flavor, full bodied and slightly sweet.

Lager Yeast

Bry 118: Used successfully by many breweries, this yeast originated on the East Coast. This is a flocculent yeast. The beer produced shows a sulfury odor and flavor and is rather estery.

Bry 144: Originating in Europe, this is a powdery yeast preferred by some breweries for specific purposes. The beer produced shows a sulfury odor, is rather estery, slightly grainy and yeasty-sulfury.

Bry 145: This is a flocculent yeast of European origin. The beer produced shows a sulfury odor and flavor, is slightly light on flavor and rather estery.

Bry 203: This European yeast strain shows flocculent characteristics. The beer produced has a good balance of higher alcohols to esters and possesses good drinkability.

Bry 206: A popular flocculent strain, this European yeast is used widely in the international brewing industry. The beer produced has a slight sulfury odor and is rounded with moderate attenuation.

Once it was thought that brewers yeasts are capable of enzymatically reducing DMSO to DMS, and this was seen as a major factor in the non-bacterial formation of sulfur compounds in the fermentation. This can happen in artificial substrates, but it has been shown clearly that it cannot happen in normal beer wort; therefore, one must look elsewhere to explain the effects described in the above figure.

If a pure yeast strain is responsible for the fermentation, then it is reasonable to assume only the two major pathways (aerobic respiration and anaerobic fermentation) are relevant. A close look at both pathways shows that the only place where a sulfur-bearing compound arises is in the aerobic cycle. This occurs after carbon splitting and the formation of pyruvic acid. The compound in question is acetyl coenzyme A, which is the metabolically active form of acetate. Because this sulfur constituent arises solely as a result of yeast metabolism, it is not surprising that different strains will produce different amounts. Some of these sulfur constituents will be scrubbed out in the fermentation, but the fate of the remainder is unclear. Nevertheless, the following points apparently are valid:

(1) Sulfur constituents produced by yeast are formed very early in the fermentation.

(2) The higher the initial fermentation temperature, the more sulfur constituents are produced.

(3) The higher the middle and final fermentation temperature, the more the sulfur constituents are scrubbed out.

(4) DMS and its precursors are not involved. An increase in DMS during the fermentation and/or aging is due exclusively to bacterial infections.

I tested these points with various test brews using the Christian Schmidt yeast (Siebel's Bry 118). This popular lager yeast typically yields beers with generous sulfur profiles (see Siebel's descriptors, Figure 1). This was certainly the case with worts fermented at 58 degrees F (14.5 degrees C). Different results were obtained in a

modified fermentation that starts cold and ends warm. In particular, the first three days of a nine-day fermentation were conducted at 43 degrees F (6 degrees C). The next three days were at 50 degrees F (10 degrees C) and the final three days at 65 degrees F (18 degrees C). Beers produced with this temperature program seemed much less sulfury and slightly more drinkable than the control batches. The latter were typically more complex. Cy Martin, a noted homebrewer and author, has obtained similar results with a cold starting fermentation using a sulfury lager yeast. The Weihe Stephan strain W-308 (Wyeast 2308) was used in Martin's experimental brews.

In the end, the desirability of sulfury flavors in beer will be seen as desirable in some cases and undesirable in others. The good news is that we as brewers have some measure of control to produce results we deem to be desirable.

This article is available in Library 13-AHA/zymurgy/Clubs on CompuServe's Beer and Wine Forum as SULFUR.F92.

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





Hitting Target Gravities



Illustration by John Martin



What do you do with a bock that has an original gravity of only 1.060? Or an English bitter with a whopping gravity of 1.066?

You might try to reclassify them to similar styles with a more appropriate gravity.

But more often than not such efforts are doomed by grain components and hop additions that are inappropriate for the adopted style.

Unfortunately, by the time we discover that a brew is off-target, it's usually too late to do anything about it—all the hops have been added, the boil is finished and the wort has been chilled. At this point it's hard to go back and add extract or boil the wort down to a lower volume.

What's needed during brewing is a technique for accurately hitting the original gravity of each brew, whether it is all grain, extract or some combination. This article describes how a few easy measurements and a little simple math can help you predict the original gravity of the beer you are brewing long before the end of the boil. By using these techniques and a few simple adjustments, you can hit your target gravities on a regular basis.

What Goes Wrong

Unfortunately, a lot of factors can cause you to miss the gravity called for in your recipe or formulation. Let's look at a couple of examples.

- The 7.5-gallon plastic fermenters that many people start homebrewing with have no volume markings, so it's hard to tell how much wort you are starting out with. Without

guidance, it's easy to over or under fill the fermenter and miss your target gravity by as much as 50 percent.

- If you look at enough recipes, you'll see some that seem to achieve unbelievably low or high yields for partial or full mashes. If you are following someone else's recipe and you want to duplicate their results, you'll have to check the gravity "on the fly" to make sure your finished product will match theirs.

- If you are an innovative brewer who uses unusual grains or other fermentable ingredients, you won't know until after the mash what kind of yield you might get from your novel ingredients.

- All-grain brewers face a number of challenges. Any recipe that involves grain will vary based on your own mash yield. Brewers who are using a new source of malt for the first time are often surprised by yields that differ from those of their accustomed source. Generally, variables in water, grain, equipment and technique affect the yield so that no two brewers can conduct the same mash and achieve the same yield. The more the recipe depends on grain rather than on extract, the greater the opportunity for significant variation in the original gravity of the beer you produce.

The Concept

While it's not hard to come up with compelling reasons to control your gravity, putting together a system to do so requires a couple of tricks with equipment and calculator. The basic concept is easy. Every beer has a "total gravity" that can be expressed as volume of wort multiplied by gravity of wort.

RAY DANIELS

Once you have added all of your fermentable materials, the total gravity of your wort will not change, no matter how much you boil, hop, combine or cool it. This fact allows us to assess total gravity after mashing or during the boil and use the information to predict the wort gravity at the end of the boil. We do this using the following basic concept:

$$\begin{array}{l} \text{volume (during boil)} \times \text{gravity (during boil)} \\ \text{will be equal to} \\ \text{volume (at end of boil)} \times \text{gravity (at end of boil).} \end{array}$$

Equations based on this concept allow you to assess the gravity of a beer long before the end of the boil so you can make adjustments to keep the final gravity on target. Let's look at two examples:

Extract Beer: You're boiling three gallons of wort with which you intend to make a final volume of five gallons. The temperature-adjusted specific gravity of the wort in the boiling pot is 1.082. To find out what the gravity of the final five gallons will be, apply the formula. First, strip off the one, the decimal point and the leading zero from the specific gravity reading. Mathematically speaking, this would be $(SG - 1) \times 1,000$. So the total gravity of this wort is $82 \times 3 = 246$. If we add this to enough cold water to make exactly five gallons of wort for pitching, it should have a gravity of 1.049. This is equal to the total gravity divided by final volume or $246/5 = 49$. To get specific gravity, divide 49 by 1,000 and add one.

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All Grain: Following the mash and sparge, you have exactly seven gallons of wort ready to boil. The recipe you're using says the target gravity is 1.045, but it called for a lot of grain so you want to check to see where you stand. The temperature-corrected specific gravity of the wort is 1.038. This means your total gravity is $38 \times 7 = 266$. If you boil this down to five gallons, the final gravity will be $266/5 = 53$ or 1.053 as an original gravity.

These examples show how you can predict the original gravity of your finished wort long before the brewing is done. By the way, you can use other units of measure for gravity and volume without any ill effects. Degrees Balling are actually a more convenient measure for these calculations because they don't have to be converted and can be used exactly the way you read them in the formulas.

The next few sections describe the steps you can take to assess the gravity of your beer while there is still time to adjust it. Using this system, you should be able to hit your target specific gravity within ± 0.002 .

Measuring Volume

To hit a final target, you have to start with a known volume at a known gravity and calculate the total gravity of the wort. Doing this requires you to have the equipment and information needed to calculate precise volumes and temperature-corrected specific gravities.

Volume measurement is easy if your brewing vessels are calibrated. I have poured measured amounts of water into each of my brewing pots and sparge collection vessels to mark them off in gallons. My British-made BruHeat boiler is inconveniently marked in imperial gallons (1.25 U.S. gallons each) and liters. But because it is plastic, I can easily match the volume on the inside with the markings on the outside in order to tell exactly how much wort I have boiling in the pot.

Before getting the BruHeat boiler, I used an 18-quart pot for my boils. I marked the two- and three-gallon volumes on the outside with the same China marker I use to label bottle caps. For both marking and measuring, you can use a wooden spoon handle. Put the handle in the pot until it just touches the top of the liquid. Mark the spot where the handle meets the top edge of the pot with your thumb, then move the handle to the outside of the pot, again holding your thumb-marked spot even with the top of the pot.

If you don't like the spoon method—or if you're in the market for a big pot anyway—some restaurant pots are calibrated on the inside by quarts or gallons to make this kind of measurement easy.

If you're an all-grain brewer, the end of the mash is the best time to assess total gravity. To do so, you will want volume calibrations on anything you use to collect mash runoff. I use a couple of old plastic fermenters marked off in gallons for this purpose. Also, if you add water to your boiled wort in the fermenter, you will want to calibrate your fermenter to ensure an accurate final volume.

Measuring Gravity

For measuring gravity, most homebrewers already have a hydrometer that is perfectly suitable. If you don't have one, it's time to invest the \$10. In addition, to pinpoint original gravities, you will want a thermometer to help you correct the specific gravity of hot wort samples.

You can assess specific gravity of hot wort at temperatures all the way up to boiling, but I usually prefer to pull a sample and measure it at a somewhat lower temperature. My hydrometer tube holds about six ounces of fluid, so I will pull a cup of wort from my sample vessel. If the sam-

ple was boiling, I cool it in the measuring cup by popping it in the freezer for 10 minutes. Finally, I put the wort in the hydrometer tube, take a temperature reading, insert the hydrometer to check the specific gravity and then put the thermometer in again for a second temperature check.

The attached chart, drawn from Greg Noonan's *Brewing Lager Beer* (Brewers Publications), gives the gravity correction factors for temperatures up to boiling in 10-degree-F increments. I choose the temperature closest to the average of the before and after readings and add the appropriate amount to my specific gravity reading to get the actual specific gravity of the wort.

Gravity Correction Chart

Temperature degrees F	(C)	Add degrees SG	Temperature degrees F	(C)	Add degrees SG
80	(26.5)	0.002	140	(60.0)	0.016
90	(32.0)	0.004	150	(65.5)	0.018
100	(38.0)	0.006	160	(71.0)	0.022
110	(43.5)	0.008	170	(76.5)	0.025
120	(49.0)	0.010	190	(88.0)	0.033
130	(54.5)	0.013	212	(100.0)	0.040

Example: First temperature reading: 128 degrees F (53.5 degrees C)
Gravity reading: 1.042
Second temperature reading: 126 degrees F (52 degrees C)

From these data, I estimate the actual temperature during the hydrometer reading was about 127 degrees F (53 degrees C)—or about one-third of the way between 130 and 120 degrees F (54.5 and 49 degrees C). You can add the adjustment factor for 130 degrees F (54.5 degrees C) to get $1.042 + 0.013 = 1.055$ corrected specific gravity. Alternately, you might reduce the correction factor by 0.001 to 0.012 to reflect the temperature reading at 127 degrees F (53 degrees C).



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Applications and Corrections

The following subsections provide the exact formulas to be used in several different gravity assessment situations. In all cases, the word "gravity" means specific gravity with the 1, decimal point and leading zeros stripped off. Mathematically the conversions go like this:

$$\begin{aligned}\text{gravity} &= (\text{SG} - 1) \times 1,000 \\ \text{SG} &= (\text{gravity}/1,000) + 1.\end{aligned}$$

Boiling less than five gallons, or boiling more than five gallons:

$$\frac{\text{boil volume} \times \text{boil gravity}}{\text{final volume}} = \text{final gravity}$$

This equation can be used whenever the volume of the wort you want to assess is different from your expected final wort volume. It can be used when you add less than five gallons of boiled wort to water in the fermenter to achieve a specific final volume, usually five gallons. It can also be used at the beginning of a long boil when you have six or more gallons you will be boiling down to five.

Virtually all brewers can use this equation during their next brew. Take gravity and volume readings after you have added all of your fermentable materials to your boil. Multiply them and divide by the final volume you want to end the boil with to get the expected gravity of your brew.

Assessing the total gravity of two pots of wort

If you split your boil into two pots, you can still assess the expected final gravity using the following equation:

$$\frac{[(\text{volume of first pot} \times \text{gravity of first pot}) + (\text{volume of second pot} \times \text{gravity of second pot})]}{\text{final volume}} = \text{final gravity}$$

I use this approach frequently with all-grain batches to assess the final gravity even before I begin the boil. After collecting my sparge runoff, I check both (or all) of the containers with runoff to determine total gravity and estimate the gravity of the finished beer.

With the all-grain batches, variations in yield often give me a bit more or a bit less gravity than anticipated. In these cases, I adjust the brewing process so I will hit the final gravity at the end of the boil. Depending on whether you are high or low, there are a couple of different strategies you can pursue.

Adjustments

Total Gravity is High: I usually give myself a margin of safety in my mashes, so often I wind up with a higher total gravity—and a higher expected original gravity—than I need. In these cases, the only way to hit your target gravity is by making more beer than you had planned. (What a disappointment!) This is done by simply adding more water to your wort or reducing a long boil, to reach a final volume that will give you the right original gravity for the beer. How do we know what the right final volume is? Just plug your numbers into this equation:

$$\frac{\text{pot volume} \times \text{pot gravity}}{\text{target gravity}} = \text{final volume}$$

If you usually brew five-gallon batches, this number will be more than five. Remember this possibility when calibrating your pots and containers and be sure they are calibrated to at least six gallons.

