

RAY DANIELS
Inaugural Issue!

Vol. 23 No. 3 May/June 2000 Published by the American Homebrewers Association

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

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Associate Editor Kathy McClurg

Technical Editor Paul Gatz

Editorial Adviser Charlie Papazian

Art Director Stephanie Johnson

Graphics/Production Director Tyra Shearn Segars

Marketing Art Director Wendy Lyons

Advertising Sales Manager Julia Herz

julia@aob.org

Advertising Coordinator Jennifer Grossman

jennifer@aob.org

Circulation Coordinator Eric Caldwell

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ZYMURGY®

Zymurgy \ zī'mər jē \ n: the art and science of fermentation, as in brewing.

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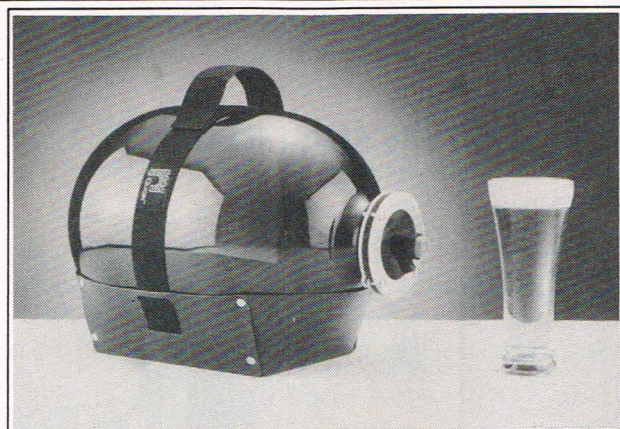
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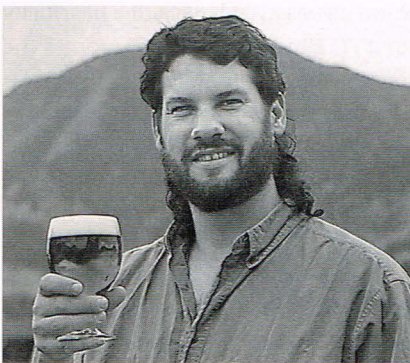
BY PAUL GATZA

Spring is here and it's time to celebrate. It's our busiest time of the year at AHA headquarters. We are getting ready for the Big Brew, we are midway through the AHA National Homebrew Competition, and it's time to bring your best brews to Michigan for the AHA National Homebrewers Conference. Much of the work we do year-round involves working with members to plant the groundwork for these three events.

Before I talk about how you can participate in these events, I want to first talk about this issue of *Zymurgy*. My personal affection for honey is no secret for anyone who has made mead with me or visited my barchives. I was quite happy when the AHA Board of Advisors put out the word that the AHA should put more energy into promoting mead and cider and helping brewers brew more and better mead and cider.

The first place I ever heard of mead was from the old manuscript Beowulf. I was assigned Beowulf in 7th grade English class. I was fascinated by the descriptions of the social aspects of meadhalls, with long tables, hearths, time and mead. Archeological finds of communities from that era focus on the buildings that fit the descriptions of meadhalls. I heard on NPR last week that Beowulf is in the top ten in the U.K. book sales list and in the top twenty on amazon.com. Perhaps it is time for mead to make a big comeback.

Mead is especially appropriate for spring and summer brewing because, in my opinion, mead is more forgiving than beer to elevated air and fermentation temperatures that can happen this time of year. A mead is less prone to a stuck fermentation in summer than in the colder months, and the issue of high ester levels in beer fermented at higher temperatures is not as important with mead. If the warmer ferment gives your mead some higher chain alcohols, aging will likely heal it on the back end.



One area I have struggled with is in making honey beers. Of all the times I have made honey beers, only once have I been truly happy with the result. It was honey pilsener. I did a ten-gallon batch and added pasteurized, cooled honey to one of the carboys. In a side-by-side test I preferred the honey pils to the pils. It passed the test at Junefest too, with the keg of honey pils draining before pilsener. I look forward to trying some of the ideas in Brad Kraus's article on brewing with honey. Brad has crafted the GABF gold medal honey beers each of the last two years.

Big Brew 2000

The Big Brew is set for National Homebrew Day, May 6th. Big Brew '99 had 2180 homebrewers register as participants at 265 brewing sites in 47 states and 8 foreign countries. This day of community celebration of homebrewing also includes an internet chat on the Brew Rat Chat site, so log on to find out what is happening at other brewsites around the globe. Register and remit your participant totals on www.beer-town.org, so that the homebrewers and the hobby of homebrewing gets as much press as we can generate.

At the request of participants, the style for this year's Big Brew is American Pale Ale. This style developed out of the surge of brewing on the west coast from the 1970's

into the 1990's. This recipe is based on the eighteen attempts of Chris P. Frey of the Ann Arbor Brewers Guild and Fermental Order of Renaissance Draughtsmen (FORD) to emulate Sierra Nevada Pale Ale. The Big Brew's major sponsor is Wyeast Laboratories. Big Brew 2000 is also sponsored by California Concentrate Co. So gather as many friends and brew kettles together as you can and have a great brewing party on National Homebrew Day. Here is the official recipe for the Big Brew.

Big Brew 2000 – Nearly Nirvana Pale Ale

All Grain Recipe for 5 gallons:

- 6.5 gallons water (2.5 mash, 4 sparge)
- 1 T gypsum (unless using hard water)
- 8 lb U.S. two row malt
- 1/2 lb U.S. crystal malt 60 L
- 1/2 lb U.S. dextrin malt
- 1 oz Perle hops (bittering or first wort hop)
- 1 oz Cascade hops (flavor)
- 1/2 t Irish moss
- 1/2 oz Cascade hops (aroma)
- 1 oz Cascade hops (dry hop)
- Wyeast 1056 liquid ale yeast

Extract with grain recipe for 5 gallons:

- 5 gallons water (1 1/2 steep and boil, 3 1/2 added)
- 1/2 lb U.S. crystal malt 40 L
- 1/2 lb U.S. crystal malt 20 L
- 1 T Gypsum
- 6 3/4 lb Alexander's Pale Malt Extract Syrup
- 1 1/2 oz Perle hops (bittering)
- 1 oz Cascade hops (flavor)
- 1/2 t Irish moss
- 1/2 oz Cascade hops (aroma)
- 1 oz Cascade hops (dry hop)
- Wyeast 1056 liquid ale yeast

The best beer from each club made with this recipe will go head to head in the August AHA Club-Only Competition. See the Club Report in the next issue in *Zymurgy* for more information.

National Homebrew Competition

The first round of the 22nd annual AHA National Homebrew Competition is being held right now. The entry deadline has passed, but the fun has not. First round judging occurs at regional sites at the end of April, with the second round judging and awards presentation a feature of the AHA National Homebrewers Conference in Michigan. Results will be posted on www.beertown.org as soon as they are confirmed. Whether your beer advances or not, I highly recommend you join in the stewarding and judging and awards festivities at the...

National Homebrewers Conference

If you missed the last AHA Conference, be sure not to miss this one. Last year was a wonderful example of what the AHA can be when member volunteers put their

hearts into planning, organizing and running the conference. This year a coalition of Michigan homebrew clubs has created MIY2K for your homebrew pleasure. MIY2K will take place at the Holiday Inn in Livonia, Michigan June 22 to 24. Livonia is about ten miles from the Detroit airport and equally accessible from Ann Arbor and Detroit. The program includes the NHC judging and Awards Banquet, a full-blown pig roast, club night, the hospitality suite staffed by clubs from around the country in two-hour shifts and a speakers list that includes Fred Eckhardt, Ray Daniels, Larry Bell, Charlie Papazian, Morton Meilgaard, Dan McConnell, Fred Scheer, Alex Kennedy, Jeff Renner, Mike O'Brien and Al Korzonas.

Conference registration information is on page 12. Visit the conference website at www.hbd.org/miy2k for the latest updates or to sign up online. The conference hotel is bound to book early. We have a special block of rooms at a special conference rate of \$84 per night for one to four brewer occupants. The Holiday Inn can be reached

directly for room reservations at (734) 464-1300. Make sure you mention that you are part of the AHA National Homebrewers Conference to receive the special conference rate. The conference earlybird registration deadline is May 15th, so register now and save.


AHA Board of Advisors Election

We want your vote. There are four slots open on the AHA Board of Advisors. I am in regular contact with the AHA Board through our email distribution list. The board is important as a sounding board for staff, for member ideas to make a better AHA, for membership development, for advancing program work, for long-term strategic planning and budgeting and for serving as AHA representatives across the country. Please review the candidate statements on pages 13-14, photocopy the ballot, and mail it to the board chair. Choose the people you think will best make decisions for and carry out the mission of the AHA.

Homebrewer and former homebrew shop owner Paul Gatza is the director of the AHA. ☺

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OUR READERS

To Freeze Or Not To Freeze

Dear Zymurgy,

I've just received and read the January "Zymurgy" (I'm in Japan, the mail here is a little slow) and a nagging question has reared its head again. I would like to address something that appears in just about any article about making "ICE" beer. There is almost always a statement that says the concentration of alcohol by freezing is distillation and that distillation is illegal. "Don't try this at home!" Distillation does not mean "concentration." Distillation is a process that involves the heating of a mixture (beer) and the extraction of the desired component (alcohol) by condensation. Removing ice from frozen beer is not distillation.

In the years I've been homebrewing I've read many articles about applejack and ice beer. I remember reading one in which the author claimed to have contacted the IRS regarding the legality increasing alcoholic strength by freezing. The answer was that freezing did not come under the IRS definition of distillation and was, therefore, not illegal. I wish I could remember where I read it.

Perhaps you could contact the IRS, find out what they really have to say on this, and publish the FACT of the matter.

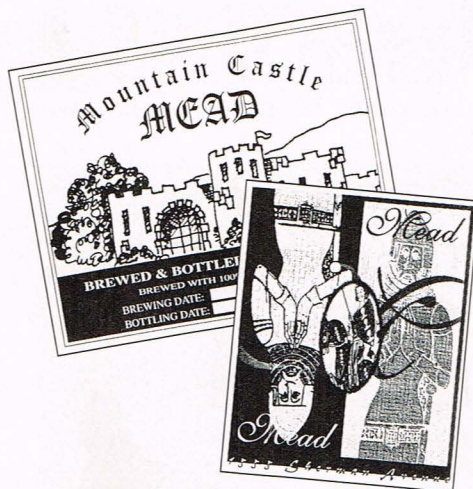
Have a Terrific Day!

Ed Kendall

Cal Lab Manager SRF Det.

Sasebo Japan

Here's the scoop: according to Warren Wynn at the Washington, D.C. office of the U.S. Bureau of Alcohol, Tobacco and Firearms, the concentration of alcohol by freezing by home brewers is not illegal. Any form of true distillation, i.e. the application of heat to vaporize and then condense alcohol, is illegal without a license. Thanks for keeping us honest! —Ed.



Sticky Situation

Dear Zymurgy,

Steve Delasala's informative article (Vol. 23 No. 2) on the judging of meads requires a couple of comments. First off, the illustrations on the title page depict a wasps nest, not bee comb! Feral bees do not produce a nice square comb like that seen in the frame of a typical hive but they are flat (one set of cells on each side) as opposed to rounded and are made of wax, not paper as is the comb in the illustration.

More important is the assertion that honey comes from the hive sterile. It does not. It is full of organisms which include things like botulinus spores (this is why pediatricians recommend that infants not be given honey) and, of more interest to the mead maker, wild yeasts. These latter are held in stasis by the high osmotic pressure of the dissolved sugar. Apiarists don't harvest (and cooperatives don't buy) honey which has a moisture content greater than about 13% because at above this level spontaneous fermentation will occur. Mead musts are commonly boiled not so much to sterilize them as to allow the proteins to coagulate and rise to the surface so they can be skimmed for clearer mead. This is not, as the article mentioned, a good idea as volatiles will be lost. Control of wild yeasts is effected by pitching a large quantity of a desired yeast and the use of sodium or potassium metabisulfite in the same way that vintners use it. Not only does this metabite slow the growth

of wild yeast but it helps to keep the mead in a reduced state thus minimizing oxidation problems during storage.

Turning now to Prof. Surfeit's column in the same issue: the chemical reader Rawson is referring to (sodium thiosulfate) is photographers "hypo" and is, thus, readily obtained from photo shops. Brewers may prefer to use the same potassium metabisulfite referred to above. It is sold in home-brew and wine making shops as 'Campden Tablets', will do the job just as well as thiosulfate and is food grade when purchased in this form. Note that Campden tablets will not only neutralize the chlorine that a brewer may have used as a sanitizer but the chlorine and chloramine that water authorities use to treat their supplies. One tablet in 20 gallons will clear the levels employed by most municipalities (3mg/L).

Cheers,

A. J. deLange

Guess we got stung pretty good this time. Unfortunately our staff beekeepers (we have two now) didn't come on board in time to proof that last issue. Hopefully we've done a better job illustrating our honey coverage in the pages that follow. —Ed.

Wasps in the Honey

Dear Zymurgy,

I enjoyed Steve DellaSala's article on Meads, but why, oh why, did you devote all of page 36 to a picture of a paper wasp's nest, when wasps are enemies of our friends, the honeybee?? Bees make their hives from beeswax, not regurgitated wood pulp! A picture of a honeybee hive or comb of honey would have been much better, and perhaps stimulated some interest in your readers who might like to keep bees, a beneficial insect that is in real serious trouble in this country.

By the way, I agree with the "More Wine and Mead!" letter, that the more types of fermentation/alcohol production techniques discussed, the better for all.

John Ellis, beer brewer,
mead maker, and former bee keeper.

*Sorry about the wasp—see our note above.
As for more mead, you're in luck: this*

issue is packed with mead and honey beer information. —Ed.

Suspicious Smoke

Dear *Zymurgy*,
I cannot understand how the recipe for "Smoked Porter" (page 44, March/April 2000 *Zymurgy*) could result in anything like a porter. There are no specialty grains

used and mashing specifics are absent. But what's really amazing about this recipe is that it yields 62 points/lb./gal!

I really would like to brew a replica of the Alaskan Smoked Porter but I'm not going to try this recipe. I hope you'll publish a more accurate recipe in a future edition.

Thanks,
Tom R. Sanville

You were a wise man to steer clear of the recipe in question. Somewhere between Maier's mouth and our pages the copy elves snatched some critical components of the recipe. Here is the corrected recipe for Smoked Porter as it should have appeared.

Smoked Porter

Ingredients for 5 U.S. gal (37.8 L)

- 8 lb pale malt (3.6 kg)
- 1 lb hand-smoked Munich malt (.45 kg)
- 0.5 lb 40 L crystal malt (.23 kg)
- 0.5 lb chocolate malt (.23 kg)
- 1 oz Perle hops (28 g) (boil)
- 0.5 oz Cascade hops (28 g) (60 min.)
- 0.5 oz Cascade hops (end of boil)
- 0.5 Wyeast American ale yeast
- Primary fermentation: 5-7 days at 65 to 70° F (18 to 21° C)
- Secondary fermentation: 5-7 days 65 to 70° F (18 to 21° C)
- Original gravity: 1.056
- Final gravity: 1.018

Brewing specifics

Mash grains for 60 minutes at 154 degrees F (68 degrees C). Boil for 90 minutes. Add 1 ounce Perle hops at beginning of boil, .5 ounces Cascades 60 minutes into boil, and .5 ounces Cascades at end of boil. After bottling, Maier recommends aging the beer in your refrigerator for at least a month to allow the smokiness to mellow out.

Hey brewers! Do you make your own beer bottle labels?

If so, send us a sample in color or black and white. Every issue, we run a few just to make the letters section more interesting. Provide us with your name, address and homebrew club name (if any) and we'll make sure to mention your name. Send labels to attention S. Johnson, Association of Brewers, PO Box 1679, Boulder, CO 80306-1679.



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Unrequited Mash Lust

I must confess to you, my homebrew brothers and sisters, that I have found a new muse. Indeed, I fear that this discovery will distract me from my homebrew equipment for months, if not years to come. Fear not, for I shall still brew. But it will never be the same again.

If you must know, I found her in Germany. True, it was an odd setting for love, even for a geeky homebrewer. You see I found her in the laundry where I was staying. Her pale skin was luminous in the early morning light. And even though she has many talents, I knew in one look that she had the potential to be my one and only life-long brewing companion.

I think the thing that first fascinated me was the broad range of temperatures at which she could operate. Marked off in degrees centigrade, her most prominent dial was full and ripe with potential mash rest temperatures. From 40 on up to 90, she offered the essential beauty every brewer seeks in a mashing apparatus.

My breath came in hot shallow drafts as I imagined the things that we might do together. First, I would teach her my language so that we could mash in at 104 °F. Then I would line her beautiful enameled cavity with fine stainless steel mesh and fiddle her controls to bring her precious cargo into the saccharification zone. Here we would languish unaware of time—thinking only of the luscious magic that we were working together.

Finally, when there was precious little left to extract, I would make my final move and teach her the true beauty and meaning of a word from her own language: *vorlauf*, *vorlauf*, *vorlauf*! In this final movement of our sensuous dance, I would whip her spin cycle knob to its maximum setting. She would respond with a delicious 1600 rpm whirl, leaving the mass inside her dry and



spent. The sweet juice that flowed from her in this final ecstasy would surely prove to be a most fertile beginning for my many homebrewed offspring.

Now mind you, this was but a fantasy. Through it all, I remained faithful to my long-time brewing gear. Indeed, whenever I brew I still drag the same old Frankenstein collection of copper and plastic out of the closet, kick the Cajun cooker onto the patio and fish my springy home-made wort chiller out of a pile of miscellaneous gear. It's not romantic, but it works: I have both the beer and the medals to prove that. Still, when I'm confronted with mechanical beauty and elegance, I must confess that I lust for something new. Something better.

This desire—like most untamed longings—can have serious consequences. A few years back, I invested a good bit of time and money trying to start a commercial brewery. And let's face it, when a homebrewer tries to go pro, stainless steel envy is a big part of what fuels the process.

Me, I'm one of the lucky ones. I didn't start a brewery, but I also didn't lose my life's savings and I managed to walk away while I still enjoyed brewing and beer. Not everyone who travels that road can say the same.

So now I'm back to homebrewing with my buddies Coleman and Ace (as in Hardware). And again, I'm aching for more.

Like many of you, I've often contemplated tossing my old brewing mate in favor of a more sophisticated setup. The specs for this ideal system go something like this: a copper-clad beauty, steam fired and microprocessor controlled, capable of performing infusion- and decoction-mashes; accommodates either whole or pellet hops. Of course, it should have a price tag that's no more than a cheap roundtrip ticket to Munich.

I haven't seen a system like this and frankly I don't expect to. So until all-grain homebrew machines achieve the popularity of color TVs, the system I want will probably have to be home-made.

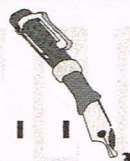
Like many of you, I'm certainly willing to build my own homebrew equipment. Indeed, I have built everything I currently brew with from cheap or surplus parts. I'll admit that I possess only modest skill in this area, but I have picked up this habit of looking at every device with brewing in mind. As a result, my grain mill is powered by an old food processor and my wort pump was scavenged from some long-forgotten bit of industrial gear. Indeed, devices that heat, cool, blow or rotate can not be thrown out in my household.

Yet despite its sizeable dimensions, my surplus equipment collection still doesn't add up to a new brew rig. And it certainly doesn't add up to that digitally-controlled, semi-professional in-home brew house that I've begun to fantasize about.

That's where my little German beauty comes in.

As I stood pondering whether my jeans should be washed at 40 or 50 °C and spun at 800 or 1000 rpm, it occurred to me that I'd found the perfect device to serve as the core for my new brewing equipment. Here, in the

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domain of a German *putzfrau*, I had found the technology I longed for: a temperature-controlled, water-plumbed machine with the built-in ability to separate water from a wet, pulpy mass. Immediately, I longed to fill her with grain and make her hum.

Sure, she was far from perfect. But with a little diddling here and little fixing there, I had no doubt that she could be the perfect home mashing machine.

I schemed ways to make her my own. But alas, it would not be. You see, my German sweetheart suffered from but one flaw and it was the reason that we parted company one grey and snowy November day never to be united again.

The problem was her orientation. She simply wasn't built like other washing machines. Maybe it was her wiring, maybe something about where she was made. But there was no denying it: she was that one thing that made her useless to a man with my kind of appetites. She was a front loader.

Zymurgy editor-in-chief Ray Daniels brews beer in Chicago but scouts for gear in many lands.

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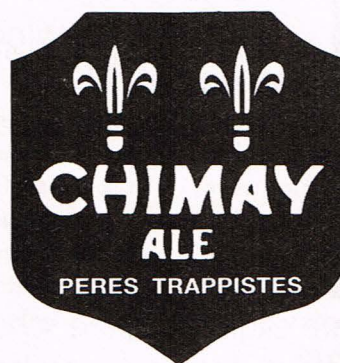


**See page 1 for registration and information to the
2000 National Homebrewers Conference**

A MAHL TURCZYN

Chimay Red

Chimay is probably the most popular of the Belgian Trappist ales, and is available worldwide. The monastery, technically called the Abbaye de Notre-Dame de Scourmont, actually produces three products: "rouge," or "Premiere," with an original gravity of 1.063 (7% abv); "blanche," a triple style called Cinq Cents (1.071, 8% abv); and finally, a "bleu," or "Grande Reserve," (1.081, 9% abv).



Orpheo Roja Belgian-Style Red

Ingredients for 5 gallons (19 L)

- 9 lb Belgian pale malt (4 kg)
- 1 lb Belgian aromatic malt (.45 kg)
- .5 lb 110 L crystal malt (.23 kg)
- .5 lb white sugar (.23 kg)
- 1 oz Belgian chocolate malt (28 g)
- 1.5 oz Styrian Goldings hops, 5.6% alpha acid (43 g) (60 min)
- 1 oz Styrian Goldings hops, 5.6% alpha acid (28 g) (30 min)
- 1 oz Willamette hops, 4% alpha acid (28 g) (10 min)
- Trappist or Belgian Abbey ale yeast

- Boiling time: 90 minutes
- Original gravity: 15.5 (1.061)
- Finishing gravity: 2.5 (1.010)

Use soft brewing water, acidified slightly if possible. Mash grains for 60 min at 154 degrees F (67 degrees C).

Extract method: Crush and steep Belgian aromatic malt, 110 L crystal malt, and chocolate malt in 150 degree F (65 degrees C) brewing water for 30 minutes. Strain, add extract and sugar, and bring to a boil.

Ferment at 68 degrees F (20 degrees C), transfer, and condition in a secondary vessel for several days before bottling.

Luckily, despite its popularity, Chimay's offerings remain some of the finest quality ales in the world.

One of the most distinctive qualities of these beers is the unusual combination of fruity and spicy flavors, which are products of the multi-strain yeast used. Added for both the primary fermentation and bottle conditioning, this yeast had been used at the monastery for over fifty years. As one would imagine considering the complex character of the brew, it is a fierce ester producer, and though Chimay ferments at fairly high temperatures, I've still had good results keeping fermentation below 68 degrees F (20 degrees C). Because Chimay does not add a different yeast for bottle conditioning, home brewers can often culture live yeast from store-bought bottles of the beer, as long as the bottles have been well kept. At least two yeast labs also have available "Trappist" yeast strains which are very similar in profile to the Chimay strain: White Labs Trappist ale yeast and Wyeast No. 1214 Belgian Abbey ale yeast. I recommend that one of these strains be used, if available, as bottle culturing can be risky in terms of sanitation.

Chimay uses German and American hops, and of course, Belgian barley. While

most of the flavor profile does come from the yeast, Chimay Premiere does have a noticeable hop presence. Goldings, while an English variety originally, works nicely for this beer. The finishing hops are subtle, but an aromatic, low-alpha American variety like Willamette or perhaps Mt. Hood should work well. As for the grain bill, using Belgian malts instead of domestics, especially the aromatic malt, does make a difference. Authentic Belgian candi sugar is not necessary, however—white table sugar will work just as well in this recipe.

When the beer is finished, keep in mind that Belgian Trappist beers have a long tradition of bottle conditioning, and that they are usually served with a livelier level of carbonation than most other styles. To respect that tradition, add a few tablespoons of priming sugar to the usual .75 cup (177 mL) per five gallons. In this case, dextrose, or corn sugar, is recommended over table sugar for best results. Bottle in heavy-gauge, corkable 750 mL bottles if possible. (Standard beer bottles are also fine, but regular wine bottles won't cut it.) Champagne corks are hard to find, as are Champagne corker machines, but plastic closures with wire cages are more readily available and hold pressure just as well, if not better. Sure, it takes away part of the mystique to use plastic, but they are easier to sanitize and insert, and you can also reuse them.

Finally, presentation of such a hard-earned homebrew must also be done with a little extra care. Goblet glasses are perfect for serving this style of ale, and like British real ales, temperature is also a factor: 45 to 50 degrees F is a reasonable range for most Belgian ales—colder temperatures tend to mask flavors.

Amahl Turczyn is the associate editor of Zymurgy magazine.

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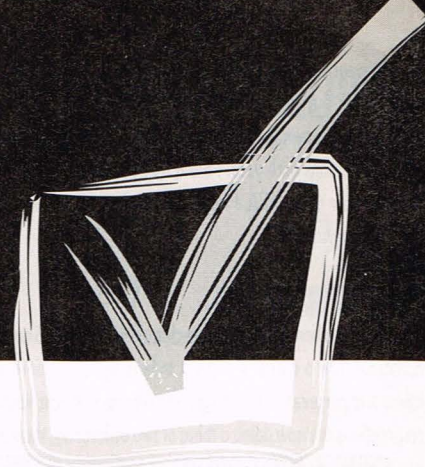
- Open to active AHA members only. Must be an active member at the time of drawing.
- Entry must be submitted by e-mail, fax, or mail. **NO PHONE CALLS.**
- AHA Board of Advisers, AOB staff, and Lallemand employees are not eligible.
- Only one entry per active membership.
- One entry for each additional sponsored member will be given to current AHA members. New members must name sponsor at the time of sign up. New members can sign up via e-mail, phone, fax, or mail.
- Winner agrees to have AHA and Lallemand publish information about the winner.
- Winner agrees to use scholarship within one year of date of winning.
- Winner agrees to write a report to Lallemand about course, which may be published.

