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BrewYour

NOVEMBER 2004, VOL.10, NO.7

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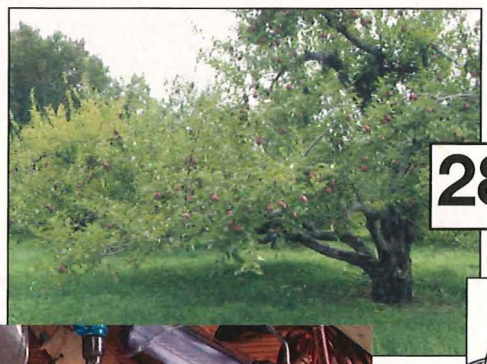

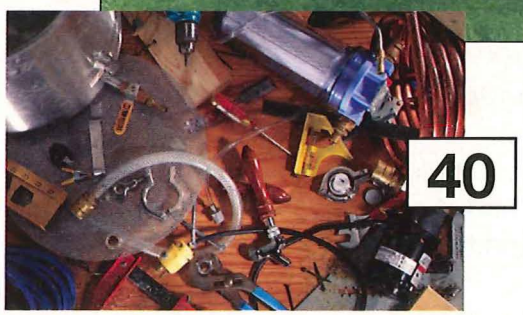

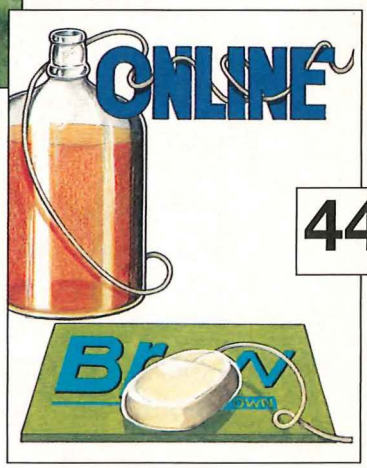

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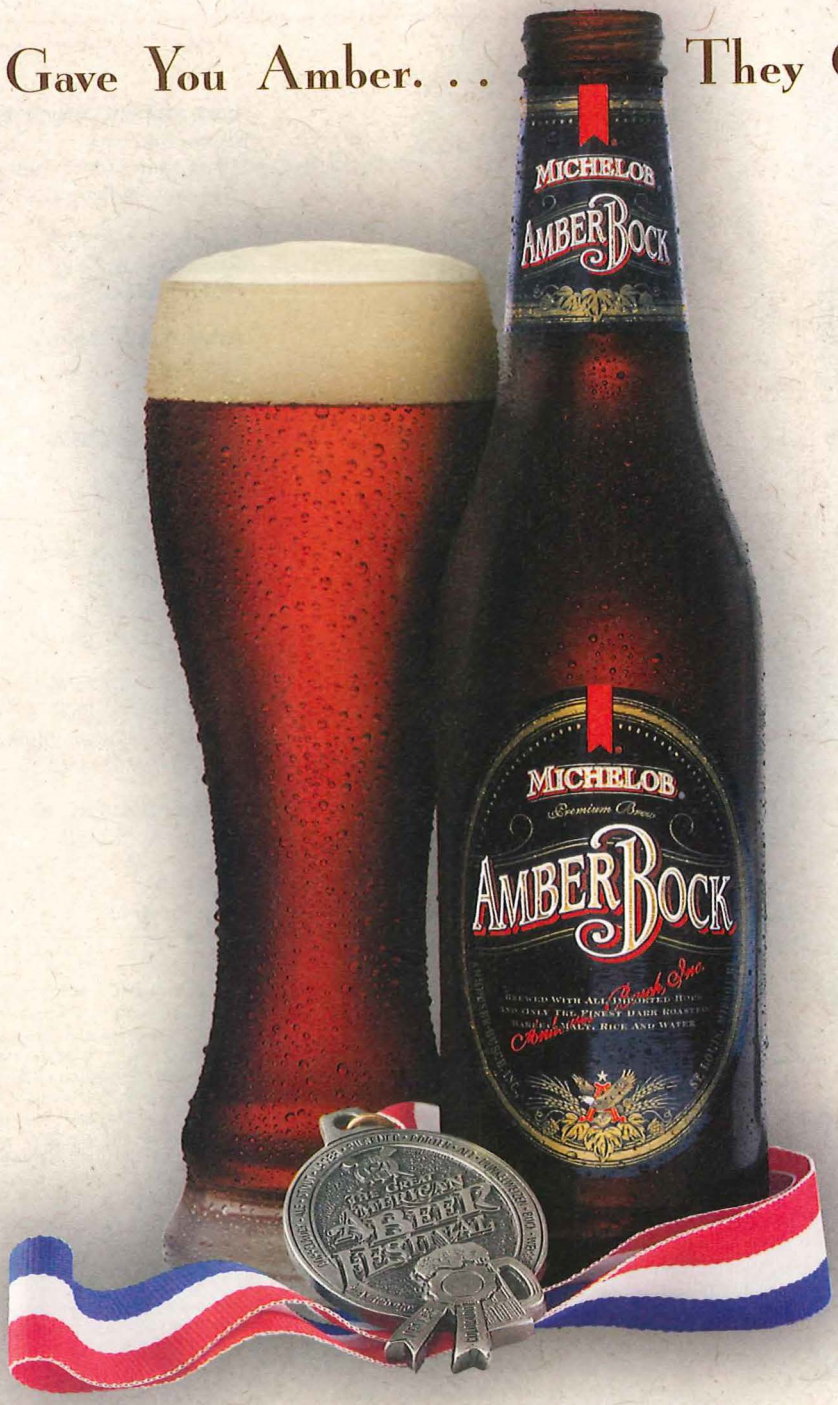
We Gave You Amber. . . They Gave Us Silver.



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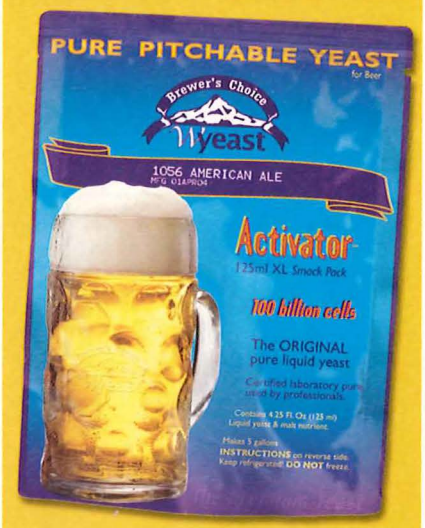

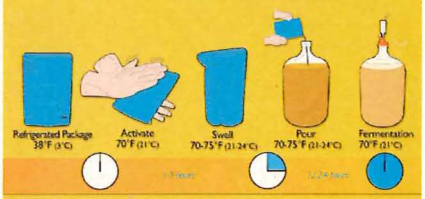

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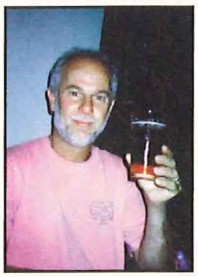

Paul Zocco has been homebrewing for about ten years. For his first beer, he jumped right in and started with an all-grain Octoberfest. Paul opened up his shop — Zok's Homebrewing & Winemaking Supplies — in Willimantic, Connecticut in the fall of 2000 and it is still going strong. He holds sessions at his shop every Saturday in which he features a particular beer style and, as a National BJCP judge, he knows beer styles. He usually brews a 5-gallon (19 L) batch of beer every Thursday at his shop on his quarter barrel system of his own design. These brewing sessions double as a way to teach customers of his who want to learn about all-grain brewing.

Paul travels to Europe at least once or twice a year in search of specific beers and also travels to wine capitals in Europe with his wife. He has written for *Brew Your Own* before, including a cover story about Scottish beers. For five years, he was the Connecticut and Rhode Island beat reporter for *Ale Street News*. He also currently has a regular column in the *New England Wine Gazette* called the Yankee Winemaker. He also conducts a wine tasting for each bimonthly issue.

Paul is the organizer of the Eastern Connecticut Homebrew Beer Competition, currently the largest competition in New England, drawing about 300–400 entries. He is no stranger to winning medals at homebrew (and home winemaking) competitions, having won New England Meadmaker and New England Cidermaker of the year multiple times. On page 28 of this issue, he discusses how he makes cider and how a newcomer to cider can dive right in by making cider from commercially produced apple juice.

Perry Launius began homebrewing when his wife bought him a beginner kit as a Christmas present in 1999. "I wonder if she had known what she was creating, if she'd rather have given me an electric razor," he says. "Seriously, I can't give her enough credit. She's a great brew wife and supports my hobby wholeheartedly". Perry lives in Jackson, Mississippi with his wife and daughter where he works as both a barber and in the liquor business. He is also a freelance writer, and dedicated all-grain brewer and has volunteered at his local brewpub, Hal and Mal's. He has been active in attempts to legalize homebrewing in Mississippi and is founder of the Central Mississippi Homebrewers Guild. Most of Perry's writing is in the beer, wine and spirits industry and gives a strong emphasis to beer and food pairings. "I feel strongly that if beer were properly selected and presented, it could hold its own against wine in a fine dining restaurant."

Perry's true love is making his own equipment. Much of his brewery has been built by himself and he finds the same creative aspect of brewing in this. "I will admit that often, it's much more expensive to build something than to buy it, but even in these cases I learn something that may be passed on to another brewer in the future."

Perry credits his knowledge of brewing to the Internet. "My brewery is contemporary despite the lack of a single homebrew supplier in the state. My knowledge of brewing is far beyond what I would have had, had I been left to my own devices," he says. "I have no doubt that if I wouldn't have looked to the computer for help; I'd have either quit brewing all together or would still be brewing beers that could pass for paint thinner." On page 40, he points the way for homebrewers to point and click their way to the useful brewing Websites on the Internet.

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BYO RECIPE STANDARDIZATION

Extract efficiency: 65%
(i.e. — 1 pound of 2-row malt, which has a potential extract value of 1.037 in one gallon of water, would yield a wort of 1.024.)

Extract values for malt extract:
liquid malt extract (LME) = 1.033–1.037
dried malt extract (DME) = 1.045

Potential extract for grains:
2-row base malts = 1.037–1.038
wheat malt = 1.037
6-row base malts = 1.035
Munich malt = 1.035
Vienna malt = 1.035
crystal malts = 1.033-1.035
chocolate malts = 1.034
dark roasted grains = 1.024-1.026
flaked maize and rice = 1.037-1.038

Hops:
We calculate IBU's based on 25% hop utilization for a one hour boil of hop pellets at specific gravities less than 1.050.

Pliny the Overhopped?

In your September 2004 issue, the clone of Pliny the Elder says that the IBUs are 100+. Running this recipe through ProMash, however, I come up with 284 IBUs. Am I doing something wrong or are there too many ounces of hops in the recipe?

John H. Scherrer
Harrison, Michigan

BYO Editor and clone story author Chris Colby responds: "The amount of hops in the Pliny clone came from Vinnie Cilurzo, brewer of Pliny the Elder. Russian River lists their (commercial) Pliny the Elder beer at 95–100 IBUs. On my spreadsheet, however, the value for IBUs of the homebrew clone comes out to over 275. (The exact numbers depends on which method of calculation I use.)

"Keep in mind, however, that the maximum amount of IBUs you can squeeze into a beer by boiling hops is around 100. (Other people claim that, in addition, differences in bitterness between beers over 90 IBUs or so can't be detected.) I've had a beer in which the brewer added roughly 3 pounds (1.4 kg) of hops to a 5-gallon (19-L) batch. This beer had a calculated bitterness around 400 IBUs. However, it just tasted like a big IPA — not that much more bitter than a few other beers I tried that day that claimed to have 80–90 IBUs.

"Also, hops add flavors and aromas in addition to just IBUs and Pliny has loads of hop flavor and aroma. I believe that, beyond a certain point, adding more hops does not increase hop bitterness, but hop flavor and aroma keep increasing.

"I called Vinnie Cilurzo at Russian River Brewing and he confirmed that this was indeed the reason for the hop amounts in the Pliny clone. He said that he focuses more on hitting a flavor and aroma profile in Pliny than the amount of IBUs in the beer. To get the right hop profile, he adds hops beyond the point at which they are contributing more bitterness to the beer.

"So, long story short, you need all the hops in the clone recipe to make a good clone of Pliny the Elder."

Inadequate Acme Additions?

I got my first issue of *BYO* just for the IPA clone feature and you seem to be missing a hop addition or two from the Acme IPA. What's missing?

Chris Jones
via email

Chris Colby issues another name-dropping response: "I got the hop schedule for Acme IPA from Mark Ruedrich of North Coast Brewing. They start with two additions of Clusters hops, at 60 and 30 minutes, which gets them less than 30 IBUs during the boil. However, they add a ton of Northern Brewer at knockout (when the heat is turned off) and then they whirlpool the wort. Mark said that they get over half of their IBUs in the whirlpool.

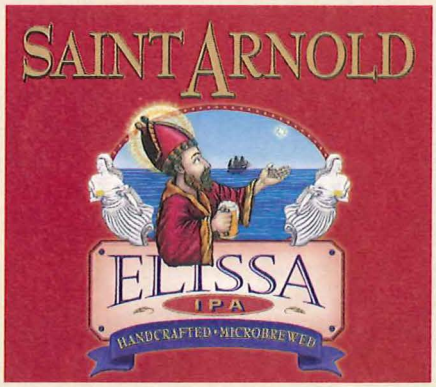
"In the BYO clone, we specify a 30 minute whirlpool — i.e. just let the wort sit without cooling for 30 minutes. This yields alpha acid extraction from the hops added at knockout (and probably further alpha acid extraction from the "30 min" Clusters). The whirlpool should bring the beer up to its full 56 IBUs. (For best results, try to keep the wort from losing too much heat during the whirlpool.)"

Tomahawk Axed

I went to a local brew shop to get the ingredients for the Hop Rod Rye clone in this month's issue of *BYO* and they did not carry the Tomahawk hops listed in the recipe. I was curious to see what types of hops may be good substitutes for these? Thanks in advance.

Brian Beauchemin
via email

Chris Colby keeps at it: "I spoke with Richard Norgrove of Bear Republic Brewing and he said that Columbus hops are a good substitute for Tomahawk."



Lid on for Elissa?

During a 60-minute boil, should the brew pot lid be on tight (to keep evaporation to a minimum) or half open (to allow dissipation of unwanted chlorine, or whatever)?

Also, I just brewed the Elissa recipe. In the instructions it stated to steep grains in 70 oz. (2.1 L) of water. My first thought was, that's not a lot of water and the grains are going to absorb a good amount of it. Is the

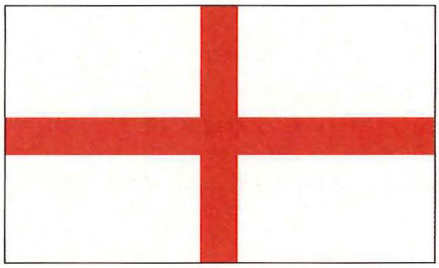
intent to have 70 oz. at the end?

Craig Peterson
via email

Chris Colby responds: "Whenever you brew, you should always leave the lid off (or at least cracked) to allow volatile compounds in the wort — especially DMS, a molecule that lends a cooked corn flavor to wort if not removed — to evaporate. (It's better to try to remove the chlorine from your brewing water before you use it rather than boil it off from your wort.)

"The amount of water used is around 1.5 quarts of water per pound of malt. This is a good ratio that will allow the 2-row base malt to convert as well as extract plenty of the flavor and color from the crystal malt, but not be so thin as to extract tannins. How much water a malt absorbs depends on how it was crushed. Properly crushed malt absorbs around 0.1 gallons of water per pound of malt (0.84 L per kg). With this rate of absorption, you will have about 60 oz. (1.7 L) of "grain tea" after the steep.

"I did not consult Brock Wagner, cofounder and brewmaster at St. Arnolds Brewing, when formulating the answer for this question. However, in keeping with my shameless name-dropping in this installment of Mail, I will mention him because he's very supportive of homebrewers in the Houston area. Brock Wagner. Brock Wagner. Brock Wagner."



Old Ale Requires an Old Flag?

I thoroughly enjoyed Terry Foster's article on English old ales in the September issue. My own "Old Peculier" clone is a favorite of mine and my friends and has been brewed around 50 times. I found the article to be accurate and informative, but I do have to take issue with your face illustration of the Union Flag. This flag is often inaccurately called The Union Jack and is the flag of The United Kingdom of Great Britain and Northern Ireland. The article was about English old ales and if any flag was used it should have been the English flag, which is the historical Cross of St. George.

Trevor Cox
Reading, Pennsylvania

We just used the UK flag because it's the flag most people associate with England. However — just as when you wrote in last year to say we should have used a different flag in our piece on pale ales — we'll show you the Cross of St. George. We look forward to hearing from you the next time we run a piece on English beers! ■

brewer PROFILE

Brian Moore • Wilmington, Delaware

photos courtesy of Brian Moore

Brian and fiancée Karen take in some rays on a break from brewing.

Fool Circle is the name I chose to represent my homebrews and myself. The name developed from the bad habit I used to have of talking in stream-of-conscious circles. My first beer was a pale ale that I was really excited about and basically forced upon everyone I knew. Time went by and I brewed many unique styles: a mandarin orange spice lager, a vanilla maple Pilsner, an espresso stout, a green tea with honey lager and one dubbed the Smurf-Berry Brew, which was a blueberry/strawberry beer made with pie filling!

After a year of playing with the whole homebrewing thing and spending my hard earned cash on brewing upgrades, my family stopped poking fun of everything that I made. My biggest supporter has always been my fiancée, Karen McCaffrey. For Christmas of 2000 my brother Dave decided to give me my own Website, www.FoolCircle.net as a gift. This originally was supposed to be a place for me to post my recipes and give descriptions of my beers, which would complement my quarterly newsletter, "The Village Idiot." The Website, now four years old, has developed into quite a nice site to frequent.