Total Gravity is Low: If the total gravity of your wort is too low to hit your target original gravity at your target volume, you have two choices—you can make less beer or you can increase the total gravity of the wort by adding some malt extract. If you choose the first option, use the same equation as in the previous example to determine what your final volume should be. If you want to make a full recipe, you can determine how much extract to add by using this formula:

$$\frac{(\text{target gravity} \times \text{final vol.}) - (\text{current gravity} \times \text{current vol.})}{45^*} = \text{pounds of dry malt extract}$$

*Note, divide by 36 rather than 45 if you are going to use malt syrup.

Still Not a Science

Despite all these precise calculations, you still have to use your experience and judgment while brewing if you want to hit gravities on the nose. After all, brewing is a craft as well as a science. I was tripped up earlier this year when I tapped a sample off the bottom of a bucket of mash runoff without stirring first. The first-runnings wort at the bottom of the bucket had a much higher gravity than the recent runoff at the top of the bucket. At the time, I was amazed at the great yield from the mash, but I was too distracted by my visitors to think through the implications. When the boil was done, I missed my target gravity by 0.010!

For those of you who view mathematical aids to better brewing as an evil influence on the craft of our chosen avocation, there is still craft aplenty in the use of these equations. Consider the all-grain brew where the boil starts with seven or eight gallons of wort. You will face a challenge in deciding when to start your hop additions. You want to reach the target volume through evaporation at the same time that your hop schedule says to stop the boil. With a little experience, you'll develop a "feel" for hitting it just right.

For the less "craft" inclined, you can always err on the side of boiling too long then add more water near the end of the boil to bring volume up to your target level. It makes hitting your target final volume pretty easy—but don't tell "craft" guys that, it would ruin their fun. ☹

Ray Daniels is an avowed Chicago Beer Society "Beer Geek" with a passion for all things geeky that can in any way be linked to beer. An avid competitor, Ray shares the 1992 Midwest Homebrewer of the Year title.



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The New Brewer

THE MAGAZINE FOR MICRO AND PUB-BREWERS

THE OLDEST BREWERY IN AMERICA



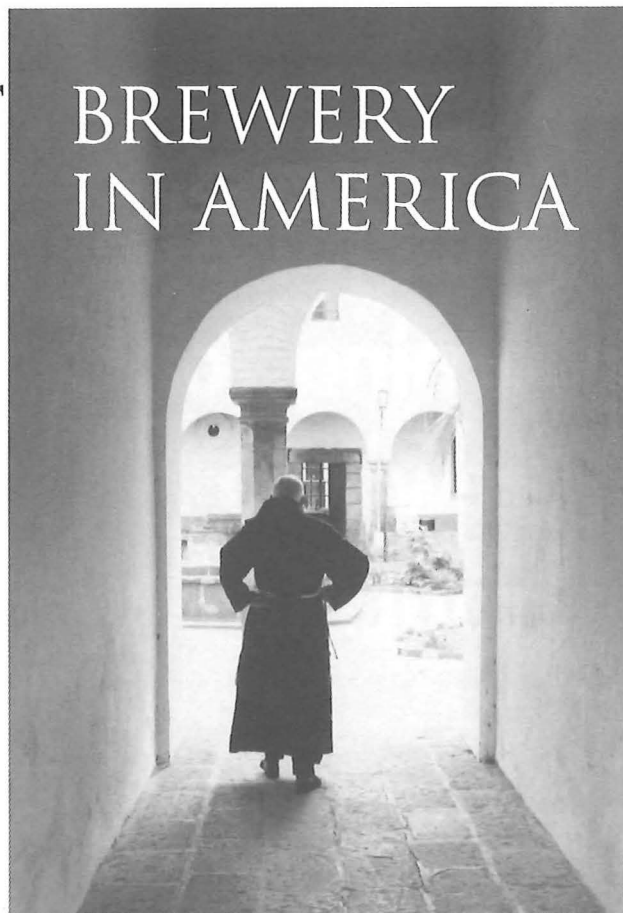
The San Francisco Monastery - where beer was brewed until 1968

America's oldest existing brewery stands where it is eternally spring, at an elevation of nearly 10,000 feet surrounded by volcanoes towering over 20,000 feet, only 50 miles from the hot, humid tangle of the world's largest jungle. As though these surroundings were not spectacular enough, the brewery's history inspires the mind when con-

Ecuador has a lot to offer—the towering Andes, tropical beaches, Amazon Basin jungle, brilliant deserts, Indian, African and Spanish culture and America's oldest brewery.

Quito was founded in 1534 during the Spanish conquest. It was only a matter of days before work on a church and monastery was begun

CHARLIE PAPAZIAN



Hallowed passages of the San Francisco Monastery

Photos by Charlie Papazian

templating the origins, wisdom tenacity of the founders nearly 450 years ago.

The high Andean air in the city of Quito, Ecuador, is bright, clean and easily calmed by the country's readily available Pilsener and Club Premium lager beers. A country the size of Colorado, situated on the equator,

by seven monks who had traveled to the South American continent from Flanders (now part of Belgium). With them they brought their yearning for beer as it was brewed in the old country. Eleven years later wheat was brought over and cultivated. Then perhaps America's first brewery began malting, brewing and fermenting wheat beer.

In the garden of the monastery one of the padres gave a short history of the brewery, which has been restored as a museum. Through an interpreter he explained that cultivation of wheat was followed in later years with the introduction of barley. The small, simple brewery, popular with the growing population, expanded into a more "serious" brewery in 1595.

Up until 1957 the five-to-six U.S.- barrel brewhouse malted its own barley and sun-dried it. The brewery continued operation until 1967 when, according to the padre, the pope issued an order halting brewing operations. The tradition of the Franciscan Order embraced a

vow of poverty and humility and, as the Vatican evidently saw it, the brewing of beer did not fit into the modern interpretation of these values.

However, until the brewery ceased operations the monks were brewing 12 batches per week, half kept for the monastery church itself and the rest distributed to other churches and monasteries in the area. Wheat beers, pale beers and very dark beers were brewed regularly, according to the padre.

These beers are now only a memory in the minds of a select few residents of Quito. The manager at the small hostel where I stayed related how his father used to work in the brewery. He couldn't recall very much except that a locally produced proteinous substance was used in the brewing process. I figured it must have been some sort of clarifying agent similar to isinglass, which is derived from the swim bladders of sturgeon.

With the help of two Ecuadorean breweries, Cervezas Nacionales of Guayaquil and Cerveceria Andina of Quito, the brewery has been preserved as a museum. The museum has a beautifully preserved small beer hall next to it. The flavor of it all seems to linger as a cross between a Flanders and a Germanic brewing tradition. A visit to the monastery brewery is well worth the effort if you are ever in Quito.

And I know the padre appreciated the bottle of my own homebrew I gave him after our brief encounter at the Brewery of the Monastery of San Francisco.



A section of the brewery museum, adjacent to the brewery

Author's Note: Many thanks to Guillermo Moscoso, currently working for Anheuser-Busch in St. Louis, Mo., for introducing to me the tale of the Brewery of the Monastery of San Francisco; to Dori Whitney, editor of *The Brewers Digest* who uncovered the January 1966 issue that featured the brewery; and to Lilian Bejarano, who is working on the monastery restoration and graciously arranged a brewery tour.

AHA President Charlie Papazian visited the brewery of San Francisco Monastery on a recent vacation trip to Ecuador.



THE FOLLOWING IS EXCERPTED FROM AN ARTICLE BY PAUL V. GRANO ABOUT THE MONASTERY BREWERY AND ONE TYPE OF BEER BREWED THERE. "THE BREWERY OF THE MONASTERY OF SAN FRANCISCO" ORIGINALLY APPEARED IN THE JANUARY 1966 ISSUE OF THE BREWERS DIGEST.

The brewhouse consists of a copperlined concrete mash kettle, a wooden lauter tub with a bronze false bottom and a hot water tank made of an old German hop cylinder. All heating is by direct wood fire. Thirty-three pounds of Pilsener malt plus 50 pounds of caramel malt and 20 pounds of black malt (milled in a coffee grinder in the monastery) are mashed in and the usual infusion method is followed. Since the agitator that was installed for the fathers is inadequate they have to take turns stirring the mash in order to avoid burning on to the bottom. This is quite a hot and heavy job.

The mash then runs to the lauter tub by gravity and the wort is pumped back to the mash kettle by hand. Here 100 pounds of brown sugar dissolved in hot water are added. The hop rate for the batch is two pounds. When the boiling of the wort is finished the wort once again runs by gravity to the surface cooler and is left there overnight. The next morning, the yeast that we (La Victoria Malting/Brewing Co.) provide them is added and fermentation goes on at about 60 degrees F (15.5 degrees C). The original extract is about 10.5 degrees Balling and when the beer has fermented

down to one degree Balling above the end fermentation the beer is bottled immediately. The bottles are filled through four siphons and crowned by hand. The empty bottles as well as the crown corks were (recently) given to the monastery by our brewery when this type of bottle was discontinued for commercial purposes some years ago.

The fermentable extract still in the beer produces about 0.5 percent CO₂ by weight or 2.7 percent by volume after 10 to 12 days of storage when the beer is ready for consumption. The alcohol is about 3.4 percent by weight and the taste is very pleasant. The fathers are served one glass for lunch and one for supper. About one hour before serving, the crown corks are lifted slightly, otherwise the beer would pour like Champagne.

To conclude, I would mention a small episode that took place a few weeks after we had first agreed to assist the fathers. I went over to the monastery to ask the "Brewmaster" how the beer had turned out, to which he answered with a smile that where he had previously used one padlock to close his store room, he now had to use two!

FOR THE BEGINNER

RUSTY MCCRADY

In the late 1970s an Englishman named Dave Line wrote a famous book on homebrewing, *Brewing Beers Like Those You Buy*. He clearly had a good idea because nearly every homebrewer eventually either desires to make, or is asked to make, a lager beer like Miller Genuine Draft, Beck's or Heineken.

Can a beginning or intermediate homebrewer make this beer style? The answer is a qualified "maybe."

As is obvious from any quick perusal of the shelves at a well-stocked homebrew supply shop, many kits promise to produce quick and easy "lager" beer via the same steps and procedure as for ale, stout, etc. But read the fine print and you will deduce, mainly from the recommended fermentation temperature of 65 to 70 degrees F (18 to 21 degrees C), that these kits are providing top-fermenting yeast, and the "lager" produced will be a blond to amber-colored ale.

Thus the beginning brewer is back to square one, and hence this article on how to make an easy, genuine lager beer from malt extract.

It's no wonder that many, if not most, homebrewers sooner or later desire to brew real lager beer. Why? Allow me to draw some analogies. Lager is to beer what Gewürztraminer or Chardonnay is to wine. In football, if ale is your big rugged offensive lineman, then lager is your quarterback. In baking, if ale is devil's food cake, then lager is angel food.

The trouble is that in addition to the above distinctions, lager also is different from ale because it's a little trickier to make. But while the risk of failure is greater, it's a risk worth running, especially during the cooler months of the year.

Let's break this problem down into two main components: ingredients and procedure—each will vary

An Easy Lager

significantly from those used for the ale that 99 percent of all beginners start out making.

Ingredients

First and foremost there's the matter of yeast. This is the linchpin of lager production process. Genuine lager beer *must* be fermented with bottom-fermenting yeast. Unfortunately this yeast is dicey at best in dried form. I can only recommend—after some less than desirable outcomes using both European and American packaged dry yeast—using high quality (and more expensive) liquid lager yeast. Quite a few varieties are available; simply buy the one that matches the particular style of lager beer (American, Munich, Pilsener) you are planning to make.

The choice of malt is less critical. You can purchase a "lager" kit (discard the yeast or use it in an ale recipe) and supplement with some light dried malt extract, or go with two three-pound bags of light dried malt extract for a five-gallon recipe. It's worth noting here that most lagers are blond to pale gold in color, and one characteristic of most canned malt extracts, even those labeled "light" or "lager," is that they are nearly always a fairly deep amber. The extract brewer should be aware that a relatively new product, Laaglander Extra Light Dried Malt Extract, has now become widely

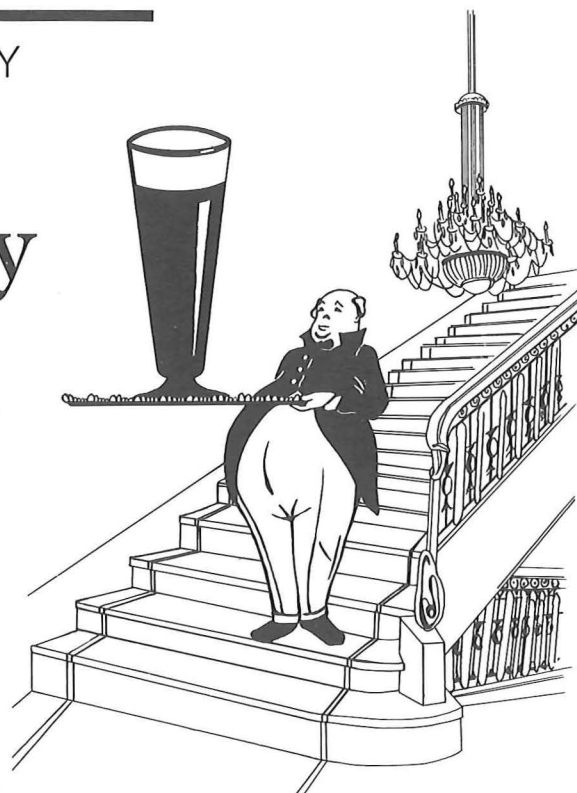


Illustration by Vicki Hopewell

available and may be the perfect base for your European or American style lager. Munton & Fison also has an extra light malt extract but it wasn't as light as I expected.

Of course, lager beer does not *have* to be light in color. You already know there are many shades of malt that can produce amber to dark lager beers, all of which have their place. Simply choose the color to match the style you are making.

The question about what hops to use for a lager beer is not critical. Most any variety will do, provided it is fresh. But because you're probably interested in making the genuine article, you may as well choose one of the traditional varieties used in commercial worldclass lagers: Saaz, Tettnanger, Hallertauer, Hersbrucker or Mt. Hood. I've listed these roughly in order of alpha-acid strength, from mildest to more bitter. None is a strongly bitter hop. If you are brewing with unhopped malt extract, use at least two ounces of hops for five gallons; if using hopped extract supplemented with dried unhopped extract, use about one ounce of hops.