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AHA BOARD OF ADVISORS ELECTION

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Scott Abene

No

Oak Park, Illinois

I believe what I would like to see happen in the AHA is fairly simple.

I want to see the national competition more widely publicized and run better. I want to see more BJCP judges in every round and less novice judge judging styles they know nothing about.

I want to see the AHA become more active in the club program. The AHA is the only org out there for us and it should be active in every aspect that it can be within the club system.

I would like to see the legalization of home brewing become more of a focus of the AHA. Many have complained about the lack of help that the AHA has given. Let's fix that and make it a priority.

More definitive style guidelines. Let's look at American styles and improve on the lack of them.

Education of home brewing in a wider arena.

More home brewers writing articles in *Zymurgy*. There is a ton of talent out there. Let's use it!

Support! Support! Support! Give the member a voice and not just a subscription.

Pat Babcock

NO

Canton Township, Michigan

Pat has been fermenting since a 7th grade Science Fair project (1975) on yeast. Due to the difficulty of obtaining information in that era, Pat has made it his goal to ensure that no brewer ever go wanting for quality information. This has prompted his personal website, involvement on AOL, hosting of the HBD, and the development of the HBD club hosting/site preservation project.

A recognized change leader at Ford Motor Company, Pat contributes excellent communication skills, a deep desire to keep parties informed and a balanced approach to problem resolution.

I would like to see the AHA become a more member-centric organization that truly listens and responds to the membership, delivering what the membership needs of the AHA in support of the home brewing craft.

Louis Bonham

No

Houston, Texas

I am honored to be considered, and thank the AHA for this opportunity.

For a number of reasons, over the past few years many advanced amateur brewers across the country have become disenchanted with the AHA. Recently, the AHA has taken real, dramatic steps to address many of these issues, including the restructuring of the Association of Brewers' Board of Directors and hiring Ray Daniels as the Editor in Chief of *Zymurgy*. From my conversations with Paul, Ray, and members of the AHA Board of Advisors, one of their major objectives is to reach out to these former AHA supporters and work with them in a common purpose: to promote the craft of amateur brewing.

I believe that I can contribute to AHA's efforts here. Through my experience with the MCAB, HBD, and *Brewing Techniques Magazine*, and my contacts with the HWBTA, BJCP, and numerous homebrewing clubs and industry sources across North America, I am aware of what this segment of the amateur brewing community would like to see in a national organization, what the AHA can do to attract it, and how to implement such programs effectively and economically. I welcome the chance to work with the AHA in this regard.

John Carlson, Jr.

NO

Louisville, Colorado

I began brewing in 1991 and am an American Homebrewers Association ("AHA") life member and NHC medalist. I hold the rank of National BJCP judge, sit on several BJCP committees and have written articles for *Zymurgy* and *The New Brewer*. I serve as the Executive Director of the Colorado

Brewers Guild, a non-profit corporation serving the legislative and business interests of the Colorado Craft Brewer. I live, brew and practice law in Boulder County, Colorado.

In 1993, I began a legal research project on behalf of the AHA in order to determine the status of state homebrewing laws. This study became the basis for the current effort to legalize homebrewing in all 50 states.

I am an active member of my local homebrew club, Hop Barley & the Alers'. For three years I organized the Reggale & Dredhop Homebrew Competition. The Dredhop is a large regional competition and has been selected to be a Qualifying Event ("QE") for the 1999 Masters Championship of Amateur Brewing ("MCAB").

I judge beer both on the homebrew and commercial level and have served on the GABF PPBT staff since 1995. I served as a GABF judge in 1999 and World Beer Cup judge in 2000. I brew once per month and enjoy Belgian styles, Mead and Pilsner.

My interest in serving on the BOA stems from my role as an industry advocate and devout hobbyist. If selected to serve on the Board I plan to use my experience and connection with the craft brewing industry to pump new life into the AHA. I am extremely proud of the American brewing industry and its history. The AHA plays a large role in helping to revitalize an interest in beer styles in the United States. I want to help accomplish that mission.

Stephen Mallery

Yes

Eugene, Oregon

I could talk about my love of great beer, my history of years in Europe and experience quaffing European classics, and about how I was drinking microbrewed beer since before it was fashionable. But the most relevant thing is my six years of experience with *Brewing Techniques* and my deep involvement in the home brewing and craft brewing industries. As an owner of a major magazine in the brewing community, I became acutely aware of the myriad issues facing all parties in the community - brewers, manufacturers and suppliers, retailers, and writers and publishers. I foresaw the recent decline before it hit, and I lobbied the HWBTA to initiate a publicity program to support and promote home brewing, beginning in 1996/1997. I eventually launched a publicity program myself, through the Homebrew Publicity Campaign, because I believed the challenges that the industry faces were real, the potential consequences dire, and that inaction would result in further declines. I know the risks firsthand, of course, because *Brewing Techniques* failed, a testimony to the reality of the decline in home brewing's vitality. I believe in the need for a strong national home brewing association, and I believe that among those in the trade AHA is in the best position to make a positive difference. As for what I bring to the table, I strive for careful and accurate analysis, and I believe in the power of communication to break down barriers and build consensus. I am not dismayed by the tension of opposing views, in part because I know that a middle way exists in all situations, and it's only ever a matter of time and communication before willing participants find constructive resolution. I would be pleased to be able to lend whatever I can to the effort of building the AHA, its relationships with other organizations, and the health and vitality of the greater home brewing community.

David Miller

Yes

Hermitage, Tennessee

I started homebrewing in 1975. In 1979, I began experimenting with all grain brewing; I believe I was one of the first people in this country to do so. Those experiments in turn led to the Homebrewer of the Year award in 1981, and the books and articles I have written since.

I cannot say that I still brew at home; since going pro in 1991, I brew in bigger batches, though with the same approach and enthusiasm. I have maintained my interest and commitment to homebrewing. I have been in the BJCP program since 1986 and continue to judge in several competitions each year. I am a founding and Life Member of the St. Louis Brews, and a long time member of the AHA. I would like to continue to serve the homebrewing community through the Board of Advisers.

Randy Mosher

Yes

Chicago, Illinois

American homebrewers have changed the world. Starting with nothing more complicated or ambitious than a desire to enjoy a wide range of delicious beers, we have, through enthusiasm, talent and perseverance, changed the commercial beer landscape here, and even abroad. Mega-corporations are now doing a thing or two differently, thanks in part, to us. Good beer is available nearly everywhere. And all this without a single protest, lawsuit or boycott.

Partly due to our unintended success, one of the most powerful reasons to brew — simply to get great beer — is less compelling than it once was, and consequently, our ranks are diminishing. I believe it is important to encourage the uniquely wonderful qualities of this hobby: fraternity, fun, experimentation, artistic creativity, curiosity and a dash of mad science. I see a growing tendency towards dogmatism, competitiveness, and self-indulgent exclusivity that I believe harms the hobby. I will continue to use my board tenure to expand the appeal of the hobby by helping to make it irresistibly energetic and engaging, reflecting the true spirit of homebrewing.

Lynne O'Connor

Yes

Austin, Texas

Lynne O'Connor, owner St. Patrick's of Texas Brewers Supply, homebrewing since 1987.

There are four areas in which I would like to move the AHA in order to broaden its support and increase membership.

1. Better day-to-day service including immediate membership registration. The AHA has a reputation for unprofessional and sloppy attention to the details of good business. It is imperative that this be corrected by implementing immediately a working policy that includes: attention to details, keeping members abreast of their orders, same-day membership cards and quick feedback on competition results.

2. New fresh avid homebrewers contributing to *Zymurgy* and AHA activities. The AHA has been blessed with many contributors over the years. Unfortunately, the number of new faces, writers for *Zymurgy* for example, has been very small. The AHA and *Zymurgy* needs to actively solicit articles and comments from the new converts to homebrewing.

3. The homebrewer today is more knowledgeable and makes better beer than homebrewers in the past. We must resist the 'been-there-done-that' attitude that deprives new brewers of the joy of discovery. We must continue to push the hobby forward with more accurate and better information.

4. The AHA is a consumer organization. The AHA must identify which concerns are consumer-oriented and which are industry-oriented. For example, the BJCP is a consumer group and it is undoubtedly in the interest of the AHA to reconcile with the BJCP. On the other hand, the HWBTA is an industry group and some of its past actions and objectives are not in the interest of the consumer. The AHA needs to address these issues in a much more candid and open forum.

My philosophy is that the new homebrewers of tomorrow should be excited that they have the opportunity to learn more and be better than the homebrewers of today or yesterday. It is that attitude that I would like to assist the AHA in projecting.

Martin Stokes

NO

Old Town, Maine

I grew up just outside Burton-on-Trent, England — the home of the gypsum water pale ale. I have been brewing beer, wine, and cider since 1972 and have taken numerous ribbons in homebrew competitions including the AHA Cider Maker of the Year Award in 1993. I am a national judge in the BJCP and have been judging for about 10 years. I have attended many of the AHA National Conferences since 1987 and have judged in the AHA regionals, the final judging at the meeting and at the AHA cider judging. I have organized one homebrew competition and judged at numerous others in the northeast.

I have taught homebrewing both privately and at a local shop in Orono, Maine for almost 10 years and I have taught a similar class in CED at the University of Maine. I am one of three faculty members who cooperatively teach a graduate level class on fermented foods.

I have been a guest brewer at two Maine brewpubs and brewed twice at the Bass Museum Brewing Company in Burton-on-Trent, England. I grew the yeast for the first brew at our local brewpub and continue to advise them on recipes, etc. I host the Brewmaster dinners at the pub and consult for the local natural foods shop which sells home brewing equipment and supplies.

I think my broad experience in home brewing and craft brewing will allow me to make valuable contributions as an AHA advisor.

Vote Now!

Election Guidelines:

Photocopy the ballot. (That way you don't have to cut a piece out of *Zymurgy*.) Read the statements. Candidates have also been invited to place additional campaign materials in the Board of Advisors section of <http://www.beertown.org/AHA/aha.htm>. Vote for FOUR (4) candidates by putting an "X" on the line next to the candidates name.

Fill in your name and membership number in the appropriate place. If you do not know your membership number, call us at 888-UcanBrew or email gary@aob.org to get your number. Only AHA members are permitted to vote. If you are not a member and would like to become one, call us at 888-UcanBrew and we'll set you up with a membership number on the spot.

Mail your vote in to Charlie Olchowski, AHA Board of Advisors Election, P.O. Box 1047, Greenfield, MA 01302-1047 by May 15th, 2000.

American Homebrewers Association Board of Advisors Election OFFICIAL BALLOT



Select the four (4) candidates you feel are best qualified to serve on the AHA Board of Advisors.

- | | |
|--|---|
| <input type="checkbox"/> Scott Abene | <input type="checkbox"/> David Miller |
| <input type="checkbox"/> Pat Babcock | <input type="checkbox"/> Randy Mosher |
| <input type="checkbox"/> Louis Bonham | <input type="checkbox"/> Lynne O'Connor |
| <input type="checkbox"/> John Carlson, Jr. | <input type="checkbox"/> Martin Stokes |
| <input type="checkbox"/> Stephen Mallery | |

**BALLOTS MUST BE
POSTMARKED NO
LATER THAN
MAY 15, 2000**

Name _____ Membership Number _____

Signature _____

Mail completed ballot to: Charlie Olchowski, AHA Board of Advisors Election,
PO Box 1047, Greenfield, MA 01302-1047

PAUL GATZA

Bill Pfeiffer

On February 26, the Ann Arbor Brewers Guild gathered at the home of Bill Pfeiffer to bottle the Commemorative Mead for the Year 2000 AHA Conference in Detroit. The bottling was a bittersweet affair, as it was done with the knowledge that Bill had completed his attempts to battle his cancer, and was making the most of the time he had left.

Bill has few peers when it comes to his history in the AHA and the Beer Judge Certification Program. Bill began brewing in 1976. He was present when the BJCP was conceived and begun. Bill has won numerous first place awards for his meads in the NHC and the Mazer Cup. He was critical to the growth of homebrewing in Michigan.

In my first ever edition of *Zymurgy* (Summer, 1988), I saw an article about five guys who were the first to reach National judge status. One of them was a guy named Pfeiffer from Wyandotte, Michigan, a mere ten minutes from my home. With some considerable trepidation, I called him up; he cheerfully invited me to bring some beer over to his house to taste, and a fast friendship was soon formed.

To acknowledge Bill's contributions to the hobby, the AHA recognized Bill with its Lifetime Achievement Award on February 26. I had the distinct pleasure of presenting Bill with the award. It was one of the most satisfying and at the same time difficult things I have ever done. Bill was truly touched, and it was a very emotional time for everyone present. Bill taught me about water chemistry, about yeast starters, about international bittering units, and a tremendous amount about mead making. We brewed many batches together, and often shared the 40 mile ride to Ann Arbor Brewers Guild meetings. Bill gave me my first taste of Sierra Nevada Pale Ale. He taught

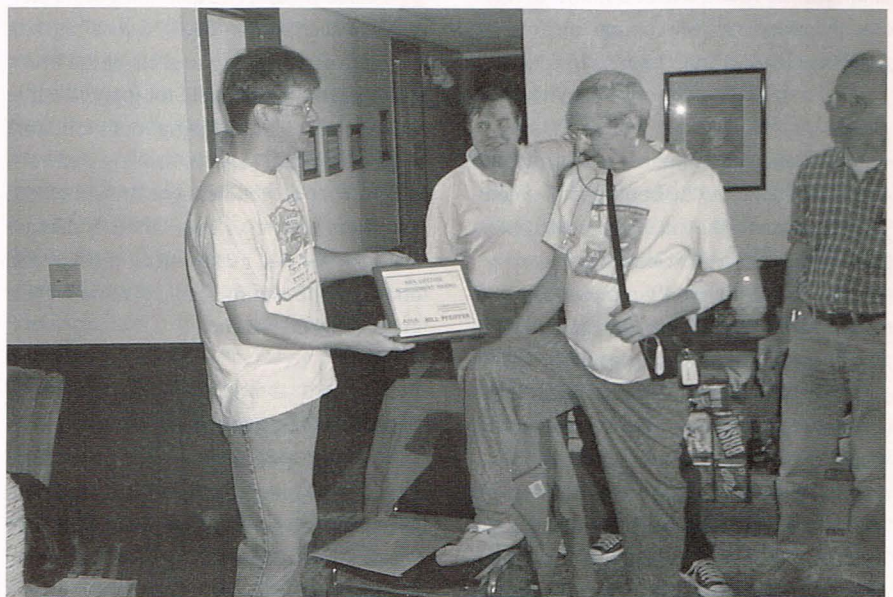


AHA Y2K Celebration Mead National Homebrewers Conference June 22-24, 2000--Livonia, Michigan

This mead was designed and created by renowned mead maker Bill Pfeiffer at his home on September 6, 1999, with help from Arnold Neitzke, Dan McConnell, Ken Schramm and Carol Messina.

The mead was crafted from 66 lbs of honey and 14 lbs North Star cherries, 6 lbs Obladinska cherries, 4 lbs Pozog cherries, 28 lbs Heritage and Latham raspberries, filtered reverse-osmosis water, pectic enzyme, yeast nutrient and a starter mixture of three yeast strains. It was bottled February 26, 2000, shortly before Bill's death. We celebrated long and hard that day, but mostly we celebrated Bill Pfeiffer. May his memory live on forever, and always be sweeter than his mead.

Bottles for this mead were donated by Abita Brewing Co., whose prompt generosity in a pinch allowed Bill to see this mead bottled before his passing. Abita Brewing Co. LLC, Abita Springs, Louisiana, 1-800-737-2311.



Ken Schramm presents Bill Pfeiffer with the first ever AHA Lifetime Achievement Award.

me the value of honest but never harsh or incendiary judging. Bill had the most positive outlook on life of anybody I have met. He would take joy from every aspect of life,

and especially from every aspect of brewing. I did not brew a batch with Bill, or attend a judging during which Bill didn't comment gleefully about how much he loved this



Michigan homebrewers bottling the commemorative mead for the AHA National Homebrewers Conference.

hobby. In his final days, in much pain and dying of cancer, he said, "I am so glad I am getting a chance to say goodbye to all the people that I love. I am so lucky."

I am lucky to have known Bill. I am lucky to have made and bottled his Commemorative Mead with him, and to have had the chance to brew, and to hunt, and to celebrate life with Bill. I am so lucky.

—Ken Schramm

I was one of the number who turned up at Bill Pfeiffer's for the bottling of the commemorative mead. And to say goodbye to a dear friend and a great brewer.

In the short time I've known Bill, we have formed a lifetime of friendship. This is not because I'm anything special. No. It is entirely Bill's doing. Bill quietly inspires those around him to attain greatness in our brewing.

I remember when I first met Bill at the first Ann Arbor Brewers Guild meeting I was ever invited to. It was at Guild member Spencer Thomas' house the summer of 1995. Scott Henry (faithful sidekick) and I took Spencer's invite and traveled to Ann Arbor to meet with these people, many of whom we only knew from their postings to the HBD. I recall standing there, empty glass in hand and this salt-and-pepper haired gentleman filled it with a beer he

made to "empty his pantry" of all the odds and ends he had laying around.

What I tasted was a perfectly balanced, deliciously malty Belgian Tripel. "Wow! Who is that guy?!" I asked. "Bill Pfeiffer" was the response.

I made good beer, but nothing so masterfully concocted from "odd and ends" as that.

Bill was perfecting aspects of the brewing craft we all now take for granted while we were all still mucking about with table sugar and bread yeast or swilling Budweiser. Over time, mead caught Bill's interest, and there has never been another meader like him. No one makes mead the way Bill does, no one attains his level of perfection in the finished product.

—Pat Babcock

Club-Only Competition News

The AHA would like to thank past club-only winner Matt Stinchfield and the Rillito Creek Homebrew Club for hosting the "My Barley Doesn't Whine" AHA Club-Only Competition in January. Matt did an especially fine job creating and maintaining the competition website. This competition was the fourth one in the August to May cycle with points going toward the Homebrew Club of the Year trophy on a six points for first, three for second and one for third basis. Other points for clubs are scored in the first

and second round of the AHA National Homebrew Competition. Thanks to everyone who entered. There were 37 entries:

Congratulations to the following winners:

First Place

Rob Clucas, representing the Kansas City Bier Meisters, with his English-Style Barleywine.

Second Place

Don Darst, representing Capitol Brewers, with his American-Style Barleywine called "Ol '99 Barleywine."

Third Place

Brain Cole, representing Mountain Ale and Lager Tasters with his American-Style Barleywine called "Y2K Barleywine."

Weiss is Nice Club-Only Competition

The May AHA club-only Competition sees the return of "Weiss is Nice," hosted by Bruce Thomas and the Dead Yeast Society. One entry per club will be accepted in Category 17 Wheat Beer in subcategories 17A. Bavarian Weizen, 17B. Bavarian Dunkelweizen, 17C. Berliner Weisse and 17D. Weizenbock. The entry window is May 7th to 13th. The mailing address is Weiss Is Nice AHA Club-Only Competition c/o Dead Yeast Society, 506 Robinhood Circle, Lafayette, LA 70508. Judging will take place between May 18th and 20th.

Homebrew Club of the Year Standings

Points	Club
12	Kansas City Bier Meisters
7	Capitol Brewers
6	Brew Angels
6	NET Hoppers
3	Brewers United for Real Potables (BURP)
3	Derby Brew Club
1	Ann Arbor Brewers Guild
1	Cincinnati Malt Infusers
1	Mountain Ale and Lager Tasters (M.A.L.T.)

Homebrewer Paul Gatz is the softball coach for Hop Barley and the Alers, a Boulder, CO homebrew club.

PETA

Research Shows Beer Is Better Than Milk

A nutritional comparison of beer and milk done by PETA, People for the Ethical Treatment of Animals, shows that beer is better for you than milk. Here's why: beer has zero fat, while milk is loaded with it; beer has zero cholesterol, while milk contains 20 mg of cholesterol in every 8 oz serving; beer doesn't contain hormones or antibiotics, while most brands of milk contain an ever-increasing variety of the pesticides and antibiotics fed to cows; beer has half a gram of fiber in every cup, while milk has none; beer has only 12 mg of sodium per 122 mg, while milk is sky-high in sodium; and finally, PETA claims that the high animal protein content of milk actually leaches calcium from the bones, while beer does not. This should come as good news to college students, the press release also stated. "PETA wants undergrads to know that the foam moustache should be from a brew, not a 'moo.'"

American Beer Month Slated for July 2000

The Institute of Brewing Studies (IBS), with the help of its brewery members and state brewers guilds, has selected July 2000 for the first annual American Beer Month. It is intended to be a national promotional campaign designed to raise awareness of the variety and quality of American craft beers. As sales of import brands continue to rise in the U.S., many brewers also feel it is a great way to remind consumers that some of the best beer available in the America is and has been brewed domestically.

American Beer Month was created last October during the Great American Beer Festival when IBS members and state craft brewers guilds met to brainstorm possibilities for a national craft beer advertising campaign. Knowing the necessary funds for national-level advertising would be difficult to raise, yet eager to channel the industry's collective grassroots energy into a new campaign, the group of 50 asked the IBS to move forward with the project.

American Beer Month will provide many different avenues for celebration and promotion. State brewers guilds will organize beer festivals and beer dinners. Individual brewpubs, microbreweries and regional breweries will organize their own events, inviting other restaurants or breweries to partner with them, or will highlight their own examples of American brewing and American beer cuisine.

Brewpubs and Micros may wish to feature a seasonal example of a classic American beer style, providing patrons with information about the beer's history, the origin of its ingredients, and perhaps how it compares with the brewery's usual beer styles. Brewpubs might choose to offer a special food selection which complements or even includes the featured beer style. Tastings or beer dinners including other strictly American styles might also be a relevant way to celebrate, or perhaps for joint brewery or brewpub efforts, small local festivals featuring American-brewed offerings from each brewery could be organized. American Beer Month can also be embraced by companies in the business of selling beer, such as wholesalers, taverns and retailers. All events would be united under the American Beer Month umbrella, with promotional packages, posters and copies of the official logo available to participating organizations through the IBS.

July was chosen for the event because of the inclusion of the July 4th holiday, which is one of the biggest beer sales weekends of the year. Several of the country's most successful beer festivals are also held in July.

The IBS will promote American Beer Month by working with other associations including brewers associations and state guilds, but also wholesaler, retailer and restaurant associations; barley and hop growers; suppliers of packaging materials; and local homebrew clubs. The IBS will also compile a calendar of events listing American Beer Month-related functions across the nation on the www.beertown.org website.

The IBS has also released the first look at the official American Beer Month logo. A sample of the logo is available from the IBS. The logo will be used by each participant to show their support of the celebration and to create a unified appearance, thereby creating instant recognition with consumers.

American Beer Month will provide many different avenues for celebration and promotion by breweries, brewers guilds, wholesalers, restaurants and other brewing-related companies across the nation. In a strong show of support, 19 brewing organizations from throughout the U.S. have officially given their endorsement of American Beer Month. "The Master Brewers Association of the Americas (MBAA) is glad to endorse the objectives of the American Beer Month initiative, as these are in alignment with our mission of promoting the interest of the brewing profession and industry," states Hugo Patino, president of the MBAA. "This project enriches the diversity of the art and



Institute for Brewing Studies Presents
American Beer Month
Celebrating the Pride and Heritage of American-Brewed Beer

craft of brewing with our brewing professionals and with our consumers."

For more information contact JoAnne Carilli, Marketing Director, Association of Brewers at Joanne@aob.org or by phone at (303) 447-0816 x144.

The Bud Battle Continues



Anheuser-Busch has been only marginally successful in its campaign of court battles with Budejovicky Budvar n.p., to gain

exclusive rights of the name Budweiser. The Czech brewery, which makes Budweiser Budvar, has recently reported a victory over the world's largest brewing company, however. Lawsuits brought by A-B were thrown out in the countries of Latvia and Lithuania, allowing Budvar to continue to sell its products under the name of Budweiser there. Budvar is banned from selling its products in the U.S., while in Switzerland, the court ruling went the other way, banning Anheuser Busch from using the name. Countries like the U.K. have

ruled that the name can be used by both companies. Budweiser is the German name for the town of Ceske Budejovice, where Budvar has been brewed for over one hundred years.



GUINNESS

Guinness Bubbles: Up or Down?

Professor Clive Fletcher and his students at the University of New South Wales, Sydney, Australia, have used the latest industrial computer simulation methods to solve the apparent mystery of why the bubbles in a freshly-poured glass of Guinness appear to move downwards rather than upwards. The research team simulated the motion of the bubbles using FLUENT computational fluid dynamics (CFD) software from Fluent Incorporated to attack the problem. CFD simulations allow engineers to graphically depict fluid flows, pressure, temperature, and chemical concentration at any location, making it possible to quickly gain a better understanding of any problem involving fluid flow.

Fletcher's team used this software to simulate the motion of the bubbles and discovered that, as expected, most bubbles do move upwards. The bubbles in the center of the glass, free from the effects of the wall, move upwards most quickly and drag liquid with them. But the liquid moving up in the center of the glass, having nowhere else to go, must eventually turn towards the walls and start to move downward. The liquid moving downward near the walls tries to drag down bubbles with it. Larger bubbles have sufficient buoyancy to resist but smaller bubbles (less than 0.05 mm) are continuously dragged to the bottom of the glass.

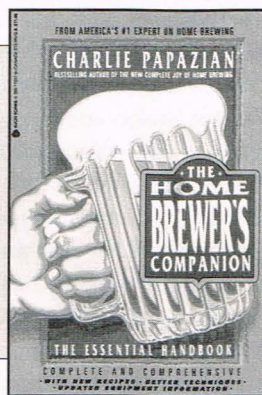
These results can be clearly seen in animation of the simulation results that is available at www.fluent.com/news/pressrel/guinness/tsld001.htm. The animation, which is based on the actual physics, clearly shows the bubbles moving downwards around the edges of the glass. Of course, the primary use of FLUENT CFD software is solving far more serious fluid flow problems, like helping to design the escape vehicle for the International Space Station.