In 2003, after years of developing my particular style, I decided to enter my first homebrew competition. The typical competition brewer is a different beast from the average cat. I brew beer for myself first and my friends second. I brew to challenge myself and expand my horizons. A typical competition brewer brews to BJCP guidelines, proudly. I entered six beers into the 2nd Annual B.O.N.E.S. Bash and won three 1st place prizes! One of the beers that won a first place in the competition was called the Moore's Light. The Moore's Light was brewed in the beginning of November 2002 for my father as a Christmas gift. My dad regularly drinks Coors Light. Sometimes I'll take him something I made and he always responds the same way: "It's O.K., but it's no Coors Light." So this time I tried brewing a beer like Coors Light for him. Just as a cherry on top I decided to try and reflect a Coors Light label. It just so happens that our last name is Moore, so it made it quite easy to slide in the play on words. My father thought the labels were great. As for the beer, "It's okay, but I'll stick to my Coors Light." Oh well, at least I tried. My new goal is to "live the dream." I am aspiring to turn my homebrewing into a profession. I love how science and art fuse together, transforming the vision and giving it life.

Brian won three first place prizes at his first brewing competition and is now hooked.

Big Winning RECIPE: Bill Briggs • Cheyenne, Wyoming 2004 Colorado State Fair: Best of Show

Green Chili Wheat Recipe

Ingredients

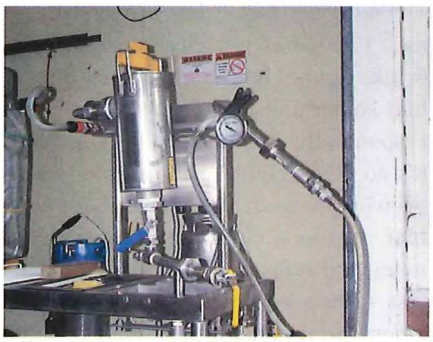
8 lbs. (3.6 kg) Muntons Wheat liquid malt extract (55% wheat, 45% barley)
0.5 lb. (0.22 kg) crystal malt (20 °L)
5 AAU Hallertau hops (60 min) (1 oz./28 g of 5.0% alpha acids)
2.8 AAU East Kent Goldings hops (5 min) (0.5 oz./14 g of 5.7% alpha acids)
1/2 lb. (0.22 kg) roasted green chilis
1 jalepeño pepper
Windsor ale yeast (use as specified on package)

Step by Step

Crystal malt steeped prior to boil, then removed at 180 °F (82 °C). Boiled for one hour. Pitched on a cake of Windsor Ale yeast left from a cream ale the week before. (This would actually have been better with a fresh packet of Nottingham, as some judges thought the beer too malty sweet). Added 1/2-lb. (0.2 kg) of roasted green chilis from the local farmer's market and one Jalepeño pepper from the grocery store to the primary fermenter at the start of fermentation. Started fermentation on 5/16/04 at an OG of 1.048. Racked beer to a secondary fermenter after 7 days, left the chilis out of the secondary. Kegged on 7/4/04 at a final gravity of 1.018 and it won!

homebrew SYSTEMS that make you DROOL

David LaMotte • Cardiff, New South Wales, Australia



My homebrewery consists of a 60-liter boil kettle, 50-liter mash/lauter tun and a 30-liter grant (boil kettle). A stainless steel stand holds the mash tun, pump, filter and heat exchanger, with the boiler free standing at the end. The heart of my system is the pump (0.5 HP 90 liters/minute), filter and heat exchanger. The filter consists of fine mesh inside a stainless termite mesh tube held in place by a hose clamp. I slipped a length of plastic hose over the stainless tube to give the clamp something to bite on. The tube is attached to a socket welded into the keg wall via a ½-inch brass compression fitting. This is the only brass or copper part of the system and has had the surface lead removed with a hydrogen peroxide/vinegar solution.

(Top left):The immersion heater used to heat water and boost wort to boiling.
(Middle left): Filter body showing plate exchanger at rear and inline temperature gauge on outlet.
(Bottom left): The pump output is directed to either the filter or various hoses by a series of ball valves.
(Top right): The ice bath cools the wort further than the heat exchanger is able to.
(Bottom right): The stainless steel brewing stand holds all the brew equipment.

The plate heat exchanger is made from plates of copper sheet covered with stainless steel. A series of hard piping and ball valves allow the pump's output (either wort or water) to be pushed through the filter or circulated through a series of hoses. I have a variety of output hoses, which connect either to the post chiller or directly to a ball valve and length of stainless pipe, allowing me to pump wort without splashing. A 2.5-kilowatt immersion water heater has greatly reduced the length of my brew day by allowing me to crush the grain, measure the liquor into the mash tun and add the sparge water to the boiler the day before.

I do not pump directly from the tun but let the wort flow by gravity to a lauter grant. When the grant is full I use my pump to move the wort to the boiler. Finally I pump the wort through the heat exchanger and directly into my fermenter — an 80-liter "corny" keg. I had an additional gas fitting welded into it, which allows me to inject oxygen at the beginning of fermentation.

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replicator

by **Steve Bader**

Dear Replicator,

I recently visited St. Louis, Missouri and tasted a unique beer. A Cherry Chocolate beer by O'Fallon Brewery. I would most appreciate it if you could supply the recipe for this beer.

George Hutton
Rotonda West, Florida

Cherry Chocolate is a seasonal beer that is fairly new in the O'Fallon lineup. Brewery owner Tony Caradonna asked brewer Brian Owens to come up with a beer that used both cherry and chocolate flavors. Brian said that he decided to use a base beer that resembled a dunkelweizen and a mild brown ale. The large amount of wheat malt helps with foam retention and the relatively low hop bitterness and lack of aroma hops (there are no aroma hops in this beer) allow the cherry and chocolate flavors to show through the beer. Brian says that there is a cherry flavor up front, with a chocolate finish, with the flavors overlapping. For more information visit the O'Fallon Brewery Website at: www.ofallonbrewery.com or call 636-474-2337.

O'Fallon Brewery – Cherry Chocolate Beer

(5 gallon/19 L, extract with grains)
OG = 1.051 FG=1.010
IBU = 16 SRM = 22 ABV = 5.3%

Ingredients

3.3 lbs. (1.5 kg) Briess light malt extract syrup
2.2 lbs. (1.0 kg) Briess wheat dry malt extract
9.0 oz. (252 g) CaraPils (dextrin) malt
9.0 oz. (252 g) crystal malt (40 °L)
5.0 oz. (140 g) chocolate malt
0.5 oz. (7 g) Durkee liquid chocolate extract (alcohol base)
2 oz. (56 g) Cellar Pro natural cherry fruit flavoring
1 teaspoon Irish moss
2.8 AAU German Northern Brewer hops (bittering hop, 60 min.) (0.33 oz./9.2 g of 8.5% alpha acid)
2.4 AAU German Northern Brewer hops (30 min.) (0.25 oz./7 g of 8.5% alpha acid)
White Labs WLP029 (German Ale or Kölsch) yeast or Wyeast 2565 (Kölsch) yeast
0.75 cup of corn sugar for priming.

Step by Step

Steep the 3 crushed malts in 3 gallons (11.4 L) of water at 155 °F (68 °C) for 30 minutes. Remove grains from wort, add the malt syrup and dry malt extract and bring to a boil. Add the first addition of Northern Brewer hops, Irish moss and boil for 60 minutes. Add the last addition of Northern Brewer hops for the last 30 minutes of the boil. There are no finishing hops in this recipe. Now add wort to 2 gallons (7.6 L) cool water in a sanitary fermenter, and top off with cool water to 5.5 gallons (20.9 L). Cool the wort to 75 °F (24 °C), aerate the beer and pitch your yeast. Allow the beer to cool over the next few hours to 65 °F (18 °C), and hold at this temperature until the beer has finished fermenting. Add the chocolate and cherry flavors to the beer on bottling day when you add the priming sugar. Then bottle and enjoy!

All-grain option:

This is a single step infusion mash. Your grain bill will be 6.33 lbs. (2.9 kg) pale 2-row malt, 2.75 lbs. (1.2 kg) wheat malt, 9 oz. (252 g) dextrin malt, 9 oz. (252 g) crystal malt (40 °L), and 5 oz. (140 g) chocolate malt. Mash crushed grains at 156 °F (69 °C) for 60 minutes. Collect enough wort to boil for 90 minutes and have a 5.5-gallon (20.9-L) yield (about 7 gallons/27 L). Lower the amount of bittering hops in the boil to 0.25 ounce (7 g) to account for higher extraction ratio of a full boil. The rest of the recipe is the same as the extract recipe.

homebrew calendar

November 5
International Mead Festival
Boulder, Colorado

The International Mead Festival is the world's largest and most prestigious mead competition and festival. This year it will be held at the Boulder Outlook Hotel and Suites. For more information visit www.meadfest.com.

November 6
Belgian Beer Fest
Boston, Massachusetts

The Belgian Beer Fest is being held on Saturday, November 6, 2004 at The Cyclorama at the Boston Center for the Arts. Tickets are $20 in advance or $25 at the door for each of two sessions. There will be upwards of 100 Belgian-style beers from Belgium and North America. For more information visit www.beeradvocate.com/fests/.

November 6
Novembeerfest 2004
Kent, Washington

Novembeerfest will be held Saturday, November 6th at Larry's Brewing Supply in Kent, Washington. Entries are due by October 30th 2004. Entries will be accepted from all BJCP/AHA beer style categories, including cider and mead. Entry forms may be downloaded at www.brewsbrothers.org/nbf/nbf_top.htm. Ship entries to 24211 4 Place, West Bothell, Washington 98021.

November 13
Australian Amateur Brewing Championship 2004
Canberra, ACT, Australia

The 2004 Australian Amateur Brewing Championship will be judged at the Canberra Club located on 45 West Row, Civic on Saturday, November 13. A dinner and presentation night will be held at the same venue on the same day. For more information visit www.aaba.asn.au or email info@aaba.asn.au.

BREWER'S DICTIONARY

P is for...

pale ale: an amber colored beer brewed with pale malt. This ale originated in England and is known for its light color, hoppiness and drinkability with its typical alcohol content of 3.5% by volume.

pasteurization: A stabilizing technique that uses high heat in packaged materials or brew to kill microorganisms. This process also prevents post packaging fermentation in brews and lengthens shelf life.

pH: the commonly used abbreviation for "potential hydrogen." This measurement is given a number between 1-14, representing the acidity or alkalinity in a solution. A solution below 7 pH is considered acidic and a solution above 7 is alkaline.

Pilsner: a style of beer that is light colored and hoppy. These brews originated in the city of Plzen, Czechoslovakia. Typically, this brew has a 5% abv.

porter: an extremely dark brew that is mild in alcohol. It originated in London as a richer alternative to ales. It gets its dark color and rich flavor from roasted, unmalted barley.

potential alcohol: the estimated amount of alcohol that a final brew will have. This measurement is based on the pre-fermentation sugar content.

primary fermentation: the first phase of fermentation where sugars are converted into ethyl alcohol and carbon dioxide.

priming: the practice of adding sugar to fermented brew before bottling to reintroduce fermentation and carbonate the brew in bottle.

homebrew CLUB

UC Homebrewer's Guild

Cincinnati, Ohio

(Left to right): Secretary Nathan Hadloch, Vice President Scott Arnold, President Frank Noel and Treasurer Kyle Bertke.

After a hard day at school, Frank Noel, Scott Arnold, Kyle Bertke and Nathan Hadloch invited a friend to their house who claimed the ability to turn water and a few of its friends into liquid gold. Within a few hours, a couple college buddies had a new found love for brewing and its magical byproduct, homebrew. After getting a few batches under their resume and developing a desire to share and acquire knowledge with other local contemporaries, the young men established The University of Cincinnati (UC) Homebrewer's Guild in February of 2004.

The guild, officially recognized by the University of Cincinnati, started with a bang as an intense campus advertising campaign, including a front page article on the school's newspaper, brought a flock of people armed with a thirst to brew. The guild has provided the quench with bi-weekly brewing sessions, brewery tours and informational sessions hosted by local brewmasters.

As the guild continues to search for knowledge to perfect their product, all fifty members are encouraged to brew various styles of brew and add their own touches, such as fruit or chocolate. In recognition of the best and most unique brews, the club awards its members the fabled UC Homebrewer's Guild "Brewthren Gold Standard" pin, which notifies special status from within. An Imperial IPA and American Barleywine have been the two yields worthy of the esteemed pin. As a funded organization of the University, the guild is open to all. If you are interested in joining the Guild please email ucguild@yahoo.com. The guild is constantly seeking additional contacts, resources, members, fans and funding so feel free to get ahold of us.

Members of the Guild siphon brew during their first experience with Korny kegs.

Scott Arnold and Frank Noel work to correct the pressure in a keg.

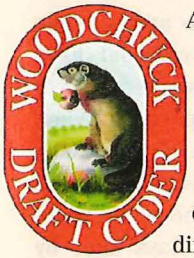
Hard Cider

What Johnny had in mind

by Thomas J. Miller

Fall's upon us and, wouldn't you know it, apples are ripe for the pickin'. Whether you press your own or buy fresh juice, this is definitely the year to reserve a carboy for a fresh batch of hard apple cider.

Winemaker: Greg Failing has been making apple wines and hard cider professionally for the last seventeen years. He works for Green Mountain Cidery in Middlebury, Vermont, makers of the Woodchuck line of hard ciders.



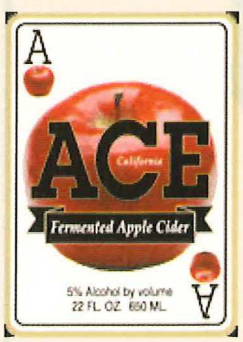
Apples are far cleaner to work with than grapes in the sense that there are no tartrates or precipitates to deal with. To me, making hard apple cider is just a slightly different version of making wine. We focus on the standard of cider in today's industry — cider with 5 percent alcohol — so there has been no sugar added. Apples have enough sugar (approximately 1.050–1.060 SG or 12–15 °Brix) to get you a 5–6 percent alcohol content without adding sugar. The first question a hard apple cider maker needs to ask is: Do I want to start with fruit or juice? Home cider makers can easily get the equipment needed for crushing the apples, but if you don't have a good press, it is really hard to extract good juice from the apple. Apples are very hard and compact. You need a way to grind the apple first. Then you can press it. Only then do you get the good extraction of juice.

Without the equipment to properly press apples, I suggest buying the juice from somebody with the equipment and the fruit. It's important that the juice be free of preservatives, which can slow down yeast and cause problems during fermentation. The downside of purchasing juice is that you are going to get whatever apples they throw in the mix. This can reduce your creative abilities, but it is definitely a basic way to get your feet wet in making hard cider.

Before adding the yeast, you want to bring the juice's temperature up to 65–70 °F (18–20 °C). This will ensure a lively fermentation. Add cultured wine yeast once you have reached room temperature. I suggest Champagne yeast or Killer Yeast like K1. You might also try a brewer's yeast, but it may add characters that differ from your typical expectations of cider. Some brewers prefer this, others do not.

Depending on the apples that were used for the juice, there may or may not be enough nutrients to push the yeast all the way through fermentation. To be on the safe side, I suggest adding a yeast nutrient. You should conduct the fermentation in a cool place. Fermentation — especially in the small, 5-gallon (19-L) containers — builds up heat. If the fermenting juice gets too hot, it results in off-flavors. A steady 60 °F (16 °C) is an ideal climate.

Winemaker: Jeffrey House is the owner of California Cider Company in Sebastopol, California. They have been making Ace Cider for ten years.



If home cider makers have to choose between using apples or fresh juice to make their cider, I'd definitely say start with the juice. You need all kinds of equipment to press apples. Using the juice is far simpler if you plan on making small cider batches. We are located in California's wine country, so there is lots of emphasis on quality grapes in producing quality wines. The same is true for hard cider. If you put garbage in, you get garbage out. It is imperative, then, to focus on getting high quality, natural, filtered juice for the cider you are making.

It wasn't always this way, of course. The British, or perhaps the Normans, used to eat the eating apples — by that I mean those apples that were pleasant enough to eat were actually eaten, not fermented. It was the drop apples or the crab apples they would use to make an alcoholic drink. They were not so much interested in the taste of that cider, of course. It was more the alcoholic kick that they had in mind. Times have changed: Making quality and flavorful cider is important to cider makers and consumers. One can make a nicely balanced cider by using a mixture of sweeter apples and more bitter varieties. The European style still tends to use small apples that are not fit for eating. I think if you want a fresh-tasting cider, you should use an apple variety that is aromatic.

Drier style ciders need more acidic apples. American drinkers seem to prefer semi-dry styles. For this you would use something like Granny Smith, Fuji, or Gravenstein. I would suggest that home cider makers attempt to make their first batches using only one apple variety. This will allow you to distinguish the different characteristics behind the fruit and how it tastes when converted to cider. McIntosh, Empire and Cox's Pippin are three ideal varieties to start with. I think the best ciders need to be in balance. Some cider makers will stray from this, preferring to lean toward sweetness, dryness or bitterness, but you can adjust these to taste.

Brewer: Ashton Lewis is the brewer at Springfield Brewing Company in Springfield, Missouri.

We make a hard cider annually as the local apples are harvested. Southwest Missouri has historically produced apples and there are several local apple orchards around our brewery. I choose to buy apple juice from an orchard that has a really nice press that continually wins ribbons at the state fair for their top-quality preservative-free juice.

Herndon's Orchard in nearby Marionville, Missouri grows a variety of apples and is happy to blend tart and sweet apples together to give us the must we want for making cider. They have a really neat press that sends the apples through a hammer mill and then through a continuous belt that expresses the juice and then discharges the apple pumice.