Feel free to mix and match two or three of these varieties in the same

batch, perhaps using one for boiling (bitterness), one for flavoring and one for finishing (aroma). But it is adequate to use only one variety because each is versatile enough to perform all three of these essential hopping functions. Some connoisseurs have suggested that Saaz and Tettnanger are especially good aroma hops. But again, freshness is the most important factor to consider in a finishing hop, so let your nose tell which is the freshest and go with that variety.

A final ingredient that's easily overlooked is your water. A general rule is that ales are made using hard water, while lagers are made from soft water. High carbonate water won't make a good lager. Get some spring water, other low-carbonate water or compromise and add half the water crystals, or Burton water salts, you normally add, if you normally add any at all. Don't worry about your water if you've made good beer with it before; it will most likely be just fine for lager beer.

Procedure

Brew as you normally would for any homebrew, boiling the wort for about 45 minutes, adding hops at the beginning, middle and end, and Irish moss (for clarifying) at the middle. The tricky part will be to cool your wort to about 70 degrees F (21 degrees C) to pitch your yeast, and then to cool it further to about 55 degrees F (13 degrees C) and maintain this temperature for the entire 10 days to two weeks of fermentation.

At this point it's a good idea to explain the significance of temperature control in lager brewing. It is no coincidence that the first lager beers were brewed in Europe by monks in caves, where the year-round ambient temperatures are around 55 degrees F (13 degrees C). For reasons perhaps understood only by microbiologists, lager yeast (*Saccharomyces uvarum*) performs properly only at cold temperatures. In fact, it can stay active just above freezing. For most homebrewers, it is practical to ferment in the mid-50s, and most varieties of lager yeast should do well in this temperature range.

The other special characteristic of lager yeast is that, working at cool-

er temperatures, it will take longer than ale yeast to do its work. Hence your fermenting time will be closer to two weeks than the one week you're used to with ale.

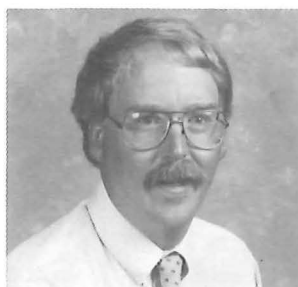
Finally, we come to the part of the procedure that gives this beer its name. To "lager" in German means to store, and all of the world's renowned lager beers are stored at very cool temperatures *after* their initial fermentation. Whether you rack yours from the primary fermenter after the first 10 to 14 days of fermenting into a secondary fermenting vessel, or whether you bottle it at that point and let it lager in the bottle, do not expect to drink it for three weeks to two months after the primary fermentation has finished. The length of time will depend on temperature [do not exceed 60 degrees F (15.5 degrees C)], specific variety of yeast and other unknown and unpredictable factors. I told you that lager brewing is tricky!

If you do use a secondary fermenter, make sure it is as well sealed with an airlock as your primary was. Whenever you bottle this beer, prime it just as you do ale and wait until the contents are crystal clear and well-carbonated before you sample it. (Patience!)

From the time the beer is ready to drink, keep it refrigerated or in a very cool basement, because heat and light are terrible enemies of lager beer.

There is something about the smoothness of naturally fermented and carbonated lager, born of the microscopic bubbles in the almost whipped-creamy head, that makes it stand out above all other beverages. I hope you'll know what I mean when you try your first batch. ®

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



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WINNERS CIRCLE

JAMES SPENCE



Here's a selection of recipes for homebrewers who like to plan ahead. Sure, we're still in the latter days of fall, but if you brew these now they'll be just right for drinking on those chilly winter evenings. Most of these beers are higher in alcohol and their rich, full flavors should mature nicely for sipping in late December. All are winning recipes from the 1991 AHA National Competition.

Greg Walz's traditional German bock took first out of almost 40 entries in the Bock is Best Club-Only Competition. His "Three Eights Bock" (eight pounds of each malt, get it?) is a straightforward version of this classic lager style.

BELGIAN-STYLE SPECIALTY

Trappist Ale
Second Place
Jackie Keith
Louisville, Kentucky
"Jackie's Abbey"



Illustrations by Martin Hess

Ingredients for 5 gallons

- 12 pounds Alexander's pale malt extract
- 6 ounces crystal malt
- 4 ounces chocolate malt
- 1 3/4 ounces Bullion hops, 9 percent alpha acid (45 minutes)
- 1/4 ounce Perle hops, 7.4 percent alpha acid (45 minutes)
- 3/4 ounce Saaz hops, 4.4 percent alpha acid (10 minutes)
- 3/4 ounce Hallertauer hops, 3 percent alpha acid (10 minutes)
- 1/4 ounce Saaz hops, 4.4 percent alpha acid (one minute)
- 1/4 ounce Hallertauer hops, 3 percent alpha acid (one minute)
- yeast cultured from Chimay bottle
- 1 teaspoon Irish moss (15 minutes)
- 3/4 cup corn sugar to prime
- Original specific gravity: 1.068
- Terminal specific gravity: 1.018
- Boiling time: 60 minutes
- Primary fermentation: 15 days at 65 degrees F (18 degrees C) in glass
- Age when judged (since bottling): two months

Brewer's specifics

Used filtered water preboiled for one hour. Steeped grains at 175 degrees F (79 degrees C).

Judges' comments

"A super fine beer. Just a little dark and toasty to be a trippel. Excellent.

"This beer straddles the subcategories. Well-made but a bit simple. Try a yeast that adds more character.

"Good drinkability with nutty character. English hop character. Taste of a dubbel, alcohol of a trippel."

ENGLISH AND SCOTTISH STRONG ALE

English Old Ale/Strong Ale
Third Place
Sandra Castro and Helen Murphy
Sacramento, California
"K.A."



Ingredients for 10 gallons

- 28 pounds two-row malt
- 1 1/2 pounds Munich malt
- 2 pounds crystal malt
- 1/2 pound chocolate malt
- 3/4 ounce Cascade hops (60 minutes)
- 3/4 ounce Fuggles hops (60 minutes)
- 3/4 ounce Cascade hops (30 minutes)
- 3/4 ounce Fuggles hops (30 minutes)
- 2 ounces Cascade hops (finish)
- 2 ounces Fuggles hops (finish)
- Rubicon yeast culture
- Original specific gravity: 1.066
- Terminal specific gravity: unknown
- Boiling time: 60 minutes
- Primary fermentation: 11 days at 60 to 65 degrees F (15 to 18 degrees C) in glass
- Age when judged (since bottling): unknown

Brewers' specifics

Mashed all grains at 155 degrees F (68 degrees C) for 60 minutes.

Judges' comments

"Very dry finish to beer. Slight overcarbonation washes away taste. Needs more hop-malt balance.

"Nice malty beer. Somewhat tart or bitter. Good beer.

"Fine beer though too hoppy for style. Clean, no problems other than balance."

STOUT

Imperial Stout
Second Place
Wendell Choinsky
Germantown, New York
"Baltic Stout"



Ingredients for 3 1/2 gallons

- 9 pounds John Bull unhopped dark extract
 - 1/2 pound roasted barley
 - 1 pound pale malt
 - 2 cups oatmeal
 - 1/2 pound crystal malt
 - 1 ounce Northern Brewer hops, 8 percent alpha acid (60 minutes)
 - 1/2 ounce Cascade hops, 5.5 percent alpha acid (60 minutes)
 - 1/2 ounce Cascade hops, 5.5 percent alpha acid (five minutes)
 - 1/2 teaspoon gypsum
 - 1 package Edme ale yeast
 - 1 package Lalvin 1118 yeast
 - 1/2 cup corn sugar to prime
- Original specific gravity: 1.132
 - Terminal specific gravity: 1.052
 - Boiling time: 60 minutes
 - Primary fermentation: six days at 60 degrees F (15 degrees C) in plastic
 - Secondary fermentation: 21 days at 60 degrees F (15 degrees C) in glass
 - Age when judged (since bottling): 13 months

Brewer's specifics

Step infusion mash the grains and oatmeal for 90 minutes at 120 degrees F (49 degrees C), 150 degrees F (66 degrees C) and 158 degrees F (70 degrees C).

Judges' comments

"Some residual sweetness. Could be aided by the addition of more hops.

"Excellent beer. Could use more bittering hops."

SMOKED BEER

Bamberg Style Rauchbier
Second Place
Dave Lipitz, Judy Lipitz
and Lynn Patterson
Pueblo, Colorado
"Prairie Smoked Beer"

Ingredients for 5 gallons

- 4 pounds pale malt
- 2 pounds lager malt
- 2 1/2 pounds Munich malt
- 1/2 pound crystal malt
- 1/4 pound dextrin malt
- 1/4 pound red roasted barley
- 3/4 ounce homegrown Hallertauer hops (60 minutes)
- 1/4 ounce Northern Brewer hops, 9.4 percent alpha acid (60 minutes)
- 1/2 ounce Mt. Hood hops, 3.5 percent alpha acid (30 minutes)
- 1/2 ounce Mt. Hood hops, 3.5 percent alpha acid (10 minutes)
- Bavarian yeast (No. Y2206)
- 2 teaspoons gypsum
- 3/4 cup corn sugar to prime



- Original specific gravity: 1.055
- Terminal specific gravity: 1.015
- Boiling time: 60 minutes
- Primary fermentation: seven days at 60 degrees F (15 degrees C) in glass
- Secondary fermentation: 14 days at 60 degrees F (15 degrees C) in glass
- Lagered one additional month at 32 degrees F (0 degrees C) in glass
- Age when judged (since bottling): six months

Brewers' specifics

Soaked Munich malt in water for 15 minutes then smoked over apple and beechwood. Mashed all grains at 145 degrees F (63 degrees C) for 20 minutes. Raised to 159 degrees F (71 degrees C) until conversion. Sparged with 4 gallons of 170-degree-F (77-degree-C) water.

Judges' comments

"Medium smoky flavor. Slight maltiness. Slight astringency.

"Nice smoky notes. Slight astringency noticeable in aftertaste. Very good effort."

BARLEY WINE

Second Place
Micah Millspaw
Oakdale, California
"Trespassers Will Be Violated"



Ingredients for 15 gallons

- 20 pounds two-row malt
 - 4 pounds caramel malt (20 L)
 - 1 pound wheat malt
 - 16 1/2 pounds light dry malt extract
 - 6 pounds light brown sugar
 - 2 ounces Hallertauer hops, 3.9 percent alpha acid (60 minutes)
 - 8 ounces Cascade hops, 5.8 percent alpha acid (60 minutes)
 - Whitbread ale yeast
- Original specific gravity: 1.092
 - Terminal specific gravity: 1.020
 - Boiling time: 60 minutes
 - Age when judged (since kegging): nine months

Brewer's specifics

Mashed all grains. Dough-in with 4 gallons of 148-degree-F (64-degree-C) water. Strike with 2 gallons of 200-degree-F (93-degree-C) water. Sparged with 8 gallons of 170-degree-F (77-degree-C) water.

Judges' comments

"Nice, outstanding aftertaste. Needs to be "chewier." I really enjoyed this one. Very drinkable

"Outstanding, well-balanced. Very smooth. Very, very nice. Body a little thin."

BOCK IS BEST CLUB-ONLY COMPETITION WINNER

Traditional
German Bock
Greg Walz
Pittsburgh, Pa.
Representing the
Three Rivers Alliance of
Serious Homebrewers
"Three Eights Bock"



Ingredients for 10 gallons

- 5 1/2 pounds Laaglander dry light extract
- 8 pounds German Pils malt
- 8 pounds Munich malt
- 8 pounds Klages two-row malt
- 1 pound CaraPils malt
- 4 ounces Hallertauer hops (90 minutes)
- 1 ounce Tettnanger hops (flavor)
- 1 ounce Tettnanger hops (finish)
- 2 teaspoons gypsum
- Wyeast No. 2206

- Original specific gravity: 1.073
- Terminal specific gravity: 1.027

- Boiling time: 90 minutes
- Primary fermentation: 14 days at 50 degrees F (10 degrees C) in glass
- Secondary fermentation: 21 days at 34 degrees F (1 degree C) in glass
- Age when judged (since bottling): 15 months

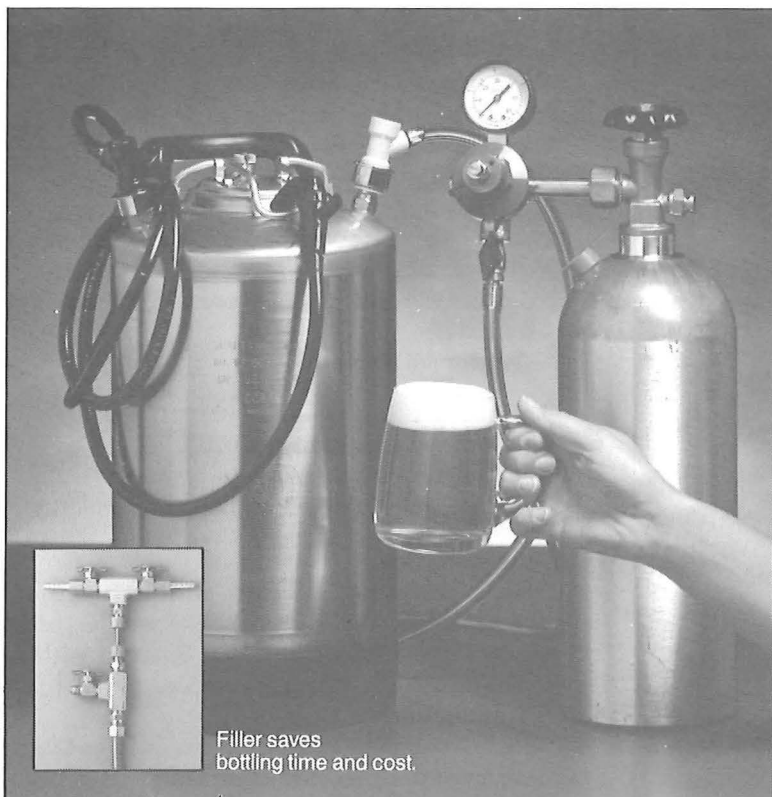
Brewer's specifics

Step infusion mash. Protein rest at 124 degrees F (51 degrees C) for 40 minutes. First saccharification rest at 140 to 144 degrees F (60 to 62 degrees C) for 15 minutes. Second saccharification rest at 152 to 154 degrees F (67 to 68 degrees C) for 90 minutes. Sparged with 170-degree-F (77-degrees-C) water. Runoff recycled until crystal clear. Boil wort for 90 minutes.