Amahl Turczyn is the Associate Editor of *Zymurgy*.

LOGOS COURTESY OF ANHEUSER-BUSCH INTERNATIONAL, INC. AND GUINNESS IMPORTS

BREW YOUR OWN — WITH HELP FROM THE EXPERT!

Charlie Papazian, America's leading authority on home brewing, offers readers two comprehensive, in-depth guides to brewing everything from the lightest lager to the darkest stout.

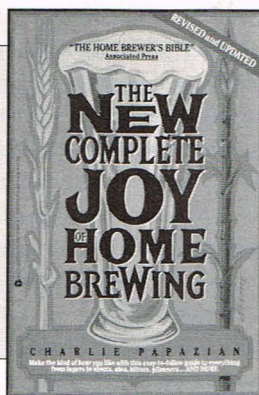


THE HOME BREWER'S COMPANION takes readers to the next level of home brewing expertise. It includes sections on:

- The effects of the water used (the amount of calcium, minerals, chlorine and salts present can completely change the taste and style of the beer being brewed)
- Hops varieties, mashes and grains
- Typical problems encountered during the brewing process and how to go about solving them
- Dozens of delicious new recipes and tips on how to create your own recipes
- Information on beer evaluation, handling and storage

THE HOME BREWER'S COMPANION

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\$11.00 464 pages



THE NEW COMPLETE JOY OF HOME BREWING is the original home brewing bible. Perfect for the beginner, intermediate or advanced home brewer. It includes:

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- A fully illustrated guide including simple, easy-to-follow explanations of each step of the home brewing process
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AVON BOOKS
The Hearst Corporation

Wine and Brew Techniques

Dear Professor Surfeit,

I have read that if you let your cooled wort settle and rack it off of the trub before pitching your yeast, you can achieve cleaner tasting and clearer beer. I am interested to try this, but I want to take it a step further and was wondering if I am totally insane to try this.

I was thinking of borrowing a practice from winemakers (yes we might be able to learn from them) and add a 1/4 tsp. of potassium metabisulfite to the wort and let it sit overnight before racking and pitching. I want to utilize the sanitizing properties of the SO₂ that is produced from the metabisulfite to protect the wort from infection. According to all of the home winemaking literature I have access to, the SO₂ should dissipate within 24 hours so as not to inhibit the "good" yeast from multiplying after pitching. Any remaining SO₂ should be "scrubbed" out with a healthy primary fermentation.

Well what do you think? Have I overlooked the obvious? Is beer yeast as resistant to SO₂ as wine yeast and will this have a major effect on the taste of the finished beer? Have my adventures into winemaking clouded the eyes of my homebrewer soul? Any thoughts on this would be greatly appreciated.

Brewers make wort, yeast makes beer.

Steven Leitten
North Chautauqua Homebrewers
Dunkirk, New York

Dear Steven,

Hmmmm. Seems like you've been enjoying some very good homebrew. After all that is what good ideas are borne of—relaxing, not worrying and having a homebrew. Your idea deserves merit. However I can not speak

from experience, though I too have made wine on occasion and have used the metabisulfite routine. You are right it works with wine. Why not with beer? I suppose it will work. Though I can't help but recall that a little sulfite character sometimes adds a tone of complexity to wine that is desired by some. Would that complexity be welcomed in beer? I don't know. My guess is no, but then again the sulfite complexity we speak of in wine is probably contributed during the final bottle sanitization process and not by the initial treatment prior to fermentation.

Okay, let's suppose you sulfite your wort. After twenty-four hours it dissipates and has sanitized the wort. What have you gained? Perhaps a more compact trub sediment. Okay you win. But you've lost a day and time's a wasting. What I've done in

the past when my concerns took me down the path you are going now, is to let the trub settle for a couple of hours. Rack the clear beer off into another fermenter. Pitch the yeast (remember, time's a wastin') and then siphon off that beer and trub, that you couldn't cleanly separate, into a gallon jug. Put the jug in the refrigerator overnight. Now you'll have a good separation of trub from the clear beer. Simply pour the clear beer off into your now fermenting beer.

I don't mind getting a little trub into the fermentation. In fact a little trub is good in that it provides needed nutrients for healthy fermentation.

Hope this provides some good insights. You are on the right track m'boy.

*Keep on brewin'
The Professor, Hb.D.*

Charging Eisbock

Dear Professor Surfeit,

I would like to brew an Eisbock but am curious about carbonating the final product. It is my understanding that once I freeze the beer and remove any surplus frozen water I can assume any leftover yeast as dead. Therefore, how should I prime my beer and how do I calculate how much new yeast (if any) to add. Would a packet of dry yeast and the usual amount of priming sugar do it? (I plan to bottle) I have decided that I have lousy well water so I now brew with bottled water, however I still use my well water for all my sanitation needs. I don't think there are any real pathogens in the well water, just an unpleasant taste. Should this affect anything? Thanks for your help—not worried just curious and thirsty.

Steve Lineweaver
Salisbury, Maryland



Hey Steve-o,

Man oh man, I hope there aren't any pathogens in your well water for your own general well being. Don't want you to get typhoid or cholera. If in doubt, have it checked out—please.

About your Eisbock—you are on the dead center, right on track! Yes, when you prime with your carbonating sugar the easiest quality thing you can do is to rehydrate some dried lager yeast (for lagers) and add it to the beer and sugar-prime just before bottling. Dried yeast is easy and because of how it has been dried, doesn't need the oxygen charge that a liquid cultured kraeusening yeast would require. Purist brewers of Eisbock would use all malt wort for priming sugar and use a cultured liquid yeast that is just past the respiration cycle. Dried yeast is just fine.

Go for it and enjoy, man.

*Rockin' out with Eisbock,
The Professor, Hb.D.*

Real Coffee Flavor—Revisited

Dear Professor Surfeit,

I waited to delve into the latest issue of *Zymurgy* until I boarded my plane home to Colorado for the holidays. When I stumbled across Jeff Petruso's article on the best way to use coffee in his brewing, it hit close to home so I had to write in on it.

My first professional brewing position was right in your back yard actually as the assistant in the Mountain Sun Brewpub in Boulder Co. While I was there I learned some important lessons on how to best use coffee and I have carried them with me out to Washington. The first time I used coffee we mashed the grind right in at about 50 minutes. Thus the coffee was boiled. The result was a lot of coffee, a lot of oil killing our head retention, and a loss of aroma and flavor. When Mike Altman took over the brewery, he showed us all a better way that proved very worthy. We started making "Toddy" and adding it right into our bright tank as we racked over from primary fermentation. To apply this to the homebrew arena, and stop before I give away Mike's secrets to a marvelous Java Porter, I will quickly show how I have used it in Washington.

I did a cask-conditioned Java Porter that turned out to be wonderful, and this is what I did: For a 15.5 gallon batch I simply took about 0.38 pound of finely ground robust coffee. I then took a China Hat and a filter and ran just over a quarter gallon of water through the grounds, 0.26 gallons of water. Then I took the liquid and repeated this by recirculating through the grind four times and let it sit in my conditioning cellar overnight, and then the coffee was ready to be added. I racked 15.5 gallons of wort off of a batch of fermenting Porter. It was the third day of fermentation.

I added the coffee, then the wort, and began a secondary fermentation. About 5 days at room temperature and a week in the cellar it was ready to go. The result was a great coffee flavor and aroma to complement a mildly sweet chocolatey Porter. The cask really brought out the flavors and I found that the bitterness of the coffee grind was nicely balanced actually by the natural sweetness of our Porter.

I tend to write longwinded so I just thought if I threw this out there you could in turn let Jeff and others know what I have learned, if you find this experience one of merit.

Enjoying your publication,

Jason Mangone

Brewer for the Engine House #9 Brewpub
in Tacoma Wa.

Dear Jason,

Wow! Thanks for all the insight. A lot of good wisdom here. One question I have is, is the water you pass through the China Hat cold water or hot water? The big issue



here is that you've confirmed what coffee lovers know—don't boil your coffee! I really like the idea of "brewing" the concentrated coffee just before you add it and adding it just before bottling or kegging time. What a treat.

*Expressively Espresso,
The Professor, Hb.D.*

Gasping for the Facts

Dear Professor Surfeit,

Zymurgy should put a big notice out in their next issue that Prof. Surfeit missed the main reason you do not want to use your propane burners in the house. Thankfully, he did recommend not doing it (in a reply to a query by a reader Francisco Jones in the Jan./Feb. 2000 "Dear Professor" column.) The main reason you do not want to do this is because propane gas is heavier than air; and wouldn't you know, homebrewing is the very activity that is most likely to create the deadly scenario of having non-burning gas spew out into the house, pooling in the lowest areas (where maybe there is a pilot light?); why homebrewing? is there a homebrewer present who has not had boil-over when boiling wort? Would that person please raise his hand so we know who the liar is? Have a boil-over inside your house with a propane burner, odds are it will put out the fire, and you can guess the rest.

Apparently fires have been started just with a guy using his propane BBQ in his garage—also not recommended. They must be used outside only! ONLY! It is just not worth the risk, and please get the word out.

Sincerely,
Carl Williams
Arlington, VA

Dear Gas Master,

You have made the point explosively interesting. Thanks for setting me straight.

The Professor, Hb.D.

Send your homebrewing questions to "Dear Professor", PO Box 1679, Boulder, CO 80306-1679; FAX (303) 447-2825 or professor@aab.org via e-mail.

Fred's Polish Sweetheart—Dojlidy Porter

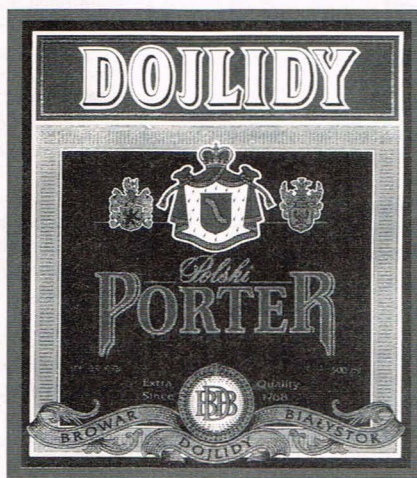
Fred Eckhardt has been an icon in the homebrewing world since the 60s. He literally wrote the book on making Japanese rice wine, or sake, at home, so unsurprisingly he preferred to name a favorite sake rather than a favorite beer.

Eventually though, we were able to twist his arm. And Fred's brew of choice turned out to be a very interesting one: Dojlidy Polski Porter. Not exactly a household word even among beer aficionados, but as we found out, it was quite a worthy choice regardless.

According to Fred's own research on the style, Polish porters originated from British porters, which were imported by the court of Empress Catherine the Great. Like the famous Imperial stouts, they quickly gained a cult status in and around Russia, and by the end of the nineteenth century, Baltic brewers began to imitate the style using their own bottom-fermenting yeast strains. The style was also popular in the old Communist block countries, especially Poland and the old Baltic Republics of Estonia, Latvia, and Lithuania.

Fred's endorsement was right on target; the beer is delicious.

Weighing in at around 19.5 degrees Plato (1.080), with roughly 8% alcohol by volume, Dojlidy drips with chocolate flavor and aroma. There is also a hint of port-like wininess in the aroma, and a little warmth in the finish from the higher alcohol. A rich, smooth malt character one would expect from a traditional German



doppel bock is also evident, no doubt a result of the use of lager yeast rather than ale yeast. Fred recommends eating chocolate chips with the beer, but with that suggestion the phrase "gilding the lily" comes to mind—there's already so much there that any more might be considered decadent.

To brew a strong porter in the Baltic style, Fred recommends a grain bill of pale, amber (or dark Munich), crystal, chocolate and black malts, molasses or dark candi sugar (no more than 20% of the total extract) and perhaps a small amount of brewer's licorice. Lager yeast lends the characteristic smoothness, and although the Dojlidy appears to be filtered, bottle conditioning would probably be just as, if not more, authentic to the style. For further research, a few other examples of the style include; Kunze's Deutscher Porter

Polish Porter

Recipe for 5 US gallons (19 L)

- 15 lb pale malt (6.8 kg)
- 0.5 lb molasses or dark candi sugar (.23 kg)
- 0.5 lb 15 L crystal malt (.23 kg)
- 0.5 lb 80 L crystal malt (.23 kg)
- 4 oz black malt (113 g)
- 4 oz chocolate malt (113 g)
- 4 oz dark (20 L) Munich malt (113 g)
- 2 oz Polish Lublin hops, 4.5% alpha acid (57 g) (90 minutes)
- 0.5 oz Polish Lublin hops, 4.5% alpha acid (14 g) (30 minutes)
- Wyeast 2308 Munich Lager Yeast
- 0.75 cup corn sugar (177 mL) or 1.25 cup dry malt extract (300 mL) to prime

Extract method:

Steep milled specialty grains in 150 degrees F (65.5 degrees C) brewing water for 20 minutes. Remove grains, bring wort to a boil, and remove the pot from the stove. Add sugar and 9.75 lb (4.4 kg) pextra light dry malt extract in place of the pale malt.

- Original gravity: 1.087
- Final gravity: 1.025
- Boiling time: 90 minutes

Primary fermentation:

47 to 52 degrees F (8 to 11 degrees C) for 2 weeks

Secondary fermentation:

57 to 62 degrees F (14 to 17 degrees C) for 4 weeks

Tertiary fermentation:

40 degrees F (4 degrees C) for 2 months

According to Fred's own research on the style, Polish porters originated from British porters, which were imported by the court of Empress Catherine the Great.

at an original gravity of 18 degrees Plato (1.074), Okocim Polish Porter at O.G. 19.8 Plato (1.081), and Sinebrychoff Porter from Finland at O.G. 18 Plato (1.075).

Amahl Turczyn is the associate editor of Zymurgy magazine.

APRIL

21-30 American Homebrewers Association National Homebrew Competition. Rules and regulations in Jan./Feb. issue of *Zymurgy* as well as on the NHC 2000 webpage. First-round entries due by April 14. Shipping addresses for first round sites are published in the Mar./Apr. issue of *Zymurgy* and are listed on the NHC 2000 webpage. Contact Gary Glass, AHA Administrator, at (303) 447-0816 x 121 or email: gary@aob.org, <http://www.beertown.org/AHANH/C/aha2000.htm>.

22 High Desert Brewers Spring Thing, AHA SCP, Idaho Falls, ID. Entries due by 4/17/00 with \$5 for the first entry, \$4 for additional entries. Contact Don McNeal at (208) 238-9738, <http://cyberhighway.net/~hdbs/>.

29 B.E.E.R. 4th Annual Homebrew Competition, AHA SCP, Nesconset, NY. Entries due 4/15/00 with \$5 entry fee. Contact James B. Thoms at (631) 269-5833, email: Thomsjam@email.msn.com, <http://www.homebrewshop.com>.

MAY

6 Big Brew 2000. Simultaneous brewing across the globe. Contact the AHA at 1-888-UI-CAN-BREW, (303) 447-0816, email: aha@aob.org, <http://www.beertown.org/AHA/BB2000/bb2000conf.htm>.

6 7th Annual Sin City Sudzders Homebrew Competition, AHA SCP, Sheboygan, WI. Entries due 5/2/00 through 5/5/00 with \$5 entry fee. Contact Rick Woods at (920) 467-9962 or (920) 457-4441 x 7-2834, email: rick.woods@kohler-co.com, <http://www.dataplusnet.com/homebrew>.

6 Green Mountain Homebrew Competition, AHA SCP, Burlington, VT. Entries due 4/1/00 through 4/28/00 with \$5 entry fee, \$4 each for 5 or more. Contact Dan Marshal at (802) 862-7667.

6 4th Annual Western New York Homebrew Competition, AHA SCP, Buffalo, NY. Entries due 4/17/00 through 4/28/00 with \$7 for the first entry, \$5 for additional entries. Contact Keith Curtachio at (716) 877-8767, email: goodbeer@niagarabrewers.org, <http://www.niagarabrewers.org>.

6 Ice Harbor Brewing 1st Annual Homebrewers Contest, AHA SCP, Pasco, WA. Entries due 2/1/00 through 5/1/00 with \$5 entry fee. Contact Kelly Cox at (509) 521-5253 or the brewery at (509) 545-0927, email: kellacox@aol.com, <http://www.iceharbor.com>.

6 7th Annual Peach State Brewoff, AHA SCP, Atlanta, GA. Entries due 4/17/00 through 4/28/00 with \$6 entry fee. Contact Marlon Hurst at (770) 761-9448, email: mjhurst@bellsouth.net, <http://www.coverthops.com>.

7 Northern Brewer Homebrew Competition, AHA SCP, St Paul, MN. Entries due 4/17/00 through 4/26/00 with \$8 for the first entry, \$6 for additional entries. Contact Chris Schiffer or Chris Farely at (651) 291-8849, email: mail@northernbrewer.com, <http://www.northernbrewer.com>.

15-20 UNYHA 22nd Annual Homebrew Competition/11th Empire State Open, AHA SCP, Rochester, NY. Entries due 4/12/00 through 5/6/00 with \$5 per 3-bottle entry. Contact Tina Weymann at (716) 482-3346 (h) or (716) 231-1212 (w), email: tweymann@hseilaw.com, <http://ggw.org/unyha>.

18-20 Weiss is Nice AHA Club-Only Competition, AHA COC, Lafayette, LA. Hosted by the Dead Yeast Society. Entries due 5/7/00 through 5/13/00 with \$5 entry fee (make checks payable to the AHA). Contact Bruce Thomas at (337) 993-0017 (h) or (337) 233-8240 x 2347 (w) email: bruce.thomas@att.net, http://www.beertown.org/AHA/1999_aha_coc.htm.

19-20 Oregon Homebrew Festival, AHA SCP, Corvallis, OR. Entries due 5/1/00 through 5/15/00 with \$5 entry fee. Contact Mark Kowalski at (541) 752-2008 (h) or (541) 715-8574 (w), email: mhkowalski@home.com, <http://www.hotv.org/fest2000>.

19-21 11th Annual Sunshine Challenge, AHA SCP, Orlando, FL. Entries due 4/24/00 through 5/8/00 with \$6 entry fee. Contact Ron Bach at (407) 696-2738 (h) or (407) 897-2880 ext. 136 (w), email: bachian@juno.com, <http://www.cfhb.org>.

20 Great Bear Beer Hunt, AHA SCP, Wasilla, AK. Entries due 5/19/00 with \$4 entry fee. Contact Lowell Burgett at (907) 373-0885, email: lb@micronet.net, <http://www.greatbearbrewing.com>.

20-21 Hops Annual May Fest III, AHA SCP, Tacoma, WA. Entries due 4/17/00 through 5/18/00 with \$7 for first entry and \$5 for each additional entry. Contact Jeff King at (253) 843-2817, email: Jeffking1958@earthlink.net, http://members.tripod.com/Homebrewers_o_P_S/.

21-22 8th Annual Great Alaska Craft Beer and Homebrew Festival, AHA SCP, Haines, AK. Entries due 5/18/00 with \$10 for 5 entries and \$2 each for additional entries. Contact Dorothy Sargent at (907) 766-2000, email: halsinglan@aol.com.

28 Guinness Import Co. and Renaissance Pleasure Faire's 11th Annual Elizabethan Home Brew Competition, San Bernardino, CA. Entries due 5/7/00 through 5/12/00 with \$10 entry fee. Contact Laurie Poel at (909) 880-6211.

JUNE

4 Capitol Brewers 6th Annual Mill Creek Classic, AHA SCP, Salem, OR. Entries due 5/25/00 with \$5 each for the first 3 entries, \$4 each for additional entries. Contact Brian Knaupp at (503) 623-9902 (h) or (503) 551-6051 (w), email: bknaupp@earthlink.net.

4 Celtic Brewoff, AHA SCP, Arlington, TX. Entries due 5/6/00 with \$6 entry fee. Contact JB Flowers at (817) 467-0398 (h) or (817) 472-4241 (w), email: APIC8@aol.com, <http://www.hbd.org/kobb/>.

JULY

1 Mother Lode Fair, AHA SCP, Sonoma, CA. Entries due 6/17/00 with \$5 entry fee. Contact Jan Haydn-Myer at (209) 532-7428.

15 6th Annual Commander SAAZ Interplanetary Homebrew Blast Off, AHA SCP, Melbourne, FL. Entries due 6/23/00 through 7/12/00 with \$6 entry fee. Contact William "Billy" Kendrick at (321) 639-7022 or email: Commander saaz@msn.com.

15 Ohio State Fair Homebrew Competition, AHA SCP, Columbus, OH 43211. Entry forms due 6/20/00; bottled entries due 7/10/00 through 7/14/00 with \$5 entry fee. Contact Brett Chance at (614) 771-1536 (h) or (614) 644-4126 (w), email: b.chance@expo.state.oh.us, <http://www.ohiostatefair.com>.

15-19 E.T. Barnette Homebrew Competition, AHA SCP, Fairbanks, AK. Entries due 7/5/00 through 7/12/00 with \$5 entry fee. Contact Scott D. Stihler at (907) 474-2138 (h) or (907) 474-5450 (w), email: stihlerunits@mosquitonet.com.

AUGUST

9 San Mateo County Fair Amateur Homebrew Contest, AHA SCP, San Mateo, CA. Entry forms due 7/8/00, entries due 7/21/00 through 7/22/00 with \$4 entry fee. Contact Lizett Llamas at (650) 574-3247, email: info@smexpo.xo.com, <http://www.sanmateoexpo.org/fair>.

AHA SCP = American Homebrewers Association Sanctioned Competition Program

The Calendar of Events is updated weekly and is available from the Association of Brewers: info@aob.org or www.beertown.org on the web.

To list events, send information to *Zymurgy* Calendar of Events. To be listed in the July/August 2000 Issue (Vol. 23, No. 4), information must be received by May 9, 2000. Competition organizers wishing to apply for AHA Sanctioning must do so at least two months prior to the event. Contact Gary Glass at gary@aob.org; (303) 447-0816 ext. 121; FAX (303) 447-2825; PO Box 1679, Boulder, CO 80306-1679.

18-20 12th New Mexico State Fair ProAm Beer, Mead & Cider Competition, AHA SCP, Albuquerque, NM. Entries due 7/24/00 through 8/5/00 with \$5 entry fee. Contact Guy Ruth at (505) 294-0302 (h), email: guyruth@abq.com, <http://www.angelfire.com/nm/DukesofAle/NMSFProAm.html>.

OCTOBER

20-21 17th Annual Dixie Cup, AHA SCP, Houston, TX. Entries due 10/6/00 with \$6 per entry; entries received between 10/7/00 and 10/13/00 will be charged \$10 per entry. Contact Bev Blackwood at (713) 432-1248 (h) or (713) 348-5925 (w), email: bdb2@bdb2.com, <http://www.crunchyfrog.net/dixiecup/>.

• KUDOS •

AHA SANCTIONED COMPETITION PROGRAM

• JUNE 1999 •

8 Seconds of Froth

Cheyenne, WY, 45 entries — Richard Mincer of Cheyenne, WY won best of show.

• AUGUST 1999 •

Western Washington Fair Amateur Beer Competition

Puyallup, WA, 177 entries — Chris Horn of Vancouver, WA won best of show.

• OCTOBER 1999 •

Barley Literate Oktoberfest

San Marcos, CA, 71 entries — Harold Gulbransen of San Diego, CA won best of show.

Oktoberbest, Zinzinnati

Cincinnati, OH, 107 entries — Brian St. Clair of Cincinnati, OH won best of show.

• DECEMBER 1999 •

New England Fall Regional

Shelburne Falls, MA, 164 entries — Mark and Tess Szamatulki of Trumbull, CT won best of show.

Winter Warmer AHA Club-Only Competition

Amherst, NY, 26 entries — Dave Dixon of Ft. Worth, TX won best of show.

• JANUARY 2000 •

Meadlennium III

Orlando, FL, 39 entries — Jim and Kathleen Gilson of Orlando, FL won best of show.

• FEBRUARY 2000 •

Anchorage Fur Rendezvous

Anchorage, AK, 139 entries — Kirk Allen of Anchorage, AK won best of show.

Florida State Fair

Tampa, FL, 261 entries — Ken Koenig and Scott Dahn of Tampa, FL won best of show.

Kansas City Bier Meisters 17th Annual Regional Competition

Olathe, KS, 423 entries — Mike Porter of Lenexa, KS won best of show.

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Sweet Necessities: Fast Facts for Brewing with Honey

Weights and Measures: Honey at 18% moisture has a specific gravity of 1.417. One gallon of honey (18% water content) weighs 11.75 lbs.

Gravity contribution:

- If you combine 1 lb of average honey with 1 gallon of water, you should get 1.1 gallons of liquid with a specific gravity of 1.033 (8.3 °P).
- If you dilute one gallon of honey with water to produce exactly 5 gallons of "must," the gravity should be approximately = 1.083 (20 °P)

For Priming: By volume, use 50% as much of honey as you would corn sugar (3/8th to 1/2 cup for 5 gallons). By weight, substitute an equal amount of honey.

Storage: To preserve color, flavor and aroma of honey store below 52 °F (11 °C).

Color and Flavor: Although exceptions exist, lighter honeys generally have a milder flavor and darker honeys have a more robust flavor.

High Gravity Brews: High original gravities can inhibit yeast activity. For stronger meads and beers using honey, start the fermentation at a lower gravity and add more sanitized honey after the fermentation is in full swing.

The Mighty Oak: Like white wine, some meads are aged in oak barrels to add a special flavor and complexity. Byron Burch discusses this on page 60.

Fermentability: Apparent attenuation of honey is often in excess of 90% and final gravities may well be below 1.000 SG. Results vary depending on the type of honey and the yeast employed.