The must we buy is a blend of locally produced fruit and has a specific gravity right around 1.048. No preservatives that inhibit yeast growth, such as sorbates or benzoates, are added. We buy this juice by the 500-gallon (1900-L) tank load and drive it back to our brewery where we pump it into a fermenter and pitch it with our house ale strain of yeast. Fermentation is carried out at 68 °F (20 °C) and the gravity cranks down to a specific gravity below 1.000, much like dry wine within 1–2 weeks.

Southwest Missouri is also home to the largest oak barrel maker in the U.S., Independent Stave Company, and we use new, American oak barrels to age our cider. We use a medium (+) toast to age 25% of the 500 gallons (1900 L) of cider. These barrels impart a toasty, vanilla-like flavor found in dry white wines like Chardonnay. The other 75% of the cider is aged in stainless steel tanks where we add another special ingredient. . . this is a malolactic bacterial culture produced by Wyeast and sold to wineries. We use this bacterial blend to subdue the tartness of our cider by converting the mouth-puckering acid malate (found in big doses in apples) to the rounder and less acidic lactic acid. The "ML" culture also produces a little bit of diacetyl and gives our cider a full, rich flavor.

After the cider ages to balance, we do a final check before filtration. Cider contains pectin and excessive levels make it impossible to filter. We now perform a presumptive test similar to those that wineries conduct where one part of fermented cider is added to one part of ethanol. If a colloidal haze (pectin gel) forms, then we know filtration will be virtually impossible. When this occurs, we add a commercially available pectinase solution to the cider and confirm that the pectin problem is absent about 7 days later by repeating the test prior to filtration. ■

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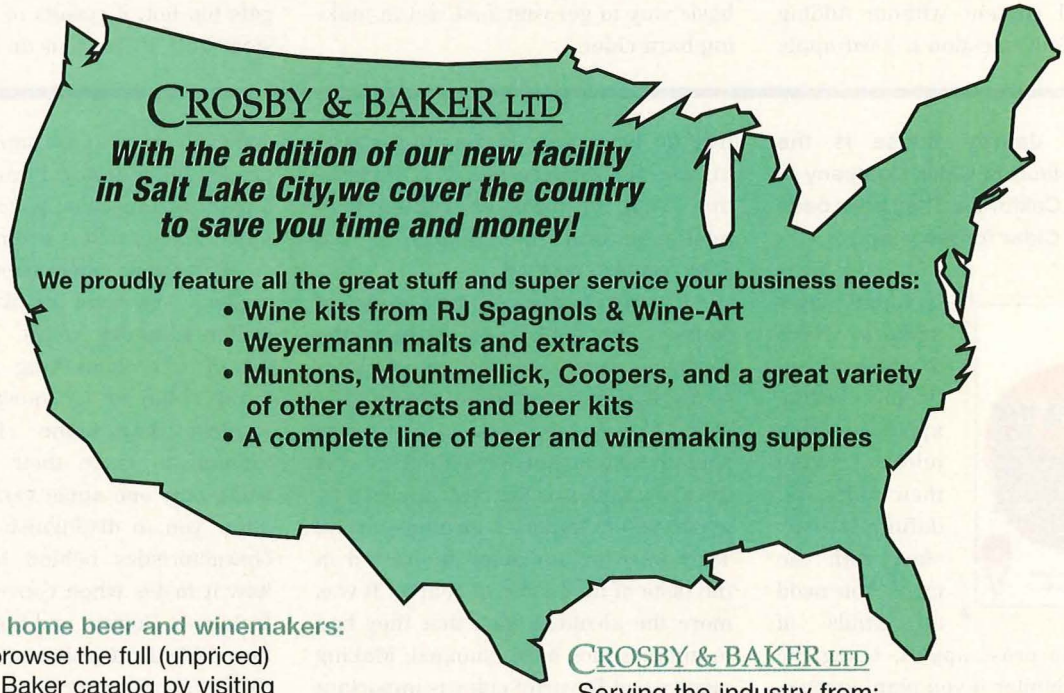

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Fining solutions

"Help Me, Mr. Wizard"

Hops in the ice box, racking tactics and efficiency 201

A gelatinquery

Would fining with gelatin have an adverse effect on naturally conditioned beer? I've already used Irish moss on my second all-grain batch (2 tsp. to a 5-gallon pot in the last 15 minutes). I racked it to the secondary yesterday and the brew still looks pretty opaque. I'm curious about adding gelatin to the secondary as it is an edible food product; I just fear it would effect the yeast too badly. Would gelatin be okay, or should I steer clear from it? I've also looked into Polyclar, but don't want to use powdered plastic as a fining agent.

Luc Lachance
Toronto, Ontario

Fining is one of those brewing practices that takes some "touch and feel" to perfect. Not all beers respond equally to finings, regardless of the type. That's because the components in the beer affected by finings, primarily protein, yeast and polyphenols vary in composition. This is especially true of yeast because different strains vary in flocculation and respond differently to collagen finings (gelatin and isinglass).

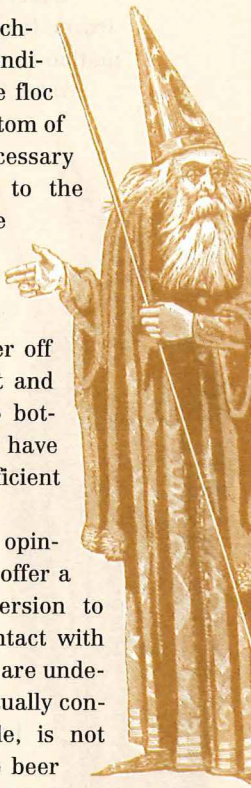
Irish moss is used to help remove protein from wort, which ends up in the trub and is separated from the wort prior to fermentation. The next step in the brewing process where finings are used is post fermentation. Cask conditioned ales are racked into a keg where isinglass finings, priming sugar and often times dry hops are added before the keg is sealed up for conditioning. Isinglass is made from the cleaned and dried swim bladders of certain fishes and contains a very pure form of collagen. Gelatin is also rich in collagen, but it is not as pure as isinglass and is not as effective at removing yeast. Both can be used in brewing.

The preparation of isinglass involves stabilizing the protein in an organic acid (tartaric or malic, for example) at a pH of ~2.5. When added to beer isinglass casts a large open net with positive charges on the surface of the molecule. These charged sites act like little magnets and electrostatically bind yeast cells, due to the overall negative charge of yeast. The pH of beer is usually around 4.5 and at this level the collagen begins to precipitate from solution. As the collagen precipitates it falls through beer pulling yeast to the bottom of the fermenter. It is also important that you store and use your finings at a temperature range of 42–55 °F (6–13 °C), or they simply will not fine your beer correctly.

Not all yeast respond the same to this method of fining because not all strains have the same density of negative charges on the cell wall. Trial and error will tell you if the yeast strain you use is effectively removed by isinglass. Most serious users of finings perform bench top tests to avoid over fining. A good starting point with isinglass is 1 mL isinglass solution per liter of beer.

Finings remove compounds from beer and wine and the compounds removed are singular. Add too much isinglass and you may end up stripping more than yeast from your beer. The philosophy with fining is to add just enough to accomplish the primary goal. The concentration of yeast after fining with isinglass can be quite low and ales fined with isinglass typically contain less than 100,000 cells per mL, sometimes as low as 10,000 cells per mL. Most commercial breweries that I know who bottle-condition like to see ~one million yeast cells per mL of beer. Anything significantly lower than this density causes problems with carbonation. This takes us back to cask-conditioned ale. These beers carbonate during the same time that the yeast is being pulled down to the bottom with the isinglass. The other key to recognize with fined cask beer is that the cask has a belly where the yeast can collect without flowing to the tap. Since isinglass forms a fluffy yeast layer it is important not to disturb a cask that is being dispensed.

Bottled beer is another animal and you cannot use the cask technique to fine, prime and condition beer in the bottle. The floc would never stay at the bottom of the bottle during those necessary movements (i.e. transfer to the fridge, drinking from the bottle or decanting to a glass). You can fine your beer with isinglass (or gelatin), rack the clear beer off of the yeast and add yeast and sugar to the beer prior to bottling. This allows you to have clear, fined beer and sufficient yeast for carbonation.



Everyone is entitled to opinions and I thought I would offer a counter-point to your aversion to PVPP. Beer comes into contact with all sorts of compounds that are undesirable in the product eventually consumed. Glass, for example, is not something you want in the beer when it comes time to drink it! PVPP is a synthetic fining used to remove tannins from beer and the goal is to reduce chill hazes from forming. Silica gels are used to remove haze-active proteins and some brewers the two finings in conjunction to combat chill haze. These compounds are insoluble and tend to sink quickly. This makes them relatively easy to remove by racking or filtration.

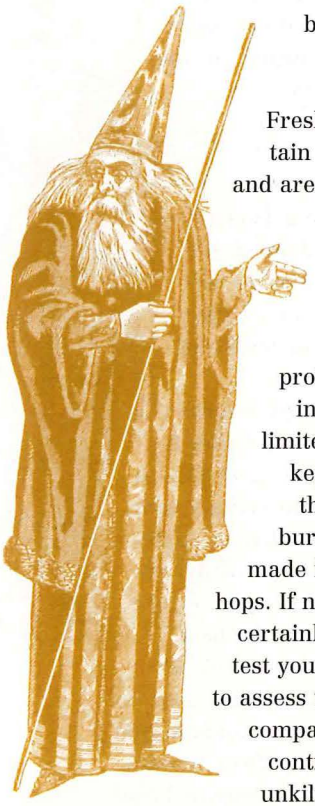
Making hopsicles

This year is my first year at growing and harvesting hops. I am harvesting Cascade and Fuggles. I was wondering if it is necessary to dry my hops before I vacuum seal them and freeze them in the freezer? It's my understanding that if I don't dry them and freeze them with their moisture they may get freezer burned. And freezer burn simply is the dehydration of the frozen hops. If you just re-hydrate the hops when you add them to the wort then why dry them?

Ben
via email

"Help Me, Mr. Wizard"

I have never had this question asked and cannot give a definitive answer on the topic. I do know, however, that freezer burn has a negative affect on the flavor and texture of frozen foods and is the result of sublimation or the direct change from solid water (ice) to gaseous water vapor without the water becoming liquid. This results in big, fuzzy looking ice crystals. Freshly picked hops contain about 80% moisture and are good candidates for freezer burn. If you can vacuum pack them in a moisture barrier bag, like a foil pack, you could probably store the hops in a deep freezer with limited freezer burn. The key to your question is the affect that freezer burn has on beer flavor made from freezer burned hops. If nothing else, it would certainly be worth trying to test your idea. When you go to assess the results you must compare the test beer to a control made with fresh, unkilned or "green" hops as opposed to dried hops.



When green hops are kilned they loose their grassy, fresh aroma. Many brewers have begun producing special brews with fresh hops and the hop aroma is markedly different from beers hopped with kilned hops. You ask a good question and are hereby tasked with executing a brewing trial to assess your proposed method. Drop us a reply when you are done with your homebrewing homework assignment and we will run your lab report in our mail column!

Racking tactics

I've currently got a Belgian white in my primary and it's still got a pretty vigorous fermentation after seven days (about one bubble in my airlock every 10 seconds). Fermentation has shown signs of slowing down, but still seems too early to transfer to the secondary. Would transferring now be a good idea, or should I wait for the primary fermentation to settle more?

Tim Bollnow
Downers Grove, Illinois

The main reason to rack the beer from primary to secondary is to reduce the yeast load for aging. This is not absolutely necessary, but does help reduce autolysis if the beer is aged in the fermenter for several weeks prior to bottling. This practice is still widely practiced by commercial brewers, but is gradually being replaced by the unitank method of fermentation where beer is fermented and aged in cylindrical tanks with conical bottoms that permit removal of yeast without racking. If the beer is still fermenting when you rack it into the secondary you will carry more yeast over than if you wait until fermentation is substantially finished and the yeast has had a chance to flocculate. It certainly will hurt the beer to rack it before it is completely finished . . . but if the point is to get it off the yeast, you don't want to rack it too soon.

Doing gravity checks at home can be viewed in a negative light because each sample is equal to about 1/2-bottle of beer and each time the fermenter is breached with a sampling device you risk contamination. I firmly believe that the pros of sampling far outweigh the cons and like to check my fermentation for completeness. If you don't test it, you really don't know if it fermented properly until it is too late. I take several samples during fermentation to track the progress of the fermentation. This gives me a chance to take a corrective measure, for example adding more yeast, if things are not going as planned. It also produces a sample to taste. If something really bad happens early on that results in a bad batch, I prefer to jump ship early instead of spending any more time on a lost cause than necessary. My advice is to test it, taste it and rack it when the time is right!

Revisiting efficiency

In your response to this inquiry, "When I follow all-grain recipes, my original gravity is always about 10 points lower than the recipe target. Help!" in January–February 2002's issue (the answer in full can be found at www.byo.com/mrwizard/889.html), you advise that a given columnist, like Replicator, "typically will use his own efficiency factor, based on his system and experience. This is usually between 65 and 68%, meaning that a pound of malt will add between 0.65 and 0.68 pounds of extract to the wort." This answer is somewhat misleading and seems to leave out a critical assumption behind all-grain mashing extract calculations.

For instance, at the given efficiency ratings, you would only expect between 0.65 and 0.68 pounds of extract if the cereal you were mashing manifested an extract potential of 100%. This is never the case in all-grain mashing. Pale malt typically has an extract potential of 81% — which means at a 100% "efficiency factor" you would only expect a maximum of, say, 37 gravity units per pound of malt (or 0.81 pounds of extract in the wort per pound of pale malt mashed). The difference between a realistic pale malt extract potential of 81% and a hypothetical 100% extract potential (wherein one might expect to extract 46 or 47 gravity units per pound of malt) is essentially 10. This could explain the 10 gravity unit difference, couldn't it?

Stephen McDaniel
Oakland, California

Wow! It's amazing how the same question read by two brewers can be interpreted so differently. I read the question more simply. His problem as I saw it was that when he followed a recipe printed in a magazine or book he never got the published starting gravity and is usually about 10 points low. I understood the 10 points low to mean 1.038 instead of 1.048, for example. I also assumed that this brewer was not doing any sort of calculations and was not able to find a fault in his calculation methodology because he did not mention anything about his calculations.

Now that I read this again, I can

think of a methodology error that can result in a phantom low yield and that is improper use of the hydrometer. If a brewer performs a gravity check on wort that is warmer than the calibration temperature on the hydrometer, the measured value will be under reported. I use hydrometers with built-in thermometers and correction scales for easy temperature compensation. You do make some good points about extract efficiencies and the finer points of extract calculations. I will attempt to clarify the numbers I used in my original answer to in hopes of eliminating confusion.

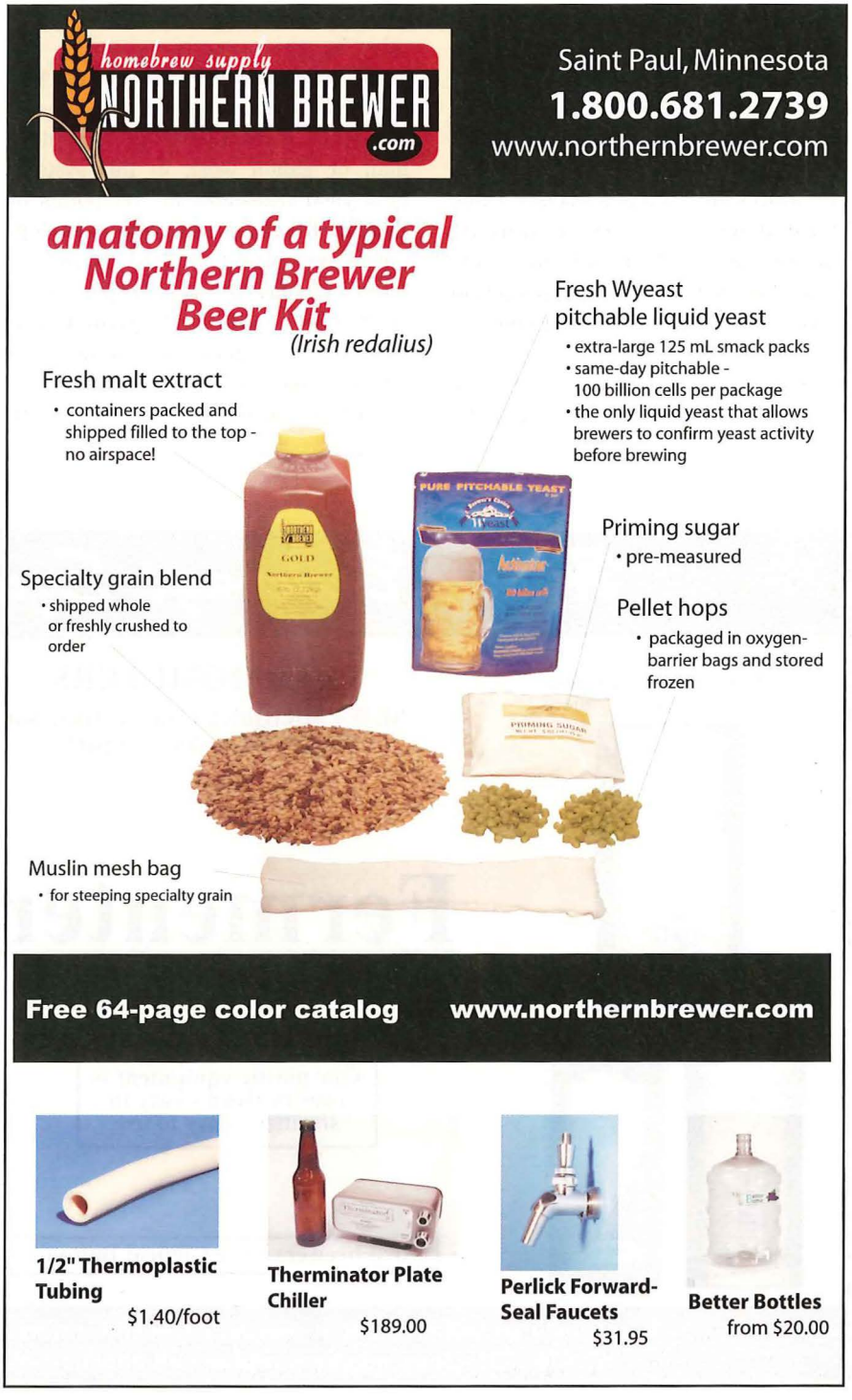
Pale malt indeed has a typical "laboratory yield" of 81% dry-basis yield. Maltsters use such numbers to describe their products. The method used to obtain this number is to perform a small, laboratory mash. The malt sample is split into a coarsely ground sample and a very finely ground sample. The two samples go through a mash profile, the wort is separated from the grain solids in a funnel equipped with a filter and the wort is aggressively "sparged" to leave little-to-no extract in the spent grains. This is a standardized method, is reproducible and is used by labs all over the world that do malt analyses. The method (along with a moisture content analysis) yields five parameters with a range of typical values (for North American 2-row malt):

coarse grind extract (as-is)	77-78%
coarse grind extract (dry-basis)	79-80%
fine grind extract (as-is)	78-79%
fine grind extract (dry-basis)	80-81%
coarse/fine difference	1-2%

Coarse/fine difference is a measure of malt modification and ranges between 1–2% for most malts, where malts deemed "under modified" have a C/F difference of more than 2%. This is a crude line in the sand and is somewhat irrelevant since most malt today has a C/F difference of less than 1%. Even "under modified" malts do not come close to 2%. My point is that the coarse and fine grind values are pretty darn close these days.