Judges' comments

"Watch the astringency. Very nice malty character. Some aging may be all this beer needs to mellow out the roughness and bitterness.

"Good malty character. Well-balanced. Lower fermentation temperature could reduce solventlike finish."



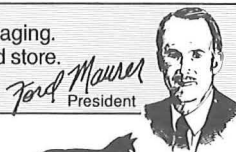
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WORLD OF WORDS

CHARLIE PAPAZIAN

Slanting Annie's Chocolate Porter

I must first of all confess: I cannot take credit for this sensuously creative and wonderfully balanced beer. I didn't brew it, but I watched it being brewed. I took care of it a little bit. I bottled it. My brewing friend Tracy, inspired by other chocolate beers and by her love of chocolate, waved the charismatic wooden spoon and created something that any chocolate lover would dearly love: a chocolate-flavored porter.

Having brewed her first chocolate porter a year earlier, Tracy yearned for *more chocolate* than the original. Careful to take into consideration the bitterness of one pound of unsweetened bakers chocolate, she compensated by adding a moderate amount of hops for bittering and using a not ordinary amount of crystal malt. She added the wheat malt to enhance the chocolate with a caramellike sweetness of crystal and maltiness of wheat malt.

The results filled the kitchen with the aroma of chocolate brownies baking in the oven and, five weeks later, a chilled mug of deep velvety rich chocolate porter. Slanting Annie's Porter, that is.

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

Recipe for five U.S. gallons

This recipe requires a partial mash plus malt extract.

For the mash

- 2 1/4 pounds crushed crystal malt
- 1 3/4 pounds crushed pale malt
- 2 1/4 pounds crushed wheat malt
- 1/3 pound crushed black malt

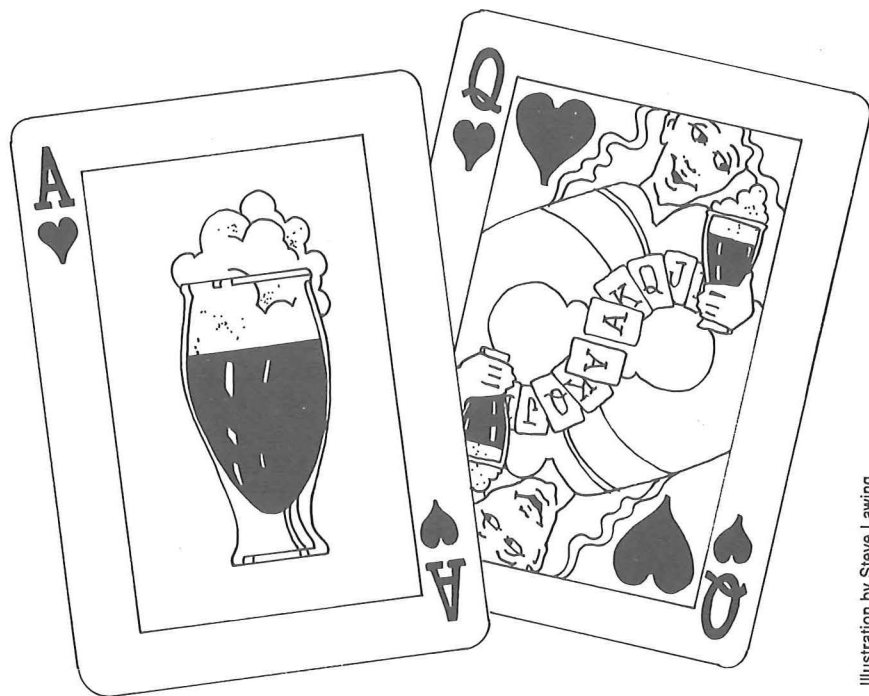


Illustration by Steve Lawing

- 1/3 pound crushed chocolate malt
- 1 tablespoon gypsum

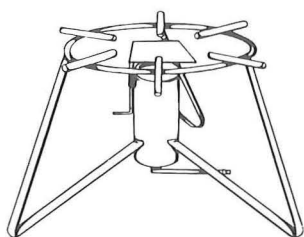
For the boil

- 3 pounds light dry malt extract
- 12 ounces unsweetened bakers chocolate
- 7 to 8 Homebrew Bittering Units (1 1/4 ounce of Bramling Cross hops were used in the full boil)
- 1/2 ounce Willamette hops for flavor and some bitterness
- 1 ounce Willamette hops for aroma
- 3/4 cup corn sugar or 1 1/4 cup dried malt extract for bottling
- 1 to 2 packets ale yeast or liquid yeast starter

- Original Gravity: 1.063 to 1.067
- Final Gravity: 1.019 to 1.023

Add 7 quarts of 130-degree-F (54.5-degrees-C) water to the crushed grain and gypsum and hold the temperature at about 122 degrees F (50 degrees C) for 30 minutes. Then add 4 quarts of boiling water to this mash and raise the temperature to about 158 degrees F (70 degrees C). Hold at this temperature between 15 and 20 minutes. Conversion of starches to fermentables should be complete at this point. Strain the sweet liquid from the grains using a lauter-tun configuration. Sparge with about 2 gallons of 170-degree-F (76.5-degree-C) water. *Relax.*

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If you wish to use an all-extract recipe instead of mashing, simply steep the crushed crystal, black and chocolate malt in 2 gallons of 160-degree-F (71-degree-C) water for 30 minutes and strain the colored sweet liquid into your larger brewpot. Add an additional 1 1/2 pounds of light or dark plain malt extract and 2 pounds of wheat malt extract to the malt extract called for in the recipe and carry on.

Prepare the chocolate by microwaving in a saucer to soften it and make it easier to dissolve. Add the softened chocolate, malt extract and boiling hops and boil for 30 minutes. Then add flavor hops and boil for an additional 30 minutes. Turn the heat off and add your aroma hops and let steep for about two to three minutes before adding this hot concentrated chocolate wort to a sanitized fermenter to which you've added about 1 1/2 gallons of cold water. Use a strainer to remove the hops before adding to the fermenter.

Top off the wort with cold water to make 5 gallons. Cool to pitching

temperatures, aerate the wort and add yeast.


Aha! During the primary fermentation you will notice there is very little if any krausen, those mounds of fermentation foam. You also will note globs of ugly cocoa butter floating on the surface. Aha. The cocoa butter has congealed resulting in an oily surface that inhibits bubble formation. Don't worry. After five or seven days of primary fermentation, transfer the wort to a secondary fermenter by siphoning, naturally, from below the surface of the beer. Let the brew sit in the secondary until fermentation has stopped and signs of clearing appear.

Bottle the beer with priming sugar and enjoy as soon as it has carbonated and cleared. Your chocolate porter will have a wonderful thick head, the rich aroma of chocolate, the subtle charm of hop flowers and the flavor of porter—a wonderful porter.

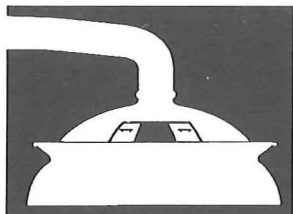
Slanting Annie suggested Tracy might substitute 3 level tablespoons of bakers cocoa (powder) for each ounce of bakers unsweetened chocolate to avoid the concern with cocoa butter. Sounds good to me.

Slanting Annie? Oh yes, she is a legendary character out of the Old West from the small town of Creede, Colo. One leg was shorter than the other, but she sure could deal a deck of cards, or so the story goes.

I've enjoyed being the caretaker of this porter. So will you.

I also wonder about chocolate fruit porter. Chocolate barley wine? Chocolate bier? Chocolate Pilsener? Nah, I better stop while I'm still credible. Have a homebrew. 

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DEAR PROFESSOR



Hyperventilation

Dear Professor,

Prior to pitching dry yeast, it's important to oxygenate the wort for the yeast's aerobic phase. Once fermentation has begun, it's best not to incorporate oxygen into the wort. However, I always begin fermentation with at least two cups of starter culture. Since this yeast is past the aerobic phase and fermenting away, I'm unsure if it's best to aerate my wort prior to pitching or leave it alone. Do you have any idea which way would promote healthier yeast?

Holding my breath (and the yeast's),
Doug Allison
Lawrenceville, Georgia

Dear Doug,

So you are beginning with two cups starter culture, but are you sure these two cups have enough yeast? My guess is they don't. And the yeast must still multiply to magnitudes. So oxygenate that wort. Don't worry, any unused oxygen (if there is any) will be "scrubbed" out by the carbon dioxide produced by the yeast.

*You're in good hands,
The Professor, Hb.D.*

Gray Matter Doesn't Matter—Much

Dear Professor,

Although I strive for consistency in my mashing technique, I seem to have a frequent difference in the appearance of the mash. When using the same malt (Klages) and treating it with the same treatment (gypsum), there sometimes is a gray and greasy residue at the top of the malt in the mash tun. I haven't detected a difference in the finished product, but I would like to maintain better control over this process.

I also would like to question you regarding the reason for the mash-out stage. Charlie Papazian says it is necessary in order to deactivate enzymes.

PROFESSOR SURFEIT

Aren't these enzymes going to be deactivated soon enough during the sparging and boiling? Dave Miller says, "I have tried omitting the mash-out and encountered very difficult sparging as a consequence." If this temperature is necessary for ease of sparging, then flow through the grain should be very difficult at lower temperatures.

Rodney Morris in *zymurgy* Special Issue 1988 (Vol. 11, No. 4), inspired me to build a recirculating mash system. Voilà, the liquid does seem to flow quite nicely at temperatures much lower than the mash-out temperature. I have omitted the mash-out stage using this system with no discernible change in my beer and no difficulty during sparging. Please enlighten me!

Sincerely,
Stephen L. Stanley
Middletown, Indiana

Dear Stanley,

I know what you are talking about. I get that gray stuff on the top of my mash-lauter sometimes. No harm done to the brew, I assure you, except that it can set up like gray mud on the surface and prevent proper flow of your sparge water. What I do routinely is take a clean barbecue skewer and use it as a one-prong "rake" to break up the surface and the grains to a depth of about two inches. This prevents the "mud" from setting and allows the proper trickle through.

With or without mashing out, with my 12-pounds-of-grain simple double-

bucket mashing system I rarely have difficult runoffs (except with oatmeal and wheat combos). I theorize the higher temperature mash bed will allow trickle through more efficiently, as the sugars are more soluble at higher temperatures.

Also, when you mash-out and deactivate the enzymes you have stopped the activity and there will be little, if any, change in the spectrum of sugars you have created.

If you don't mash-out then the spectrum can change during the runoff, i.e., remaining enzymes can continue to break down sugars unpredictably. Ah that is the key, predictability. If you really want to brew an "exact" batch of beer and duplicate it another time, you'd be better off controlling your enzyme timing by mashing out.

*Remember, you're a homebrewer,
The Professor, Hb.D.*

Brix to Balling

Dear Professor,

After brewing a good number of gallons over the last few years, I still enjoy Red Tail Ale from Mendocino Brewing Co., Hopland, Calif. I understand this is an all-grain beer. Do you have any suggestions for a recipe using malt extract?

Alexander Malt Extract has a Brix of 81. Is there a formula for converting Brix to specific gravity per gallon; i.e., one pound malt extract with enough water to make one gallon?

Sincerely,
Jack Schafer
Fair Oaks, California

Dear Jack,

Brix is essentially a degrees Balling scale measuring the weight of sugars as a percentage of total wort. So 81 Brix is 81 grams sugar per 100 grams of total wort. In another words, it's 19 percent water, 81 percent malt sugars. If you were to dilute this extract 5-to-1 then you'd have 16 Brix or 16 degrees Balling, or multiply by

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*four to get approximate specific gravity
of 64, or rather 1.064. If you dilute 10-
to-1 then you'd get about a 1.032 final
wort.*

*Mr. Answer,
The Professor, Hb.D.*

The Case of the Foul Brew

Dear Homebrewing Experts,

I am sending this letter to several
of you who, from all the literature I have
studied, would be most able and/or will-
ing to help with my brewing problem.

I began brewing about four years
ago. While I admit to being a gross
amateur, I have progressed to all-grain
brewing. Until this year I had not
made an undrinkable beer and several
friends have complimented my brews
as the best they have ever had. I even
made a reasonably respectable first-
time showing in last year's AHA
Nationals. I don't say all this to brag,
but rather to point out that, until last
winter, I have had no apparent sanita-
tion or infection problems. And as the
good "Perfesser" yourself would say, I
have been able to "relax, don't worry (be
hoppy) and have one of my homebrews."

Last year between mid-November
and early January I brewed 10 five-
gallon batches. Every single batch had
the same type of nauseous-smelling
infection. From talking to a wide vari-
ety of homebrewers and reading every-
thing I can get my hands on (including
Burch, Eckhardt, Miller, Noonan,
Papazian and every *zymurgy* article
from 1985 until today), I strongly sus-
pect an *E. coli* infection. But, no mat-
ter what the infection, the fact that
every single batch has had it is driving
me absolutely crazy! Though it would
be nice to know what it is, I need to
know more about the source.

I have brewed batches of all-
grains, all-syrups, all D.M.E. and vari-
ous combinations of hops (all pellets),
yeasts, finings (or none) and Irish
moss. We have well water, but it has
been tested with negative results for
bacteria and nitrites. I have even used
distilled water from two different
sources for two different batches.