Balance: Mead recipes include acid for balance. Add 0.67 ounce of tartaric acid (about four teaspoons) to five gallons of mead to increase the acid level by 0.1%.

Common Mead Styles

Mead: Honey alone

Melomel: Honey and fruit or fruit juice
A.k.a: Mulsum¹

Metheglin: Honey and herbs or spices

Pymment: Honey and grape juice. A.k.a: Clarre¹

Cyser: Honey and apple juice

Hippocras: Spiced piment

Morat: Honey and mulberries¹

Weak and Strong:

Hydromel: A weak or watered mead²

Sack Mead: Mead made with 20-25% more honey¹



How Much Honey in Your Beer:

Research conducted on behalf of the National Honey Board suggests the following effects for adding various proportions of honey in beer:

- 3-10% honey:....Subtle honey flavor
- 11-30% honey:..Distinctly noticeable flavor note
- > 30% honey:Dominant honey flavor

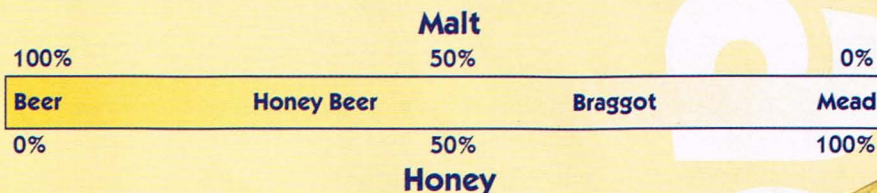


Average Composition of Honey³

(By weight)

Total Simple Sugars:	78%
Higher Sugars:	1.5%
Water:	17.2%
pH:	3.9

FOR DETAILS, SEE THE CHART ON PAGE 54.



Honey by the Numbers (FOR THE UNITED STATES)

1/12th tsp	Honey produced/bee/day
1/3	Portion of human diet derived from insect-pollinated plants
300-400	Different kinds of honey made
55,000	Miles flown by bees to make 1 lb of honey
211,600	Beekeepers
2.58 million	Honey-producing bee colonies
1.1	pounds, annual per capita honey consumption



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- [1] GAYRE, ROBERT WITH CHARLIE PAPAZIAN. BREWING MEAD: WASSAIL! IN MAZES OF MEAD. BREWERS PUBLICATIONS. BOULDER. 1986. P 169-170.
- [2] MORSE, ROGER A. MAKING MEAD (HONEY WINE): HISTORY, RECIPES, METHODS AND EQUIPMENT. WICWAS PRESS. ITHACA. 1980. P 22-23.
- [3] WHITE, JONATHAN, ET AL TECHNICAL BULLETIN 1261, ANALYSIS OF HONEYS. USDA EASTERN PLANT PRODUCTS RESEARCH LAB. 1962.

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In some regards, homebrewing resembles mountain climbing: **we brew until we conquer**—be it a style or a specific recipe. Certainly, we continue to enjoy our homebrewed beers, and repeat them as their seasonal appeals beckon us, but in many ways, the pursuit of the elusive platonic ideal of a given style—the satisfaction of nailing a profile that suits our fancy—embodies much of the allure of our hobby.

The desire to realize that which is conceived in the mind's eye (or in the case of libations, the mind's palate, as it were) meets an even broader horizon when it comes to mead. The ability to "knock off" our favorite beers—the best-ever glass of Sierra Nevada Celebration, or Celis Grand Cru, or even to craft a Lambic which approaches Hansenns—has at its core the premise of hitting an established target. In the world of music and art, it is one thing to mimic Stevie Ray Vaughn, or Jean Luc Ponty, or to copy the works of Monet or Michaelangelo; it is quite another to match their original creativity from silence or blocks of granite. The task in homebrewing often is to replicate commercial examples or slight modifications thereof – "cloning," in the vernacular.

In mead making, where we encounter a world in large part devoid of outstanding commercial examples, both challenges face us. We must fashion a fully detailed and three dimensional visualization of our desired product, and then deploy the recipe formulation and technical skills needed to realize our objective. It may well be the amusing complexity of this double-bladed challenge that explains the growth of interest in mead making.

As we have conducted the Mazer Cup Mead Competition for several years, we have grown increasingly convinced that the most successful mead makers are those who have concrete, definitive ideas of the product that they seek to create. The process involves far more than the simple concoction of an intriguing flavor combination; it involves fleshing out every aspect of the mead's finished profile, and the systematic reverse engineering of the ingredients and fermentation procedures needed in its production. Phil Fleming's Chocolate Mint metheglin was among the finest examples of this approach to mead making, and recently Bill Pfeiffer has shown an uncanny adeptness at sculpting meads which hit his targets precisely and repeatedly. (Dan's Riesling Pymment is another very noteworthy example, but modesty prevents him from mentioning it. -Ken).

Once you have a well-defined flavor objective, you must translate the component parts into both numerical and subjective recipe goals. Several aspects of a mead's overall profile can be manipulated. The tools at our disposal include honey selection, sweetness/acid balance, flavor intensity, body and mouthfeel, as well as the effects of yeast selection. The two parts of the process where we exercise the most control are recipe formulation and fermentation. To present a clear picture of how you might go about considering and deciding upon each of these elements, we will remove fruits, spices and malt from the equation and focus on traditional mead.



By Ken Schramm and Dan McConnell

CHART 1. Mead Recipe Formulation Guidelines

		Balance			
Body		Dry	Medium	Sweet	Very Sweet
	Quantitative Parameters	1.5-2 lbs./gal OG:1.060-1.080 FG:0.994-1.010 Res. Sugar: 0-0.5% Acid: 0.4	2-2.5 lbs./gal OG:1.080-1.1005 FG:1.010-1.020 Res. Sugar: 1-2% Acid: 0.5-0.6	2.5-3 lbs./gal OG:1.1000-1.120 FG:1.020-1.035 Res. Sugar: 3-5% Acid:0.6-0.8	3-4+ lbs./gal OG:1.120-1.140+ FG: 1.030+ Res. Sugar: >5% Acid: 0.8-1.0
	Recommended Honey	KV-1116 EC-1118 YeastLab M-61 Wyeast 3632	Lalvin D-47 Cote de Blancs (Epernay II) YeastLab M-62 Wyeast 3184	Cote de Blancs YeastLab M-62 Wyeast 3184	
	Light				
	Medium	Fireweed, Orange Blossom Mesquite, Sourwood Blueberry, Cranberry	Bourgovin (RC-212) Pasteur Champagne EC-1118 YeastLab M-61 Wyeast 3632	Lalvin D-47 71B-1122 Premier Cuvee	Premier Cuvee YeastLab M-62 Wyeast 3184
Full	Medium				
	Full	Coralvine, Raspberry Blackberry, Tulip Tree Tupelo, Sumac Mint Varieties	Bourgovin Pasteur Champagne 71-B-1122 EC-1118 YeastLab M-61 Wyeast 3632	Bourgovin Premier Cuvee 71-B-1122	Premier Cuvee 71-B-1122 YeastLab M-62 Wyeast 3184
Extreme	Full				
	Extreme	Buckwheat, Chinquapin Basswood	Cote de Blancs 71-B-1122 YeastLab M-62 Wyeast 3184	Cote de Blancs 71-B-1122 YeastLab M-62 Wyeast 3184	Flor Sherry Cote de Blancs Tokay YeastLab M-62 Wyeast 3184
1. Select the desired sweetness (balance) and body. 2. Decide on honey and quantitative parameters from within recommended varieties and ranges. 3. Find the intersection of body and balance selections to determine the recommended yeast.					



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Honey selection

Honey selection and yeast selection are the two elements of recipe formulation which can not be corrected or tinkered with post-fermentation, so they should be approached with thorough and deliberate consideration beforehand.

By comparison with lighter colored honeys, darker honeys do, by and large, have bigger mouthfeel, and higher ash and mineral content. They make for meads that have more robust profiles and that require longer aging periods.

Be aware that beyond the straightforward varietal selection, the timing of the extraction will also have a bearing on the profile of the honey and resulting mead. Typically, early extractions, known as spring flows, are lighter in color, body and flavor

intensity, especially with the so-called "wildflower" honeys. Alfalfa and clover honey extractions can begin as early as May in the southern states, and continue on through October. These honeys are likely to include some fraction of other floral sources, as all "single-source" honeys do. This is because bees are notoriously hard to train, and don't take well to discipline. As a result of these factors, even varietal honeys are subject to variations.

Table 1 (page 54-55) is excerpted from USDA Technical Bulletin number 1261, by Jonathon White and others. The bulletin shows the breakdown of the constituents of 490 samples of honeys from the United States, including several varietal honeys. The values in Table 1 represent the averages of all honey samples of the given source. Some of the varieties listed are honeys we are not familiar with, but which show values which make them candidates for meads with truly unique and dynamic flavor profiles. Prune, Athel tree, and most particularly chinquapin have constituent values which should set them apart from your run-of-the-mill grocery store blends.

If we had to pass judgement based on one generalization regarding these honeys and their values, it would be that honeys with higher maltose and ash tend to make full-bodied and very characteristically flavorful meads. Raspberry, blackberry, spearmint, sourwood (considered by many honey authorities to be the finest honey in North America), and Tulip tree all fit into that category. So do prune and chinquapin. One other observation is that honeys with one or more constituents (acidity, other sugars, maltose, ash, etc.) skewed to an extreme also tend to be possessed of uniquely distinguishing profiles.

The honeys that we have been most consistently pleased with have been raspberry and orange blossom. We have also found a Michigan supplier of fruit blossom blend that is highly floral, with a plethora of heady aromas and a considerable depth of flavor. A few years back we made an interesting braggot by using one pound of

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nearly a dozen different honeys. We have tasted excellent examples of meads made with tupelo and mesquite honey, and several made from wildflower blends. Buckwheat is a honey that can be highly variable; we have tasted delicious complex, beguiling meads from buckwheat, and others that were barely palatable. Basswood is a light honey with a tangy, slightly bitter, almost piney aroma and flavor that some enjoy and others find repugnant. Eucalyptus has a similarly singular character. Sample each of these last three honeys on more than one occasion (your palate can perceive flavors differently at different times, depending on a host of influencing factors) before starting a mead with them.

Select a honey with an aroma that pleases you. While the sweetness and flavor of the honey will be greatly changed during its fermentation, the aroma should survive the ferment to create your mead's first impression. Whenever possible, taste the honey. Look for a honey with flavor beyond sweetness (this can be difficult; honey's sweetness is unquestionably its most profound characteristic), and one with a distinctive and lingering aftertaste. Many simple honeys finish "short," and they will do so in your mead, as well.

Creating a Balance

The real key to arriving at your desired balance of sweetness, alcohol and mouthfeel lies in correctly matching the amount and variety of honey with the appropriate yeast.

The fourth element, acidity is adjusted independently. Here are few facts to consider as you work on the balance of your mead.

1) The specific gravity of honey at 18% moisture is 1.417, giving it a weight of about 11.75 pounds per gallon. In a five gallon batch, every pound of honey will add approximately 8 points of original gravity (OG).

2) The sweetness/acidity ratio of your mead can be adjusted post-fermentation, bearing in mind that both are additive procedures: sweetness (honey) and acidity (in the form of malic, citric or tartaric acids) can be added but not removed. (See Byron Burch's article on page 38 for details on acid testing.)

3) To prevent secondary fermentation (and loss of residual sweetness) yeast activity can be halted through the use of potassium sorbate. Follow manufacturers directions carefully. Make adjustments slowly and with patience.

In addition to these general guidelines, we have developed some specific recommendations for the production of meads at different dry/sweet increments from honeys that vary from light to robust. These guidelines are shown in Chart 1: Mead Recipe Formulation Guidelines (page 28).

Of course such a chart comes with caveats. First, it is based on personal experience, and is reflective of very subjective judgements on our part. Good, even great meads can and will be made outside of these guidelines. Please do not view our recommendations as limitations. *(continued on page 54)*

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ALC 10.5% BY VOL.

Mead is without a doubt the most magical of alcoholic beverages. Although both beer and wine have their ancient and gloried past, neither can match the romance of mead, probably the oldest fermented drink known to humans.

Celebrated in prose and verse for centuries, this potent concoction made from heavenly honey is a central part of the mythology of Greece, Rome, Scandinavia, and the British Isles. Nor is its heritage limited to Western Europe. The peoples of Sumer, Ethiopia, Egypt, and India also made mead. Indeed, the word honeymoon is derived from the Babylonian tradition of providing newlyweds with enough mead to last a lunar month and so to promote fertility (and supposedly produce male offspring as well). Mead is mentioned in the writings of Plato, as noted by Stephen Harrod Buhner in his book *Sacred and Herbal Healing Beers*: "Plenty (was) drunk with nectar (i.e., mead), for wine was not yet invented."

In ancient Britain, the indigenous Picts brewed a heather ale from heather and heather honey that was actually a form of mead. Mead is often mentioned in the tales of King Arthur and the Knights of the Round Table. It was a popular beverage of the Middle Ages, and even, apparently, in Middle Earth as Gandalf the wizard "had...drunk at least a quart of mead" at the house of Beorn in J.R.R. Tolkien's *The Hobbit*.

The Vikings also consumed great quantities of mead and ale. All Norse poetry and song was thought to have originated from the "mead of inspiration" accidentally dropped to Earth by Odin, chief of the gods.

The word "mead" itself is derived from the Old English word "medu" and the Middle English term "mede," which also meant meadow. In Sanskrit, "madhu" is the word for honey; in the Icelandic language, mead is "mjöthir." Our word "honey" itself comes directly from the Middle English "hony" ("hunig" in Old English). The Dutch and Germans called it "honig;" it was "hurrang" in Icelandic.

Just as humans "tamed" barley and grapes, the domestication of honey production was surely one of the hallmarks of early civilization. Honeycombs were often found in the hollow trunks of trees, and ancient beekeepers cut these down and carried them to more desirable locations. Such primitive hives gave way to man-made wooden or ceramic cylinders called skeps. Cross pieces were added inside for the attachment of the honeycombs. So-called bar hives with movable combs were mentioned in a book published by Giovanni Rucellai in 1590. Movable frames were added to the basic box shape in the late 1700's. As agriculture spread to the United

States, beekeeping followed, since bees were used for the pollination of many crops. This author's grandfather kept hives at his farm near Rainier, Washington. His "beekeepers bible" was *The ABC and XYZ of Bee Culture* by A.I. and E. R. Root, first published in Ohio in 1878. Grandpa collected some remarkable honeys in his time (fireweed was his favorite.) Unfortunately, he never made mead.

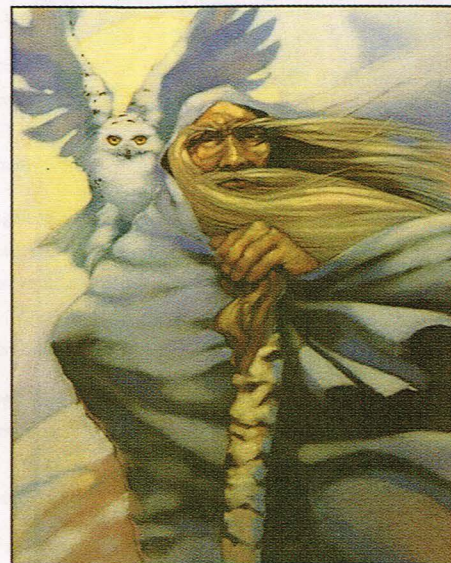
In our era of communications and computers, science has supplanted much of the mystery of natural foods and alcoholic fermentations. Nevertheless, mead retains a legendary, almost spiritual place in human culture.

One reason for this is probably the relative scarcity of commercial examples of meads today. Supermarkets regularly stock hundreds of beers and wines, but few meads are available to consumers, even in specialty shops. Breweries and brewpubs rarely make mead. Because of mead's similarities to wine, small wineries have become the major purveyors of mead across the U.S. Many of them are located outside the largest wine-producing regions. Yet meaderies *per se* do exist, and their number has slowly grown, although mead production is still minuscule compared to that of breweries, wineries, or even cideries.

Fortunately, as many homebrewers know, excellent mead is still being legally produced at home in most states. Perhaps as the health benefits of both honey and alcohol are better known, mead will regain more popular acceptance in the marketplace as well.

As well it should, since honey itself, the principal ingredient of mead, is truly a mysterious and wonderful substance. Manufactured by bees

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THE BUZZ About Mead



Mead Producers

United States

Ambrosia by Kristy

Produces: Traditional mead (sweet)
University Place, WA
www.amead.com

Anderson's Orchard and Winery

Produces: Traditional mead (sweet)
Valparaiso, IN

As You Like It Winery

Produces: Traditional mead
Ashby, MA
www.spirit-alembic.com

Bargetto Winery

Produces: Traditional mead (sweet) with spices
Soquel, CA
www.bargetto.com

Bayfield Winery

Produces: Traditional mead
Bayfield, WI
www.execpc.com/baywine

Berrywine Plantation

Produces: Traditional mead (sweet) and Ethiopian tej style (hopped)
Mount Airy, MD
www.linganore-wine.com

Bias Vineyards and Winery

Produces: Traditional mead (sweet)
Berger, MO

Bonair Winery

Produces: Traditional mead (sweet), methglin, cherry melomel
Zillah, WA

Camas Winery

Produces: Traditional mead (sweet), tej, huckleberry and raspberry melomel
Moscow, ID
www.palouse.net/camas

Chateau Lorane

Produces: huckleberry and raspberry melomel
Lorane, OR

China Bend Winery

Produces: melomel
Kettle Falls, WA
www.chinabend.com

Cuthills Vineyards

Produces: Traditional mead (sweet), raspberry melomel
Pierce, NE

Earle Estates Meadery

Produces: Traditional mead
Locke, NY
www.meadery.com

Easley's Winery

Produces: Traditional mead (sweet)
Indianapolis, IN
usagrandprix.com

Fred's Mead Company

Produces: Traditional mead (semi-sweet)
Gainesville, FL
http://fredsmead.com

Golden Angels Cellars

Produces: Traditional meads, raspberry and cherry melomel, cyser
Eureka, CA
www.goldfenangels.com

Heidrun Meadery

Produces: Sparkling mead (dry)
Arcata, CA
www.heidrunmeadery.com

Honey Run Winery

Produces: blackberry, cranberry, elderberry, cherry melomel
Chico, CA
www.honeyrun.com

Honeywood Winery

Produces: Traditional mead
Salem, OR

James Arthur Vineyards

Produces: Traditional mead (sweet)
Raymond, NE
www.jamesarthurvineyards.com

Knippath Cellars

Produces: Raspberry melomel, sparkling mead
Spokane, WA
www.knippath-cellars.com

Lakewood Vineyards

Produces: Traditional mead (sweet)
Watkins Glen, NY
www.lakewoodvineyards.com

Little Hungary Farm Winery

Produces: Melomel
Buckhannon, WV

Loudon Valley Vineyard & Winery

Produces: Traditional mead
Loudon, TN

Manatawny Creek Winery

Produces: Traditional mead (sweet)
Douglassville, PA

Martin's Honey Farm and Meadery

Produces: Traditional mead (sweet and dry)
Sterling, NY
www.zlink.net/~martinhf

Mountain Meadows Mead

Produces: Traditional mead (semi-sweet and sweet), spiced mead, apricot, persimmon, and cranberry melomels
Westwood, CA

Native Wines

Produces: Traditional mead, honey wines
Mt. Pleasant, UT

Nehalem Bay Winery

Produces: Traditional mead (sweet)
Nehalem, OR
www.nbwines.com

Oliver Winery

Produces: Traditional mead (sweet)
Bloomington, IN

Pirtles Weston Vineyards

Produces: Traditional mead (organic), sparkling mead, raspberry and blackberry melomels
Weston, MO
www.pirtlewine.com

Rocky Mountain Meadery

Produces: Traditional meads (dry to sweet), melomels, pyment
Palisades, CO
www.wlc.net/meadery

Sky River Brewing

Produces: Traditional mead (dry, semi-sweet, sweet)
Sultan, WA

Spurgeon Vineyards & Winery

Produces: Traditional mead (sweet)
Highland, WI
www.spurgeonvineyards.com

Stoney Mesa Winery

Produces: Traditional mead
Cedaredge, CO
www.stonemesa.com

Summerset Winery B & B

Produces: Traditional mead (semi-sweet)
Indianola, IA
www.summersetwine.com
iowawine.com

Volcano Winery

Produces: Traditional mead
Volcano, HI

Von Jakob Vineyards

Produces: Pyment (concord grape)
Pomona, IL
www.vonjacobvineyard

White Winter Winery

Produces: Traditional mead (dry and sweet, melomels, cyser, braggot (bracket), pyment)
Iron River, WI
www.whitewinter.com

Widmer Brothers Brewing Co.

Produces: Specialty traditional mead (sweet)
Portland, OR
www.widmer.com

Canada

Bernard Bee Bec

Produces: Traditional mead
Beebe, Quebec

Entreprises Prince-Leclerc

Produces: Traditional mead (dry and sweet)
St-Agapit, QC

Intermiel

Produces: Traditional mead
St-Benoit (Mirabel), QC

Les Vins Mustier Gerzer

St-Antoine Abbé, QC

London Winery

London, ON

Meadery Ferme Apicole Desrochers D

Produces: Traditional mead and melomel
Ferme Neuve, QC

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Chateau-Richer, QC

Rucher Les Saules

Saxby Corner, Granby, QC

Commercial Meads

Mead is a beverage of considerable variety. Even not considering the different styles of mead—dry, sweet, sparkling, or meads made with the addition of fruits or spices—meads offer many different appearances, aromas, and flavors. The following are some comparisons based on my tasting notes on some commercial meads available in the United States today. Like any tasting or judging, it is admittedly subjective, and should be seen as no more than a rough guide to the meads evaluated. It is also meant to stimulate more research! I encourage readers to search out these remarkable elixirs and conduct tastings of their own. But beware: mead can be habit-forming. There's a reason it has kept the attention of the human race for so many thousands of years.

Color

Traditional meads, like the honeys used to produce them, have a wide range of color. Some are nearly as pale as water, such as the Sky River, Camelot Mead or White Winter Meads. Others have a slightly pink tinge such as Cuthills Vineyards Mead or Nehalem Bay Mead. Pirtle Missouri Mead has a pale peach color. Pale gold meads include Ambrosia by Kristy, Chaucer's Mead, Martin's Mead, Spurgeon Vineyards Mead, Summerset Mead. Medium gold meads are Golden Angels Star Thistle and Blackberry Meads, Mountain Meadows Meads (semi-sweet and sweet), and Mystic Mead. Medium to deep gold meads include As You Like It Mead, Easley's Mead, Golden Angels Golden Mead, and Manatawny Creek Winery Mead.

Aroma

The presence of sulfites, rarely mentioned in mead evaluations, actually can have a huge effect on the perception of mead aroma. While sulfites prevent oxidation, delicate honey flavors are blunted or even completely obscured by excess sulfur in the nose, a common fault among some of the examples tasted. Just as in wine, sulfur can block aroma without being consciously perceived. I found the Spurgeon and Sky River Meads were particularly sulfurous. On the other hand, Golden Angels Meads, the only meads tasted without sulfites, had pronounced honey and fruit aromas with little or no oxidation.

Different honeys have different aromas, and so do the meads produced from them. The Golden Angels Blackberry Mead has a fruity/musky aroma, whereas Golden Angels Star Thistle Mead is herba-

ceous and resinous. Camas Winery Mead has an apple and pear bouquet. Camelot Mead from Oliver Winery has a winey, floral aroma. Chateau Lorane Life Force Mead had a Chenin Blanc-like, almost tropical fruit cocktail nose. Citrus aromas are found in some meads, such as Ambrosia by Kristy, Loudon Valley Vineyard Mead, and White Winter Sweet and Dry meads.

Flavor and Body

Mead can be anything from light and delicate to full-bodied and rich in flavor. Like wine, mead flavor is best when the sweetness or intensity of its taste is balanced by an appropriate amount of acidity. Here meads vary considerably. Dry meads, such as Sky River, White Winter, Rocky Mountain King Arthur, and James Arthur Vineyards' Sir James are all fairly austere, with noticeable acidity like many dry Riesling wines. Medium sweet meads are Ambrosia by Kristy, As You Like It Mead, James Arthur Chérie, Rocky Mountain Lancelot Mead, Sky River Semi-Sweet, Stoney Mesa Mead, and Mountain Meadows Mead. Sweet meads, which are often full-bodied, include Camelot Mead, Chateau Lorane Life Force Mead, Chaucer's Mead, Easley's Mead, the Golden Angels Meads, Manatawny Creek Mead, Mountain Meadows Honeymoon Nectar, Mystic Mead, Pirtle Mead, Rocky Mountain Camelot Mead, Sky River Sweet Mead, and Summerset Mead.

Oak

Some meaderies age their meads in oak wine barrels, which introduces additional aroma and flavor components. Both Mountain Meadows traditional meads (as well as their Spice Mead) have some oaky aroma, flavors and tannins, from their use of French and American cooperage.


Finish

The overall impression of a mead is probably most important. Many have a sweet, lingering finish, such as Martin's or Mountain Meadows. Some are more supple and delicate, like Golden Angels Blackberry Mead. Drier meads may seem more acidic in flavor and finish, such as James Arthur Sir James, Sky River Dry Mead or White Winter Dry Mead.

Tasting the range of meads now available is a fascinating experience. With the variety of styles and approaches to making mead, a whole new world awaits those willing to investigate new versions of this oldest of all alcoholic beverages.