The dry basis number accounts for the moisture content of malt and allows for an accurate comparison of malts that have different moisture contents. The as-is number gives the brewer a handy number to use in the brewery because it tells us the percent extract contained in the malt on hand, including the moisture. The as-is number is always lower than the dry-basis number because malts contain some water.

Personally, I like comparing my actual yield in the brewery to the laboratory coarse grind extract (as-is basis) value to calculate my brewhouse efficiency, usually called brewhouse yield. I have a mash mixer and lauter tun where I work and we routinely get 92–94% of the laboratory coarse grind extract (as-is basis). I call the lab value multiplied by the brewhouse yield the working yield. For example, 0.78 (lab

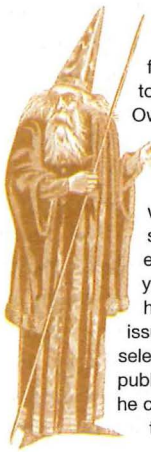


yield) * 0.92 brewhouse yield = 0.72 working yield. In our brewery, this means that when we brew a beer primarily from pale malt with a lab yield of 78% (coarse grind, as-is) we yield 0.72 parts extract per part malt used in the mash. This is what I call a working yield of 72%.

Most homebrewers do not get 92% brewhouse yields and instead usually get brewhouse yields around 85%. When this number is compared to a coarse grind, as-is lab yield of 78%, the working yield is 66%. Finally, I've noodled my way into a response to your point that the only way to get 0.65–0.68 pounds of extract per pound of malt is to begin with a cereal with a 100% lab yield. This is a realistic value and it states that if your brewing rig and method is 85% as efficient as the lab method you will get 0.66 pounds of extract from a pound of malt containing 0.80 pounds of extract.

I admit this is not a perfect method because it assumes that all of the malt in the brew has the same laboratory yield and this simply is not true. As you point out, lab yield drops as the malt becomes more highly kilned because part of the extract present in the starting material is either lost in "smoke" or rendered insoluble during kilning. I benchmark my efficiency with beers almost entirely composed of pale malt (our helles lager is one such brew) and consider the various yields of individual malts in comparison to this benchmark when doing calculations for other beers.

In your response to my answer, you introduce a unit I typically do not use and that is extract points per pound of malt or gallon wort. In this system, 80% yield translates to ~37 points of extract (I convert using the following: points per pound = 0.46* % yield + 0.09). I suppose one could expect 100% yield from malt (~46 points) and conclude that they are yielding 10 fewer points per pound than erroneously expected. It is indeed key to compare your performance to the right laboratory yield, and with malt the yield is not 100%. I also agree that if a brewer miscalculates their brewhouse efficiency and uses more malt they will not correct a mathematical error. In this case, however, I think his problem has more to do with differences in brewhouse yields among various systems than with the finer points of yield calculations.



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Düsseldorf Altbier

A cool ale from a cool city

by Horst D. Dornbusch

It is rare that we can pinpoint the birth date of a beer style. The Pilsner, born in Pilsen on November 11, 1842 and the helles, born in Munich on March 21, 1894, are perhaps the two most notable exceptions. It is quite common, however, that we can pinpoint a style's place of origin. For instance, London gave us the porter; Bamberg, the rauchbier; Dublin, the stout; Dortmund, the export; Burton, the IPA; Cologne, the Kölsch; and Düsseldorf . . . the altbier. Altbiers are a cool-fermented and lagered, copper-colored ale and the traditional beer style from this capital city of the Rhineland.

In Germany, where 88.7% of all beers drunk in 2003 were lagers, altbier is one of the few indigenous ales — next to the blond Kölsch from Cologne, only 44 kilometers (27 miles) up the River Rhine from Düsseldorf, and the weizen or weissbier family from Bavaria.

A sip of altbier is a sip of beer history itself

Altbier was not created on a particular day; it evolved over centuries, even millennia. "Alt" means "old" — an allusion to the old style of brewing, before lager. The modern altbier acquired its name only in the 1800s, when this Düsseldorf original became threatened by the "new" beer — the lagers of Bavaria and Bohemia. The first lagers had been pioneered in Bavaria in the 16th century but they became ubiquitous in Continental Europe only in the 19th century. Before that time, in Düsseldorf, altbier was just bier.

ALTBIER by the numbers

OG	1.046–1.050 (11.5–12.5 °P)
FG	1.010–1.012 (2.5–3 °P)
SRM	10–20
IBU	25–45
ABV	4.5–5%

In spite of its age, however, Düsseldorf has somehow managed to integrate its heritage with its aspirations — and its indigenous beer is living proof thereof. It's still chic for dapper and suave modern Düsseldorfers to sip an altbier from the traditional straight-sided 0.2-liter (~7 oz.) glass, in one of the city's ancient brewpubs or ritzy bars. In the city's Altstadt (old town), almost every house contains a pub. There are more than 200 of them crowded together in an area less than one mile square in buildings, many of which date from the 13th to the 17th centuries! The Altstadt survived the bombings of World War II unscathed. With its cobble-stoned lanes, it is known affectionately as the longest bar in the world, and it is there that you can find three of the four brewpubs that have defined the altbier style for our age. Within a few hundred yards from each other, there is the Zum Uerige, Im Füchschen and Zum Schlüssel. In translation, these names mean "at the grouch," "at the little fox" and "at the key" respectively. The oldest altbier brewpub, Schumacher, so-named after its founder Mathias Schumacher, is only a 10-minute walk to the east of the Altstadt. It opened in 1838.

Düsseldorf is perhaps the most un-German of German cities. Neither dour nor glitzy nor jovial, it is laid-back, fashionable and cosmopolitan. Düsseldorf is cool, both literally and metaphorically, like its signature brew. It rarely gets very hot or cold in Düsseldorf, which has important ramification for the types of beer that one could brew there before refrigeration. Thus, altbier is the slowest and coolest fermented ale in the world. The greatest altbiers are fermented by a specialty ale yeast at a cool 55 °F (13 °C), almost as cold as a lager.

In 2003, altbier had a market share of 2.7% of all brews in Germany, but on its home turf, in Düsseldorf, every other beer consumed is of the

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RECIPE

Cool Alt

(5 gallons/19 L, all grain)
OG = 1.047 FG = 1.010
IBU = 40 SRM = ~10 ABV = 4.8%

Ingredients

10.66 lbs. (4.8 kg) Weyermann Munich Type I malt (6.5 °L)
10.75 AAU Spalt hops (bittering) (2.4 oz./68 g of 4.5% alpha acid)
1.2 oz. (33 g) Spalt hops (aroma)
Wyeast 1007 (German Ale) or White Labs WLP029 (German Ale) yeast
1 cup dried malt extract (for priming)

Step by Step

Start with a dough-in at about 122 °F (50 °C) for a 30-minute rest. Then increase the mash temperature, using a combination of hot-water infusion and direct heat, to 148 °F ± 2 °F (64 °C ± 1 °C) for a 30-minute beta saccharification rest, to 156 °F ± 2 °F (69 °C ± 1 °C) for a 30 minute alpha saccharification rest, and finally to 170 °F ± 2 °F (77 °C ± 1 °C) for the mash-out.

Recirculate your wort until it runs brilliantly clear (about 15 minutes). Then sparge until you reach kettle wort's gravity of about 1.042 (10.5 °P) to account for evaporation losses during the boil. All-grain brewers should expect to need a total of 6.75–7.5 gallons (approximately 25.5–28.5 L) of brewing liquor for mashing and sparging.

In Düsseldorf, boiling times are between 90 and 120 minutes. Longer boils produce a maltier aroma and a slightly deeper color. So take your pick. Add the

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bittering hops about 60 minutes before shut-down. At the end of the boil, check the kettle gravity and adjust to the target of OG 1.047 (11.75 °P). Depending on your reading, either liquor the wort down or resume the boil for additional evaporation. Add the aroma hops right after shut-down. Stir the wort gently with a spatula to blend the hops in evenly. Then let the brew rest for about 30 minutes to allow for sedimentation of the hot break and debris.

Siphon the wort off the trub and heat exchange it to the proper pitching temperature: 60 °F ± 5 °F (16 °C ± 3 °C)] for Wyeast 1007; 67 °F ± 2 °F (19 °C ± 1 °C) for White Labs WLP029. For cleanest results, always ferment the wort slowly at the bottom edge of the yeast's preferred temperature range.

Ferment until the wort is about 90% attenuated (approximately 1.014 or 3.5 °P). Then rack and reduce the temperature gradually by about 2 °F (1 °C) per day until your Altbier reaches a lager temperature of 32 °F to 40 °F (0 °C to 4 °C). Let the brew mature for three weeks to two months on the yeast. Altbier gets better with longer lagering. After the first two weeks of lagering, rack the beer off the sediment.

At the end of the lagering period, rack the brew again and prime it for packaging. Traditional altbiers are not very strongly carbonated. If you package your altbier in a Cornelius keg, therefore, maintain a pressure of no more than 12 PSI (0.82 atmospheres). Store altbier at about 41 °F (5 °C) and serve it at about 50 °F (10 °C).

Cool Alt

(5 gallons/19 L, partial mash)

OG = 1.047 FG = 1.010

IBU = 40 SRM = ~10 ABV = 4.8%

Ingredients

5.0 lbs. (2.3 kg) Weyermann Munich Amber liquid malt extract
2.33 lbs. (1.1 kg) Weyermann Munich Type I malt (6.5 °L)
10.75 AAU Spalt hops (bittering) (2.4 oz./68 g of 4.5% alpha acid)
1.2 oz. (33 g) Spalt hops (aroma)
Wyeast 1007 (German Ale) or White Labs WLP029 (German Ale) yeast
1 cup dried malt extract (for priming)

Step by Step

Steep crushed grains at 148 °F (64 °C) for a 30-minute rest followed by a 30-minute rest at 156 °F (69 °C). To do this, place crushed grains in a nylon steeping bag. Heat 75 oz. (2.2 L) of water to 159 °F (71 °C) in a 6–8 qt. (~6–8 L) pot (not your brewpot) and dunk the bag in it. With a clean spoon, poke around at the bag and ensure that the water and grain gets mixed thoroughly. Monitor temperature every ten minutes or so and add heat to boost temperature back to 148 °F (64 °C). (Add heat in short — 30 second to 1 minute — bursts. Stir and let the mash sit for minute, then retake temperature.) After 30 minutes, stir in boiling water until you reach 156 °F (69 °C). Let this rest for 30 minutes. After this partial mash, remove grain bag with a large kitchen strainer. Rest bag (in strainer) over brewpot. Add a quart (~1 L) of 180 °F (82 °C) water to your "grain tea" and pour it through the grain bag, letting the liquid run into brewpot. Add water to make up your full boil volume, heat it to a boil and add malt extract. See the first recipe for the remaining brewing steps.

Cool Alt

(5 gallons/19 L, extract only)

OG = 1.047 FG = 1.010

IBU = 40 SRM = ~10 ABV = 4.8%

Ingredients

6.4 lbs (2.9 kg) Weyermann Munich Amber liquid malt extract
10.75 AAU Spalt hops (bittering) (2.4 oz./68 g of 4.5% alpha acid)
1.2 oz. (33 g) Spalt hops (aroma)
Wyeast 1007 (German Ale) or White Labs WLP029 (German Ale) yeast
1 cup dried malt extract (for priming)

Step by Step

Mix the malt extract with your hot brewing liquor in the kettle. Bring the wort to a boil and follow the all-grain instructions.

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style. Most of it is poured on-premise, tapped from wooden casks and dispensed without CO_2, by gravity alone. In the United States, too, altbier has become quite popular as a brewpub special. As an import, however, altbier is still rather rare, though I have found Frankeinheim Altbier and Uerige Altbier in a few specialty on and off-premise outlets in the U.S. recently. This dearth of imported altbier in the New World should be an additional incentive for homebrewers to have a go at this unique and rewarding brew.

Altbier ingredients and processes

Most of the modern altbier specifications emerged during the nineteenth century, in the wake of the Industrial Revolution, when advances in brewing science and technology allowed brewers and maltsters to control their ingredients, especially malt and yeast. Altbier generally has an alcohol content of 4.5–5% by volume.

Some Düsseldorf brewmasters use decoction mashing only, but even they admit that a perfect altbier can be made just from infusion. All altbier professionals, however, still insist on both a protein rest and one or two saccharification rests. In Düsseldorf, mashing usually takes about two hours.

To get the rich and engaging copper-bronze color of a typical altbier, brewers take various routes. Many employ just one malt, a Munich malt at a color rating of roughly 5 to 8 °Lovibond, such as Weyermann Munich Type I. Munich malt is usually highly modified and imparts a strong malty flavor and aroma, leaving some residual sweetness behind for a rich mouthfeel. Our recipe is based on this malt. For homebrewers looking to substitute other malts, be sure that they are within the specifications mentioned above (5–8 °L).

Extract brewers are in luck, provided they can find Weyermann Munich Amber liquid malt extract (LME). It is the perfect altbier extract, because it is produced entirely from a double-decoction mash of Weyermann Munich Type I malt. At an OG of 1.050 (13 °P), this LME produces boiled wort of between 8.8 and 11.1 °L. Because there is no need to steep specialty grains, there is no extract with grains recipe for this beer. However, this beer offers a nice opportunity for extract brewers to try a partial mash beer.

All-grain brewers, however, depending on where they shop, may have a problem, because not all malting companies offer Munich malts in the 5–8 °L color range (10–20 °L is more common).

In this case, you can follow the practice of several German brewers, who compose their grain bills of a mixture of darker Munich and pale Pils malts. The Pils malt usually has a color value of 1.5–2 °L. Do not, however, use pale ale malt — it differs in two

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important respects: It is usually 0.5–1 °L darker than pale Pils malt, and it is usually made from grains that taste less malty. Maltiness, however, is essential for the flavor profile of a top altbier.

Continental European Pils malt is usually made from such two-row barley varieties as Barke, Alexis, Scarlet, and Krona, whereas British pale ale malt is often made from less malty Golden Promise and Maris Otter. In North America, pale ale malt is often made from Harrington, or even (such as Briess's "Brewers Malt") from six-row barley. None of these malts are suitable for top-quality altbier.

The ratio is often half and half. These brewers prefer some Pils malt in their altbier mash tuns because it provides the beer with more fermentables and thus with a drier, crisper backbone. If you feel like experimenting, you could make an altbier from 50% Pils malt, 25% dark Munich malt and 25% Vienna or Carapils malt.

Some brewers add a small measure of caramel or even black malt, but in miniscule quantities only, just to color the beer. Because altbier lives almost exclusively off its upfront hops bitterness and its malty finish, roasty toastiness is absolutely verboten! Some altbiers contain a little bit of pale malted wheat — usually no more than 5% of the grain bill — for extra creaminess and a stronger head. In Westphalia, the wheat portion of brews labeled altbier may even go as high as 40%. This results in a beer, however, which many aficionados no longer consider a true altbier.

Once or twice a year, the altbier brewpubs of Düsseldorf produce a single batch of a special altbier called a sticke alt (ancient slang for secret altbier) or a Latzenbier (ancient slang for beer on a shelf). These beers are brewed slightly stronger and darker, perhaps to an OG of 1.056 (14 °P), an IBU rating of 50, a color rating of 16 SRM, and an alcohol level of 5.5% by volume. These altbiers often contain a good dose of caramel malt (otherwise not typical of an altbier), and even roasted malts.

The favorite hop variety in

Düsseldorf is Spalt (for bittering, flavor and aroma). It has a mild and pleasant, slightly spicy aroma and a bittering level of about 4–5 IBU. If difficult to come by, you can use Hallertauer Mittelfrüh, Tettnanger, Perle or Mount Hood as substitutes.