I purchased new plastic primary
fermenters, siphon hoses, sanitized
with unscented Clorox from one table-
spoon per gallon of water all the way
up to three to four tablespoons per gal-
lon. For chilling the wort to pitching

temperature, I used a professionally
made copper-coil wort chiller for five-
gallon boils and boiled one to 1 1/2 gal-
lon worts and poured them into three
to 3 1/2 gallons of cold water already in
the primary. No matter what I try,
absolutely nothing prevents this infec-
tion from getting into each batch.

As for other possibilities, we have
had no particular human or animal ill-
nesses this year. We have one dog and
two cats in the house, but in the past
three years, we have had two dogs and
two cats. We have had no strange visi-
tors, no new furniture or appliances,
no construction, absolutely nothing
any different. If there were anything
in the ambient air contacting the cooled
wort, some item would have been in
the air prior to this particular winter.

I have saved the three most
recent bad batches (lagering). If you
have the facilities and/or willingness to
subject these brews to testing (either
taste-type or microbiological tests), I
would be more than happy to send you
a bottle or two or three.

If I don't get some effective help
soon, I'm afraid I will have to give up
what had become a thoroughly enjoy-
able and creative hobby. But, I just
can't afford to keep pouring money into
a product that goes down the drain!
Please help.

Sincerely yours,
Tom McKnelly
Oxford, Wisconsin

Dear Tom,

*Doing detective work off-site is
tough, but here are some suggestions.
Get a good yeast starter going. Use
enough yeast to overcome the small
amount of bacteria you may have float-
ing in the air.*

*Have you checked your strainer?
Wire meshes are impossible to sanitize
with bleach. Boil it in the wort. How
about the saucepan you use for a
"ladle." Do you sanitize that?*

*Send me a bottle for inspection
and tasting. I suspect it is not your
ingredients nor equipment, but some-
thing having to do with how you trans-
fer the beer maybe.*

*E. coli! Man, I'd have a hard time
believing that, because that is so rare in
homebrewing. I'd like to help, but this
calls for an on-the-site workout.*

*Wishing I were there,
The Professor, Hb.D.*

THE BEST FROM KITS

KURT DENKE AND PAMELA MOORE

Some things become more complicated while others become simpler with time. Consider Neolithic life—food, clothing and shelter, while not always easy to provide were not complicated to obtain. People grew what they ate, made what they wore and built the places where they lived through their own direct efforts. The fourth necessity of civilized life, beer, probably was one of the trickier things to produce. But in a world where life was, in Hobbes' words, nasty, brutish and short, the lengthy process and great effort required to make beer was, no doubt, well worth it.

Being somewhat nasty, brutish and short myself, I (Kurt) have always been interested in Neolithic life, and, naturally, in Neolithic brewing. These were tough times for a homebrewer. The closest thing to a beer kit was a plot of land; just clear it, plant barley and only 329 steps later it's time to relax and have a homebrew. The whole process had to be undertaken without any of the tools we take for granted. With no metallurgy, there were no metal brew pots; polymer science was millennia away and the nearest rubber tree that could yield a No. 6 1/2 stopper was in South America. Sanitation left quite a bit to be desired. To make things worse, *The Complete Joy of Home Brewing* would not be published for another 5,000 years. About the only thing the Neolithic homebrewer had in common with his typical modern counterpart was an abundance of facial hair.

Recently we visited the Orkney Islands just north of the Scottish Highlands. These treeless bits of sedimentary rock sticking out of the North Atlantic seem like an unlikely place to have been a hotbed of Neolithic activity, yet people lived here in rather large numbers and left behind dramatic evidence of their existence in the form of stone circles, chambered tombs and some of the oldest standing dwellings in the world. To this day, ancient means of human sustenance can be found in use on Orkney. An early form of barley known as "bere" is grown there and farmers still raise a breed of sheep similar to that introduced in the stone age. The weather is constantly changing, and with no trees to cut down the wind there's always a substantial breeze. Living in these conditions with Neolithic technology must have been quite a trying existence, and one in which beer would have been an important source of pleasure.

In many ways our lives today are more complicated, though certainly less difficult. We get our food, clothing and shelter by our participation in a complex economy, rather than by our own direct efforts. While life has become more complicated, beer has become, in many ways, simpler. The world economy that makes the relationship between our work and our food, clothing and shelter almost incomprehensibly remote also brings us access to a huge

variety of advanced products, such as the beer kit, that make individual participation in the brewing art so easy.

That being said, though, I know one fellow who still makes beer from dirt by the Neolithic 329-step method. He earns his living as a small-scale farmer, and among his other crops he grows the very barley and hops he uses to brew. The question naturally arises: why would anyone want to do that when it's possible to brew much more easily? The answer to that question is pretty much the same as the answer to why anybody bothers to brew beer at all when it is available by the truckload at the supermarket—to keep control over the beer, to make the beer of our dreams.

In other words, as I've argued before, complexity in brewing is a good thing so long as we choose for ourselves to what degree of complexity we wish to be involved. Viewed in that light, beer kits as marketed by the various European manufacturers can be a bit limiting if all we do is follow the instructions and never fiddle around and change things to suit our personal tastes.

In recent times, however, there has been an encouraging trend toward marketing homebrew kits that avoid excessive simplification in favor of more sophisticated, but still easy, techniques for brewing better beer. Where the traditional European beer kit concept is the all-in-one-can, three-easy-steps approach, newer American formulations of the kit concept, pioneered by individual homebrew shops, recognize that really superb beer often requires just a few additional simple procedures. Kits of this type are better suited to satisfy the contemporary American taste for complexity of flavor and fullness of body than are many of the European kits.

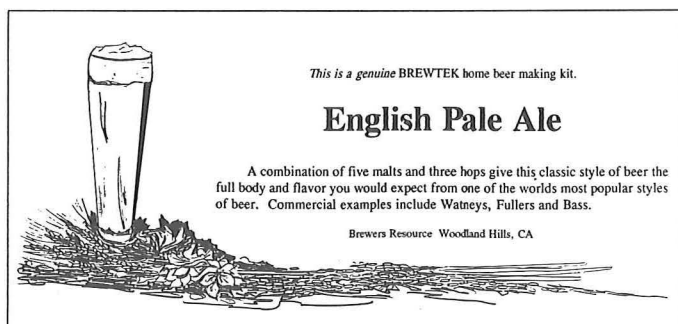
A good example of this modern trend is a line produced by Brewers Resource of Woodland Hills, Calif., under the "Brewtek" name. Rather than just a can of malt extract and a pack of yeast, this kit comes boxed with dry malt extract, hops pre-measured for three separate additions to the wort, ground malt grain, priming sugar and a choice of dry or liquid yeast. And what's more, this kit has excellent detailed instructions that practically amount to a how-to-brew book. For a new brewer, few things are more helpful than a well-written instruction manual.

Brewtec Pale Ale

Ingredients for five gallons:

(all ingredients except water are included and premeasured):

- dry malt extract
- ground malt grain
- pelletized hops
- priming sugar
- Wyeast liquid yeast culture



- OG: 1.048
- FG: 1.016

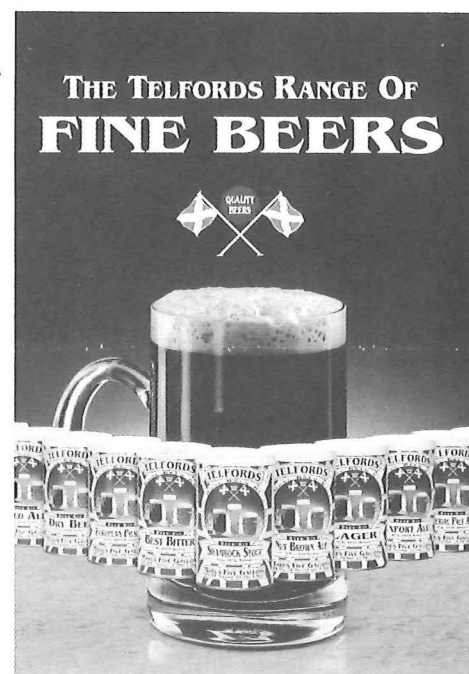
Following the instruction booklet, we steeped the crushed malt in a pot of hot water for about 20 minutes, then added it to the brew kettle, where the dry malt extract and more water were mixed. Once the wort began to boil, we added the first of three packets of hops, boiled for 50 minutes, then added the second round of hops and boiled for another five minutes and then added the final packet of hops at the end of the boil. After cooling and topping up with water to five gallons, the yeast culture (started two days earlier) was pitched. After primary and secondary fermentation, the beer was bottled with the priming sugar supplied with the kit.

The finished beer has a pleasant medium-copper color and a fragrant hoppy aroma. The body is full, the bitter-

ness is substantial and well-balanced and there is a nice malty background for it all. All in all, an excellent beer from an excellently conceived kit.

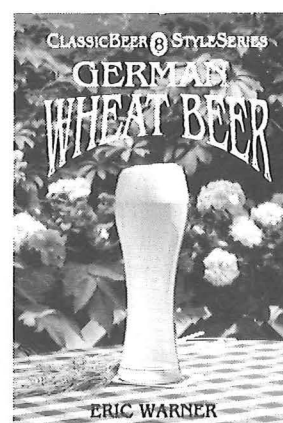
Telford's Shamrock Stout

Telford's kits come from Scotland, a land of peat, whiskey and sheep. While Scotland isn't the first place that comes to mind when shamrocks and stout are mentioned, the Scottish and the Irish have a good deal in common, including Celtic languages and ... well, peat, whiskey and sheep. Because stout often is at its best when relatively unadorned, we brewed this batch simply:



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Ingredients for two gallons:

- 1 can (3.3 pounds) Telford's Shamrock Stout kit ale yeast
- 1/4 cup corn sugar (for priming)
- OG: 1.060
- FG: 1.022

We boiled the wort for 10 minutes then force-cooled it and pitched the yeast. After about 10 days of fermentation, we bottled it with the priming sugar.

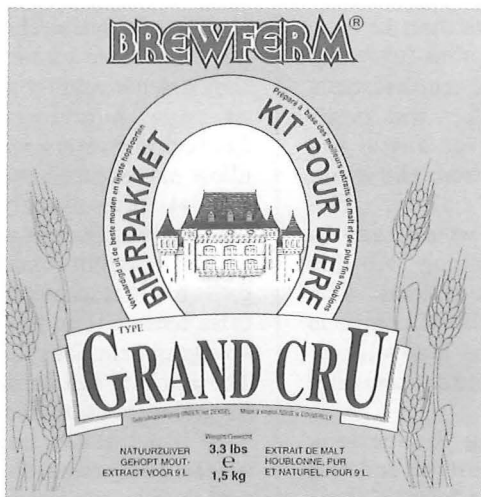
The finished beer is opaque, with a simple but pleasant roasted grainy aroma and a nice full body. The bitterness is somewhat lacking, so I'd recommend giving it a bit of a boost by adding some bittering hops at the beginning of the boil. The grainy profile in the aroma and flavor, though, is perfect for the style and this is a nice kit overall.

Brewferm Grand Cru


This is another of the interesting series of Belgian-style beer kits from Brewferm. This kit, modeled after Belgium's unusual spiced beers, is made with barley and wheat malt extract, oat flakes and herbs. The labeling calls for making nine liters of beer with one can and 500 grams of sugar, so we trimmed the sugar and made two gallons from a single can.

Ingredients for two gallons:

- 1 can (3.3 pounds) Brewferm Grand Cru kit ale yeast
- 1/4 cup corn sugar (for priming)
- OG: 1.060
- FG: 1.020



We boiled the wort for 20 minutes then force-cooled it and pitched the yeast. Once fermentation stopped, we bottled it with the priming sugar.

The finished beer is a rich golden color and has a prominent herbal aroma; what the herbs are I can't exactly tell. There is a bit of residual malty sweetness that balances nicely with the herbal character and the bitterness is quite low and appropriate to the style. This is a genuinely well-done adaptation of a rather unconventional beer style to kit form—and a very good glass of homebrew. 

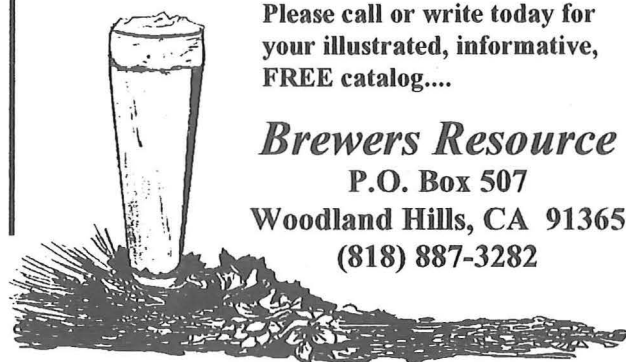
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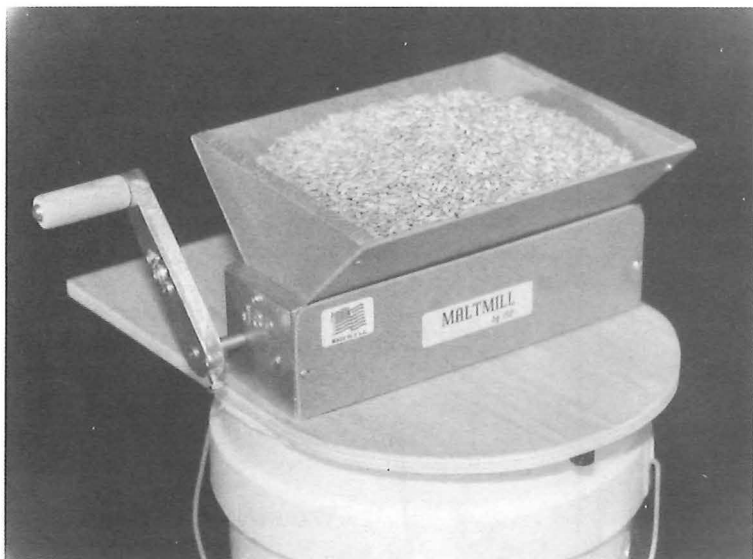


Photo by Jack Schmidling Productions

Maltmill

The size of crushed grain can make a big difference in your beer. Crush too fine and you end up with floury particles that can set the mash and cause cloudiness. If you don't crush fine enough the extract efficiency can be inhibited. The grain husks must remain intact to provide a good filter bed when sparging. The ideal way to meet these requirements is to use a roller mill.