AMBROSIA BY KRISTY

MEAD



Honey
Time

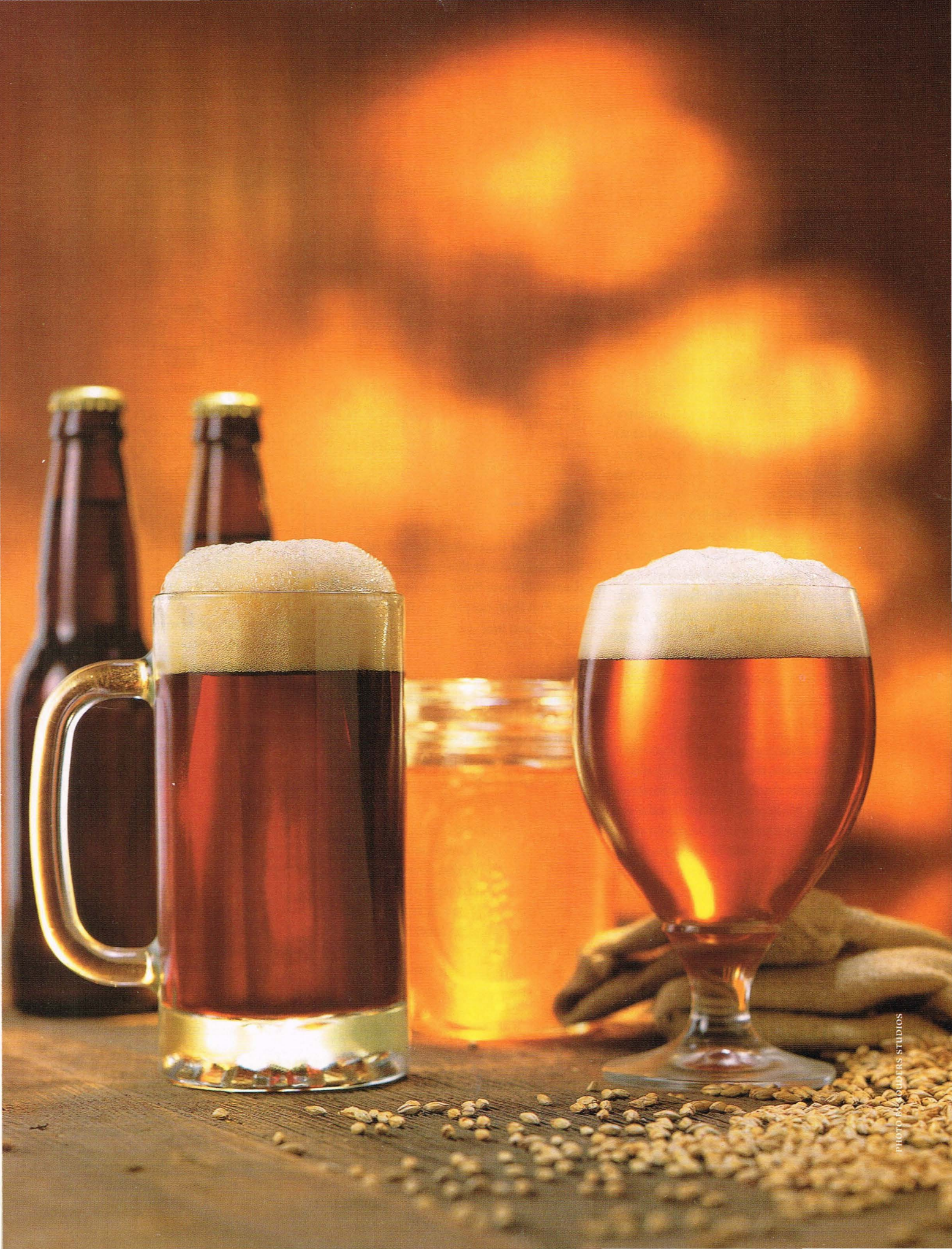
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from nectar gathered from the flowers and sugary secretions of plants, honey is the most readily accessible natural sugar on Earth. The National Honey Board gives it this definition: "Honey is the nectar and sweet deposits of plants as gathered, modified and stored in the honeycomb of honey bees." It is important to recognize that honeys are not just produced from plant flowers, but also from the saps of various trees. However, not all such honeys are suitable for making mead. In fact, according to Buhner, honeys produced from poisonous plants, such as certain species of rhododendrons and azaleas, will themselves contain poisons that can be passed on to humans.

Honey varies considerably in both color and flavor depending on the plants it is gathered from. The most common variety in North America comes from clover or alfalfa, usually white or pale in color. Other pale honeys are made from acacia, raspberry, fireweed, milkweed, Canada thistle, and star thistle, which is actually (continued on page 57)

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WHEN MAZERS AND MASHERS MEET: THE MAGIC OF BREWING WITH HONEY

Honey in beer is as old as brewing itself. Honey has been an occasional ingredient in beer-brewing, as well as mead-making, since at least Sumerian times¹. While improvements in brewing technology have made the use of honey as an adjunct unnecessary, many homebrewers, microbrewers, and even national brewers are using honey's allure to provide distinctly out-of-the-ordinary beers, and yet, preserve one of the oldest brewing traditions.

Mead making does have some historical precedence to beer brewing². Honey was used as a source of yeast and extra fermentable sugar in early beers³. Honey was often added with the comb, and this is still practiced in isolated areas of the world. Malting was not understood and conversion of starches often required techniques that included utilizing an enzyme, pytalín, found in saliva. To process the grains, they were chewed and then added to the brew⁴. Small wonder the flavor and aroma of honey would be welcome!

A Finnish saga from 1000 BC recounts the use of both saliva and honey to finally get the beer to ferment. The saliva used was reportedly from angry, fighting bears⁵. I do not suggest trying this at home! Another reference is made to a Viking beverage of the ninth century made in Ireland, which used honey for fermentable sugar as well as heather, and wormwood for bittering⁶.

A brewery in West Flanders, De Dolle Brouwers (The Mad Brewers) makes a seasonal beer called Boskeun (Easter Bunny). A strong beer (6.4 abw, 8 abv), it is made with cane sugar as a kettle adjunct and is bottle-conditioned using honey for priming⁷. Michael Jackson says different vintages have varying amounts of honey in the aroma, but all have the sweetness of a Sauterne wine⁸ and he also describes them as honeyish⁹.

In Great Britain mead making still enjoys some popularity and some breweries also produce honey-accentuated ales. Ridley's of Chelmsford, Essex, occasionally produces a Honey Mead Ale¹⁰. Envile near Stourbridge in the West Midlands is a tiny brewery that also brews such ale¹¹. Envile Ale (4.5% abv) is brewed on the estate of the Earls of Stamford. Michael Jackson describes it as being golden in color, with a remarkably soft, smooth body¹² and notably flowery¹³ and bearing a resemblance to the traditional pale milds made in the Black Country¹⁴. Envile Ale is said to be honey primed, leading one to believe the honey is used at bottling. Yet another is Waggle Dance (5.0% abv) made by Vaux, of Sunderland that Michael Jackson says has a sweeter, more overtly honeyish taste¹⁵. Even the venerable Fullers is producing Honey Dew, soon to be Organic Honey Dew (5.0 % abv) in both bottled and cask varieties¹⁶.

by BRAD KRAUS

TIPS ON BUYING HONEY

The best test of honey is its flavor and aroma. There are over 300 floral sources and each has its own flavor. Some honeys, such as almond and some wildflowers, are bitter and not of value. There is no mistaking the beautiful flavor of fine honey. The darker honeys usually have stronger flavors than lighter honeys.

The color of the honey should be appropriate for the flower. For example, clover should always be light while buckwheat and tupelo should be more amber. Honey is measured on the Red Lovibond scale (absorption of 560 nm light) whereas, the lovibond scale for beer is based on absorbance of blue light (430 nm). Honey is best stored below 52° F or in sealed containers. It will darken slightly with age.

Blended or filtered honey is difficult to evaluate because poor quality honey can be lightened and mixed in the blend. Adulteration of honey (adding sugar) is a persistent problem. Perhaps the most important factor in selecting honey is buying from respected suppliers.

The water content of honey should be <18.6%. Honey with more water can spontaneously ferment by the ever present wild yeasts. You cannot easily quantify water content but here is a very reliable qualitative means. Take two jars of honey at the same temperature, one in each hand. Turn them upside down and observe the air bubble rise in each. The one with the most water will rise faster. This method never fails and you can distinguish as little difference as 0.1% water.

Color, water content, and flavor of each honey vary annually due to climatic effects on both the plant and the bees.

Virtually all honeys may crystallize. Crystallization is not indicative of poor quality and, in fact, may be associated with gentle processing and low water content, both of which are desirable. Crystallization is a concern for table honey, not mead honey. Tupelo is a valued table honey because it does not crystallize.

The retail price of premium unfiltered honeys should be \$2 - \$3 per lb in quantities typical for mead makers. Expect to pay more for table quantities. The sole exception is the rare tupelo which commands twice the price.

The United States has its share of breweries producing beer with honey added at various steps in the process and in an extremely wide variety of styles. The Calistoga brewpub in California at one time brewed a Honey Pilsner and Bert Grant in Yakima, Washington uses honey in his Imperial Stout¹⁷. I currently produce Nayati's Lobo Dorado Honey Ale at my brewpub in Santa Fe, New Mexico. It is a pale, golden ale meant to accentuate the aroma and flavor of the raw, unpasteurized, local honey used. Even brewing giant Anheuser-Busch has a honey beer, their Michelob Honey Lager, which has a definite honey flavor and very sweet finish. It is made with two-row and carapils malt, Hallertau, Tettnang and Willamette hops. The wildflower honey is added at knockout, and the standard lager yeast is used, giving it a clean finish with no discernable bitterness¹⁸.

MAKING HONEY BEERS

Today's brewers are no less experimental than the ancients were. They use honey in a vast number of beer styles from very light ales and lagers to robust porters and stouts. The choice of honey to use should be based on the style of beer being made and how much honey character is wanted in the aroma and flavor. There is debate about whether it is better to use raw or processed honey. I prefer raw and unprocessed, since the flavor and aroma seem more intense and it contains more nutrients. The only problem that may occur is from the wax content. This can leave residues in kettles and fermenters, though I have never experienced any problems with cleaning. Filtering the honey usually alleviates this problem. Check with the producer if this concerns you. Either processed or unprocessed is quite acceptable though, as long as the desired character comes through.

More debate is heard about varietal honeys versus blended. I personally use a blended honey for the sake of consistency in a commercial product. The answer is as before, what ever gets the desired results.

Honey can be added at almost any point in the brewing process. Honey added in the boil will influence aroma the least since the aromatics are driven off by the heat, just

ALE Spice

This recipe is based on Charlie Papazian's "Christmas Cheer," but over the years it has mutated into this formulation which I found in my files from 1988. For more honey character, omit the spices and add the honey at the end of boil. Also try using a different variety, such as orange blossom or wildflower.

Recipe for 5 Gallons (18.9 liters)

- Original Gravity: 1.050
- Racking Gravity: 1.024
- Final Gravity: 1.014

- 1 lb. (.45 kg) Ireks Munich malt, crushed
- 7 lbs. (3.18 kg) Alexander Pale malt extract
- 19 oz. (.5 kg) light clover honey
- 1.5 tsp. Burton Water Salts
- 0.75 oz. (21 g) U.S. Perle hops, 5.8% alpha, bittering, loose, boil 60 min., 12 IBU
- 0.39 oz. (11 g) U.S. Perle hops, 5.8% alpha, bittering, loose, boil 30 min., 3 IBU
- 0.39 oz. (11 g) Ger. Hallertau hops, 3.8% alpha, bittering, loose, boil 30 min., 3 IBU
- 1 oz. (28 g) Ger. Hallertau hops, aroma, pellets, at end of boil
- 0.75 oz. (21 g) Ger. Hallertau hops, aroma, loose, in hop back
- Grated rind of 4 oranges, last 10 minutes of boil
- 2 x 3" (7.62 cm) cinnamon sticks, last 10 minutes of boil
- 1 oz. (28 g) fresh grated ginger, last 10 minutes of boil
- Whitbread Ale yeast

Dissolve 1/4-tsp. water salts in 1.5 quarts (1.4 liters) of mash water. Mash in at 142 °F (61 °C), hold 15 minutes, boost to 154 °F (68 °C) in 5 minutes, hold 15 minutes, boost to 170 °F (77 °C) in 2 minutes, and mash out. Dissolve 1/4-tsp. water salts in 1.5 quarts (1.4 liters) of sparge water at 168 °F (75 °C). Dissolve malt extract and honey in collected wort, add 5 gallons (18.9 liters) hot water, add remaining water salts and bring to boil. Add hops on schedule shown, being sure to add spices 10 minutes before end of boil. Strain out hops and spices. Cool to 68 °F (20 °C) and pitch yeast. Rack to secondary after three days. Keg after two weeks and force carbonate after chilling to 34 °F (1 °C) for 3.5 minutes at 30 psi. Alternatively, you may prime with 1/2 to 3/4 cup corn sugar or the equivalent in honey and bottle.

HONEY PORTER

Recipe for 5 Gallons (18.9 liters)

- Original Gravity: 1.056
- Final Gravity: 1.014

- 10 lbs. (4.5 kg) pale ale malt
- 0.5 lb. (0.23 kg) light crystal malt, 20 lovibond
- 0.5 lb. (0.23 kg) medium crystal malt, 40 lovibond
- 1.5 lbs. (0.7 kg) chocolate malt, 400-500 lovibond
- 2 lbs. (0.9 kg) wild honey or dark honey
- 0.6 oz. (17 g) Magnum hops, 12.0% alpha, bittering, pellets, boil 60 min., 22 IBU
- 0.6 oz. (17 g) Cascade hops, 5.0% alpha, bittering, pellets, boil 30 min., 6 IBU
- 1 oz. (28 g) Willamette hops, aroma, pellets, at end of boil
- Ale yeast

Crush malt and mash in with 1 to 1.25 quarts per pound of grain (2.1-2.6 liters/kg). Mash pH should be adjusted to 5.0-5.4 with lactic or phosphoric acid. Stabilize mash temperature at 154 °F (68 °C) and hold for 1 to 1.5 hours, stirring occasionally. Check conversion. Sparge with 168 °F (76 °C) until wort volume is approximately 6 gallons (23 liters). Bring to boil and add hops on schedule shown; the total boil time is 90 minutes. Dissolve the honey at the end of boil. Cool to 68 °F (20 °C) and pitch yeast. Ferment to completion and rack to priming vessel. Prime with 1/2 to 3/4 cup corn sugar or the equivalent in honey and bottle.

as those in hops are. Adding honey at whirlpool or at the end of boil will preserve a great deal more of the aromatics and will have the benefit of heating the honey enough to sanitize it.

Honey can also be added in the fermenter, but should be pasteurized before addition to prevent contamination. The same would be said for priming with honey, and equivalent sugar contents are available elsewhere in this issue (See page 54). Honeys added later will retain more of their aromatic qualities and in most cases, flavor,

too. Force-cooling the beer prior to the end of fermentation can leave more honey sweetness, but should only be done on sterile-filtered beer or beer that will be force carbonated and refrigerated! Otherwise that closet or cupboard will be full of honey hand grenades!

Very light colored and flavored honeys such as clover can be used solely as an adjunct, since they will impart very little in the way of flavor or aroma to the beer. Slightly darker wildflower or agricultural honeys, such as acacia, catsclaw, alfalfa and cotton, will impart more flowery notes and deeper honey flavor. Fruit honeys lend a more fruity character, usually reminiscent of the flowering fruit that was the source of the nectar. All honeys tend to impart some fruitiness since they are approximately 38 to 40% fructose¹⁹. Wild honeys, collected from trees or other natural hives can quite often be strongly flavored. Dark honeys, such as tamarisk or salt cedar are also very strongly flavored. These should be used judiciously but can be appropriate for darker, stronger flavored beers like porter or stout. The best way to determine which honey is best is to taste the honey and see if it will meld with the malt, hop, and spice flavors wanted in the final product.

The amount of honey used in beer formulation varies widely. Enough must be used for the desired effect without overwhelming other flavors. Balance is key in any recipe. Typical amounts will range from 15 to 30% of the fermentable sugars. Anything over 50% and you will essentially be making braggot, a mead that contains malt. Funny thing, the BATF has ruled in at least

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*Shipping/handling \$19.50 u.s. Dealer prices may vary from price shown

some cases that a recipe containing 80 percent honey and 20 percent malt is still considered a grain beverage (beer) rather than mead. Mead is a wine product that cannot be legally produced by commercial brewers.

Since honey is around 75% sugars and 17 to 20% water²⁰, it lends a lighter body to the beer it is used in. This can be offset in some cases by using specialty malts with higher dextrin content or higher mash temperatures, say 152 to 156°F (67-69°C). Some malts I find (continued on page 58)

HONEY CAN BE ADDED AT ALMOST ANY POINT IN THE BREWING PROCESS: IN THE BOIL, AT THE END OF THE BOIL; DURING FERMENTATION OR AT PRIMING.

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Making Sense of Making Mead

BY BYRON BURCH

Okay, you're a home brewer, and have been for awhile. You're careful, and you pay attention, so you've gotten pretty good at it. However, as the years go by, each brew session is starting to seem like more of the same, and you're getting just a bit itchy, beginning to look around for something a bit different.

Two choices immediately suggest themselves. You could quit brewing, and take up model railroading instead (but then you wouldn't have anything to drink). On the other hand, you might look into meadmaking, to try and see what all the recent fuss is about.

Confronted by such a choice, and being the sensible person you are, you'd obviously select door number two. What awaits you there is a world both familiar and strange. Like looking at brewing in a funhouse mirror, the process seems familiar, but there are all those oddities and distortions. Suddenly, you've entered the "twilight zone" of fermented beverages. This is mead country!



Meadmaking has an almost infinite number of potential variations . . . I can briefly describe a few good approaches for beginners. That may help you decide which to try.

The reality may be less dramatic than that, but you probably get the idea. Mead, the likely ancestor of all fermented drinks, is probably best described as "honey wine," and the meadmaking process has rather more in common with winemaking than with brewing, though elements of both are present. It's one of life's ironies that the mead renaissance has been led by home brewers, rather than home winemakers. As someone who makes beer, wine, and mead, I'd have expected the opposite.

Meadmaking has an almost infinite number of potential variations, and treating the subject exhaustively may well be impossible, but I can briefly describe a few good approaches for beginners. That may help you decide which to try.

Other meadmakers might disagree, but I'd recommend breaking in with one of four traditional styles. In no particular order, they are: an Unflavored (or traditional) Mead, Melomel, Metheglin, or Braggot.

Pick one of these and make up your mind to just try it. Don't try to fine tune your first batch too much. Don't even worry about how well your early efforts fit with somebody's classification system. Compared to beer styles, most mead styles are somewhat open ended, and matching up with them is the last thing a beginner should be worrying about.

Let's start with an unflavored mead style, using an old favorite recipe of mine. Aspects of the recipe or instructions likely to be unclear to brewers will be discussed more fully later on.

"St. Elizabeth's Day" Mead

(5 gallons)

- 18 lb. Honey
- 5 gallons Water
- 2 oz. Beverage People Yeast Nutrient for Mead
- 5 tsp. stock Sodium Bisulfite solution (after fermentation)
- 5 Tbl. Tartaric Acid
- 30 ml. Liquid Oak Essence (optional)
- 10 grams Prise de Mousse Yeast

- Original Brix: 25
- Total Acid: 6-6.5%

Procedures

1. Heat the water until warm, turn off the stove and stir in the honey until dissolved.
2. Heat this mixture to boiling, and boil for 5 minutes, skimming the surface with a large spoon. Add the nutrient and acid.
3. Cool to room temperature.
4. Pour the mixture into narrow-neck fermentors, filling them no more than 75% full.
5. When the temperature of the must is down near room temperature, test the sugar and acid levels. If these are below the levels indicated above, make the necessary corrections. Slightly higher is okay.
6. Add yeast to the surface. In 10 or 12 hours, stir it in.
7. Once fermentation begins, allow it to continue for two or three weeks until visible signs of fermentation have ceased.

Mead on the Internet

The ancient craft of mead-making has met the global information age. In the past, mead-makers have been stymied by mead's obscurity: They had the passion, but they often had nobody to talk to. Now, mead-makers use electronic mail and Worldwide Web pages to find one another, exchange tips and recipes, solve problems, and explore the rich history and lore of their craft. Here are a few Internet resources for mead-makers.

1. The Mead-Lover's Digest

The Mead-Lover's Digest (MLD) is a mailing list distributed in "digest" format. Readers submit articles using e-mail. The articles are collected and sent out in batches via e-mail. A digest comes out whenever there is enough material, usually every few days with about ten articles in a digest. Around 800 issues have appeared since John Dilley started the digest in 1992. Dick Dunn maintains the digest.

To subscribe to the MLD, send e-mail with the word "subscribe" either in the Subject line or the body of the message, along with your name, to: mead-request@talisman.com

All back issues of the MLD are available by anonymous file transfer (FTP) from: <ftp://stanford.edu/pub/clubs/homebrew/mead> or at the talisman.com web page (see next section).

2. Web Pages

The Web is dynamic! Web pages come, go, and move around at a startling pace. So, rather than try to provide an extensive list of mead-related web pages, we have selected a few that are both good and likely to remain stable. Most of these pages have links to other currently active pages about mead, so pick a page and start exploring from there. Just give your web browser <http://> followed by the addresses shown below.

- www.best.com/~davep/mme

The "Mead Made Easy" book in electronic form: a good, no-fear, simple introduction to mead-making. The complete text of the book is on-line here, or you can order a hard copy. Written by Dave Polaschek.

- brewery.org/brewery/library/beeslees.html

The "Bee's Lees": A large collection of mead recipes, in book format, with several appendices of useful formulas and tables. Written by Joyce Miller.

- brewery.org/brewery/MHall.html

The "Mead Hall": a collection of links to mead-related pages. Maintained by the good folks who run the electronic Homebrew Digest.

- www.eklektix.com/gfc/mead/mead.html

The Mead Maker's Page: mead basics and terminology; useful links. A long-time mead site maintained by Forrest Cook.

- www.gotmead.com

Recipes, mead-making basics, list of commercial meaderies and many good links. An ambitious, evolving site maintained by Vicki Rowe.

- www.talisman.com/mead

Mead-Lover's Digest and related material: archives of back issues, the FAQ (frequently-asked questions) list, a list of commercial meaderies, etc. Maintained by Dick Dunn.

This listing was compiled for Zymurgy readers by Dick Dunn.

11. Siphon the mead into bottles, cap them, and set them aside to age for three to six months.

Discussion

Many of these procedures will, of course, be familiar to home brewers, who should be able to maneuver their way through both boiling and bottling with ease. Other steps are pretty self explanatory. A few, however, may require at least some commentary, and to these we now turn.

"Must"

We should start by noting that the word "must," for winemakers and meadmakers is roughly equivalent to the brewers' word, "wort," signifying the beverage in its unfermented state.

Brix

You may have also noticed that the recipe provided speaks of "Original Brix," rather than "Original Gravity." Brix (or Balling) is a method of reading sugar levels favored by the wine industry. You may find the Brix scale preferred in some meadmaking literature, and it is specified here to familiarize you with it.

In any case, it's easy to convert Brix to S.G. All you need remember is that one percent Brix is almost exactly equal to four Specific Gravity points. This quick rule of thumb can be used in all but the most excruciatingly fussy situations.

Quite a bit of variation is possible as far as mead sugar levels are concerned. Unless you've somehow ended up with a much lower level than you were shooting for, you may not need to bother making corrections. If you find yourself needing to make a minor correction, it can be made with either honey or corn sugar.

Testing Acid

For a couple of reasons, the acid content of a mead is as important as the sugar content.

First, the tartness provided by acid is important to the flavor. If the acid level is too high, the taste will be excessively harsh. If too low, it will be bland or watery. Second, the acidity and alcohol combine to give wines and meads a degree of stability against spoilage.

8. When bubbles can no longer be seen rising through the mead, rack (siphon) away from the settlings into an open container. Fine with Sparkolloid, add a teaspoon per gallon of stock sulfite solution (and oak essence if desired), and siphon into a narrow-neck storage container, top up, and let it set for four weeks.
9. Rack away from the Sparkolloid settlings, top up again, and let it stand for three to six months.
10. Carefully rack into an open container, add 1 1/2 teaspoons stock sulfite solution per gallon. If you wish to sweeten the mead, do so now with sugar syrup, adding also 1/2 teaspoon Wine Stabilizer per gallon.

Prickly Pear/Mesquite Melomel - sparkling

Recipe for 5 gallons

- 7.5 lb prickly pear puree
- 12 lb Mesquite Honey
- 1 T Yeast nutrient
- 4 tsp acid blend
- Dry Mead Yeast - Wyeast #3632
- 1 cup corn sugar for bottling

Prickly pear cacti ubiquitously dot the landscape of the Southwest. Mesquite trees grow alongside prickly pear in Texas. Prickly pear introduces a beautiful magenta color and flavors of strawberry, watermelon, and honeydew melon. Mesquite honey has a delicate spiciness to balance the fruit flavors. Based on an award winning recipe of Brian Myers of Australia.

—Lynne O'Connor

A number of small, relatively inexpensive, acid titration kits are on the market for testing the total acidity in wines, meads, and musts. They all work on the same basic principle.

Starting with an acid sample of unknown strength (the mead), to which a few drops of color indicator have been added, an alkaline solution of known strength (most often sodium hydroxide) is slowly mixed in until a color change indicates neutrality has been reached. The kit's instructions will tell you how to then calculate your acid level, based on how much alkaline solution was needed to neutralize the acid in your sample. Discard all test samples.

Most available acid titration kits are designed for winemakers, and measure the percentage of acids in a given sample as "tartaric." This means that, even though you have a number of different acids in your sample, and they may of varying strengths, the percentage is expressed using the known strength of Tartaric Acid as the standard. That is the convention in the USA. In the UK, Sulfuric, a much stronger acid, is the standard.

Because the acid levels in wines and meads are generally less than one percent as tartaric, you may see them expressed in two ways, either as percentages or as parts per thousand (ppt). Normally, a mead should

have at least .5% total acidity (five parts per thousand) at the absolute minimum.

If you wish to raise the acid level in your mead, adding 2/3 oz. of Tartaric Acid (about four tsp.) to five gallons of mead increases the level by .1%.

Acid levels of .85% and above would probably be approached only under the rarest of conditions, and by the sweetest of meads. Sugar and acid offset each other, so a high level of one can, within reason, be used to complement the other.