The flavor profile of altbier is greatly influenced by the yeast. Few other beer styles, with the possible exception of weissbier, have such a restricted choice of yeasts. While British ales need yeasts that impart a fruity complexity to the brew, altbiers need exactly the opposite. The specialty ale yeasts that have evolved in Düsseldorf over the centuries produce a beer that is almost as clean-tasting as a German lager. They are cool-fermenting and can still crank at temperatures that would send most British ale yeasts into dormancy. For an authentic altbier flavor profile, therefore, you must resort to the few specialists on the market that are low-ester producers and can ferment wort at a temperature somewhere between a typical ale and a lager cellar temperature. The same, incidentally, applies for the other Rhenish ale, the Kölsch. The most commonly available German ale yeasts for homebrewers are Wyeast 1007 and White Labs WLP029, whereby the Wyeast strain can work in a cooler environment than the White Labs strain. The preferred temperature range for the Wyeast is 60 °F ± 5 F (16 °C ± 3°C); for the White Labs, it is 67 °F ± 2 °F (19 °C ± 1 °C).

All proper altbier yeasts have poor flocculation properties, but there is no need for the homebrewer to fret. Even if you want a clear finished beer, neither finings nor filtration are necessary as long as you adhere to a few rules:

1. Because altbier is a "lagered" ale, the yeast eventually will settle out, as long as you do not disturb your tank during lagering.
2. Ever notice that conditioning tanks in breweries tend to be horizontal, while fermenters tend to be vertical? Because of the geometry of a horizontal tank, the yeast has to travel less far to settle than it would in a tall tank. If you have a choice of lagering container, therefore, choose the one with the wider bottom. Corny kegs are worst for this step. If you can, "crash" the temperature down to the freezing point for a day or two before racking. Crashing always promotes yeast precipitation.
3. Additional yeast will settle after bottle conditioning. If you handle the bottle carefully before pouring, without rousing the sediment, your altbier will never look as cloudy or hazy as a typical hefeweizen.
4. Finally, beer filtration was not invented until 1878, by Lorenz Enzinger, a Bavarian living in Worms in the Rhineland. Rhine-landers, however, have been making altbier since long before that date. So you might get some yeast in your glass, consider yourself transported back to the 1830s in Düsseldorf, when the oldest modern altbier pub opened. ■

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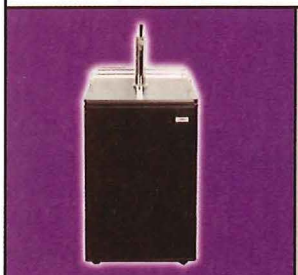
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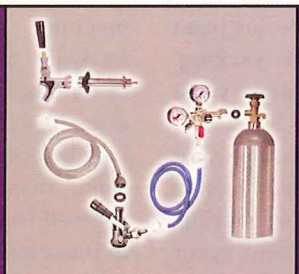
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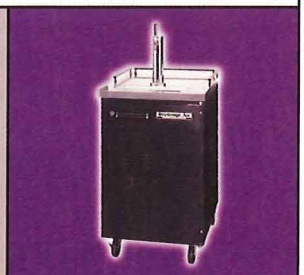
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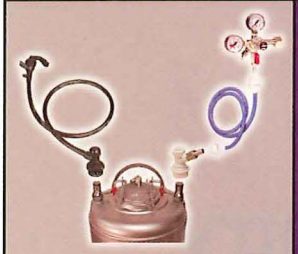
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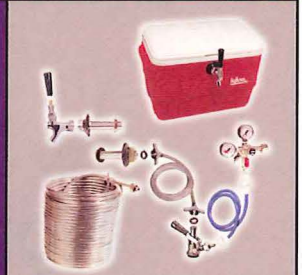
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Style profile

Horst Dornbusch was born in Düsseldorf and wrote the Classic Beer Style volume on altbier (1998, Brewers Publications). When he was a professional brewer, one of his flagship beers was an altbier.

ALTBIER in the REST of GERMANY

The locals of Düsseldorf are clearly beer loyalists. About half the beer they drink is altbier. Moreover, altbiers rank the sixth most popular beer in Germany with a market share of 2.7% of all beer sales. Altbiers are not just brewed in Düsseldorf, but also in such cities as Oelde, Münster, Steinfurt in Westphalia, Frankfurt in Hesse, Hanover in Lower Saxony and even Großostheim, a small village near Aschaffenburg in Bavaria. Though most of these altbiers are similar to the Düsseldorf model, they have been historically less significant for setting the style.

Southern altbiers tend to be bit sweeter and maltier than the classic Rhineland renditions. Hanoverian Altbiers are slightly darker. Altbiers from Westphalia (such as Pinkus Müller Altbier from Münster, which is available in the U.S.) tend to be spicier and tarter, in part because of the addition of up to 40 percent of wheat to the grain bill.

To become an accomplished altbier drinker in Hanover, incidentally, you have to learn a trick called in the local vernacular a Lüttje Lage (perhaps best translated as a "little layer"). Hold a glass of clear, unflavored schnapps (vodka will do) and a glass of Altbier in one hand, with the altbier glass between the thumb and index finger and the schnapps glass between the index finger and the middle finger. Make sure that the rim of the schnapps glass is slightly higher than that of the beer glass. When you raise the altbier to your lips, tilt it in such a way that the schnapps cascades into the beer, fortifying it as you drink.

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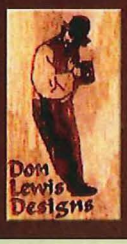

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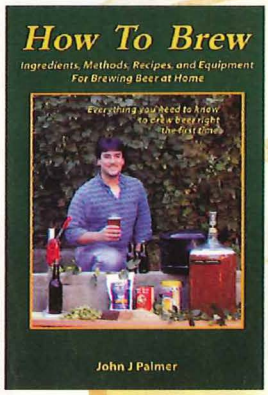

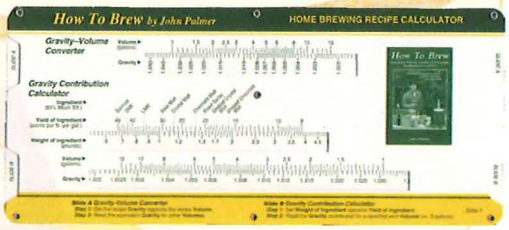

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1 Barbara and Robert Hogg of WobblyGob Traditional Ciders in Great Barr, England transfer apple pulp from the grinder to their hydraulic press.

2 The Hoggs blend four different apple varieties for their original recipe prior to the grind. The pomace of all four varieties is then pressed together to extract the juice.

photos by BRAD RING

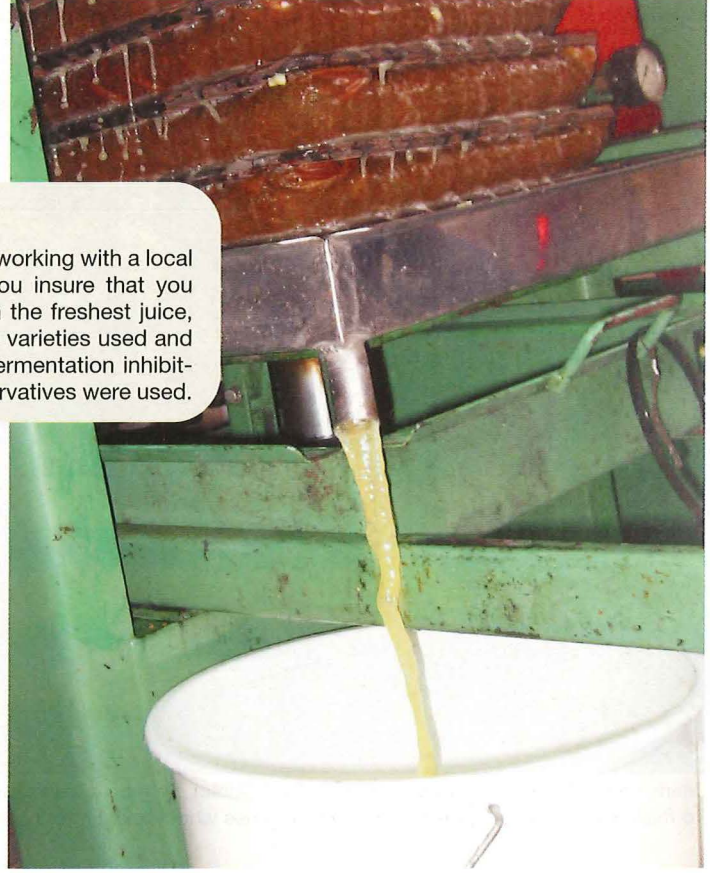
APPLE CIDER

the flavor of autumn

by Paul Zocco

3 Contact your local cider mill to see if they do custom pressing. If you plan to provide your own apples make sure they accept those varieties on their machinery.

4 By working with a local source you insure that you start with the freshest juice, know the varieties used and that no fermentation inhibiting preservatives were used.



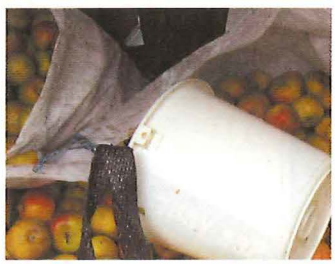
What is it that brings memories of autumn to mind? Some of us sense the cooler nights and crisper days. For others, the diminishing light is a reminder of a season gone by and a new one at our doorstep. The days are shorter, but are alive with a palate of autumn color. The perfumed fragrances of nature surround us as the autumn harvest season arrives. I anxiously wait for this fall panorama and especially look forward to the new crop of apples. The fragrant aromas and flavors of the season remind me that it's cider season again.

Picking a cider

Your first decision in the cider making process is finding the right type of apples. Cider makers from differing climatic zones throughout America produce a multitude of ciders, using many types and blends of apples. The local cider apples in the Northeast, where I live, include MacIntosh, Rome, Granny Smith, Empire, Delicious and

APPLE CIDER recipe

(5 gallons/19 L, from juice)



Ingredients

5 gallons (19 L) apple juice
sugar (can be added to increase original gravity; add to fermenter)
2 lbs. (0.91 kg) raisins (New England cider option)
2–3 lbs. (~0.9–1.4 kg) brown sugar (New England cider option)
¼ tsp. pectic enzyme (option for reducing haze; add to fermenter)
1 tsp. yeast nutrients (recommended if sugar is added; add to fermenter)
5 Campden tablets (an option for sanitizing the juice; add 24 hours before pitching yeast)
2.5 tsp. Bentonite (option to clarify; add when cider is racked)
1 tbsp. Sparkalloid (another option to clarify; add when cider is racked)
0.5–2.5 tsp malic acid or winemakers acid blend (an option for adding tartness; add to taste when bottling)
1–2.5 tsp. grape tannin (an option for adding sharpness; add to taste when bottling)
4–12 oz. (118–355 mL) wine conditioner (an option for adding sweetness; add to taste when bottling; use only for still ciders)
2–6 oz. (59–178 mL) glycerine (an option for adding body; add to taste when bottling)
spices (add alcohol extract to taste when bottling)
0.75–1.25 cups corn sugar (for sparkling cider; add before bottling)
Champagne yeast

Photo by Garrett Heaney

Many orchards, like Mad Tom Orchard in East Dorset, Vermont (shown above) crush apples to make cider. Some export the juice to breweries who ferment it for hard cider.

Baldwins. I attended a fall festival in Massachusetts last year where a farmer had at least seventy five different apples on display. I was astonished that so many different varieties are grown here in New England. Combinations of sweet, bitter, tart and sharp apples are blended by the individual cider maker. As veteran cider maker Tom Muska of Applebrook Farm in Broadbrook, Connecticut said to me, "The trick is in the blend."

Making cider starting from apples requires a fairly extensive knowledge of apple varieties and access to an apple press. This can be a bit much for a beginning cider maker to bite off, so this article will discuss basic home cider making using already bottled sweet (unfermented) apple cider.

Get your hands on the freshest cider possible, and taste it. If it tastes good, use it in your brew. There are orchards all across North America and you can probably find a local cider mill in your area by looking in the yellow pages or asking at your local farm stand. Spend a little time driving around the countryside visiting as many cider mills as possible. You'll eventually find a cider that you like and have a blast doing it.

Do not use any "supermarket juice" that has preservatives (usually potassium sorbate or sodium benzoate). Those chemicals may inhibit your fermentation. Always read the label. However, keep in mind that there may not be anything added to your local supermarket cider. If not, and it tastes good, go ahead and use it.

Sanitizing the must

In brewing, the wort (unfermented beer) is sanitized by boiling. When making cider, there are a couple ways to sanitize the must (unfermented juice). You can pasteurize the must by heating the sweet apple cider to 160 °F (71 °C) and holding it there for at least fifteen minutes. After cooling to below 80 °F (27 °C), you can add the yeast. (Before heating, check the label or ask at the farm where you buy your cider — it may already be pasteurized and ready to go.) Some cidermakers have a negative attitude towards pasteurized as opposed to unpasteurized cider. I've used both types in my ciders and can't detect a difference.

As an alternative to heating, some cider makers prefer to add 50–100 parts per million (ppm) of sodium

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or potassium metabisulfite to their freshly squeezed cider before pitching their yeast. This is approximately one Campden tablet per gallon (3.8 L) of must. After you add the sulfite (which will kill any wild yeast and bacteria), allow the must to sit for 24 hours before the yeast is pitched.

Making cider

Start by sanitizing a clean 5-gallon (19-L) carboy or bucket. Make sure that you also sanitize the lid, airlock, stirring utensils, stopper and whatever else you will be using. Next, pour your sanitized sweet cider into its primary fermentation vessel. If you are making a cider with an initial addition of sugar or other flavorings, reserve a quart of sweet cider in a cooking pot.

For a New England cider, you will add some raisins and brown sugar. Raisins are a traditional addition to a New England style cider. They add some tannins to the mix and also some fermentable sugars. Slowly bring the temperature up to 160 °F (71 °C) and hold for fifteen minutes, then add this mixture directly to your must. This volume won't affect the temperature much when added to the five gallons.

Fermentation

The most common yeast used in cider making is Champagne yeast. It has a neutral flavor and tends to ferment to dryness. I never make a starter for my ciders and haven't had any problems. (The initial pH and sugar composition of sweet cider is closer to unfermented wine than wort, and winemakers typically don't worry about pitching as much as brewers do.)

You must, however, aerate the entire mix before primary fermentation. After aeration, affix a sanitized lid or stopper and airlock to your primary fermenter. Ferment the must at 65–70 °F (18–21 °C).

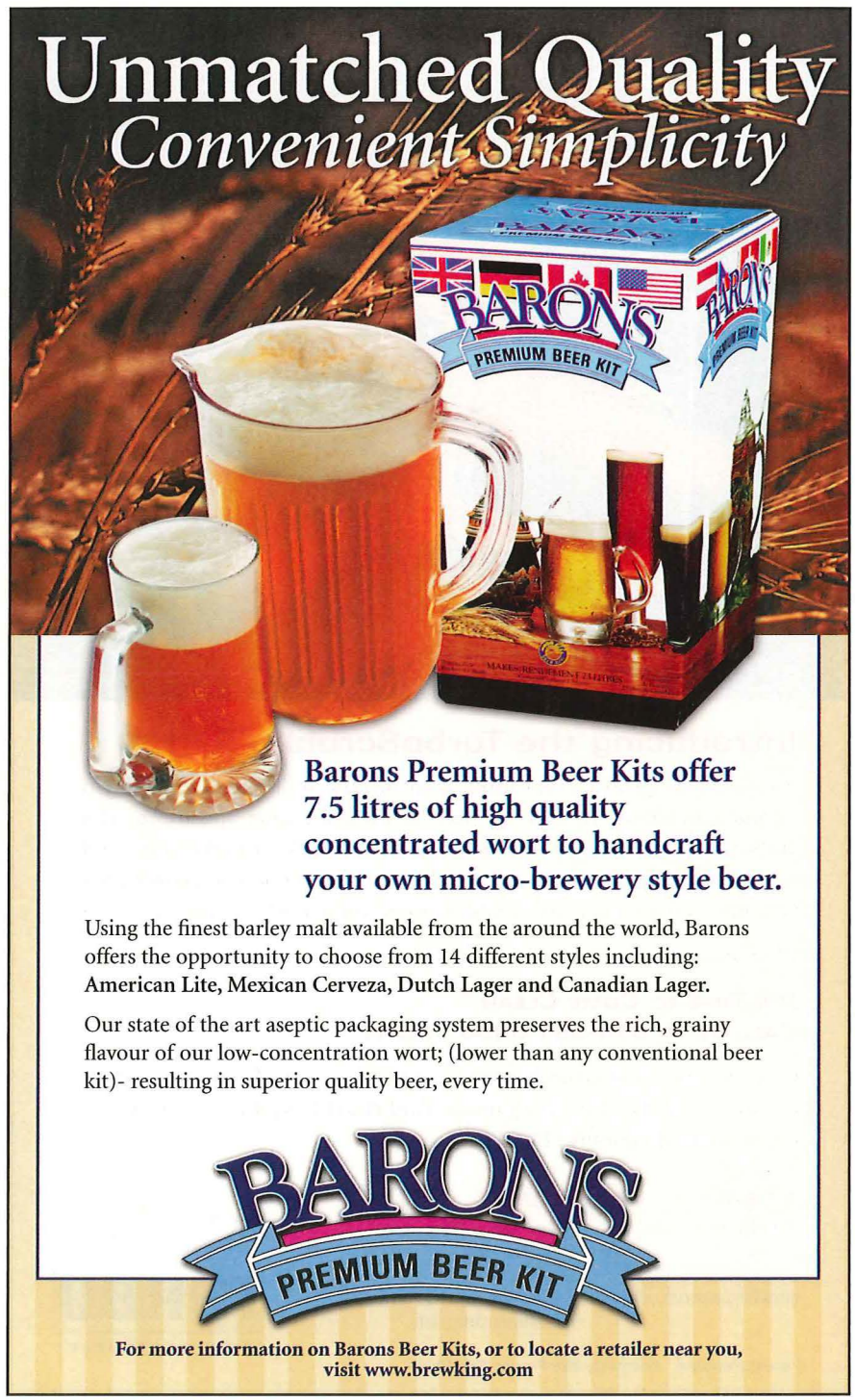
Some cider makers prefer to add pectic enzyme — usually at a rate of one quarter teaspoon per 5 gallons (19 L) — to improve the clarity of the end product. Adding yeast nutrients can also be a good idea, especially if you have added a lot of refined sugar to your cider must.