Most roller mills used by homebrewers have been made from scratch, but now Jack Schmidling Productions is offering a genuine roller mill at a reasonable price.

This mill isn't fancy, but it works. Two 1 1/2-inch-diameter stainless-steel rollers are fixed about 0.060 inch apart, which is the recommended distance for most grains. The rollers are grooved longitudinally to provide the friction to draw the grain through the spacing. The hopper is large enough to hold more than a pound of uncrushed grain. The mill is designed to rest on a standard five-gallon bucket. The crushed grain falls through the base of the mill into the bucket. The body is made mostly of wood and

plastic, while all the crucial moving parts are metal. The mill has screens and shields that prevent fingers and clothing from catching in the mechanism.

With the Maltmill I crushed 12 pounds of grain in less than 15 minutes. That rate compares favorably to other types of hand-cranked mills and the physical effort was minimal. The crank drives one of the rollers and friction from the grain propels the other roller. The instructions said it would take "a good pull to start crushing," but this initial effort was not difficult. The crush delivered by the Maltmill is very good, leaving the husks intact and producing insignificant amounts of flour.

Jack Schmidling Productions guarantees the mill forever and will replace any part that breaks at no charge. While a bit rough looking, it is solidly built and operates smoothly and silently. The wide base provides excellent stability and the feet keep the mill from moving as you grind. For a few more dollars you can buy a fitting to make the mill somewhat adjustable for different kinds of grains.

—James Spence

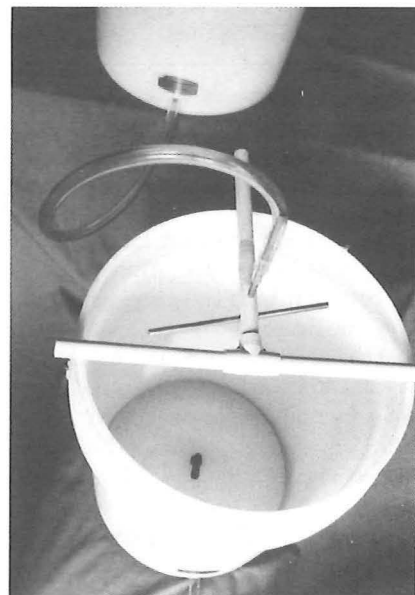


Photo by Galen Nathanson

Phil's Lautering System "Anybody Can Mash"

All-grain brewing intimidates many people but can contribute lots of excitement to your brewing. You generally have better control over ingredients and a more accurate sense of the actual brewing process from start to finish. In short, it's fun.

The principal equipment consists of a mash tun and lauter-tun. Unless you build them yourself or buy the more expensive versions they are not readily available to the average homebrewer. Phil's Lautering System was designed to allow an extract brewer to advance almost immediately to all-grain brewing with minimal expenditure.

The system consists of two five-gallon plastic buckets, a plastic false bottom, two hoses and a brass sparging arm that fits in a bracket. The buckets are arranged with one bucket elevated above the other. The top bucket holds sparging water that runs through a hose attached to the sparging arm. The water pressure causes the sparging arm to spin, producing a fine, even rainlike spray that sprinkles the grain in the lower bucket. Resting on the bottom of the lower bucket is the false bottom—a plastic disc, slightly curved with holes drilled into it. A hose attaches beneath the false bottom and carries the wort to the boiling pot.

The instructions say you can use the system as a mash tun, but probably is best used only as a lautering system. Mashing requires temperature control and the bucket does not provide insulation for a single-step infusion mash and obviously can't be heated on a stove. I used an ordinary unmodified picnic cooler to mash and transferred the grain to the lautering system once I got starch conversion.

Otherwise Phil's Lautering System works extremely well. The only difficulty was finding the right combination of chairs, stools and phone books to set the system up in my kitchen. The sparging assembly was prone to movement because of the hose tension, but a few strips of masking tape kept it in place nicely. I used about 12 pounds of grain, probably close to the limit for this system. More grain would require adjusting the sparging arm higher, which could sprinkle water outside the lauter-tun.

Overall, Phil's Lautering System is easy to use, the spinning sparging arm is fairly effective and is affordable. It comes with a booklet that describes basic mashing procedures for the beginning all-grain brewer and is available from most homebrew supply shops.

—James Spence

Axbridge Traditional English Ale

Axbridge Micro Brewery kits from Inlet in San Anselmo, Calif., are self-contained brewing bags, possibly the simplest method ever conceived. The bags contain malt extract and a dried yeast packet. Theoretically you could produce one to 1 1/2 cases of good quaffin' ale in 21 days. In reality, these kits have several problems that could lead to disappointment or even disaster.

Axbridge is patterned after a traditional English ale. I brewed two batches, one following the standard directions and the other with some modifications, including concentrating the wort, preparing a yeast starter and dry hopping. Both beers were fermented at room temperature, about 70 degrees F (21 degrees C),

the high end of the suggested temperature range.

To the first bag I added 120 ounces of boiling water, kneaded the bag to dissolve the malt, then added 280 ounces of cold tap water, mixed and pitched the yeast. The bag was about 75 degrees F (24 degrees C) and fermented actively for 10 days. A built-in pressure release valve apparently doesn't always work. I released some pressure successfully on the first bag, but the valve on the second bag failed.

Another major drawback is the kits are impossible to sanitize. Even if they are sterilized by the manufacturer, they are prone to contamination from three possible entry points for bacteria—cap, pressure valve and pouring spout.

The next day's brewing was completed in less than 20 minutes. This time I wanted to concentrate the wort and dry hop. I poured 120 ounces of boiling water in the bag first, swished it around, then added another 176 ounces. I added 32 ounces of yeast starter (made of 1/2 cup dried malt extract boiled in one quart of water for 10 minutes with the hop flowers then cooled) for a total of 328 ounces. The temperature of the bag when I pitched was 85 degrees F (29.5 degrees C). I also suspended a hop bag with one ounce of Cascades in the wort.



Photo by Axbridge Micro Brewery

The beer made with modifications was a noticeable improvement over the one made using the standard directions. It was highly hopped, masking the esters and fruitiness from the high fermentation temperature. The hop aroma was intense for the first two weeks, then diminished. The standard beer was sour and cidery and these flavors grew as the bag remained at 70 degrees F (21 degrees C) for a month after brewing.

All in all, the unique beer-in-a-bag concept and complete ease of brewing are a plus for Axbridge Brew Kits. Cooling the fermentation, adding specialty grains and dry hopping can produce an ale with fewer negative esters and off-flavors and may add to the life of the beer. The simplicity may save you time, but definitely compromises the quality of the beer.

—Susanne Price

Dear **zymurgy**,

Thank you for reviewing Fermtech's bottle filler, the Siphon Valve, in **zymurgy** Summer 1992 (Vol. 15, No.2).

The issues you raised with our product were considered during the design phase. Perhaps the following clarifications will alleviate those concerns. These points will also be added to the instruction sheet included with the product.

If it is desired to reduce the head space after using the filler, the bottle can easily (and quietly) be topped-up to the desired level by touching the filler tip to the inside of the bottle neck. As mentioned, the Siphon Valve fills hands-off and will continue to flow until picked up. So, what to do with the filler when the phone rings? Insert it back into the neck of the carboy or bucket you are siphoning out of (or any other sterile vessel that is longer than the bottle filler). The siphon will restart when you start bottling again.

Sanitation, sanitation, sanitation! We have had consistent success by soaking the filler (and all other difficult-to-clean siphon accessories) after use for 30 minutes in a proprietary cleansing agent and before use in a dilute bleach solution (**zymurgy** Fall 1991, Vol. 14, No.3).

—Derek Hamilton
Fermtech

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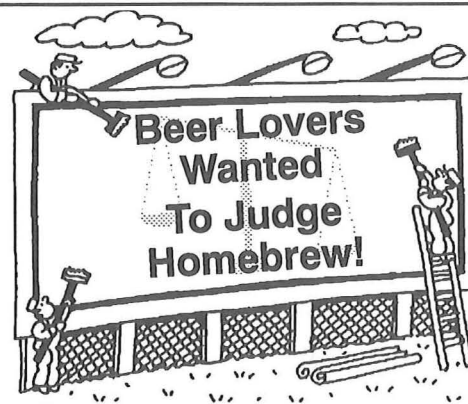
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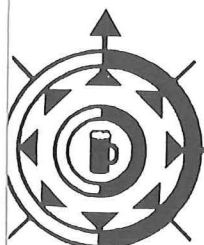
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(516) 549-4404

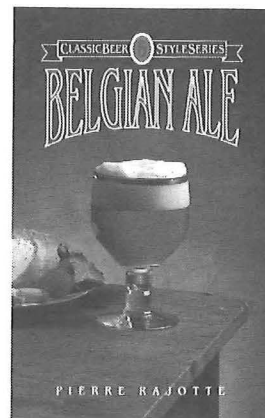
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Amdo Rodeo
2830 Wilson Blvd., Arlington, VA 22201
(703) 243-7770

Brewpub-22 beers on tap, 21-barrel brewpub. Car-part art, Tibetan beer (Chang) on tap, outdoor cafe, CD jukebox. Fun!

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Brewmasters Pub Restaurant & Brewery
4017 80th St., Kenosha, WI 53142
(414) 694-9050

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For more information on **Beer Bearings**, contact Linda Starck at (303) 447-0816.

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For more information contact the AHA at PO Box 1679, Boulder, CO 80306-1679 or call (303) 447-0816.

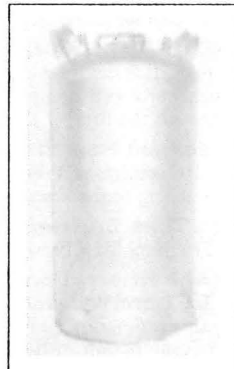
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YOUR HOMEBREW CONNECTION

HOME BREW CLUBS

JAMES SPENCE

This Club News is from registered homebrew clubs in Division 3, and includes Idaho, Utah, Wyoming, Montana, North Dakota, South Dakota, Nebraska, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Indiana, Michigan and Canada. Contact information for these clubs can be found in New Clubs or Veteran Clubs. For corrections or additional information about AHA registered homebrew clubs contact James Spence at (303) 447-0816, FAX (303) 447-2825 or CompuServe #70740,1107.

Homebrewers of the Palouse (HOPS), Troy, Idaho

HOPS has begun preparation for the beer judge certification test and will continue with monthly training sessions through December. In September they will be tasting and comparing homebrewed brown ales. The best brown will be used as the basis for a brown ale to be offered at M.J. Barleyhoppers Brewpub and will bear the homebrewer's name.

Mississippi Unquenchable Grail Zymurgists (MUGZ), LeClaire, Iowa

The MUGZ club is enjoying continual growth in membership and beer quality. Annual events include the open house celebrity tasting on National Homebrew Day, tours to the Millstream Brewery at the Amana Colonies and Fitzpatrick's Brewpub in Iowa City. Other tours are in the planning stages, call for more information.

The Home Beers Racketeers, Kansas, Ill.

Meetings are the first Saturday of every month at Harold Fleming's house, please call for directions. Members volunteer to give presentations on any topic regarding beer. February's presentations included "The Purpose of Homebrewers and Racketeers," by President Gary Burns and "Beer Styles," by Jerry Thompson. Recent activities included a trip to Chicago to visit two microbreweries and brewpubs.

Northwest Amateur Wine and Beermakers' Guild, Mt. Prospect, Ill.

The NWAABMG meetings for 1992-93 will focus on a theme of combining wine and beermaking techniques to include mead, sake, barley wine, cider, perry and fruit beers.

Prairie Schooners, Springfield, Ill.

After leading a seminomadic existence for its first two years, the Schooners appear to have found a permanent meeting place at Johnny's Pizza and Italian Restaurant. In September, the club will hold its Oktoberfest. The theme of this year's new membership drive: "If you brew it, they will come."

Bull and Stump Brew Club, Kokomo, Ind.

The club sponsored the First Annual BSBC Spring Fling featuring bratwurst, great music and copious quantities of homebrewed beer. A commercial beer tasting and Oktoberfest are planned for fall. The club will trek to Milwaukee in the spring to attend the "Blessing of the Bock" festival. New membership has increased recently and the number of grain brewers exceeds 35 percent. A 10-gallon all-grain barley wine ale with an original specific gravity of 1.110 and 100 IBUs was brewed by the club in February. The club welcomes new members and is always looking for new and innovative brewing techniques.

HOPS, Indianapolis, Ind.

(H)oosiers (O)rganized to (P)roduce (S)uds are undergoing reorganization. A local video production company is producing videotapes of club members making all-grain and extract brews. HOPS meets every other month. Call for more information.

FOSSILS-Fermenters of Special Southern Indiana Libations Society, Georgetown, Ind.

FOSSILS has adopted an aggressive, two-pronged strategy in its crusade for good, true, real beer. They staunchly advocate homebrewing and beer appreciation. For more details about their insurgency, their fight to "turn out the lite!" or the annual Christmas party contact the FOSSILS.

Tippecanoe Homebrewers' Circle, Battle Ground, Ind.

THC continues its earnest, though erratic, get-togethers for tasting, yacking and ruminating. They plan a fall bus trip to the Broad Ripple Brewpub and the Indianapolis Brewing Co.

Prime Time Brewers, Grand Rapids, Mich.

The Prime Time Brewers planned an Oktoberfest competition for September and a trip to Kalamazoo Brewing Co.

Boreal Bottlers, Bemidji, Minn.

The Boreal Bottlers club has 25 households with active members. Two of the club officers have been doing a monthly radio show on homebrewing for more than five years and the club will be co-hosting two tastings this year in conjunction with the radio station. The club planted a plot of two-row and six-row barley and many members are growing hops. One member is establishing a vineyard, not an easy task where the winters hit minus 40 degrees F.