Note that this is not a pH test. That would involve a completely different scale, and doesn't test exactly the same thing a total acid test does. However, a total acid reading of .6% or higher is very likely to mean a low enough pH to make your mead relatively stable.

Yeast Nutrient for Meads

I tasted my first mead back in 1973, but I didn't consider taking up the hobby until many years later. One reason was that I was told by the maker that his mead had fermented for four years, and that was after two years spent getting it started. I've always been thirstier than that.

That's an extreme situation, one that should never happen. These days, my meads generally go through 3-4 weeks of

Blue Agave/Guajillo Melomel - still

Recipe for 5 gallons

- 6 lb Blue agave nectar
- 8 lb Guajillo honey
- 1 T yeast nutrient
- 1 T acid blend
- Dry Mead Yeast - Wyeast #3632

Blue Agave nectar is a fructose-rich concentrate made from the Mexican plant that gives birth to tequila. The nectar tastes of prunes, raisins and currants. Guajillo honey comes from the white flower of a native Texas bush which grows in a small area of the Edwards Plateau. This rare honey has a smokey flavor. Both the flavor and color of this melomel are reminiscent of reposado or añejo tequila.

—Lynne O'Connor

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active fermentation, depending on conditions, and most of them are ready to bottle just a few months later.

One difference now is the general availability of better meadmaking information, but another is the existence of a first class Mead Nutrient.

In his book, *Making Mead*, Cornell University professor, Roger A. Morse, tells of his extensive research into mead fermentation, and gives the recipe for a complete yeast nutrient especially designed for meads.* A decade ago, my company, The Beverage People, began packaging mead nutrient, following Morse's instructions as closely as possible, but omitting the Acid, so mead-makers could add that separately. Results were astounding!

My point is not to sell nutrient. I hardly expect to get rich doing that. However, as of now, I don't know of anyone else packing up a similar product. Morse's recipe is available, so others may be doing so, but if you find another "Yeast Nutrient for Meads," it might be wise to ask some questions about the formulation. (continued on page 60)

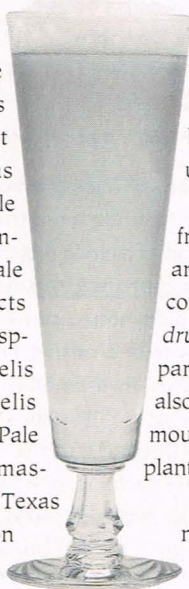
Celis & Spice:

A beer with an international following

BY GREG KITSOCK

"When they were babies I was serving them milk. Now that they're grown up, I'm serving them beer," Pierre Celis—dairy farmer turned brewer—likes to say of his customers in his native Belgium. Having reintroduced his countrymen to a nearly extinct style called witbier, he's now spreading the word in the United States.

Located in the Walnut Creek Business Park four miles from the nightclubs of Sixth Street, the Celis Brewery in Austin, Tex. turns out Belgian-style beers with a Texas twang. Among the brewery's clientele is actor Clint Eastwood, who commissioned his own beer: a golden ale called Pale Rider. Other products include a pink-champagne-like raspberry ale; the strong and spicy Celis Grand Cru; the Abbey-style Celis Dubbel; and the oddly named Celis Pale Bock (actually a pale ale, but masquerading as a lager because of a Texas law which reserves the designation "ale" for beers over 5% abv).



Celis White, however, is the flagship brand and the brewery's main reason for existence. The white ale accounts for 42% of the company's overall business, according to brewery president Christine Celis, daughter of Pierre. Celis White is a classic example of a Belgian-style witbier or biere blanche. Both terms mean "white beer." While not the color of milk, Celis White is a pale straw color with a pronounced cloudiness, a result of brewing with large amounts of unmalted wheat.

The citrusy/peppery aroma comes from a blend of the spices coriander and Curaçao orange peel. The former consists of the crushed seeds of *Coriandrum sativum*, an herb native to large parts of Europe and Asia. Coriander is also used to flavor curry powder and vermouth. The dried leaves of this versatile plant form the seasoning cilantro.

Curaçao orange peel takes its name from a small Caribbean island 38 miles north of Venezuela. This





Christine and Pierre Celis with brewmaster Peter Camps (top)

bitter, fragrant variety is native to South Asia, and was first brought here by Columbus on his second voyage in 1493. Curaçao orange is also the flavoring agent in liqueurs that go by such names as Triple Sec, Grand Marnier and Cointreau.

Celis White has an alcohol content of 4.7% abv and an original gravity of 11.8 degrees Plato (SG 1.047), both typical for the style. The grist consists of pale malt and unmalted winter wheat from the Texas hamlet of Luckenbach, celebrated in song by country singer Jerry Jeff Walker. The barley malt is a mixture of 2-row and 6-row varieties. Most craft breweries prefer the 2-row barley because it is considered to have a

more fully developed kernel and yield a better extract. However, the 6-row barley has a greater enzyme content, which helps in the saccharification process, notes brewmaster Peter Camps (Pierre's son-in-law). Also, the extra husk material aids in the lautering process, which is an important consideration when you're brewing a beer with a large percentage of wheat (between 40 and 50% in the case of Celis White).

Hops are a minor supporting player with many Belgian styles, and some Belgian breweries age their hops for a year or more to decrease the potential for bitterness. Celis uses fresh hops—Cascade, Saaz and Willamette—but maintains a low bitterness of 12-14 IBUs.

Most of the aroma comes from the coriander and Curaçao orange peel, which are obtained from a dealer in California, crushed and added midway through the boil. For years, there have been rumors of a secret third spice. When we asked Camps, he offered only a terse "no comment." Pierre declares that there is no third spice, then adds, with a chuckle, "Each brewer has a little secret!" Michael Jackson claims to have detected a hint of cumin in the Hoegaarden White that Pierre Celis perfected back in his native Belgium. Does Celis White also contain a pinch? Another source identifies the hypothetical secret spice as chamomile.

Celis White is fermented with a proprietary yeast strain from Belgium. The primary fermentation proceeds at a temperature of 20-25°C (68-77°F) and lasts 5-7 days.

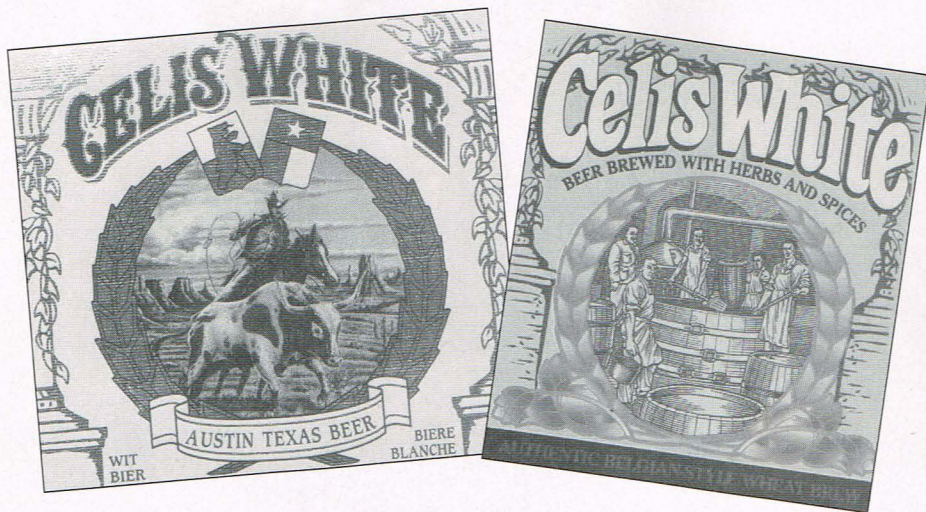
Brewery personnel are reluctant to discuss the process any further. "There's an old saying, 'The enemy listens also,'" laughs Celis. However, Jackson, in his *Beer Companion*, states that the Celis White undergoes a lactic fermentation for an additional week. Afterwards, the beer is pasteurized, then repitched with the original yeast for a third fermentation in the tank. Celis, however, is not bottle-conditioned.

Celis White is customarily drunk from a squat, tumbler-style glass, and in the opinion of Camps should be served well chilled. Jackson recommends it both as a summer thirst-quencher and an excellent accompaniment to fruity desserts like lemon meringue and orange sherbet.

Wit may be a new discovery for Americans, but the brewers of Brabant province in Belgium have been producing beers more or less like Celis for centuries. Pierre Celis has uncovered evidence of monastic brewing in his hometown dating back to the 13th century. The monks and small farmers would have produced a turbid ale in the absence of modern filtering techniques. Brabant has a tradition of "wind-malting." That means the green malt, instead of being dried in a kiln, would have been spread on a rooftop for the sun and air to do their work. The result would have been an extremely light-colored malt capable of producing a very pale beer.

What about the coriander and orange peel? Pierre Celis believes these condiments date from the Spanish domination of Belgium during the 16th and 17th centuries. Coriander, after all, thrives in warm, Mediterranean climates, and the area around Seville was—and still is—famous for its orange groves. Indeed, Spain was the first European power to colonize the island of Curaçao in 1527. At that time, Spanish sailors to the New World were required to bring along 100 orange seeds per man to plant new orchards.

The earliest wit beers were spontaneously fermented in wooden vessels, and would have picked up a sharp acidity as well as off-flavors from the action of bacteria. Brewers would have used sweet spices to mask these undesirable traits, in much the same way that the nobility of past centuries drenched their meals in spices to make bland or rancid food more palatable.



One white, two countries: Celis White for the Belgian market (left) depicts a cowboy, but for the U.S., a Belgian brewing scene.

Belgians were hardly the only nationality to use spices in brewing. It wasn't until the 14th century that hops were introduced to England by Flemish immigrants fleeing religious persecution. Bitter hopped beer coexisted with sweet, spiced ales for several centuries.

Before there was a reliable source of hops, brewers in America also compensated with various seasonings. Several recipes for spiced ale appear in Joseph Coppinger's 1815 *The American Practical Brewer and Tanner*. Among these is the following list of ingredients for making 65 bbl of what Coppinger calls "London ale":

- 200 Bushels of Pale Malt
- 206 lbs of Hops
- 4 lbs of Grains of Paradise, pounded or ground
- 4 lb of Coriander Seed
- 1 lb of Orange Powder

Coppinger calls for the addition of several other ingredients at the end of the fermentation, including "4 lb of ground ginger, 1/2 lb of bay salt, with 1/2 a peck of wheat flour well mixed." He also advises that "hard water is, by some, supposed to be more favorable for making this kind of ale than soft."

However, no matter how widespread wit brewing was, the fact remains that it survived only in Belgium—and even there by the slimmest of threads. Nineteenth-century Hoe-gaarden (pronounced "who garden"), a town about an hour's drive east of Brussels, was once a hotbed for the style, with over 30 breweries at one point. By the 1950s, the number had dwindled to a single small brewery operated by a Louis Tomsen. Pierre's father, a cattleman and dairy farmer by trade, lived on the neighboring parcel of land. In his spare time, young Pierre acted as a surrogate son to the childless Tomsen, helping him brew and learning the secrets of the trade. "Making beer was fascinating to me," he recalls.

Tomsen's brewery, by Celis' recollection, was a rustic operation, lacking electricity and relying solely on manpower. It went out of business in 1957 or 1958. "I was a little frustrated that he never asked me to take over," admits Pierre. Instead, Tomsen sold his antiquated brewing equipment to a museum in Bookrek where it remains on display to this day. (The label for Celis

White portrays a scene from Tomsen's brewery; of the five men depicted, the shortest is the young Pierre Celis.)

Nostalgic for the lost style, Pierre decided to revive wit beer in 1966. He purchased a 20-barrel farmhouse brewery and relocated the copper kettles to a stable on his father's farm. "It was just me and my wife. There were no employees," he recalls.

Wit Recipe

Jinx

Created by Jim Wagner
Pasadena, Md.

A homebrewer since 1991, Jim Wagner is one of those lucky amateurs who made the transition to the pros by being in the right place at the right time. In 1999, his brown ale took top honors in a contest sponsored by the Free State Homebrewers Guild, a coalition of homebrew clubs in the state of Maryland. Jim's prize was to recreate his recipe at DuClaw Brewing Co., a brewpub in Bel Air, MD. DuClaw, however, had just lost its head brewer, and Jim was offered the job. He never did get to brew that brown ale, but his first original formulation for DuClaw was a Belgian-style white beer that he playfully named Jinx. This is a scaled-down version of that beer.

— Greg Kitsock

Ingredients for 5 U.S. gal (19 L)

- 3.75 lb flaked wheat (1.7 kg)
- 3.5 lb 6-row pale malt (1.6 kg)
- 0.25 lb rolled oats (0.1 kg)
- 2 oz Hallertau hops (56 g)
- 2 oz Tettnang hops (56 g)
- 1 oz Curacao orange peel (28 g)
- 0.75 oz coriander (21 g)
- White Labs Belgian wit ale yeast WLP400
- Original specific gravity: 1.047-1.048
- Final specific gravity: 1.013
- Boiling time: 90 minutes
- Primary fermentation: 5-7 days
- Secondary fermentation: 7-10 days

Brewer's Specifics:

Wagner recommends a step infusion mash with the protein rest at 122°F (50°C) for 20-30 minutes, then increasing to 152°F (67°C) for 60 minutes. An alternative is to

Daughter Christine remembers spending much of her childhood playing in the brewery. "I would look in the brewkettle to see what was going on, and the bottling line was very impressive, too! I would also go along with my dad in his little truck to make deliveries. I could not have had a better teacher!"

Pierre's business grew steadily. "In the beginning I sold only to my neighbors, then

do a single-step infusion at 152°F (67°C). Add half the hops at the beginning of the boil, the other half 15-30 minutes before the end of the boil. Add 0.5 oz (14 g) of the orange peel 15 minutes before the end of the boil, and another 0.5 oz (14 g) at knockout. Insert 0.25 oz (7 g) of coriander 15 minutes before the end of the boil, another 0.5 oz (14 g) at knockout. (Remember to crush the coriander in a mill or with a rolling pin before brewing.) Primary fermentation should take place at 70°F (21°C); secondary fermentation at 65-70°F (18-21°C). Add 0.75 cups (178 mL) of corn sugar to prime the beer before bottling.

To do as an **extract recipe**, Wagner advises using "any good-quality dry malt extract" with a percentage of approximately 55% wheat, 45% pale malt. All other directions remain the same.

Wagner prefers using 6-row pale malt because the extra husk material aids in lautering. For homebrewers who would rather work with 2-row pale, Wagner recommends adding about half a cup (119 ml) of rice hulls to prevent a stuck mash. The oats give the beer a smoother, richer mouthfeel, but can be replaced with an extra 0.25 lb (0.1 kg) of pale malt. Other noble hop varieties can substitute for the Hallertau and Tettnang, but Wagner cautions that Saaz will "totally change the character of the beer and add a Bohemian-pilsner snap to the finish." Finally, Wagner notes that Wyeast Belgian white beer strain No. 3944 is also acceptable.

The recipe is calibrated to "lend the beer a good medium spiciness," adds Wagner. Homebrewers may want to tweak the amounts upwards or downwards to suit their own tastes, and the adventurous may also want to experiment with a little cardamom or grains of paradise.



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to the village, then to the next town, and then Holland and France." In 1972, he acquired an 85-barrel brewhouse and located it in a bankrupt soft drink factory. Celis named his brewery De Kluis (pronounced like "da klice"), literally "the cloister," in honor of Belgium's tradition of monastic brewing.

By 1985, without the benefit of multi-million dollar advertising campaigns, Celis was producing 300,000 barrels a year and employing 90 people. However, disaster struck on October 7 of that year when an electrical spark in the attic ignited a major conflagration. The brewery burned to the ground. Pierre was under-insured: his settlement amounted to 40 million Belgian francs, whereas rebuilding the brewery would take 280 million. As a result, he decided to sell the operation to the Belgian giant Stella Artois (now known by the corporate name of Interbrew).

Pierre continued to manage the brewery for a few years after it was rebuilt, but in 1990 allowed himself to be bought out. As he explains, he had reached the age of 65 and had no desire to work in a large corpo-

ration. Instead, he got back to his roots by founding a new operation in the New World.

Celis was already familiar with Austin, Texas as a result of his American importer being located there. There were several other reasons why he chose this spot for his new brewery. First of all, like Hoegaarden, the Texas capital had a relatively hard water supply because of underground limestone deposits. Secondly, Austin was a university town with a large population of young adults who would be more receptive to this new style of beer. Thirdly, Austin was centrally located with excellent port facilities for shipping beer to all parts of the United States. Lastly, "people in Texas speak slowly," notes the heavily-accented Celis. "It's easier to understand them."

The first six-packs of Celis White rolled off the Austin bottling line in May 1992. In the early years, recalls Christine, Celis spread itself too thin by selling beer in 30 states. "Sometimes people had to wait three months for a new shipment." That was a major reason for the alliance that Celis forged with Miller Brewing in 1995. The nation's second largest brewer acquired a majority interest in the Celis Brewery, giving Pierre and his family capital for expansion, plus access to in-house lawyers, engineers, and one of the best distribution systems in America. Because Miller buys its supplies in bulk, Celis has also been taking advantage of discounts in malt, hops and packaging materials. The Celis Brewery, however, retains complete creative control over its beers.

Celis beers are currently available in 14 states, mostly in the Southwest, Mid-Atlantic and Southeast. In addition, Pierre has stated, "One of my goals is to make America a competitive beer-exporting country." His first attempt hit a snag when the European Union slapped a 40% tariff on his shipments to Belgium. Currently, the Celis Brewery brews its white ale under license at the De Smet Brewery in Opwijk, Belgium and at the Brick Brewing Co. in Waterloo, Ontario. Interestingly, while the American label shows a Belgian brewing scene, the label for the Belgian version of Celis White depicts a cowboy.

Over the last several years, sales have flattened, a result of intense competition, in Pierre's view. It probably hasn't helped that

dozens of breweries have produced their own versions of a Belgian-style white ale, in Belgium, Holland and France, as well as the United States, Canada and even Japan. Many of these breweries have added their own individual twist to the style. The Brewery La Caracole in Falmignoul, Belgium adds lemon peel to its Troublotte witbier in addition to coriander and orange peel. The Timmermans Brewery in Itterbeek makes a lambic wit. The Foundry Ale Works, a Pittsburgh, Pa. brewpub, has offered a hybrid wheat beer called Wit'as End which is spiced with coriander and orange peel but fermented with a German Hefeweizen yeast. The Boston Beer Co. has produced two Americanized white ales. Samuel Adams Summer Ale contains grains of paradise (a West African spice with a peppery flavor), while Samuel Adams White Ale (sadly, now discontinued) is seasoned with nine ingredients, including such exotica as hibiscus and rose hips.

Celis professes to have confidence in the future, however. His brewery has its proprietary secrets that make its white ale unique (a four-star beer, or "world classic," in Michael Jackson's *Pocket Guide to Beer*). Even if his techniques became public, Celis knows that the same recipe, when brewed in different buildings by different people, produces different beer. "Brewers that make good beer will grow," he insists.

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- Greg Kitsock is a regular contributor to Zymurgy.**

While the summer months aren't always ideal for brewing, especially without air conditioning, many styles of beer, and especially mead, can withstand higher fermentation temperatures. Belgian style ales are especially suited for summer brewing because many of the yeast strains used are heavy ester producers anyway. You should also take steps to prevent summertime infections in your beer (as there are more wild yeasts, bacteria, pollen, and other potentially hazardous beasts floating around in the summer) by greater attention to sanitation procedures, and by making sure you have an ample amount of fresh yeast to pitch. Remember that you'll always have a certain level of undesirable bacteria and microbes in your brew, no matter how meticulous a brewer you are. So do all you can to prevent infection. A few more hints: use refrigeration or a cool cellar to keep your finished beer cold; keg your beer rather than bottle it, if you have the means—the less you mess around with it, the better its chances; and finally, consume the batch quickly! (Like I have to tell you....)

Belgian Style Lambic



SILVER MEDAL

AHA 1999 NATIONAL HOMEBREW COMPETITION

Matt Weaver

[Untitled]

Fruit Lambic (Framboise)

Ingredients for 5 U.S. gal (19 L)

- 6 lb Belgian pale malt (2.7 kg)
- 2 lb malted wheat (.91 kg)
- 3 lb flaked wheat (1.3 kg)
- 7 lb raspberries (3.18)
- 4 oz Hallertauer hops (stale),
4.2% alpha acid (113 g) (60 min.)
- Wyeast No. 3278 Belgian Lambic Blend
- 1 c corn sugar (177 mL) (to prime)

- Original specific gravity: 1.060
- Final specific gravity: 1.004
- Boiling time: 120 min.
- Primary fermentation: 12 months at 65 to 70° F (18 to 21° C) in plastic

Brewer's Specifications

Mash grains at 105° F (41° C) for 15 min. Raise mash to 120° F (49° C) and hold for 5 min. Raise mash to 135° F (57° C) and hold for 20 min. Raise mash to 155° F (68° C) and hold for 45 min. Raise mash to 165° F (74° C) and hold for 15 min. Sparge at 185° F (85° C). Add raspberries to primary fermenter.

Judges' Comments

"Good balance of fruit and sour finish, but could withstand some aging."

"A nice lambic. Has many of the Brussels components. Could use more age; acidity may go down & be more balanced."

Traditional Mead



SILVER MEDAL

AHA 1999 NATIONAL HOMEBREW COMPETITION

Thomas J. O'Connor III, M.D.

"Rockport Still Mead"

Still Traditional Mead

Ingredients for 3 U.S. gal (11.3 L)

- 9 lb orange blossom honey (4.08 kg)
- 3 tsp Fermax (yeast nutrient 14.8 mL)
- 1.5 tsp yeast hulls (7.4 mL)
- .5 tsp yeast energizer (2.5 mL)
- Wyeast No. 3184 mead yeast

- Original specific gravity: 1.116
- Final specific gravity: 1.012
- Boiling time: 5 min.
- Primary fermentation: 30 days at 68° F (20° C) in glass
- Secondary fermentation: 90 days at 68° F (20° C) in glass
- Tertiary fermentation: 2 years at 68° F (20° C) in glass

Brewer's Specifics

Boil must for 5 minutes.

Judges' Comments

"Clean & well-made. Nice orange blossom character. Good balance, nice body."

"Nice sweet honey finish. Nice taste of orange blossom."



Every gold-medal winning recipe from the AHA 1999 National Homebrew Competition was printed in the 1999 Nov/Dec Zymurgy (Vol. 22, No. 6) "Winners Circle."

Belgian and French Style Ale



SILVER MEDAL

AHA 1999 NATIONAL HOMEBREW COMPETITION

Tom Hamilton, Salt Lake City, UT

"Dim-Wit"

Belgian-Style White Ale

Ingredients for 5.5 U.S. gal (20.82 L)

- 4 lb two-row pale malt (1.8 kg)
- 3 lb six-row pale malt (1.36 kg)
- 2 lb flaked rye (.91 kg)
- 1 lb flaked oats (.45 kg)
- 6 oz white candi sugar (170 g)
- 1 oz Goldings hops, 4.2% alpha acid (28 g) (60 min.)
- 1 oz Goldings hops, 4.2% alpha acid (28 g) (12 min.)
- 1 oz bitter orange peel (28 g) (20 min.)
- 2 tsp ground coriander (9.9 mL) (20 min.)
- 1 tsp ground coriander (4.9 mL) (5 min.)
- 5 tsp ground cumin (2.5 mL) (5 min.)
- Wyeast No. 3944 Belgian White ale yeast
- .75 c corn sugar (177 mL) (to prime)

- Original specific gravity: 1.052
- Final specific gravity: 1.008
- Boiling time: 60 min.
- Primary fermentation: 3 weeks at 56° F (13° C) in glass

Brewer's Specifications

Mash grains at 149° F (65° C) to 154° F (68° C) for 2.5 hours. Add sugar to the boil.

Judges' Comments

"A good wit. A little less malt or additional lactic (lower pH) to off-set would help. Increased spices could also help balance malt sweetness. A good job however."

"Nice beer. Very drinkable and pleasant. A bit off the classic Belgian wit style. Could use more citrus crispness and spiciness."

American Style Ale



BRONZE MEDAL

AHA 1999 NATIONAL HOMEBREW COMPETITION

Kurt Zyla, Lebanon, NJ

"Teuksbury Gold"

American Style Ale

Ingredients for 7 U.S. gal (26.5 L)

- 15 lb pale malt (6.8 kg)
- 5 lb dextrin malt (.23 kg)
- .25 lb crystal malt (.11 kg)
- 2.3 oz Cascade hops, 5.4% alpha acid (68 g) (90 min.)
- .75 oz Cascade hops, 5.4% alpha acid (21 g) (20 min.)
- .25 oz Cascade hops, 5.4% alpha acid (7 g) (5 min.)
- 1 oz Cascade hops, 5.8% alpha acid (28 g) (dry, 1 month)
- 1 oz Willamette hops, 4.8% alpha acid (28 g) (dry, 1 month)
- BrewTek CL-50

- Original specific gravity: 1.058
- Final specific gravity: 1.011
- Boiling time: 90 min.
- Primary fermentation: 6 days at 66° F (19° C) in glass
- Secondary fermentation: 37 days at 66° F (19° C) in glass

Brewer's Specifics

Mash grains at 152° F (67° C) for 60 min.

Judges' Comments

"Good overall flavor. Nice hop predominance."

"Good balance of malt with high hop character. I like this beer."