Conditioning

As in established brewing and winemaking practice, you must transfer (rack) your cider off its dead yeast and sediment. Do this after seven to ten days of fermentation. Leave the still fermenting cider in this secondary fermentation vessel for at least two more weeks. After fermentation is complete, you may need to add a clarifier to brighten up your creation. Bentonite or Sparkalloid are commonly used for this. Usually, 2.5 teaspoons of Bentonite or 1 tablespoon of Sparkalloid is used for 5 gallons (19 L). Follow the instructions on the package for the process to make them up.

Adjusting and bottling

You are now at the stage of finalizing, modifying and bottling. If your cider lacks tartness/acidity, you can



add malic acid — the acid found in apples — or an acid blend, as used by many winemakers and meadmakers. Try adding 0.5 oz. (14 g), then taste and add more if needed. Likewise, if it lacks sharpness, you can add tannins by adding grape tannins. Start with ½ tsp., then add more if taste dictates. If your original sweet cider was a bit low in sweetness or body, you may end up with an extremely dry and flavorless cider. That's why I like to add the raisins and some spices. One of my favorite ciders is a blend of cinnamon, ginger and allspice that is added after the fermentation is complete.

A few weeks before I plan to bottle, I marinate the above mentioned spices in a little rum. The fragrant oils and flavors of the mixture permeate the rum, and also settle out the spice sediment. You can then use the clear upper layer of the elixir as a flavoring. This will not ferment, so it can be added at bottling day to the taste you prefer. One of my favorite ciders using this recipe actually tastes like a liquid apple pie.

If your creation has an alcoholic texture, a nice flavor but lacks the sweetness that seems to bind it all together, there is a syrupy commercial product called wine conditioner. Wine conditioner contains a high concentration of sugar, but also has a bit of sorbate added. The sorbate prevents fermentation from restarting and the sugars present will bring your cider back to life with a bit of sweetness. This can be done on bottling day to taste. I would start by adding 4 oz. (118 mL) to the 5-gallon (19-L) batch, then add more to taste.

Also, if the body of your cider is a bit thin or flabby, there is also a solution. Glycerine, another unfermentable, is another product available that builds body and can be added directly to the cider on bottling day. It will bring up the mouthfeel of the cider. It can also be added to taste (feel) on bottling day. With glycerine, I start with 2 oz. (59 mL) for a 5-gallon (19-L) batch, and increase to taste.

If you prefer a dry, light-bodied cider, do not add any of the conditioners or body builders. A Champagne-like dry cider can be produced this way by letting the fermentation go to completion.

If you prefer a bubbly version, you would then add three quarters of a cup of corn sugar and a package of Champagne yeast to your 5-gallon (19 L) batch, and proceed to bottle. (If you've added sorbate solution to your mix, the carbonation will not work.)

Bottles

Something as special as cider and especially your homemade creation deserves a special package. Wine makers have known for years that the bottle and label design help sell their product. Why not do the same with your cider? Corked wine bottles are a possibility. Another is using American Champagne bottles. They hold 750 mL to a liter, and can be capped with ordinary crown caps. (European

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A few notes on recipes

The sugar content of different ciders varies. Use your hydrometer to determine the specific gravity of your juice and its potential level of alcohol. (Assume that final specific gravity will drop to 1.000.) Adding fermentable sugars, such as honey, molasses, maple sugar, piloncillo or brown sugar will produce more complex flavors and a higher alcohol level. Be careful here, though, I've sampled ciders with way too much alcohol. Sometimes the higher alcohol level produces an unpleasant hot, burning sensation. Balance is the key word here.

For traditional cider, shoot for maybe 4% ABV (the BJCP guidelines say 4.5–7.0). For New England cider, the sky's the limit. (The BJCP says 7–14%). I think that you can do whatever you want, but the balance has to have apple flavor and not just alcohol. There shouldn't be any restrictions . . . do what feels good for you. A nice blend of apple flavor, alcohol and other subtle factors make for a pleasant cider.

I add an extract of cloves to my perry (pear cider). Apple pie spices seem to go well with apple cider. The flavors seem made for each other. Cinnamon, ginger and allspice marry well with the acidity of apples. Cyser is actually a mead (honey based), but is made using apple cider in place of the normally used water. You get a nice blend of apple and honey flavors. The possibilities are as endless as your imagination.

Oh, one more thing . . . remember to bring a bottle or two of your creation to your cider press guy. Trust me, he'll be appreciative, impressed and will probably share it with his family on Thanksgiving Day. ■

Paul Zocco is the owner of Zok's Homebrewing Supplies, Willimantic, Connecticut. He was New England Cider Maker of the Year for the years 2000, 2001 and 2002.

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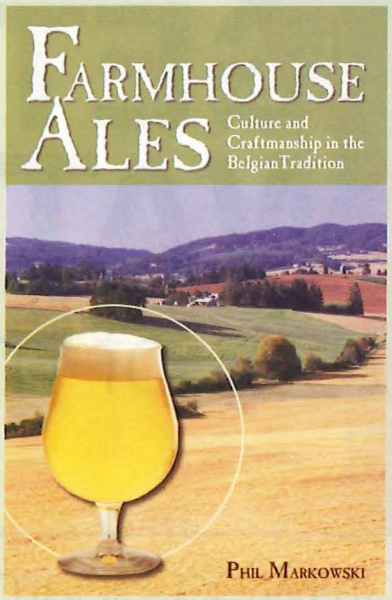

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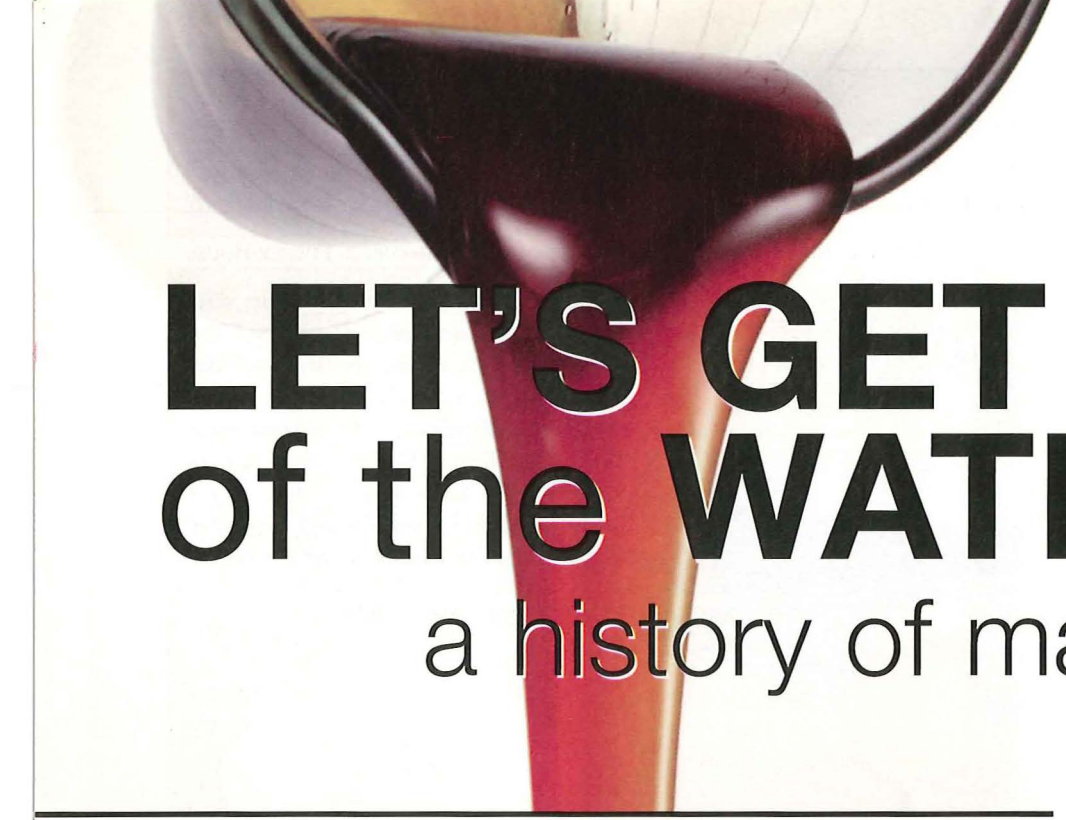

LET'S GET RID of the WATER!

a history of malt extract

Part II. Back to the Drawing Board!

By Terry Foster

Is malt extract useless as a brewing material? What changed to make it the popular ingredient it is today?

As a brewing material, malt extract is useless. At least that's what *Brew Your Own* might have said in the middle of the 19th Century if it had been published then. As we saw in the first article ("A History of Malt Extract: Part 1," October 2004 *BYO*), the British Navy had tried it extensively, but the beer brewed from it had been rejected by the sailors. Two things changed this: nothing and politics. The "nothing" was the use of vacuum in removing water from wort. The "politics" was radical alteration of the way in which the British government changed taxation on brewing.

Early attempts at making malt extract had simply boiled the water off at atmospheric pressure. This takes a lot of time and a lot of energy and makes the procedure expensive. More importantly, it has a huge effect on flavor. At best such wort would have been highly caramelized. At worst it would have had a strong burnt taste. In addition, prolonged boiling would result in protein breakdown so that the resulting beer would have had poor mouthfeel and foaming characteristics.

Advancing technology in the late 19th Century made it possible to concentrate wort under vacuum. This meant that the process was shorter and cheaper — and that less heating was required since the boiling point of the wort is much lower under vacuum than under atmospheric pressure. This also meant that the beer made from it would taste better!

Striding Ahead

Malt extract had continued to be made throughout the 19th Century, mainly for medicinal purposes. According to one writer, it appears that a good deal of this in the mid-19th Century was imported to England from the US and Germany. Apart from one reference to a Professor Reitch of Bohemia producing a solid extract in the 1870's, I have found nothing more on this. Presumably it was small-scale production, made only for medicinal, and later, food use; the Germans would certainly not have used it for brewing!

The impetus for a return to using malt extract in brewing in Britain came in 1880, when Prime Minister Gladstone introduced what became known as the Free Mash Tun Act. Prior to this time, taxation on beer was on malt and hops. Apart from a couple of brief periods when addition of sugar was permitted, this meant that other ingredients were banned. And because the revenue from these taxes was so huge, compared to other sources, this ban was rigidly enforced by the Excise.

What Gladstone did was to abolish the taxes on ingredients and to apply a new tax on the beer, based on the original gravity of the wort before fermentation. Now, brewers could use whatever they liked in their mash tuns, hence the name of the act. So they started to look at things like sugar and

historical EXTRACT recipes

Prohibition Brew

(5 gallons/19L, extract)
OG =1.068 FG = 1.005
IBU = 20–30 SRM = 10 ABV = 8.1%

This recipe was compiled from a variety of sources as an illustration of what homebrewers were up to in those dark days.

Ingredients

3.3 lb (1.5 kg) malt extract syrup (back then, it would likely have been Pabst Blue Ribbon malt extract)
5.0 lb (2.3 kg) cane sugar
2 oz. (57 g) hops (any variety, and they would probably have been old, even "cheesy"!)
Red Star dried yeast

Step by Step

Boil the hops in 3 gallons (11 L) of water for 1 hour, strain off the liquor. Dissolve the malt extract and sugar in the liquor, add cold water to 5 gallons (19 L) and pitch yeast. When fermentation has appeared to stop, bottle off and allow to condition.

That 70's Brew

(5 gallons/19L, extract)
OG =1.049 FG = 1.009
IBU = 37 SRM = 8–12 ABV = 5.2%

A pre-modern homebrew recipe. For authenticity, brew while listening to "Cold Gin" by KISS.

Ingredients

4.7 lb. (2.1 kg) Muntons Light liquid pale malt extract (back then it was Muntons and Fison's)
0.5 lb. (0.23 kg) Muntons light dried malt extract
1.5 lb. (0.68 kg) cane sugar
10 AAU Northern Brewer hops (60 mins)
(2 oz./57 g at 5.0 % alpha acid)
0.5 oz (14 g) Fuggles hops (15 mins)
1 package EDME Ale yeast
1 cup corn sugar (for priming)

Step by Step

Dissolve the malt extracts and sugar in 3 gallons (11 L) warm water. Bring to a boil, add the bittering hops, and boil one hour. Add the finishing hops 10 minutes before the end of the boil. Strain, or siphon off from the hops, and add cold water to make 5 gallons (19 L). Cool to about 70 °F (21 °C). Pitch yeast and allow to ferment. By 5–7 days, final gravity should have been reached; rack into a fermenter. One to two weeks later, rack again, prime with corn sugar and rack into keg or bottles. The beer should be ready to drink after conditioning for a week or so.

Menestheus Mild Ale

(5 gallons/19L, extract)
OG =1.038 FG = 1.009
IBU = 28 SRM = 12 ABV = 3.6%

This is an interpreation of the ale brewed on the Menestheus. The special processes used on the ship are not duplicated, but it is a pretty fair mild ale!

Ingredients

3.3 lb (1.5 kg) amber malt extract
1.75 lb (0.8 kg) dried malt extract
7.5 AAU Whitbread Goldings hops (60 mins)
(1.25 oz./35 g at 6.0% alpha acid)
Wyeast 1028 (London Ale) or White Labs WLP005 (British Ale) yeast
0.75 cup corn sugar (for priming)

photo by michael pollio

Step by Step

Dissolve the malt extracts in 3 gallons (11 L) warm water, stirring well to ensure the extracts dissolve properly. Bring to a boil, add the bittering hops and boil for one hour. Strain, or siphon off from the hops, add cold water sufficient to obtain 5 gallons (19 L) and cool to about 70 °F (21 °C). Pitch with yeast starter and allow to ferment. By 5–7 days, final gravity should have been reached; rack into a fermenter. One to two weeks later, rack again, prime with corn sugar, and rack into keg or bottles.

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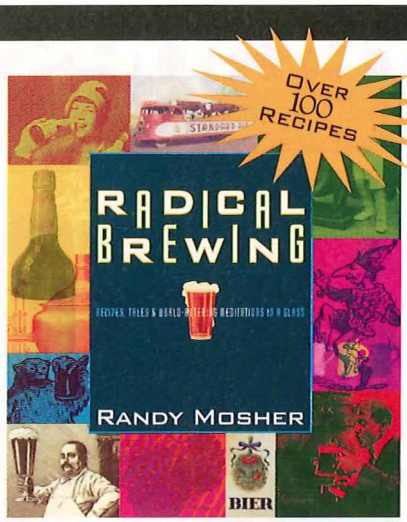

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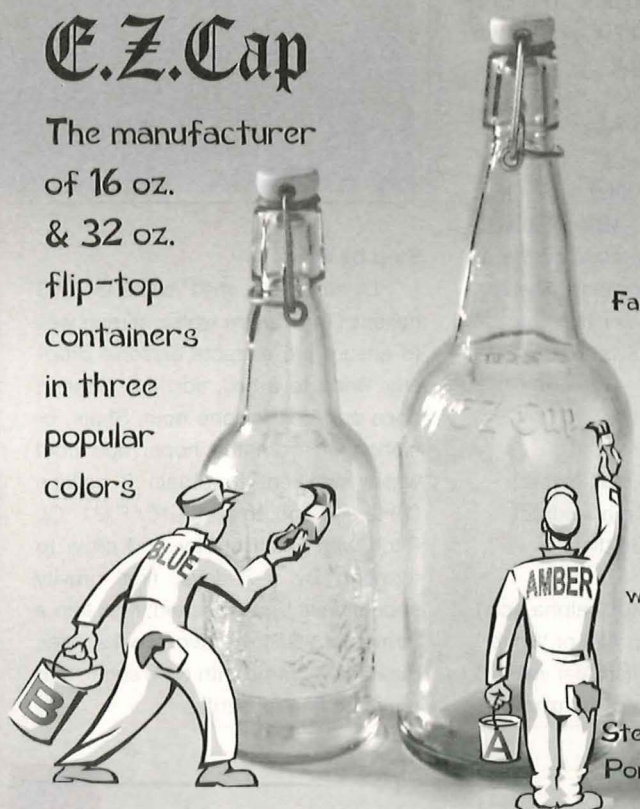

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cereals that were cheaper than malt. Malt extract was also a possibility. This, coupled with a growth of its use in health foods offered possibilities for entrepreneurial manufacturers.

First on the market, starting in 1881, was the Standard Malt Extract Company. This was later renamed the English Diastatic Malt Extract Company Limited, which shortens nicely to the EDME we know today. Before the end of the century, others were in on the act, including Macadams of Dunbar in Scotland (British Malt Products), Paine and Company (John Bull), followed in 1903 by Edward Fison (once Munton and Fison, now just Muntons).

None of these new extract makers were big, compared to the brewing industry, for their products were only used by brewers as additives. This could be done in one of three ways:

- Adding directly to the cooled wort, in order to improve fermentability
- Adding to the copper as a "wort extender," increasing wort gravity
- Adding a "diastatic extract" to the mash to increase yield from the grain malt

The first approach is now little used, and carried an obvious risk of infection. The second is still used today, and is an effective way of making high gravity wort. It is an effective way for all-grain homebrewers to make things like barleywines, without needing to use a long boil.