Northern Ale Stars Homebrewers Guild, Saginaw, Minn.

The Ale Stars held the third annual beer tasting drawing more than 400 people and resulting in a significant charity donation. In June, the club served 45 gallons of homebrewed Kölsch at the AHA National Conference in Milwaukee. July saw the first statewide club competition with beers from all five Minnesota clubs.

St. Louis Brews, Kirkwood, Mo.

The club is sponsoring its Happy Holiday Homebrew competition, which generally follows the AHA national rules and categories. One addition is for Christmas Ale. This particular category is a kitchen-sink strong beer. The starting gravity must be more than 1.060 and the brew must include three malts, four hops and one unusual ingredient. The competition date is listed in the Calendar of Events.

Prairie Homebrewing Companions, Fargo, N.D.

Greg Ottoman won the second annual PHC Challenge Competition. Club members entered three brews in the second annual Nevada Winterfest sponsored by SNAFU and took home honors in two categories. In addition, three of the 12 brews submitted to the AHA National Competition by PHC members were selected to advance to the final round. The club helped organize and judged the First Annual Homebrew Competition at the Red River Valley Fair. Call the PHC for meeting dates and membership benefits.

NEW CLUBS

ALABAMA

Wiregrass Brewers Clubs, c/o John Sartwell, Rt. 3 Box 107, Ozark, AL 36360, (205) 299-3472.

CALIFORNIA

Big Dog Homebrewing Club, c/o Gordon Ponce, PO Box 1069, Livermore, CA 94550, (510) 449-5118.

IOWA

Raccoon River Brewers Association, c/o Greg Helton, 3920 42nd St., Des Moines, IA 50310, (515) 279-4990.

MASSACHUSETTS

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

MONTANA

Big Sky Basement Brewers and Blues Revival Society, c/o Jim Hunter, 614 S. Cottage, Miles City, MT 59301, (406) 232-4378.

NEVADA

Southern Nevada Ale Fermenters Union (SNAFU), c/o The Homebrewery, 4300 N. Pecos Rd. #13, Las Vegas, NV 89115, (702) 644-7002.

NEW JERSEY

Jersey Shore Homebrewers, c/o Tom Clark, 67 Monmouth St., Red Bank, NJ 07701.

TENNESSEE

Smoky Mountain Brewmelsters, c/o Katie Cardwell, 3712 Walker Blvd., Knoxville, TN 37917, (615) 689-9064.

TEXAS

Bay Area Society of Homebrewers, c/o Richard McFall, 4425 Holly Ridge, Corpus Christi, TX 78413.

VIRGINIA

St. Arnou Society, c/o Wayne Grovenstein, 2011 Lewis Mountain Rd., Charlottesville, VA 22903-2414.

WISCONSIN

Tappa Kegga Brew, c/o Shawn Conaway, 2735 South 15th Place, Milwaukee, WI 53215-3703.

WYOMING

Snowy Range Foamontors, c/o Claude Morris, 810 S. 23rd, Laramie, WY 82070, (307) 742-0516.

VETERAN CLUBS

ALABAMA

Birmingham Brewmasters, c/o Klaus Anderson, 1917 29th Ave. S., Birmingham, AL 35209-2617, (205) 871-2337.

Madison Sobriety Club, c/o Steve Conklin, 311 Red Oak Rd., Madison, AL 35758-1540, (205) 461-8698.

ZZ Hops, Sandy, Utah

Membership has grown to 40 and boasts talented and creative brewers. The Flying Carp Brewing Contest was held in June and promises to be an annual affair. Meetings were set Sept. 18 to select the club's "Best of Fest" entry and Nov. 20 to select the "Barley Wine is Fine" entry. A contingent of diehard "Hoppers" will be trekking to Denver to participate in the GABF.

King Gambrinus Court of Brewers, Burlington, Wis.

Members gathered at Art Steinhoff's house for a demonstration of all-grain brewing and sampled beers the members were thinking of sending to the AHA National Competition. They attended the "Blessing of the Bock" in Milwaukee at Lakefront Brewery. Congratulations to Steinhoff from the club and Ray Daniels of the Chicago Beer Society for tying for Midwest Homebrewer of the Year.

Brewtown Brewmasters, Franklin, Wis.

The casual format for the club was discussed and overwhelmingly voted to be retained—no dues, no officers, just great homebrew. In addition to the annual golf tournament and Oktoberfest pig roast, a weekend camp outing was on tap for summer and a new activity was in the planning.

Madison Homebrewers and Tasters Guild, Madison, Wis.

April's Big and Huge Homebrew Competition awarded club President Dana Edgell the coveted Woolly Mammoth Trophy. The Eighth Annual November Classic Homebrew Competition was set for Nov. 21. Intending to leave no homebrewer without a category, the two new competition beer styles will be "This" and "That."

Focal Point Homebrew Club, Stevens Point, Wis.

Focal Point Homebrew Club occasionally brews up a batch of beer and the club selects a "Beer of the Month" at each meeting. Jerome Ebel was the first to earn this distinction with his delicious "Chocolate Maple" brew. The club welcomes all interested novice and advanced homebrewers. Call for more information.

Campaign for Real Ale (CAMRA BC), Victoria, British Columbia

CAMRA undertakes a wide variety of activities from an AHA-Sanctioned Competition and homebrewing seminars to political lobbying and golf tournaments. Monthly meetings often feature a guest speaker from one of the area's quality breweries but occasionally a special guest like Bert Grant will make the trip. They are not exclusively a homebrewing club; they exist to encourage the appreciation of quality ales and lagers in all the traditional styles. This involves public education and making new members and curious souls welcome at meetings.

CABAL (Canadian Association for Better Ale and Lager), Toronto, Ontario

CABAL has about 60 members who are homebrewers, professional brewers and people who simply enjoy a good pint. Recent events included a bus tour of the Luxembourg brew pubs, a stout tasting at the C'est What?, a farewell visit to Hanwell Brewing's "Legless Arms" and a visit to the newly opened Frog and Peach for which beer consultant and writer Steve Beaumont gave a very interesting talk.

Collingwood Brewing Club, Collingwood, Ontario

Members were treated to a talk and tasting of a bock by the owners of the new Mountain Brew, a brew-on-premises establishment. Along with it they sampled two excellent spent-grain breads made by John Cannon and Larry Bowhey.

Lower Alabama Lagers, c/o Maarten van der Giessen, 4701 Seabrook Rd., Wilmer, AL 36587, (205) 649-9436.

ALASKA

Great Northern Brewers, c/o James S. Roberts, 7635 Hennings Way, Anchorage, AK 99504, (907) 337-9360.

Greater Alaska Suds Swillers, c/o Roger P. Penrod, 1737 University Ave. G-32, Fairbanks, AK 99709, (907) 474-9163.

Rainbrewers, c/o Russ Staska, 171 Raspberry Lane N., Ketchikan, AK 99901, (907) 247-0767.

ARIZONA

Butthead Mtn. Brewers Association, c/o Perry Davidson, 3525 W. Lois Lane, Flagstaff, AZ 86001.

Suds of the Pioneers, c/o Slim Tighe, PO Box 144, Bisbee, AZ 85603, (602) 432-5242.

Arizona Brewers and Vintners Association, c/o Bruce E. Dahlgren, 3713 West Gelding Dr., Phoenix, AZ 85023, (602) 843-4337.

Brewmelsters Anonymous, c/o Brian Miller, 202 E. Baseline #242, Tempe, AZ 85283, (602) 345-2890.

Old Pueblo Homebrewers, c/o Jack Bates, 3463 E. 1st, Tucson, AZ 85716, (602) 325-5739.

CALIFORNIA

Barley Bandits, c/o Dick Reese, 105 S. Glendon St., Anaheim, CA 92806, (714) 630-6527.

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Shasta County Sudsers, c/o Raymond Ault, 4621 Balls Ferry Rd., Anderson, CA 96007, (916) 365-6284.

Foothill Fermenters, c/o Dan Bell, 164 Maple St. Suite 5, Auburn, CA 95603, (916) 823-8373.

M*A*D Brewers, c/o Dan Sullivan, 2010 Kingston Place, Bakersfield, CA 93306, (805) 872-0843.

Old Capitol Brewing Club, c/o Christopher Howley, 418 Mills Dr., Benicia, CA 94510, (707) 644-5517.

Stanislaus Hoppy Cappers, c/o Wayne Baker, 1907 Central Ave., Ceres, CA 95307, (209) 538-2739.

The Tandem Malt Processors, c/o Neil Johnston, 19191 Valco Parkway, MS 4-24, Cupertino, CA 95014-2525, (408) 946-6064.

QUAFF, c/o Rich Link-Beer & Wine Crafts, 460 Fletcher Pkwy., El Cajon, CA 92020, (619) 447-9191.

Yolo County Homebrewers, c/o Vern Wolff, PO Box 538, Esposito, CA 95627, (916) 787-3615.

Draught Board Home Brew Club, c/o Charles Webster, 33039 Lake Wawasee St., Fremont, CA 94555, (510) 487-4274.

San Joaquin Worthogs, c/o Dale James, 2217 N. Prospect, Fresno, CA 93722, (209) 264-5521.

Crown of the Valley Brewing Society, c/o Tom Estudillo, 1616 Orangetree Lane, La Canada, CA 91011, (818) 952-1386.

Brew Angels, c/o Ken Matzek, 602 S. Church St., Lodi, CA 95240, (209) 368-2525.

The Strand Brewers Club, c/o Peter A. Chin Sang, 3432 Studebaker Rd., Long Beach, CA 90808, (310) 425-8700.

Worts of Wisdom, c/o Russ Pencin, 2040 W. Middlefield #6, Mountain View, CA 94043, (415) 965-9820.

Stanislaus Area Assoc. Zymurgists, c/o Micah Millspaw, 309 S. 6th Ave., Oakdale, CA 95361-4032, (209) 847-9706.

Bay Area Mashers (BAM), c/o Doug Ashcraft, 5998 Alhambra Ave., Oakland, CA 94611, (415) 339-1816.

Wild Yeast Culture, c/o Gareth Gordon, 641 Paloma Ave., Oakland, CA 94612, (510) 893-0385.

The Brewblrds of Hopplness, c/o Kelly Dunham, 1229 Lerida Way, Pacific, CA 94044, (415) 355-7143.

Monterey Beer Nuts, c/o Franz Broz, 1080 Majella Rd., Pebble Beach, CA 93953, (408) 646-5224.

Gold Country Brewers Association, c/o Jim Long, 8385 Jackson Rd., Sacramento, CA 95826, (916) 386-2870.

Inland Empire Brewers, c/o John Oliver, 1258 Lomita Rd., San Bernardino, CA 92405, (714) 886-7110.

San Andreas Malts, c/o Russ Wigglesworth, PO Box 884661, San Francisco, CA 94188-4661, (415) 885-1878.

San Luis Obispo Brewing Society (SLOBS), c/o Howard Gootkin, 1568 Frambuesa Dr., San Luis Obispo, CA 93405, (805) 541-0713.

Santa Clara Valley Brewers Association, c/o Bob Hight, 433 California St., Santa Clara, CA 95050, (408) 247-6853.

Monterey Bay Brewers, c/o Lynne O'Connor, 106 Hagar Court, Santa Cruz, CA 95064, (408) 459-0178.

Redwood Coast Brewers Association, c/o Michael Byers, 707 Pelton Ave. #108, Santa Cruz, CA 95060, (408) 426-3005.

Sonoma Beerocrats, c/o Nancy Vineyard, 840 Piner Rd., #14, Santa Rosa, CA 95403, (707) 544-2520.

Susanville Homebrew Institute of Technology, c/o Larry Anthony, 527 Lakewood Way, Susanville, CA 96130-3512, (916) 257-8803.

Temecula Valley Homebrewers Association, c/o Vinnie Cilurzo, 41220 Calle Contento, Temecula, CA 92592, (714) 676-5250.

Maltose Falcons Homebrewing Society, c/o Bruce L. Brode, 22836 Ventura Blvd. #2, Woodland Hills, CA 91364, (310) 558-8458.

COLORADO The Unfermentables, c/o Ray Poarch, 6100 Wadsworth Blvd. #20, Arvada, CO 80003, (303) 420-7582.

Deep Wort Brew Club, c/o Dave Resch, 5310 Meadowgreen Dr., Colorado Springs, CO 80919, (719) 548-0612.

The Brewsklers, c/o Graham Ullrich, PO Box 2045, Crested Butte, CO 81224-2045, (303) 349-5969.

Horsetooth Homebrewers, c/o Bo Vigor, 5667 Hummel Lane, Fort Collins, CO 80525, (303) 223-6156.

Mash Tongues, c/o Steve Dempsey, 1325 Birch #14, Fort Collins, CO 80521, (303) 491-0630.

Foam on the Range, c/o Pasquale Girolamo, 8071 S. Kendall Blvd., Littleton, CO 80123, (303) 972-8379.

Hop, Barley & The Alers, c/o Dave Coy, 11638 Community Center Dr. #22, Northglenn, CO 80233, (303) 452-4357.

CONNECTICUT New York City Homebrewers Guild, c/o Keith Cunningham, 299 Prospect Place #3F, Brooklyn, NY 11238, (718) 398-1610.

Underground Brewers of Conn., c/o Victor Gubinski, 44 Lalley Blvd., Fairfield, CT 06430, (203) 259-8693.

The Connecticut Beernutts, c/o Steve Henry, 38 Wauwinet Court, Guilford, CT 06437, (203) 457-9136.

Beer Brewers of Central Connecticut, c/o Judy Lawrence, 1550 Randolph Rd., Middletown, CT 06457, (203) 346-5440.

UConn Zymurgy Club, c/o Robert Vieth, Box U-139, University of Connecticut, Storrs, CT 06269.

DELAWARE First State Brewers, c/o Charles Garbini, 705 Manfield Dr., Newark, DE 19713, (302) 368-3417.