Herb and Spice Beer



BRONZE MEDAL

AHA 1999 NATIONAL HOMEBREW COMPETITION

John Tantillo and Dan Bleaking,

Wilmington, NC

"Bleaking's Ginger Beer"

Spice Beer

Ingredients for 5 U.S. gal (19 L)

- 7 lb light dry malt extract (3.18 kg)
- 1 lb clover honey (.45 kg)
- .5 lb 60 L crystal malt (.23 kg)
- 2 oz black patent malt (57 g)
- 2 oz Cascade hops, 4.3% alpha acid (57 g) (60 min.)
- .5 oz Saaz hops, 4.0% alpha acid (14 g) (2 min.)
- 1 oz grated ginger (28 g) (10 min)
- 3 tsp ground cinnamon (14.8 mL) (10 min)
- grated orange peel from 4 oranges (10 min)
- Wyeast No. 1056 American ale yeast
- .75 c dry malt extract (177 mL) (to prime)

- Original specific gravity: 1.050
- Final specific gravity: 1.019
- Boiling time: 60 min.
- Primary fermentation: 7 days at 70° F (21° C) in glass
- Secondary fermentation: 7 days at 70° F (21° C) in glass

Brewer's Specifics

Steep black patent and crystal malts at 160° F (71° C) for 30 minutes.

Add honey and extract, and boil.

Judges' Comments

"A well made beer with no technical flaws. However, the orange and ginger dominate this brew. I cannot detect any cinnamon. Cut back on the spices to put this beer in better balance."

"Malty, slightly raisiny. Good use of spices."

Amahl Turczyn is the associate editor of *Zymurgy* magazine.



Star Brew 1000 Wheat Wine

The wicked wort warrior Charlie P. gave your editor a gripping tale of adventure for "World of Worts" this issue. Alas, with all the other goodies we crammed into this magazine, said tale would not fit into the space available for the column. Thus, we shall hold "Helles in Paradise" for our next edition.

But hey, you thirsty readers still need a story and a recipe, so here is Mr. P's voice, ripped from the pages of Home Brewers Gold, Prize Winning Recipes from the 1996 World Beer Cup by Charlie Papazian. —Ed.

Winning beer competitions did not begin for this brewpub with the 1996 World Beer Cup. Marin's beers have been winners since they first entered the Great American Beer Festival in 1989. Inspired by his homebrewing interests and background in retail beer sales Brendan Moylan, brewmaster and co-founder (with Craig Tasley) opened the doors of Marin County's first brewpub in 1989. Situated on the north side of the San Francisco Bay, the brewpub has attracted a strong following of beer enthusiasts and travelers with its quality and eclectic list of craft brewed beers.

Open 7 days a week, the Marin Brewing Company with its 130 seat restaurant and outdoor beer garden, approaches the beer business with a "Good basic food" and fun atmosphere attitude.

Creative formulation is one of the more admirable aspects of the Marin Brewing Company's beer list. Where does that come from? One might naturally guess: homebrewing. Both Brendan and Arne's love and appreciation for the homebrew hobby has led to a successful career in the brewpub business. The brewpub also serves as a meeting place for the local homebrew club. You'll find Homebrewers of Marin and Elsewhere (HOME) meeting and tasting their homebrews at 8 p.m. on the last Thursday of every month. This northern stretch of the San Francisco Bay area never had it so good.

Other products offered include Mt. Tam Pale Ale, Albion Amber, Marin Weiss,

Marin hefe Weiss, Doppel Weizen, Hefe Doppel Weizen, Pt. Reyes Porter, Old Dipsea Barleywine, Raspberry Trail Ale, Bluebeery Ale, Stinson Beach peach, St. Brendan's Irish Red Ale, Miwok Weizen Bock, Hoppy Holiday Ale, Bodega Bay Bitter, Harvest Ale as well as their World Cup winners San Quentin's Breakout Stout and Star Brew 1000 Wheat Wine.

Character Description of Star Brew 1000 Wheat Wine: Appearance is simply an amber color with an orange hue cast with a slight chill haze, but that's to be expected with a wheat wine. Get it at the brewpub. Aroma is delectably playful with a sweet caramel-toffee malt character married with an abundance of American hop aroma and nostril-warming alcohol. Gratefully the hop character is evident but does not overshadow the lugubrious soft caramel malt. The flavor impression wallops the senses with a sky high wonderful full-flavored full-bodied beer with a soothing finish. Sensually alcoholic, the

flavor is balanced with light caramel and malt followed with a wave of hop bitterness, first impressing as an intrusion, then appreciated for the balance of strength it offers to this skillfully executed brew. As big as this beer is, it is a wonder that it is not sickly sweet in the least. Quite a nightcap. Good night Irene!

Thankfully the absence of diacetyl (butterscotch) compliments a clean fermentation with only a mild hint of fruity esters. The final impression is all malt, hops and alcohol. A classic American invention.

Star Brew 1000 Wheat Wine

Recipe for 5 U.S. gallons (19 liters)

Targets:

- Original Gravity: 1.098 (23.5)
- Final Gravity: 1.026 (6.5)
- Alcohol by volume: 9%
- Color: 11 SRM (22 EBC)
- Bittering Units: 50

All Grain Recipe and Procedure

- 8 lb. (3.6 kg) American 2-row Klages pale malt
- 12 lb. (5.5 kg) American Wheat malt
- 20 lb. (9.1 kg) Total grains
- 12.5 HBU (354 MBU) American Chinook hops (pellets)—105 minutes [bittering]
- 6 HBU (170 MBU) American Chinook hops (pellets)—30 minutes [flavor]
- 1.5 oz. American Cascade hops (pellets)- [aroma] steep in finished boiled wort for 2 to 3 minutes
- 0.25 tsp. Irish moss
- 0.25 c. corn sugar for priming in bottles. Use 1/3 corn sugar if priming a keg.
- Wyeast #1968 London ESB Ale yeast

Winner of 1996 World Beer Cup Strong Ale Category

1996 Gold Cup Winner:
Star Brew 1000 Wheat Wine
 Marin Brewing Company
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 Brewmasters: Brendan J. Moylan
 and Arne Johnson
 Established in 1989
 Production at 2700 barrels (3,200 hl)



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Special notes for all grain recipe:

Because of the density of the boiling wort it is difficult to calculate actual hop utilization using brewing formulas. Typical calculations for the prescribed hop dosage would yield about 60 bitterness units, however it is estimated that actual bitterness will be closer to 50. Mash yields have been reduced to 70 percent efficiency due to the limitations of typical homebrewing systems. Sparge water is less than normally calculated so that total boiling volumes can be reasonably handled. Extended boiling time will increase caramelization of the wort, thus darkening the color from a calculated 8 SRM to a more likely 11 SRM.

A single step infusion mash is employed to mash the grains. Add 20 quarts (19 l) of 169 degree F (76 C) water to the crushed grain, stir, stabilize and hold the temperature at 152 degrees F (67 C) for 60 minutes. After conversion, raise temperature to 167 degrees F (75 C), laut and sparge with 5 gallons (19 l) of 170 degree F (77 C) water. Collect about 8 gallons (30.5 l) of runoff and add bittering hops and bring to a full and vigorous boil.

The total boil time will be 105 minutes. When 30 minutes remain add flavor hops. When 10 minutes remain add Irish moss. After a total wort boil of 105 minutes (or reducing the wort volume to just over 5 gallons) turn off the heat, add aroma hops and let steep 2 to 5 minutes. Then separate or strain out and sparge hops. Chill the wort to 65 to 70 degrees F (18-21C) and direct into a sanitized fermenter. Aerate the cooled

wort extremely well. Add a healthy amount of active yeast culture and ferment for 4 to 8 days in the primary. Then transfer into a secondary fermenter and maintain temperature. Secondary aging should last at least 2 to 3 months.

When secondary aging complete, prime with sugar, bottle or keg. Let condition at temperatures above 60 degrees F (15.5 C) until clear and carbonated. This beer will take on its winning character as it approaches one year in age.

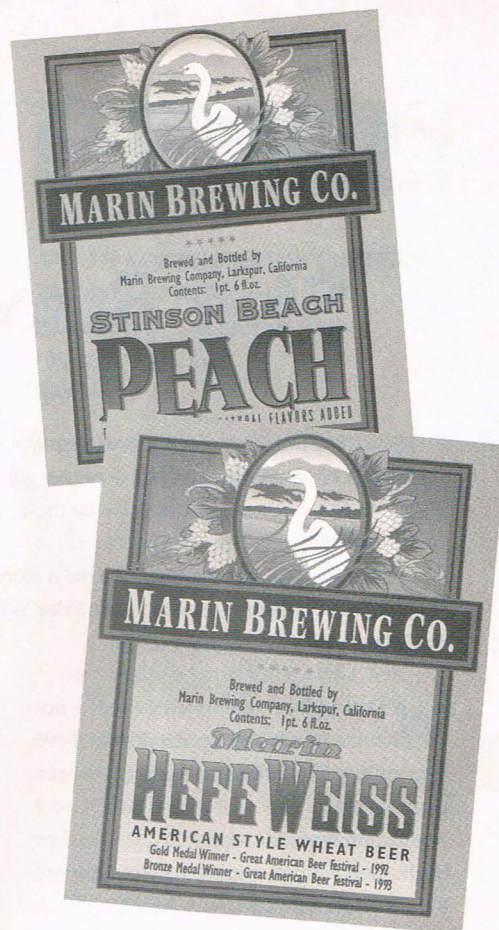
Malt Extract Recipe and Procedure

- 13.5 lb. (5.9 kg) Wheat malt extract syrup (50% wheat, 50% barley)
- 12.5 HBU (354 MBU) American Chinook hops (pellets)—90 minutes [bittering]
- 6 HBU (170 MBU) American Chinook hops (pellets)—30 minutes [flavor]
- 1.5 oz. American Cascade hops (pellets)—[aroma] steep in finished boiled wort for 2 to 3 minutes
- 0.25 tsp. Irish moss
- 0.75 c. corn sugar for priming in bottles. Use 1/3 corn sugar if priming a keg.
- Wyeast #1968 London ESB Ale yeast

Special notes for all malt extract recipe:

Because of the density of the boiling wort it is difficult to calculate actual hop utilization using brewing formulas. Typical calculations for the prescribed hop dosage would yield about 65 bitterness units, however it is estimated that actual bitterness will be closer to 50. With such a concentrated and long boil time used to reduce the wort volume there will be caramelization of the wort, thus lending a caramel flavor and darkening the color from a calculated 8 SRM to a more likely 11 SRM.

Add the malt extract, bittering hops to 4 gallons of water and bring to a full and vigorous boil. The total boil time will be 90 minutes. When 30 minutes remain add flavor hops. When 10 minutes remain add Irish moss. After a total wort boil of 90 minutes (or a reduction of the wort to about 2.5 to 3 gallons) turn off the heat, separate or strain out and sparge hops and direct the



hot wort into a sanitized fermenter to which 2 gallons (7.6 l) of very cold water has been added. If necessary add additional cold water to achieve a 5 gallon (19 l) batch size. Chill the wort to 65 to 70 degrees F (18-21C). Aerate the cooled wort extremely well. Add a healthy amount of active yeast culture and ferment for 4 to 8 days in the primary. Then transfer into a secondary fermenter and maintain temperature. Secondary aging should last at least 2 to 3 months.

When secondary aging complete, prime with sugar, bottle or keg. Let condition at temperatures above 60 degrees F (15.5 C) until clear and carbonated. This beer will take on its winning character as it approaches one year in age.

World traveler Charlie Papazian is the founding president of the Association of Brewers and the author of numerous best-selling books on homebrewing. His most recent books are *Home Brewers Gold* (Avon, 1997), a collection of prize-winning recipes from the 1996 World Beer Cup Competition, and *The Best of Zymurgy* (Avon, 1998) a collection of the best articles and advice from 20 years of *Zymurgy*.



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TABLE 1. Honey Varieties Chart

EXCERPTED FROM USDA TECHNICAL BULLETIN # 1261

Sample	Color	Granulation	Moisture	Fructose or Levulose	Glucose or Dextrose	Sucrose	Maltose	Higher Sugars	Undeter- mined	pH	Free Acid	Lactone	Total Acid	Lactone/ Free Acid	Ash	Nitrogen	Diastase
Alfalfa	4	6	16.2	39.11	33.4	2.64	6.01	0.89	2.8	3.88	20.19	10.16	30.35	0.501	0.093	0.033	17.5
Aster	7	2	17.4	37.55	31.33	0.81	8.45	1.04	3.5	4.68	20.22	2.17	22.39	0.106	0.302	0.043	—
Athel Tree	8	8	15.3	39.75	37.65	1.3	4.24	0.27	1.5	4.09	30.15	5.86	36.01	0.198	0.305	0.063	—
Basswood	4	3	17.4	37.88	31.59	1.2	6.86	1.44	3.6	4.05	16.78	6.58	23.7	0.382	0.084	0.022	—
Blackberry	8	0	16.4	37.64	25.94	1.27	11.33	2.5	5	4.5	27.37	1.76	29.11	0.112	0.399	0.055	—
Blueberry	8	2	17.4	37.2	1.08	0.79	9.09	0.83	3.6	4.36	16.36	4.92	21.29	0.301	0.163	0.059	—
Buckwheat	10	2	18.3	35.3	29.46	0.78	7.63	2.27	4.3	3.97	35.07	6.99	2.06	0.213	0.224	0.064	38.9
Chinquapin	10	1	15.8	33.63	23.93	0.89	12.27	4.79	5.3	4.95	28.57	3.36	31.93	0.121	0.761	0.052	25.3
Clover	3	1	16.8	39.18	30.72	1.4	7.46	1.55	2.9	3.83	15.82	7.19	23.01	0.44	0.067	0.025	—
Alsike																	
" Crimson	2	2	17.4	38.21	30.87	0.91	8.59	1.63	2.4	3.74	15.65	6.04	21.68	0.39	0.57	0.029	22.7
" Sweet	4	2	17.7	37.95	30.97	1.41	7.75	1.4	2.6	3.77	19.55	6.98	26.53	0.365	0.084	0.039	20
" White	5	3	17.9	38.36	30.71	1.03	7.32	1.56	3.2	3.84	22.95	8.71	31.66	0.366	0.156	0.046	—
Coralvine	11	0	16.8	34.86	28.46	0.61	6.11	3.03	7.9	4.32	46.21	8.9	55.11	0.193	0.592	0.057	—
Cotton	5	8	16.1	9.28	36.74	1.14	4.87	0.5	2.3	4.29	24.61	5.21	29.82	0.207	0.339	0.037	—
Cranberry	9	1	17.2	35.59	28.13	1.02	8.03	2.95	7.1	4.37	23.82	6.32	30.14	0.274	0.33	0.041	—
Eucalyptus	6	3	17	39.35	32.27	1.43	6.84	0.8	2.4	4.14	18.96	7.51	26.46	0.383	0.204	0.05	21.9
Fireweed	4	4	16	39.81	30.72	1.28	7.12	2.06	2	3.83	19.3	7.47	26.77	0.374	0.108	0.032	—
Gallberry	5	2	17.1	39.85	30.15	0.72	7.71	1.22	3.2	4.2	16.19	4.46	20.65	0.269	0.163	0.028	18.1
Goldenrod	6	4	17	39.57	33.15	0.51	6.57	0.59	2.6	4.45	19.93	2.11	22.05	0.091	0.263	0.045	37.4
Grape	12	0	21.2	34.4	25.42	1.12	11.47	1.55	4.8	4.03	35.83	8.64	44.47	0.241	0.239	0.082	—
Heartsease	6	4	19.6	37.23	32.98	1.95	5.71	0.63	1.9	4.06	20.7	2.6	23.3	0.123	0.161	0.06	—
Horsemint	4	1	18.8	37.37	33.63	1.01	5.53	0.73	3	3.72	28.51	13.74	42.24	0.483	0.221	0.045	—
Locust, Black	3	1	17.3	40.66	28	1.01	8.42	1.9	2.7	4.03	11.88	4.03	15.94	0.328	0.052	0.018	11
Manzanita	5	7	17.9	34.88	37.1	0.8	6.26	1.4	1.8	4.3	13.86	4.26	18.12	0.308	0.208	0.029	—
Marigold	4	4	19.3	37.08	34.22	0.93	5.3	0.44	2.7	3.6	23.42	12.26	35.68	0.524	0.076	0.034	27.3
Mesquite	5	7	15.5	40.41	36.9	0.95	5.42	0.35	3.8	4.2	13.74	2.59	16.33	0.193	0.129	0.012	—
Mex. Clover	9	0	18.2	38.28	29.42	0.75	7.94	1.38	4	3.9	42.23	13.56	55.79	0.321	0.268	0.067	27.8
Mint	1	2	18.8	38.84	33.33	2.1	4.93	0.96	1	4.01	15.9	7.85	23.75	0.494	0.123	0.019	15
Orange	4	4	16.7	39.26	31.83	1.87	6.5	1.33	2.5	3.67	24.23	13.21	37.35	0.54	0.082	0.03	27.8
" /grapefrt	6	4	16.5	38.89	32	2.78	7.16	1.37	1.2	3.84	21.47	8.87	30.34	0.415	0.073	0.012	11.9
Palmetto saw	7	2	16.6	38.24	30.92	0.83	6.48	1.69	5.3	3.98	26.54	14.71	41.25	0.57	0.352	0.022	14.4
Peppermint	9	5	16.5	42.11	31.04	0.51	6.37	0.89	2.7	4.71	34.11	3.16	37.22	0.096	0.473	0.045	—
Prune	8	6	19.4	36.94	28.09	0.42	10.47	0.77	3.9	6.1	11.8	0	11.8	0	0.694	0.095	—
Raspberry	8	0	17.4	34.46	28.54	0.51	8.68	3.58	3.5	4.04	33.64	5.55	39.19	0.192	0.471	0.047	—
Sage	4	1	16	40.39	28.19	1.13	7.4	2.38	4.3	3.81	19.9	9.19	29.1	0.458	0.108	0.037	—
Sourwood	5	0	17.1	39.79	24.61	0.92	11.79	2.55	3.2	4.53	13.52	3.43	16.95	0.263	0.23	0.02	15.3
Spearmint	6	3	16.6	41.09	32.58	0.43	5.98	0.6	2.7	4.3	32.76	5.67	38.43	0.173	0.313	0.045	—
Sumac	10	2	17.6	31.46	24.39	1.77	8.21	6.9	9.7	4.42	37.74	6.36	44.1	0.168	0.931	0.056	34.1
Thistle, Star	4	3	15.9	36.91	31.14	2.27	6.92	2.74	3.9	3.54	27.67	13.98	41.65	0.52	0.097	0.055	32.9
Thyme	8	1	16.8	37.13	31.2	0.85	8.83	1.7	3.2	4.8	22.41	5.47	27.88	0.244	0.384	0.057	—

Tulip Tree	10	0	17.6	34.65	25.85	0.69	11.57	2.96	6.6	4.45	38.28	4.71	42.99	0.121	0.46	0.076	21.7
Tupelo	7	0	18.2	43.27	25.95	1.21	7.97	1.11	2.3	3.87	25.46	11.2	36.59	0.435	0.128	0.046	17.8
Vetch	3	3	17	38.33	31.67	1.34	7.23	1.83	2.5	3.68	20.46	9.69	30.15	0.469	0.094	0.033	16.4
“ , Hairy	2	2	16.3	38.2	30.64	2.03	7.81	2.08	2.5	3.73	15.51	7.51	23.02	0.481	0.056	0.03	12.9
Avg of All Honeyes	5	3	17.2	38.19	31.28	1.31	7.31	1.5	3.1	3.91	22.03	7.11	29.12	0.335	0.169	0.041	—
Lows*	0	0	13.4	27.25	23.08	0.14	3.66	0.13	0	3.4	6.5	0	8.68	0	0.017	0	2.1
Highs*	12	9	22.9	44.26	40.75	6.54	15.98	8.49	14	6.1	47.19	19.37	59.49	0.95	1.028	0.133	61.2

Notes to Honey Variety Chart:

Color: The honeys were graded on a scale of 0-12, with one representing the light half of water white (the lightest USDA honey color designation) and 12 representing dark amber (the darkest USDA honey color designation). The numerical designations in between are representative of a linear set of gradations.

Granulation: These ratings are based on the degree of granulation observed in the sample, and were shown to be directly correlated to the Dextrose-to-Water (D/W) ratios. D/W ratios below 1.7 were indicative of non-granulating honeys, and ratios above 2.1 were predictive of honeys given to rapid granulation.

Sugars: The major simple sugars (mono- and di-saccharides) found in honey are listed individually: glucose (dextrose), fructose (levulose), sucrose and maltose. Longer chain sugars are grouped together under “Higher Sugars.”

Acid levels: These are given in Millequivalents per Kilogram (Meq/kg) and not as percentages. The measured pH levels represent the combined affects of acid levels and buffering compounds contained in honey. Ash content is more influential on pH than was acidity, lactone content or lactone-to-free acid ratio. The primary acid in honey is gluconic acid, although other acids are present in small percentages, which may vary by nectar source.

Ash: Includes all inorganic materials. Percent by weight.

Nitrogen: Percent by weight.

Diastase: An enzyme which cleaves starch and related polysaccharides into smaller units including sugars. Closely related to saccharification enzymes of malt.

Low and High Values

The lows and highs listed at the bottom of the chart represent the extreme values from among 490 honeys assayed by the USDA team. The honeys in this chart were selected because of their relevance to mead making and so the actual high or low value may not appear among these entries. Nonetheless, the ranges are included for reference, to show the extremes which can be achieved through regional and seasonal variation and to intrigue the reader regarding the possibilities. The high values among those honeys listed on the chart are shown in bold face type; the low values in italics. The following commentary identifies the actual high and low values for each characteristic.

Other Comments on Varietal Honeyes:

Coralvine: Southern vine with deep pink summer to fall blossom. Mid/late October extraction.

Grape: The variety listed is scuppermong. That grapes would be listed is noteworthy in that most varieties of grape are wind pollinated, and do not generally require the use of bee colonies for pollination.

Heartsease: A beautiful purple flowering herb, *Viola tricolor*, also known as wild pansy.

Horsemint: In the US, *Monarda punctata*, an herb with a mint/thyme aroma and flavor, known for medicinal properties. In the UK, horsemint refers to *Mentha longifolia*, a primarily culinary, peppermint-like member of the mint family.

Mexican Clover: September extraction from Tifton, Georgia.

Mint: Sample from Marion, Iowa.

Orange: All samples from California.

Orange/Grapefruit: This is the most common “Orange Blossom Honey” marketed in the US. Many blends also contain other citrus fruits, such as lemons. All but one of fourteen samples from Florida.

Prune-plum: An April (very early) extraction from Sonoma, California, indicating southern or migratory colonies of bees.

Raspberry: All had high ash values, but one of the four samples hit 1.028%, the highest in the study.

Tulip Tree: Also commonly known as Tulip Poplar.

(continued on page 56)

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Mastering Mead Formulation

Second, the values for dry-to-very sweet are somewhat arbitrary. Your actual perception of sweetness may diverge from the values given due to honey characteristics, variables in attenuation and alcohol levels. Additionally, some of these yeasts may ferment more completely under ideal nutrient and temperature conditions.

Fermentation

Mead fermentations have had a reputation for being problematic. The reasons for these problems are not complex, and are easily prevented or remedied. Honey/mead musts are notoriously low in free amino nitrogen and other essential yeast nutrients. We recommend the use of Lalvin Fermaid at the rate of 5 grams/5 gallon batch to make up the deficiency. Stir the nutrient into the must well before pitching the yeast. As with any fermentation, use an actively fermenting starter, stepped up to a minimum of 10% of batch volume. The entire starter does not need to be pitched: decant off the bulk of the spent media, swirl well and pitch. When using dry yeasts, use at least 10 grams/5 gallon batch and rehydrate before pitching.

Mead musts are also low in pH, and this can result in dramatically slowed fermentation activity. This typically occurs when the yeast uses/removes the buffering compounds during the reproductive and early fermentation phases. Use pH test strips to determine if your pH has dropped below 3.5; if so, use calcium carbonate to increase the pH to a minimum of 3.8 to assure that your fermentation isn't prolonged for several months. Use 1 gram, stir in well, test pH, continue to make additions until your target pH is obtained.

If your original gravity is too high, it will inhibit all yeast activity. If you seek a high finishing gravity, you may need to start the fermentation with 3 lbs per gallon, and add the remaining honey once the fermentation has been active for a couple of days.

Yeast manufacturers recommended fermentation temperature ranges

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KV-1116: 59°-86°F

EC-1118: 45°-95°F

Wyeast

Dry Mead 3632: 55°-75°F

Sweet Mead 3184: 65°-75°F

YeastLab

Dry Mead M-61: 60°-75°F

Sweet Mead M-62: 60°-75°F

Conclusion

Mead is in every sense a wine, and it should be approached as such, both in creation and consumption. Meads can be served at whatever temperature you desire, but be aware that meads served well chilled will not present bouquet or fullness of body as well as those served warm. Of course, sparkling meads will hold their carbonation better if served chilled.

Like wine, a glass of mead will often express a number of different characteristics, seeming to change over the time it takes to drink. The nose may become less estery, or may "soften." Also like wine, you may find that your perception of a mead may change drastically from the first glass to the second.

Making mead may be the ultimate outlet for the artistic side of a brewer's personality. Science provides us with the pigment and brushes we need to approach the empty canvas before us, but it is your imagination—your ability to fill in the details in the picture—that will enable you to communicate that vision to others. It is through your effort to clarify your vision, and your attempts at mead making and careful evaluation that your creations will come to closely match your ideal.

Ken Schramm is the Competition Director of the Mazer Cup Mead Competition, and an avid brewer and mead maker. He has been brewing since 1987, and now serves on the AHA Board of Advisors. His other hobbies include home orchardry (he has 80 varieties of fruit in his yard), and fly fishing and fly tying.

Dan McConnell has been making wine since he was 14 years old. At first it was awful, but served to start a lifetime quest. Thankfully, he has been improving since that fateful first brew and has moved into other beverages like beer and mead. This article is dedicated to his mentor, Bill Pfeiffer.

The Buzz about Mead (from page 33)

considered a noxious weed since it is poisonous to cattle. Orange blossom honey has an appropriately citrus aroma. Amber honeys usually are fuller-flavored and include goldenrod, lavender, wild sunflower, magnolia, eucalyptus, and royal palm. Buckwheat and heather honeys are dark reddish-brown and have a pungent, almost woody flavor. Those interested in more details on the character of honey should see "Mastering Mead Formulation: The Art and Science of the Sacred Honey Brew" which begins on page 26 of this issue.