In the third approach a special extract was prepared, using high-nitrogen low temperature kilned barley malt. It was then mashed at low temperature (120 °F/49 °C), the liquid separated, while the solids were remashed at higher temperature (154 °F/68 °C), and this liquid separated. Both liquids were combined, and evaporated to syrup at a maximum of 115 °F (46 °C). The resultant product was very high in enzymes, hence the name diastatic extract. They are generally not used today, partly because of much-improved malt quality, and partly because other enzyme preparations are now available.

The Homebrew Revolution

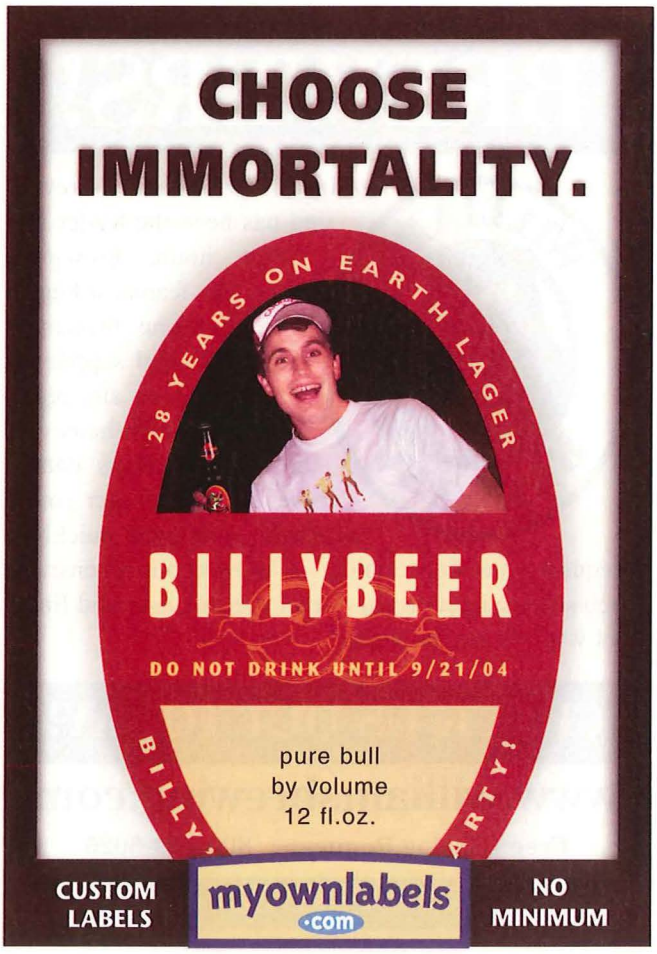
The extract business grew as its use in foods — such as cakes, cookies, and malted drinks — expanded. Its application in brewing remained relatively small, until it was taken up for homebrewing. This did not happen first in Britain, but in America, when politics reared its ugly head again and Prohibition was introduced. Brewers who had spent years building up their business suddenly found their product banned. What on earth could a poor brewer do to avoid ruin? Many things were tried by various brewers, such as producing near beer, industrial alcohol, candies, ice cream, soft drinks, dairy products and — of course — malt extract.

Malt extract had already been produced in America as far back as 1896. In fact, Muntons in Britain started importing extract from the USA in 1919. (It did not take over Fison's until 1934.) And, as a result of a sugar shortage in the First World War, the US government had pushed the use of malt extract as a sugar substitute in baking. What this meant was that, at the onset of Prohibition, a retail distribution network for malt extract was already in existence. So, many brewers jumped on this bandwagon, including such well-known names as Schlitz, Miller and Anheuser-Busch, with the latter introducing a hop-flavored extract in 1925. And, of course, Pabst — whose Blue Ribbon extract remained as a homebrewer's standby long after Prohibition's demise. Indeed, Blue Ribbon stayed around until recent times, when it became the Premier brand and eventually ceased to be made in the US.

As with the growth of organized crime on the back of illegal alcohol, so the effect of Prohibition on homebrewing was dramatic and unexpected by the authorities. By the early twenties, there were over two hundred manufacturers of malt extract in this country. It has been estimated that in 1930 enough extract was produced to make 700 million gallons of homebrew! It could only be sold for "food" use and it was illegal for retailers to offer recipes with it. A 1927 meeting of the National Malt Syrup Manufacturers adopted rules to instruct advertisers to avoid mention of beverage potential and to concentrate on food applications.

As if there was any doubt as to the way in which the extract was used, a second industry sprang up, providing all the other needs of the homebrewer. You could buy bottle caps, cappers, rubber tubing in places such as Woolworth's and Kresge's. Hops were also readily available; one writer calculated that some 13 million pounds of hops from the 1926 crop were unaccounted for, presumably because they were used in homebrewing!

Who first came up with the idea of using malt extract in homebrewing? I don't suppose we shall ever know who led what was effectively a great campaign for freedom of choice. A



homebrewer of some note was H. L. Mencken, noted writer and critic. He appeared to have a good grasp of brewing fundamentals, using hops for both bittering and flavor, and he even used yeast brought from a Munich brewery by a friend. However, malt extracts used then were mainly designed for food applications, rather than for brewing, and would not have given beer of the quality we look for today. Also, most homebrewers did not appear to understand the subtleties of the process and used quite crude techniques. One of the most common mistakes was bottling before fermentation was complete, which often resulted in exploding bottles.

Another mistake was the over-liberal use of sugar. It was common to use the same amount, or more, of sugar as of malt extract, a level that would have made the beer exceedingly thin. Whilst this may have been acceptable when no other beer was available, as soon as Prohibition was repealed in 1933, homebrewing rapidly declined. But the taste lingered and homebrewed beer had a bad reputation among the general public right up until the present "new wave" of homebrewers lifted the craft to a higher level.

Interlude

For the next major step in extract brewing we must return to the British Navy in the Second World War. By now, the Navy did not supply beer on its ships, having substituted it with a daily ration of rum, which was much easier to transport and store. But there were a lot of English soldiers in the Pacific theatre, many of them homesick and yearning for a pint of honest English ale. So, in 1944, they decided to fit out two "amenities" ships, which could provide the troops with both recreational facilities and beer. This meant they had to be able to brew on board.

The fitting out of the ships was carried out in Vancouver, but the process was designed in England and the brewing equipment was manufactured there. In the end, only one ship was actually fitted with a brewery. The kit for the second had to be cannibalized because some parts were lost in transport. The ship was the Menesthaus and she left port in 1946, complete with a working brewery and enough supplies to brew 250 English barrels (10,800 US gallons) per week.

The brewery had a 55-barrel capacity (about 240 US gallons), and used distilled water that was produced on board. Malt extract and hop concentrate came from England, though it is not clear how the hop concentrate was made. Yeast was a strain from the Guinness Park Royal Brewery in London, via a culture from the University of British Columbia Faculty of Agriculture. The extract was dissolved in hot water and boiled, with the hot wort being continuously passed through the hop concentrate. The hopped wort was then cooled to 62 °F (17 °C) and pitched with yeast. The

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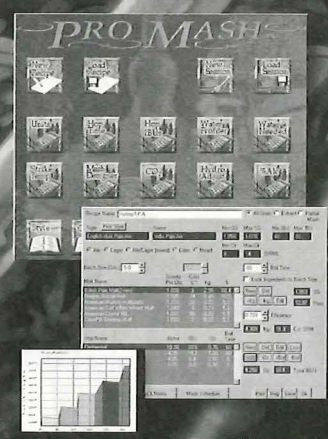

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fermenter construction was unusual; as the head formed, excess yeast passed into a yeast back, where the beer separated from the yeast was run back to the fermenter. In other words, it closely resembled a Burton Union system, with the important exception that the whole system was pressurized at 7 PSI.

After 6 days fermentation the beer was fined with isinglass and the yeast allowed to settle over two days. After chilling to 32 °F (0 °C), it was carbonated with CO_2 recovered from the fermentation, and either passed to storage tanks, or racked into 5-gallon (19-L) stainless steel tanks. Even the use of these casks was a novelty, as virtually all English brewers of the period still used wooden casks.

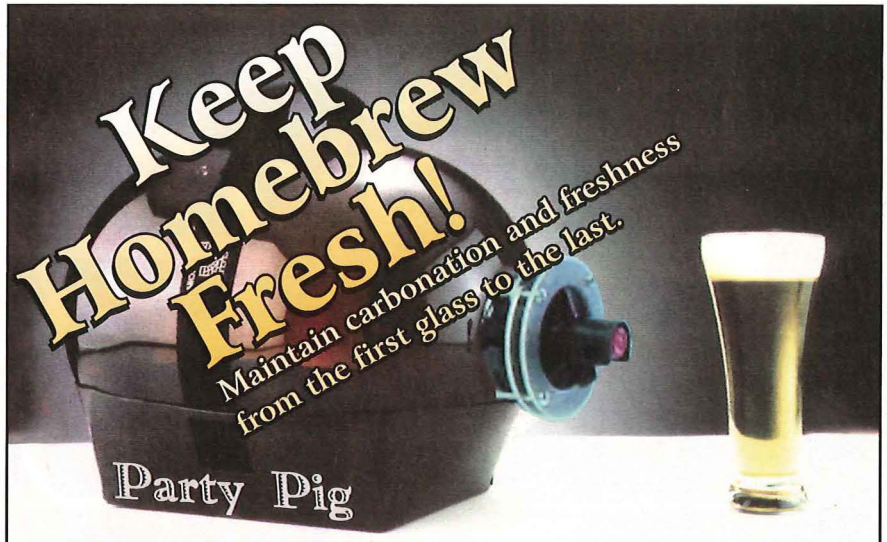
Apparently, the system worked very well with few problems, and the product had good storage stability. On the maiden voyage of the Menesthaus in 1946 the beer was advertised as being the product of the Davy Jones Brewery, The World's only Floating Brewery, and was very well-received by its customers in Yokohama, Shanghai and Hong Kong. But, by then the war had ended and the ship sailed back to England where it was taken out of service and brewed no more. And, as far as I know, no other sea-borne brewery has yet been built.

Homebrew Comeback

The recent history of homebrewing is well known. The sharp decline in the diversity of beers post-Prohibition, and the continuing homogenization afterwards eventually led to a backlash. People wanted flavor in their beers, even if they had to brew their own to get it! Homebrewing got a big shot in the arm in 1979, when it was legalized (at the Federal level) in the US.

Since then, improvements in extract quality — and the quality of information on brewing techniques — has led to a rennaisance in homebrewing. Currently, around 80% of homebrewers brew most of their beers using malt extract. Not bad for a ingredient that is useless as a brewing material. ■

Terry Foster is a frequent contributor to Brew Your Own magazine.



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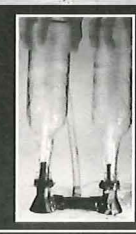

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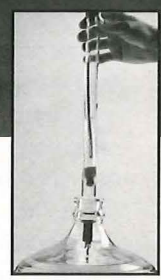

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4 great projects

Most American homebrewers brew in order to produce quality beer. A few, however, brew beer as an excuse to build their own brewery equipment. If you spend as much time in your shop tinkering with new gadgets as you do in your brewery boiling wort, then this article is for you.

We've selected four "homebrewed" projects, from simple (but clever) to straightforward and highly practical to highly advanced (but really cool). We start with a bottle filler that mimics the action of a counter-pressure filler, but can be constructed with just a few lengths of tubing and some quick disconnects. With it, you can flush screw-topped bottles with carbon dioxide then fill them with beer under a blanket of the gas. We've got a home bar — if you're brewing beer, you need someplace to serve it, right? Next we look at a collar that extends the headroom in a chest freezer used for fermentation or serving. Unlike the simplest designs, this project provides a good deal of insulation, saving money on operating costs. And finally, a peristaltic pump that moves almost 8 gallons (30 L) of liquid per minute. These projects run the gamut from something anyone can do to a serious challenge for even the biggest gearheads.

photo courtesy of David Sundberg

BOTTLE filler

David Sundberg

The heart of this bottle filler is a length of 3/16 inch ID tubing squeezed through a drilled screw top cap with a quick disconnect on one end. The disconnect can be attached to either the gas out line on a CO_2 tank or (as shown) the beer out line on a keg. By attaching the filler to the gas and cracking the cap slightly, you can fill any screw-top bottle with carbon dioxide. Screwing the cap tight and disconnecting the gas line leaves it sealed at keg pressure.

To fill the bottle with beer, switch to the beer out line and slowly crack the cap on the bottle. This releases the pressure in the bottle and the beer flows into the bottom of the bottle. When full, quickly screw on a normal twist top cap and you've got carbonated, sediment-free beer ready to take to a party. What could be easier?

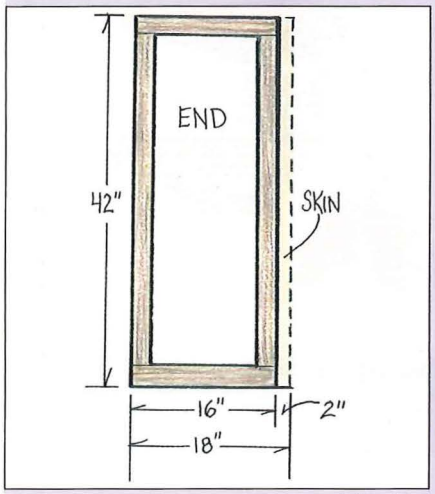
Illustrations by Don Martin

HOME BAR

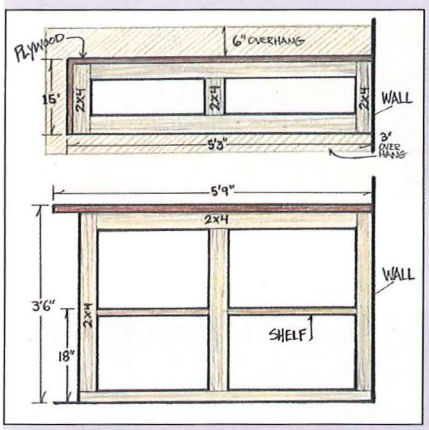
Thom Cannell

finished bar

photo courtesy of Thom Cannell

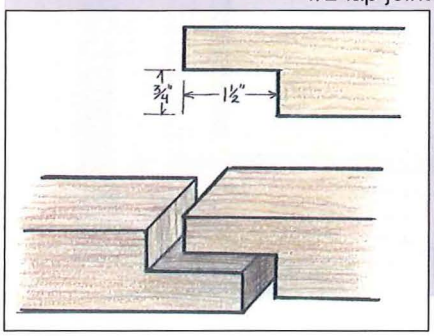


side view



top and front view

1/2 lap joint



My pal Scott, the brewer at Harper's Brewpub, outlined to me his idea for a very simple bar. The plan centered on a six-foot (2 m) counter top with 6" overhangs (150 mm) for knee and toe room. The surface would be 47" (119.4 cm) above the floor. When you plan your own bar, important considerations are: location of the bar, "elbow" height, surface cladding and plumbing for water and beer.

Elbow height, or vertical distance is critical. Whether you plan on standing by the bar or sitting on stools, estimate the best height for you to comfortably rest an elbow on a counter-height bar. Location will determine how many finished surfaces you will need. If one end is against the wall, you may not need to finish that surface.

Surfaces can be as cheap or expensive as you wish. Those of you who haunt the home stores know that pre-formed Formica-covered counter tops are inexpensive and come in a variety of colors.

The body (sides) of your bar can be covered with anything you choose. Scott and his wife, Sue, chose a pre-finished sheet of paneling for all three sides of the bar.

Begin with an accurate drawing and be sure to allow for material thickness. For instance, if your counter top absolutely must be 47" from floor to surface top, allow for the counter top's thickness.

In our project, we used a 2' x 6' counter (610 x 1830 mm). Overhangs are 3" (75 mm) on one side, 6" (150 mm) on the second side and 5 1/2" (139.7 mm) in front. This will allow knee and toe room around the bar. The sides are 42" tall and 16" wide and the front is 42" tall and 63" wide.

First, we cut the panels — front and side — from the decorated masonite sheet. With the sides and front cut, we cut the rails for three stressed skin frames. We chose to use half-lap joints and 2" x 2" select pine lumber. We cut six risers at 42", two front cross members at 63" and four side cross members at 16". All three rectangles were laid out on a worktable. A single pilot hole was drilled for each joint and glue was applied to the half-laps and fastened with a "deck screw." Then the panel skin was applied with finishing nails and the nails lightly countersunk.

With all of your panels built, stand them on level ground and test the assembly. Clamp the panels together and, from the back, predrill pilot holes for 3" deck screws. Three should suffice. Check the overlap of the side panels and remove any excess.

To disguise the joinery, cut two 42" strips of 1/2" or 3/4" corner molding. You'll later glue this to the corners to hide the exposed joint. Reassemble the front and side panels, using 3" deck screws. Set the counter top atop the panels and measure for overhang. Allow 1/2" so you can apply a finishing strip to the exposed end panels.

Attach the counter top to the panels. We chose to use 3/8" x 2" hardwood dowel pins. Drill 3/8" x 2" holes through the bar surface into the center of the 2" x 2" frame rails. Scott and Sue have two kids, a toddler and a 5-year old. Leaving corners on the front seemed a very bad idea. Using a 1-gallon (4-L) paint can as a template, we penciled an arc and cut with a jig saw. As a final touch, we decided to round over the edges using a router.

Remove the counter top and upend the structure. Because all floors are not level, install leveling feet. Drill holes of a size and depth specified by the leveler manufacturer. Screw the body of the leveler together, and bang in gently with a wooden or rubber mallet.

The last step before staining (optional) and applying a sealant — unless your décor runs to beer-stained wood — is to attach the draft tower (but that's another project).