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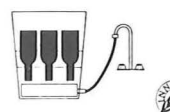
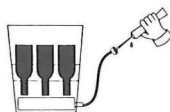
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FLORIDA

Bradenton Brewski's, c/o Chet Kedzierski, PO Box 51, Bradenton, FL 34206, (813) 747-2437.

Escambia Bay Brewers, c/o Tom Walpole, 2240 Riddle Rd., Cantonment, FL 32533.

Florida Institute of Zealous Zymurgists (FIZZ), c/o David McCarty, 2626 S.W. 14th Ave., Fort Lauderdale, FL 33317, (305) 764-1527.

Hogtown Brewers, c/o Ray Badowski, 21 S.W. 2nd St., Gainesville, FL 32601-6237, (904) 375-7949.

South Florida Homebrewers, c/o Lauren or Bryan Hemedinger, 441 S. State Rd. 7, Margate, FL 33068-1934, (305) 968-3709; FAX 968-3591.

Broward Beer Nuts, c/o Eileen Parker, 6031A Miramar Pkwy., Miramar, FL 33023, (305) 962-0100.

Central Florida Homebrewers, c/o John Cheek, 1320 N. Semoran Blvd. #101 A, Orlando, FL 32807, (407) 282-3880.

The Northeast Florida Society of Brewers, c/o Bob Davis, 7 Park Terrace Dr., St. Augustine, FL 32084, (904) 824-5252.

North Florida Brewers League, c/o Ken Woodward, 2045 Wahalah Nene, Tallahassee, FL 32301, (904) 997-8183.

Palm Beach Draughtsmen, c/o Stephan Vernet, 4345 Okeechobee Blvd., Bldg F4, West Palm Beach, FL 33409, (407) 683-4592.

Tampa Bay BEERS (Beer Enthusiasts Enjoying Real Suds), c/o Tom Lyons, 1011 N. Lake Howard Dr., Winter Haven, FL 33881, (813) 665-0966.

GEORGIA

Brew-52's, c/o Robert Hall, 450 Ruth St., Athens, GA 30601, (404) 369-1285.

Ale Atlanta, c/o Coby Glass, 1374 Cumberland Mall, Atlanta, GA 30339, (404) 435-2244.

The Clergy of Zymurgy of the Golden Isles, c/o Steve Pechin, Rt. 2 Box 9640, Brunswick, GA 31525, (912) 265-2233.

Covert Hops Society, c/o Rick Lubrant, 408 Hildale Dr., Decatur, GA 30030, (404) 377-3024.

2 Dudes That Brew, c/o Peter Coleman, 6998-D Kilay Court, Ft. Stewart, GA 31314, (912) 876-0556.

Chicken City Ale Raisers, c/o Rick Foote, 6252 Brookfield Dr., Murrayville, GA 30564, (404) 983-1135.

IDAHO

Ida-Quaffer Homebrewers Association, c/o Editor, 3894 West State St., Boise, ID 83703, (208) 344-5141.

S.E.I.Z.U.R.E., c/o Tim Hill, 4993 N. Ammon Rd., Idaho Falls, ID 83401, (208) 623-2674.

Homebrewers Of the Palouse, c/o Kane Francetich, PO Box 516, Troy, ID 83871, (208) 835-5263.

ILLINOIS

Homebrew SIG, c/o Ross Goeres, 25 N. 11th St., Belleville, IL 62220-1044, (618) 277-4243.

Egyptian Zymotic (EZ) Brewers, c/o Doug Diggle, 514 S. Illinois Ave., Carbondale, IL 62901, (618) 457-3513.

Wizards of Wort, c/o Steve Schmit, 1109 Stanton Rd., Lake Zurich, IL 60047, (708) 438-0233.

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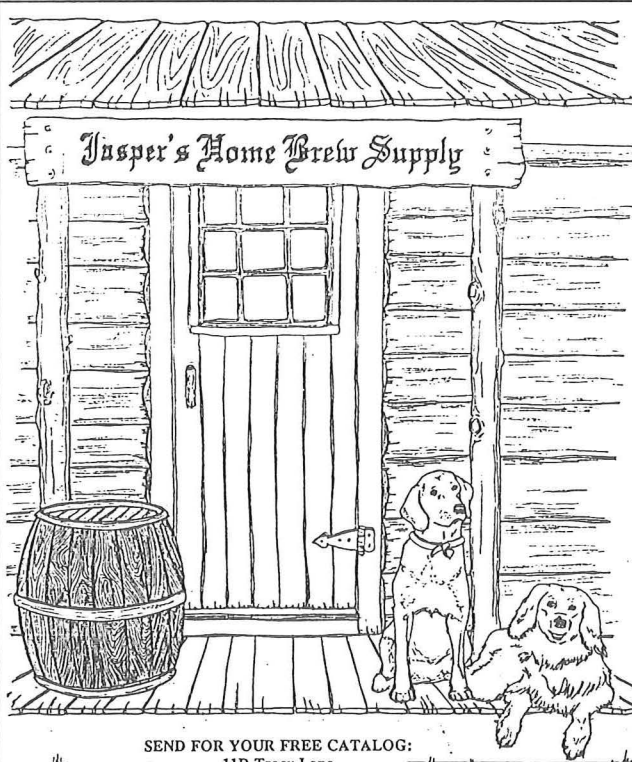
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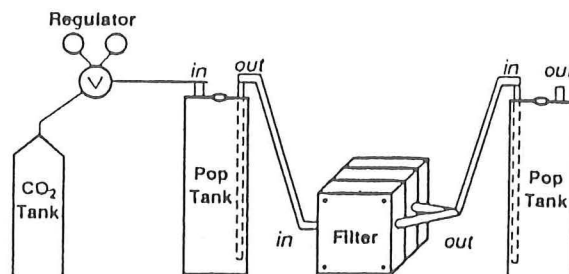
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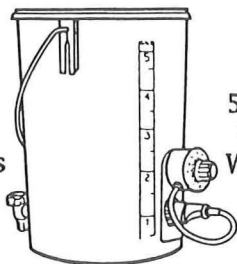
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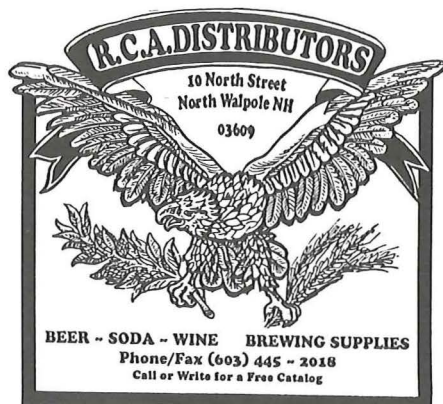
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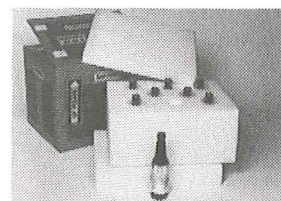
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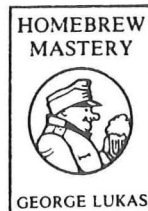
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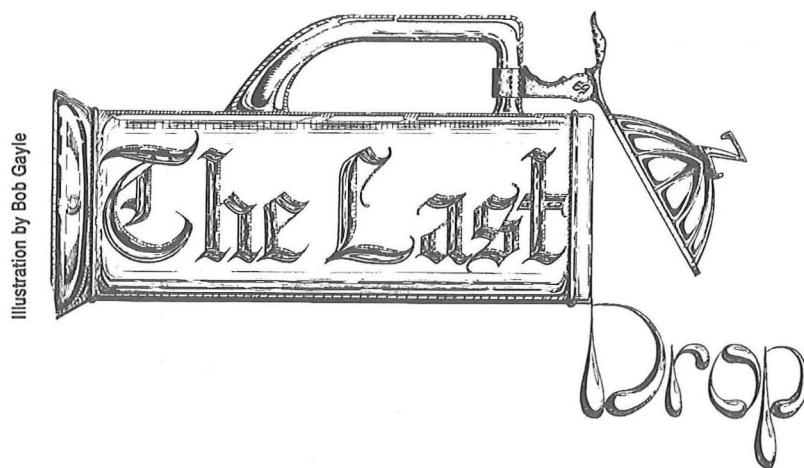
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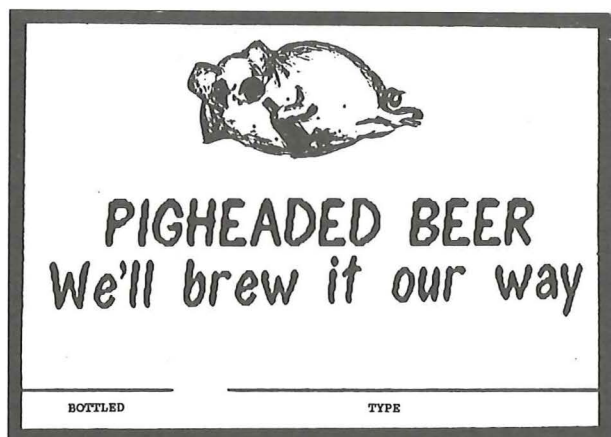
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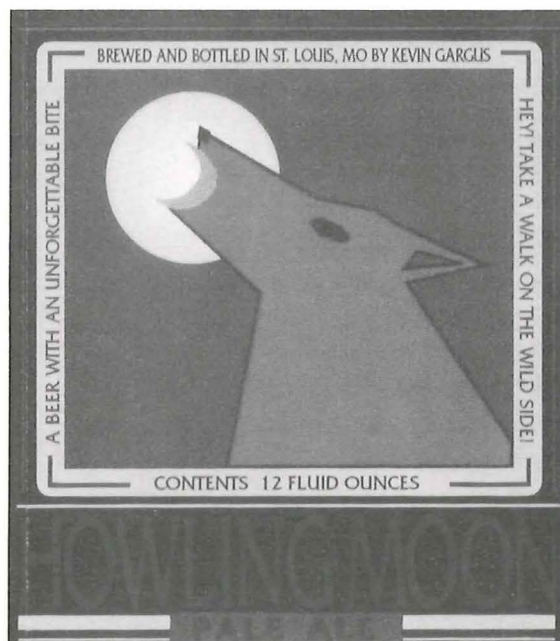


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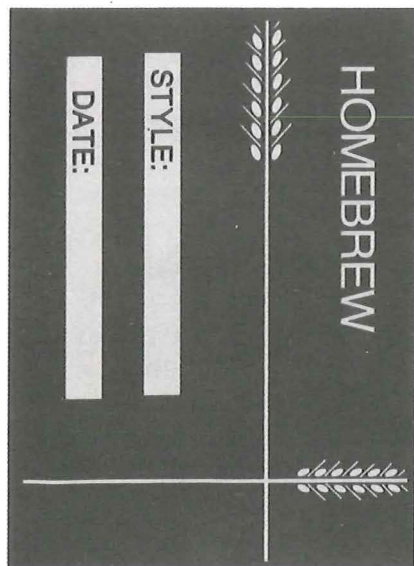
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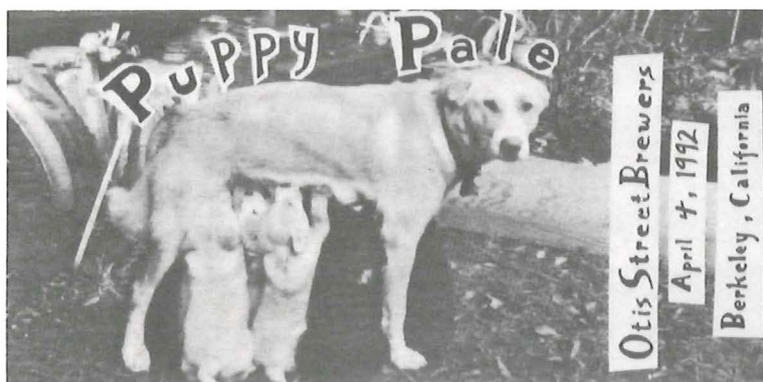
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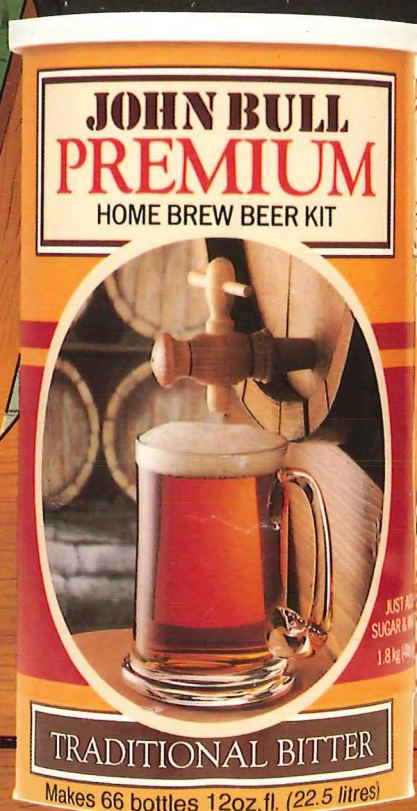


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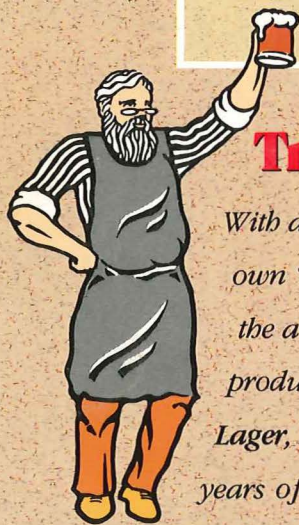
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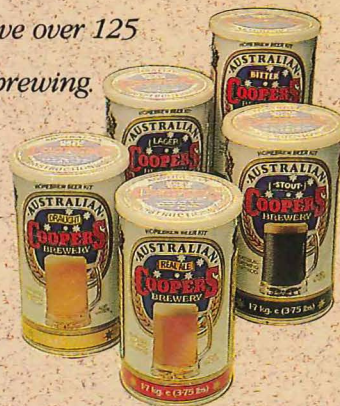
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