Kinds of Mead

Mead, sometimes called "honey wine," can be dry or sweet, still or sparkling. Its color can range from extremely pale gold to deep amber. Meads have fruity, often rather volatile aromas, a variety of fruit (and honey!) flavors, medium to full body, and an alcoholic content more like wine than beer (10-14 percent a.b.v.) When spices or herbs are added, mead is called metheglin. An interesting variation of this is mead to which hops are added, called *tej* in Ethiopia. Mead produced with the addition of various fruits such as strawberry, raspberry, or blackberry is known as melomel. If grapes are used, the resulting beverage is known as pyment (hippocras if it is also spiced). A honey-and-hard apple cider combination is called cyser.

Commercial Meadmaking

There are now over 40 commercial producers of mead in the United States and Canada. Most are wineries, but some produce mead exclusively. Many meadmakers began as homebrewers or amateur wine-makers, like Kristy Anderson of Ambrosia by Kristy in University Place, WA.

"I was history major in college in Oregon," Kristy says. "I read a lot about mead, but I couldn't find any anywhere. But a friend of mine gave me some of his home-made mead. It was so good that I wanted to make it myself." After some experimentation, Kristy began her meadery in 1997. She buys honey from a local beekeeper in Graham, WA, near Mt. Rainier. Using a blend of blackberry, star thistle, and fireweed varieties, Kristy has had her mead produced under contract by a winery. So far she has



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released only one mead, a sweet style, which is made in 1500 gallon lots (630 cases). Ambrosia by Kristy is now sold in both Washington and Oregon.

For Denise Ingalls of Sultan, WA, mead-making was an outgrowth of another family business, namely honey. Her father-in-law, Mike Ingalls, runs the Pure Foods corporation, a honey processor and wholesaler to the food industry. When Denise and her husband, Derek, became interested in producing mead, they set up a separate company about a year ago called Sky River Brewing, which is actually situated within part of the Pure Foods warehouse.

Following the philosophy of Pure Foods, Sky River uses very little local honey, even though the meadery is located in an agricultural area. Because of pesticides used on many local crops, which may contaminate honey created from them, Pure Foods buys honey from spray-free sources all over the world, including Australia and Argentina.

Like many newer meaderies, Sky River does not pasteurize or boil its honey to remove impurities, but filters it instead using a special membrane filter or "ultrafilter", a technique developed by Bob Kine at Cornell University in Ithaca, NY in 1991. Even though the meadery calls this a "cold filtration", it is actually carried out at temperatures as high as 120°F (49°C).

Sky River has three 500 gallon stainless uni-tanks for its mead production, two fermentors and a conditioning tank, all of which are jacketed for temperature control. After initial fermentation at about 70°F (21°C), additions of SO₂ and acid are also made. The mead is chilled to near freezing temperatures for several weeks before bottling.

Currently Sky River produces three meads—dry, semi-sweet, and sweet. All are quite pale, with delicate honey flavors. The Ingalls plan to develop more styles in the future, including melomels with various fruits. "We believe in producing different tastes for different people," Denise says.

For William Martin of Martin's Honey Farm and Meadery in Sterling, NY, making mead was also an outgrowth of another family business. After producing small amounts of honey for personal use and local sales for more than 20 years, "it almost seemed natural that we begin to produce our own mead," he says. Martin produced his first sweet mead in 1999, and is now making a dry style as well.

Eric Sorensen, owner of Golden Angels Cellars in Eureka, CA began meadmaking as a hobby while working at the Lost Coast Brewery. He had previously taken homebrewing classes from mead guru Byron Burch in Santa Rosa, and tasted some of Burch's award-winning meads. When his plans to build a brewery fell through, Eric decided to start a meadery instead.

In part of a 12,000 square foot building on Eureka's waterfront, Sorenson opened a gift shop and meadery/winery in 1998. The production area consists of one 17- and four 20-barrel stainless fermentors that were once serving tanks for a Seattle brewpub. Eric also uses three 11-barrel tanks purchased from Lost Coast and a few 52 gallon barrel drums and wine barrels for aging his meads.

Golden Angels makes three separate "varietal" meads from huckleberry blossom, blackberry, and star thistle honeys. Sorenson buys honey from local producers and a honey broker at a cost of 70 cents to \$1.40 per pound,

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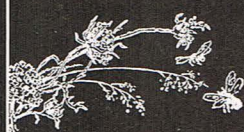
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and uses from 800-1800 lbs. for each 500-gallon batch, depending on the type of mead. With an ultrafilter, he filters each must at 70-90°F (21-32°C) before fermentation. This process takes about six hours. "I won't rush anything," Eric says.

Adding only nutrients and citric acid to produce the must, Sorenson then chills it to 68°F (20°C) and pitches a rehydrated dry wine yeast. Fermentation is stopped at the desired point by chilling the mead to 30°F (-1°C) for at least one month. The temperature is then raised to 60-68°F (16-20°C) for 3-9 months, and the mead is sterile filtered again before bottling. No sulfites are used.

Besides traditional meads, Golden Angels also produces raspberry and cherry melomels, two different cysers, and a hard cider. They are sold primarily in surrounding Humboldt County and in the Sacramento area.

At the Mountain Meadows Meadery in Westwood, CA, an historic milltown in the Northern Sierra, owner Ron Lunder crafts his meads from mostly local clover and wildflower honey. He uses ultrafiltration both before and after fermentation to clarify his meads, and also sterile filters before bottling. Lunder makes both a medium-sweet and sweet style mead (the latter was judged best traditional mead at the 1999 Mazer Cup Mead Competition). These are given additional complexity by aging in French oak wine barrels, as is his Spice Nectar mead (judged best spice mead at the same event). Mountain Meadows also produces apricot, persimmon, and cranberry melomels.

The Nectar of the Gods?

To the meadmaker, mead is more than an alcoholic beverage made with honey, water, and yeast. It is a participation in an ancient craft which lies at the root of human civilization. Mead may no longer be considered the nectar of the gods, but to those who savor the sweet life, nothing else really comes close.

Alan Moen writes about beer, wine, and spirits. An Honorary Master Beer Judge, he has served recently as BJCP Northwest Mountain states board representative. He was First Runner-Up Beer Writer of the Year by the North American Guild of Beer Writers in 1999.

The Magic of Brewing with Honey

(from page 37)

beneficial are Vienna malt, Munich malt, dextrine malt, Carapils, and very light caramel malts.

Hops can easily overwhelm subtle honey flavors and aromas. Being a self-confessed hophead, I do find it difficult to have an easy hand on the hops when making honey beers. I prefer spicy varieties, such as Hallertau, to accent and complement honey flavors and some more flowery types, like Tettnang, to boost the floral components. Other good choices are Fuggles and Willamette for emphasis on fruitiness, and Goldings for a different floral character. Let experience be the guide.

As far as bitterness goes, lighter beers should be gently bittered, say 11-17 IBUs. More robust pale ales and brown ales may see levels of 14-25 IBUs and porters and stouts may go up to 30 IBUs. These ranges are approximate and are best for beers where some expression of honey is desired. These rates would seem to produce sweet beers, but the honey will lend some dryness and accentuate its flavor. Remember, balance! Regular hopping rates can be used where honey is used only as an adjunct and is not intended to provide flavor.

Yeast should not be tricky. I have never found a beer yeast that didn't like honey. My preference is for a low-attenuating yeast to give a boost to the residual sweetness and, in turn, the honey flavor. I look for attenuation in the low 70 percent range. My current favorite yeast for honey beers is Wyeast 1308. Scottish ale yeasts and some Belgian strains will tolerate the sometimes higher alcohol produced in honey beers, yet provide a clean underlying flavor. Most lager strains are suitable as well. Some caution might be exercised with yeasts that produce a lot of esters or phenols, since the fruitiness could be over the top and the honey could be overwhelmed. The same could be said for diacetyl producing yeasts, like some English yeasts, because the butterscotch character would compete with the honey.

GET BREWING!

I have provided some of my favorite honey beer recipes to get you started. They include the first honey beer I ever brewed — a variation

BEAR DROOL BROWN ALE

Here is a really quick, all-extract recipe that is an easy, first honey beer. Definitely use an amber-colored honey, not a light one, or the honey can be easily lost. Feel free to substitute Goldings for the Willamette in the finish if you would like a more floral aroma.

Recipe for 5 Gallons (18.9 liters)

- Original Gravity: 1.052
- Final Gravity: 1.010
- 3.3 lbs. (1.5 kg) Munton & Fison Light unhopped malt extract
- 3.3 lbs. (1.5 kg) Munton & Fison Dark unhopped malt extract
- 1.5 lbs. (.7 kg) wildflower honey
Dribble of bear drool (optional)
- 0.75 oz. (21 g) U.K. Goldings hops, 5.0% alpha, bittering, pellets, boil 60 min., 10 IBU
- 0.75 oz. (21 g) Willamette hops, 5.0% alpha, bittering, pellets, boil 30 min., 5 IBU
- 1 oz. (28 g) Willamette hops, aroma, pellets, at end of boil
- Ale yeast

Dissolve malt extract in 5 gallons (18.9 liters) hot water and bring to boil. Add hops on schedule shown; the total boil time is 60 minutes. Dissolve the honey at the end of boil. Cool to 68 °F (20 °C) and pitch yeast. Ferment to completion and rack to priming vessel. Prime with 1/2 to 3/4 cup corn sugar or the equivalent in honey and bottle.

RECIPE

of Charlie Papazian's Christmas Cheer from *The Complete Joy of Homebrewing* – called Alt Spice, as well as one inspired by New Mexico fauna called “Bear Drool Brown Ale” and a tasty Honey Porter. Give these a try and experiment on your own. Brewing with honey is as fun as it is rewarding.

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Brad Kraus is brewmaster at Wolf Canyon Brewing Company in Santa Fe, New Mexico and a consultant for Kraus Brewing Services, Ltd. and DME Brewing Services. Two of his most recent awards were Gold Medals for Specialty Honey Lagers and Ales at the 1998 and 1999 Great American Beer Festival.



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Making Sense of Making Mead

(from page 41)

My reason for stressing this point is that, with our nutrient, two full ounces is the proper amount to use for a five gallon fermentation. Using that amount of a diamonium phosphate (DAP) based nutrient would have a very negative effect on the flavor. DAP is a major ingredient in many common yeast nutrients designed for wine, and could find its way into self-described Mead Nutrients as well.

Fining

I routinely fine all my meads with a clarifying agent called Sparkolloid. I've found it to work extremely well with meads. The exact formula is proprietary, but I suspect it may be diatomaceous earth and isinglass.

Fining agents combine with charged particles in suspension, and help drop them to the bottom so subsequent rackings can leave them behind. With Sparkolloid, you can often see the clarification beginning in a matter of hours.

When your mead finishes fermenting, and is ready to fine, siphon it into an open

container. Simmer one- to one-and-a-half grams of Sparkolloid powder in a cup or so of water for 15 minutes, stirring occasionally. Stir this "slurry," still hot, into your mead. Siphon the mead back into your storage container, top up, and let it stand for three or four weeks. Siphon carefully away from the settlings, and top up again.

Fining should take place early enough during aging that there will be at least two rackings between fining and bottling. These rackings will help insure that none of the fuzzy Sparkolloid sediment is passed on into the bottled mead.

Sulfite

Sulfur Dioxide (SO₂) is a gas released by Sodium Bisulfite (or Potassium Metabisulfite). It has two primary uses in wine or meadmaking. It is used to retard spoilage, and also functions as an antioxidant.

A stock solution is made by dissolving an ounce of sulfite powder in a quart of warm water. Stoppered up, this solution will remain at relatively full strength for about six months, and can be used as needed.

At each racking, stir in one teaspoon of stock solution per gallon of mead. Add one and a half teaspoons per gallon at bottling.

Stabilizer

If you wish to bottle a still mead with residual sweetness, you will need to kill any remaining yeast cells to prevent fermentation in the bottle. Add half a teaspoon of Wine Stabilizer (potassium sorbate) per gallon. This should be added along with the bottling dose of Sodium Bisulfite solution.

If you wish to "sparkle" a mead, which has

a significant amount of residual sweetness remaining, you can usually do so simply by omitting the Stabilizer at bottling. Carbonation will usually take place over a period of months.

If your mead has fermented to dryness, it will be necessary to prime it, just as is normally done with beer, in order to get carbonation.

Oak

An unflavored mead may benefit from a period of storage in an oak barrel. However, the need to take care of an oak barrel adds much to the complexity of the mead-making process. Also, in a five or ten gallon barrel, a lot of oak flavor is picked up in a very short period of time, a matter of no more than a few weeks.

You could get much the same effect by adding a modest dose of liquid oak essence to taste at bottling time. This will smooth the mead out, increasing its depth of flavor. Purists may object that adding oak essence violates the very nature of an "unflavored mead." Perhaps so, but if you use it to improve your mead, I promise not to tell.

Variations

Prospective meadmakers should also consider three easily adapted variations on the basic meadmaking theme: Metheglins, Melomels, and Braggots.

Note that none of these variations necessarily benefits from the presence of oak flavor, so discretion should be used. If you're not sure, try adding a drop of Oak Essence to a glass of mead to explore the possibilities without risking the entire batch.

Metheglin

Metheglins are meads flavored with herbs or spices, and the potential combinations are almost unlimited. Two common errors, however, should be mentioned.

Probably the most common mistake new meadmakers make is to overspice their meads. The other is not to get full value from what they add.

Fortunately, there is a way of covering both bases at once. Simply make a spice tea by boiling the spices for 15 minutes or so in just enough water to keep the pan from going dry. The tea can then be added to taste.

Make a separate tea for each spice, blending as desired. This tea can be added

Cotton Trail Mead

Recipe for 5 gallons

- 13 lb Cotton Honey
- 1 T yeast nutrient
- 4 tsp acid blend
- Sweet Mead Yeast - Wyeast #3184
- 1 cup corn sugar for bottling

Cotton honey is light in color and the smoothest flavored of all American honeys.

—Lynne O'Connor

Riesling Pymment

Recipe for 5 gallons

- 10 lb orange blossom honey
- 4 lbs Alexanders Johannesburg Riesling wine concentrate
- 1 T yeast nutrient
- 4 tsp acid blend
- sweet mead yeast - Wyeast #3184
- 1 cup corn sugar

Orange blossom honey is a very aromatic honey. It literally smells of an orange grove in full blossom. The aroma carries through to the mead if the honey is not boiled.

—Lynne O'Connor

to the mead anytime between the end of fermentation and fining.

Braggot

A braggot is simply a halfway house between beer and mead. In their heyday, they would most commonly have been spiced. The simplest way to try your hand at a braggot is to use a metheglin recipe, substituting Malt Extract for about 50% of the honey on a pound for pound basis.

Melomel

Meads flavored with fruit or berries are known as melomels. A wide mouth fermentor is needed for most of these meads (to accommodate the fruit pulp).

For most fruits, start by removing any pits present, loosely tie fruit or berries in a nylon bag, smash them up, placing the bag of pulp in the fermentor. Half an ounce of pectic enzyme should be added to any melomel prior to fermentation. During fermentation, push the pulp down into the fermenting mead twice a day for 5-6 days. Squeeze and discard the pulp. After fermentation, proceed as for any other mead.

Fruits and berries will contribute varying amounts of acidity, depending on the degree of ripeness, so this is where acid titration becomes critical. Test before adding the acid called for in your recipe, adding acid as indicated by your test results.

If you can't find a recipe for a particular kind of melomel, the next step is to look in winemaking books containing fruit and berry wine recipes. Many of these recipes can be

adapted to mead just by substituting a pound of honey for every pound of corn sugar, or 1.2 pounds per pound of cane sugar.

If you can't find a recipe using your particular kind of fruit, you can usually get satisfactory results using 12-15 lb. of fruit and 12-15 lb. of honey in five gallons. Use the lightest, most delicate honey available.

Well, there you are. Hopefully this inspires you to give meadmaking a try. Whether you wish to help rediscover one of the almost lost arts, or whether you're just looking for something different to do during the warm weather months, meadmaking

seems likely to bring you pleasure.

Meadmaking is actually easier than brewing, and it's a hobby you can certainly master, so why not give it a go. Remember, you can't drink model railroads.

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Byron Burch is a veteran beer, wine and mead maker and two-time winner of the "Mead Maker of the Year" title awarded annually by the American Homebrewers Association's National Homebrew Competition.



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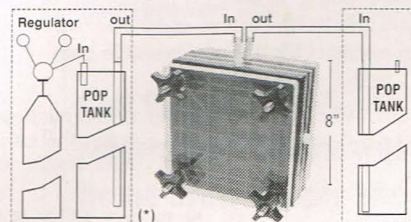
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Last Drop (from page 64) Finally, it was time to taste the beast.

My heart sank. All was not well with Scary Larry's Fitzruffian Imperial Porter. A heinous barbarian had infiltrated the temple, and was pillaging the inner sanctum, stomping on the heart of my beloved creation.

Neill always encourages us to bring in our dog beers, figuring we can learn more from our failures than our successes. Normally, I have no problem with that, but this was different. Neill had entrusted me with his vestal wort, and I taken it home and violated it. I felt ashamed, and was seriously tempted to haul Scary Larry's Fitzruffian Imperial Porter off to a toxic waste dump where it belonged, but I chose to bite the bullet, and accept the shame and degradation for the sake of learning. Besides, Dave had created a prize for Worst Beer, so at least I wouldn't walk away empty-handed.

Fourteen beers were entered in the Brew-Off. They were evaluated by Neill, his assistant Andrew Ety, industry consultant Roger Freiday, and Greg Zaccardi, head brewer of the nearby High Point Wheat Beer Company. After the judges got their samples, all the members in attendance got a taste.

When it was time for the judges to sample my Imperial Porter. I watched as they poured my creation, held it against the light, and nodded approvingly. I watched their eyebrows raise in appreciation of its deceptively tasty aroma. I watched their faces contort in horror when they tasted it. One judge lunged for a glass of water with a life-or-death urgency. My beer was passed amongst the club members. Someone yelled, "We're killing the judges!"

Other Brew-Off entries were mercifully better, and finally, a winner was chosen—Brad Anesi took home top honors with a snappy IPA. I did not win the Worst Beer prize. In fact, I suspect there were two or three other entries that scored worse than mine did.

Despite the bad news, Neill and Dave say we'll do another Brew-Off in the future. And I'll be there. Indeed, I'll show them all just how great a beer could be when entrusted to the skilled and knowledgeable hands of a craftsman like myself.

"Hank Stewart" is the *nom de plume* of an accomplished brewer who prefers to remain anonymous.

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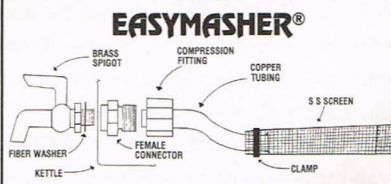


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Great Infections



Neill Acer (left) and Dave Cinquina (right) welcome a surprise visitor to the meeting.

I was ready to take my lumps. I was about to expose my fellow Mountain Valley Homebrew Club members to the worst beer I'd ever made. In return for that kindness, I was braced to suffer their hoots, hollers, howls, taunts, barbs and obscene gestures.

Normally I would never subject my homebrewing brethren to such an atrocity, but this was a special occasion. This was the night we tasted the results of our club's inaugural Brew-Off.

The brainchild of club President Dave Cinquina, the Brew-Off concept goes like this: on a designated evening, club members would come to the Mountain Valley Brewpub (Suffern, NY, where we always meet). Head Brewer Neill Acer would give us each some of his wort, which we would then take home and fool around with. A month or two later, we'd reconvene and taste each other's efforts in a friendly competition.

I had fooled around with Neill's wort sufficiently enough to transform it from the beginnings of a perfectly delightful copper

ale, to something the framers of the Constitution might have considered "cruel and unusual punishment."

"There'll be some wort slingin' tonight," Neill proclaimed as we gathered on wort distribution night. We followed him to the bottling area, our motley, single-file parade of 15 men toting empty carboys, buckets and soda kegs looked like a cross between *Oliver Twist* and *One Flew Over The Cuckoo's Nest*.

"Who needs love?" Neill asked, then filled our vessels with his Ruffian Copper Ale wort. Closest to an English Amber in style, the wort had an original gravity of 12.3 P (1.049) and contained pale malt, Belgian malt, crystal malt and East Kent Goldings hops.

I drove my five gallons home, all the while dreaming of the greatness I would bestow upon it. I would show Neill and my fellow club members just how great a beer could be when entrusted to the skilled and knowledgeable hands of a craftsman like myself.

I decided to make a porter, but not just any porter, a big, honking, juicy one—an

Imperial Porter. I'd call it, Scary Larry's Fitzruffian Imperial Porter (Scary Larry, an homage to my dog; Fitz, meaning bastard son of; Ruffian, the brand name of the original wort).

The next weekend, I made a mini-mash using a gallon of the copper wort, a quart of water, one pound of Munich malt, and a half pound each of Crystal, Black Patent and Chocolate malts. I rested the above for 30 minutes at 123 °F (51 °C). I then added a quart of boiling water to raise the temperature to 150 (66 °C). After 15 minutes, I raised it to 162 (72 °C). After another 15 minutes, I removed the grains, added the mini-mash to the other four gallons of wort, and began a one-hour boil. I added one half ounce of East Kent Goldings hops in the last five minutes.

I pitched some White Labs Irish Ale Yeast, and sealed the primary. As I toasted my newest creation with a glass of its immediate predecessor (a little tradition I have), I had great expectations. The aroma during the boil had been sublime. This was destined to be an amazing beer.

I racked to secondary a week later, and all was well. I bottled two weeks after that, and all was well. Well, almost. The beer had a big, delicious aroma—toasty, malty, with a nice, balancing hop slap. The taste, however, was a little heavy on the tannins. I wasn't worried, though. Perhaps Imperial Porters were supposed to have a slight vinous quality, Imperial Stouts certainly did. Besides, this was a big beer, it would round out with time.

Ten days after bottling, I opened a bottle to a reassuring PSSST. Pouring into the glass, it looked like a champion—black as midnight, with a rich, creamy head rising like a harvest moon. It smelled great—all the malty, toasty notes had been amplified, and a crisp, hop tartness sliced through them like a dagger. (continued on page 62)

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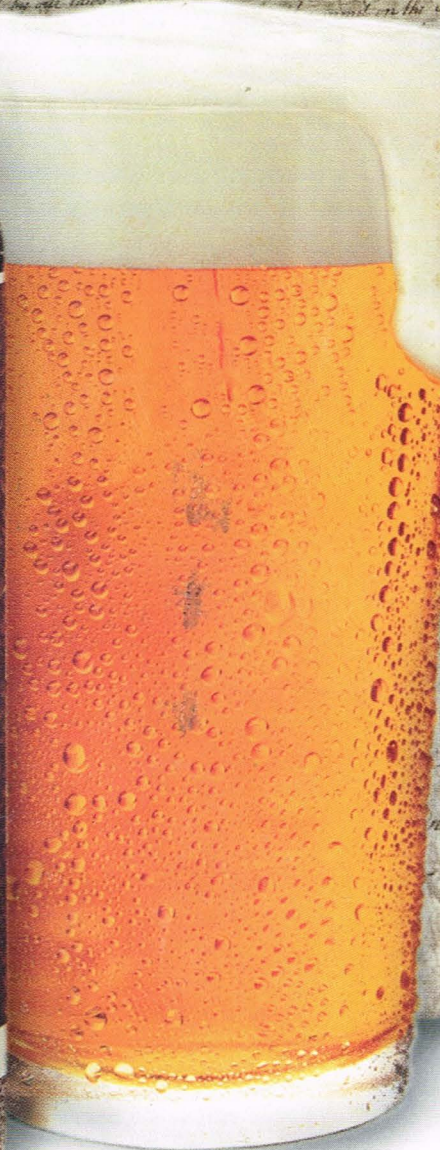
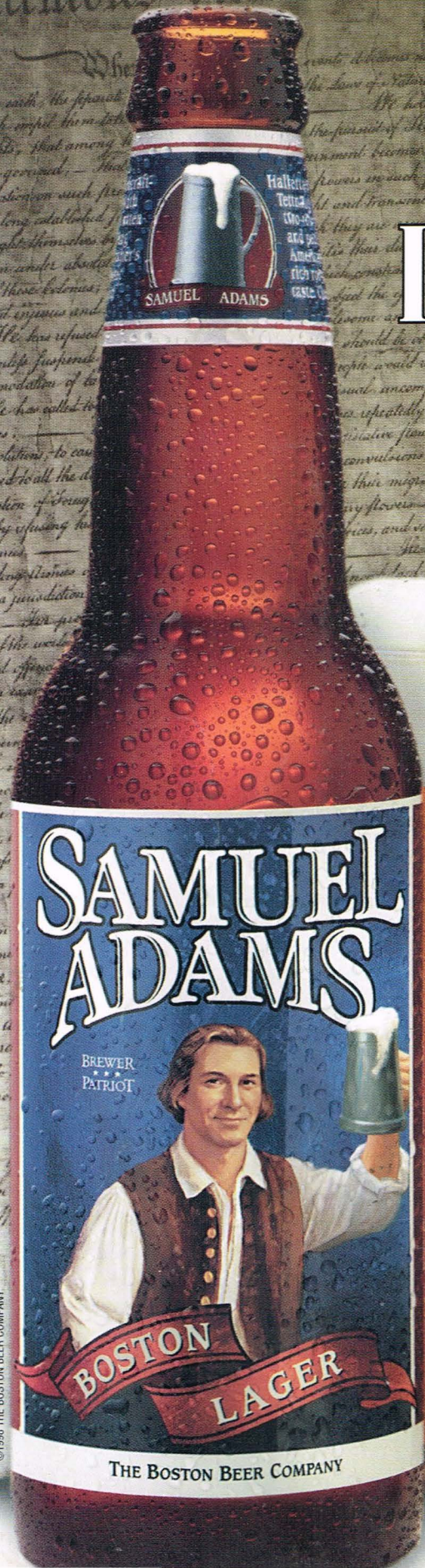
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