DRAFT SERVING FREEZER

Ken Peters

The temperature in Ken Peters' Oklahoma garage routinely climbs over 90 °F (32 °C) in the summer. So he set out to build a double-walled, insulated collar that would project 3" above the current height and slip over the walls of the chest freezer, which holds his Corny kegs. The 6" (15 cm) collar walls would be made of plywood, the top of pine and the finished shell will be stuffed with fiberglass insulation.

The first thing you need to do is remove the screws from the freezer body (not the lid). Measure both the inside and outside dimensions of the freezer as well as the thickness of the wall. Ken's freezer had a recessed lip on the inside of the wall that made measurement tricky, so he clamped a piece of wood on each side and measured between the inside edges.

Start the actual construction by ripping the plywood (for the sides) and pine (for the top) to the correct width. The width of the pine will be the height of your collar (including overlap). The width of the pine should be the width of your freezer wall. Once all of the pieces are cut to the correct width, you will need to cut them to the proper length. The front and back outside pieces will need to be 1" (2.5 cm) longer than your measured length to allow them to lap over the ends of the side pieces. Additionally, add 1/8" (0.32 cm) to the length of all of the outside pieces. This will allow leeway for the collar to slip over the wall when completed. Once the new measurements have been determined, cut the outside pieces to length. Begin assembling the outer frame by clamping the pieces together and testing the fit over the freezer wall. The collar should fit snugly, but not bind on the sides. When gluing and nailing the front and back to the sides, remember to lap them over the ends of the side pieces. Once you have the outside frame completed, slip it over the freezer to ensure that it still fits. Measure and cut the top pine pieces to fit tightly inside the frame. As you cut a piece, glue and nail it to the frame. Be sure that the top of the board is flush with the edge of the plywood as they will need to be sanded flush.

Cut four blocks of wood from scraps to use as spacers for the top. These pieces will be used to hold the collar above the top of the freezer wall. Their size will be dependent upon how high you wish the collar to extend above the wall. In Ken's case, he wanted 3" (7.6 cm) above the wall and 3" below. Two blocks will be placed in the front and two in the back. Ken used 1" screws to attach the spaces to the collar.

The next step is to assemble the inside pieces. A tight fit is required on the outside to limit airflow, but on the inside, more flexibility is needed to ensure that the collar will fit over the walls of the freezer. Consequently, leave 1/2" (1.3 cm) at each end of the front, back and side boards for leeway when fitting the collar.

Sanding the collar prepares it for a final finish and provides a smooth, level surface so the lid gasket can seal properly. Ken applied three coats of white latex paint to all surfaces including the inside.

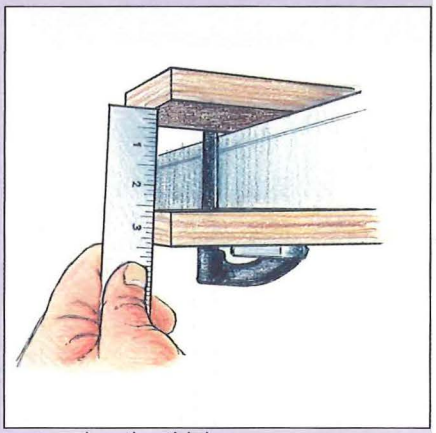
Turn the collar upside down and, starting at any corner, carefully wrap the pipe insulation around the inside of the collar. Keep the insulation pushed to the top of the collar, flush with the bottom of the spacer blocks.

To install the collar, apply a bead of white, adhesive caulk about 1" below the top on the outside wall of the freezer. Then carefully place the collar on the freezer. Push it down until the spacer blocks all have come into contact with the freezer top.

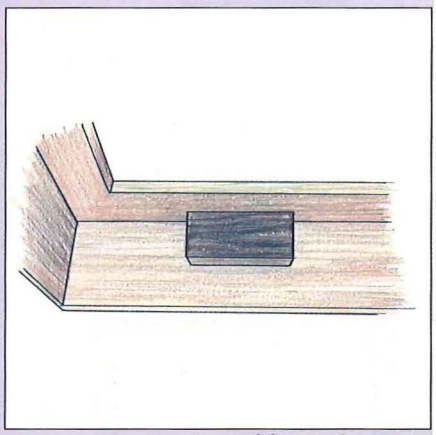
Fasten the lid on top of the collar by driving screws through the holes on the hinges. To complete the project, all that is needed now is to install the probe for the temperature controller and CO_2 lines through holes drilled near the middle of the back of the collar.

photo courtesy of Ken Peters

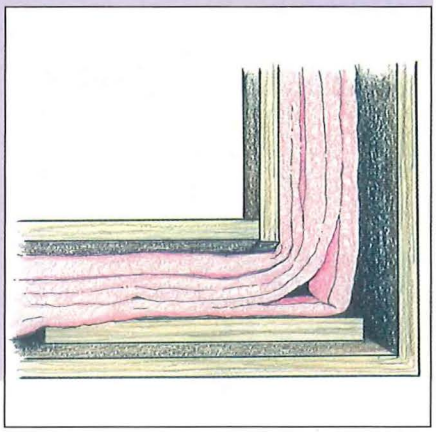
front view of freezer



measuring the thickness



top of frame & spacer



insulating the inside

PERISTALTIC PUMP

Mark Valk

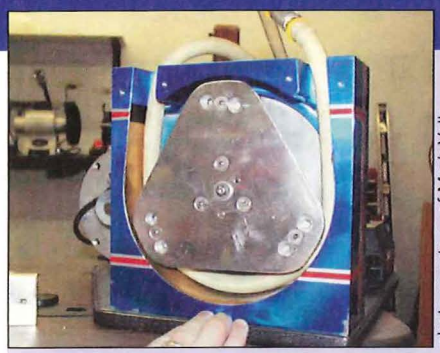
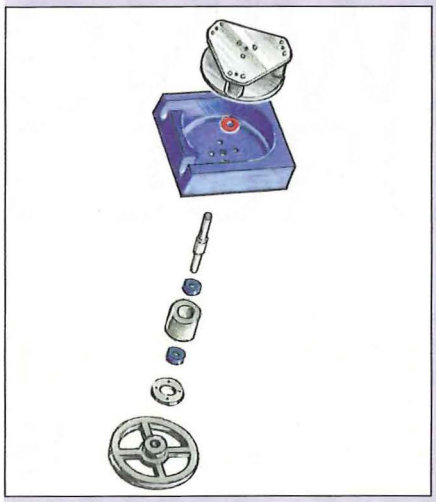
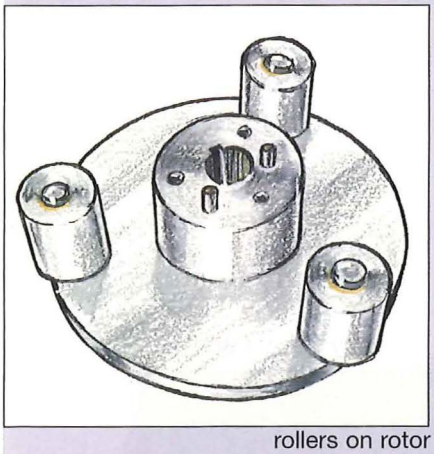


photo courtesy of Mark Valk

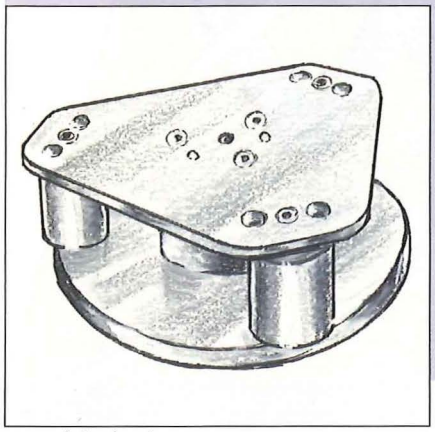
front view of pump



exploded view of parts



rollers on rotor



completed rotor

A peristaltic pump is essentially a pump that moves liquid by squeezing it through a tube. Most peristaltic pump designs are centered on a tube wrapped around a rotor. Rollers on the rotor "massage" the tube, pushing the liquid through. A peristaltic pump is gentle with the liquid being pumped compared to most other types of pumps.

Mark based the idea of his pump on that of a medical peristaltic pump of his brother's that was much smaller. He dismantled the pump to see how it worked and used his observations to design the pump with the help of some engineering software. The pump basically consists of a housing that holds the pump, a rotor that spins and three rollers attached to the rotor that "pinch" the tubing to the wall of the housing.

His brother's pump was more complex in terms of electronics and, to some degree, in the design of the pump itself. Not needing all that complexity, Mark simplified the idea to what you see using basic volume calculations of liquid displaced between rotor tips for a given speed and pump diameter. He set a target of 8 gallons (30 L) per minute at an RPM well below posted critical speeds for a peristaltic. Information he found on the Internet stated not to exceed 400 RPM or the tubing in the pump would have a short life. So, he figured on using a speed at 1/2 to 2/3 this value (200–300 RPM). With those variables "set in stone," he calculated the required diameter of the rotor assembly and the housing. The distance between the tip of each rotor and the housing when the rotor fully compresses the tubing was "guesstimated" at about 0.01 inches (0.025 cm) — less than twice the wall thickness of the Norprene tubing. With 1/16 inch (0.16 cm) wall tubing, the distance was 0.115 inches (0.29 cm).

After he finished the design, he fabricated the parts out of aluminum, assembled the pump and tested it with water. He ended up adding a strip of shim material to the inside of the pump housing to increase the "squeeze" on the tubing and got a perfect seal. The flow rate did not quite reach his target due to how he estimated the volume of liquid between rollers. He treated this volume as a simple cylinder, but in the real world the ends of the cylinder are crimped near the rollers, reducing the volume being pushed through the tubing. The actual amount wasn't that different and came out close enough to use in his brewery.

The most difficult part of the project for him to build was the pump housing, which was made of five pieces of scrap aluminum bolted together. These pieces were CNC milled to the correct shape. (A CNC machine is a computer-controlled mill that makes precision cuts in metal.) It could have been made of a solid billet, but this would have been very expensive unless found in a scrap yard somewhere. Mark says that a plastic housing might also work. The pump is powered by a motor and when it runs, it makes a very rhythmic "ffft-ffft-ffft" sound. The hoses pulse and shake with the same smooth rhythmic sound. Mark says, "It's really cool to watch."

Peristaltic pumps are positive displacement (self-priming), the liquid does not touch the pump itself, and using a variable speed motor allows him to slow the flow rate without partially closing any ball valves in his brew system.

Part of the reason Mark built the pump was the challenge of doing something different from scratch. It also gave him practice in computer design and machine shop skills. He would like to acknowledge the folks in his homebrew club — the State of Franklin Homebrewers in Johnson City, Tennessee — for supporting his idea. For more on Mark's brewery, see his website at users.adelphia-.net/~markvalk/brew.htm.

ONLINE BREWING RESOURCES

BREWING INFORMATION is just a CLICK AWAY

by Perry Launius

illustration by DON MARTIN

I BEGAN HOMEBREWING four years ago with limited equipment and even less knowledge. As a homebrewer in Mississippi, I learned that fellow brewers can be few and far between, making the educational process difficult. I bought homebrewing books and subscribed to homebrewing magazines but, without other brewers in my area, I still had unanswered questions. Eventually, I turned to the Internet for some answers and found a wealth of resources available to homebrewers.

Homebrew Forums

A few Internet homebrewing suppliers host forums in order to support the hobby and reach out to future customers. Homebrewing forums are web pages that allow members to post questions and receive answers from fellow homebrewers. You need to register with a site to participate, although registration is free. Each forum is divided into sections for different types of questions. Some have separate sections for extract and all-grain brewers. Others have separate sections for general homebrewing questions versus advanced. Many also have non-beer sections dedicated to recipes, classified ads, wine, mead, cider or "other." Each question or comment posted to the forum starts a new "thread." You can read the posting — and all the ensuing discussion related to it — by clicking on that thread. Your browser will remember what you have previously read and point out threads with newly posted information each time you log onto the site. If you see something you would like to comment on, there is a reply button to click and you can add your two cents to the thread.

Early on, I discovered the Northern Brewer forum and quickly began participating. I was astounded at the speed my questions were answered and this only prompted me to ask more. Various forum participants helped me with not only the basics of brewing but also with more advanced methods. I also learned tips and tricks to make brewing both easier and more enjoyable. Before long, I was happy to be answering questions for others. I have found that both my beer and brewing skills are improving and I could never have improved as much as I have had it not been for the Internet forums. In the spring of 2002, Northern Brewer hosted the first contest for forum members in which beers were sent in and judged. To my humble surprise, I won with my Beershasta Bitter, a high gravity IPA.

The forums have become a vital part of not only my brewing life, but my personal life as well. After a while, you get to know the forum members on a personal level. After a failed attempt to legalize homebrewing in Mississippi, they lifted my spirits with a good laugh and pat on the back.

Any brewer can post their opinion on these sites, so not all of the advice found there is sound. However, if you read them consistently, it becomes easier to separate the wheat from the chaff.

I still continue to visit Northern Brewer as well as Home Brew Digest (or HBD), whose vision is "World-wide excellence and recognition as the preeminent resource for the international home brewing community." The HBD has a brewing forum as well as an email newsletter. Home Brew Digest also sponsors a page for listing clubs across the nation, a perfect tool for those who want the fellowship that only organized clubs bring. I also frequent Homebrew.com — also known as Homebrew Adventures — a high-traffic forum that was the first to offer a "Public House" section for sharing personal views about anything from lawn care to politics. The newest addition to the forum gang is Beer, Beer and More Beer. Their forum has twenty five subcategories with topics that range from fermented foods to beer events.

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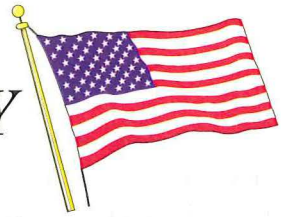

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While these are some of the largest forums, don't overlook the smaller ones like Bodensatz Brewing, Beer-Brewer, Earthworks Brewing, Tastybrew or Homebrewhome. These sites are configured in a similar manner to other forums, but receive less traffic. The smaller forums are perfect for those who don't get as much time on-line because questions stay in the foreground longer than forums with many members.

Chat Rooms

Some of these forums have real time chats. These are particularly helpful for organizing meetings, discussing complex methods of brewing as well as just fun off-topic pow-wows. Last year, Homebrew Adventures introduced live online guest chats. These Sunday evening events have featured such notable guests as Charlie Papazian (author of "The Complete Joy of Homebrewing"), John Palmer ("How to Brew"), Ken Schramm ("The Compleat Meadmaker"), Randy Mosher ("Radical Brewing"), Marty Nachel ("Beer for Dummies"), Chris White (White Labs), David Logsdon (Wyeast), Jeffrey Donovan (ProMash), Greg Noonan ("Brewing Lager Beer") and others. These chats give anyone a chance to either ask the pros a question or sit back and watch others do so.

Why Do They Bother?

I contacted these suppliers to ask them what they gain by hosting a forum. Brian Smyth of Homebrew Adventures said, "The Brewboard has definitely helped us reach our customers more directly. We've probably learned more from them than they from us." Christopher Farley of Northern Brewers stated, "I'm quite confident that it generates a good amount of revenue for us — but even if it didn't generate much revenue at all, it would still be worth doing. It generates a lot of goodwill." Also, the addition of a forum can lower the number of calls back to a supplier asking, "Should I make a starter?" or "At what temperature do I steep the grains?" These questions are answered by fellow forum members. "It generally

outsources a lot for our customer support back to our customers," says Keith Kroyster of Homebrew Adventures. I asked Jamilz Zainasheff of Beer, Beer and More Beer why they added a forum to their Web store and he responded, "We had several customers request a forum. One of the things they wanted in particular was an opportunity to discuss their B3 brewing sculptures with other owners. When we find things we can do to make our customers happy, we tend to get them done quickly."

A Whole Book

In addition to homebrewer forums, there are also endless additional online resources from which to learn. Consider John Palmer's amazing "How to Brew" text. This is a complete homebrew text that can be browsed or even printed free of charge. (A print version of the second edition of his text is also available.)

Other Groups

For those who are USENET news readers, there is also the newsgroup rec.crafts.brewing. Likewise, Yahoo Groups has a variety of homebrewing forums, many specific to offline homebrew clubs. Many individuals also have extensive homepages. For example, "Skotrat" (Scott Braker Abene) has an extensive homepage that holds vast amount of brewing information ranging from better understanding grains to building a walk-in cooler in your house. The BrewRats — the original Internet based brew club — are on this site and have held live chats dating back to 1996.

Brewing Tools

In addition, there are web-based brewing tools such as the HBD's Recipator and the brewing tools located at ProBrewer.com. There is also BeerTools.com that offers a variety of brewing tools, services, a forum and a recipe database. Virtually every aspect of the brewing process can be calculated in order to determine desired mash temperatures, water needs, expected attenuation, gravity, bitterness and color before you even light your burner. These calculators make tweaking recipes extremely easy. You can also find the additional tools like unit conversions, hydrometer correction, hop degradation, carbonation calculators and beyond. For an extra fee, there are also enhanced features. See page 53 for a discussion of downloadable brewing software, including ProMash, BeerSmith and Strangebrew.

Ingredient Producers

On White Labs and Wyeast's websites, you'll find tutorials regarding yeast washing and yeast culturing for those who wish to both save, culture and farm yeast at home. White Labs has a handy little utility that allows you to choose a beer style and they then provide you the most preferred yeast strains for that style. Likewise, most malting companies — such as Briess and Weyermann — provide malt specs on their sites. And, Hopunion's site provides a downloadable data book with information on hop varieties, including typical alpha acid content and possible substitutes.

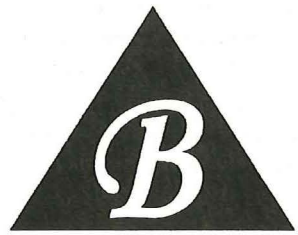
Homebrew Recipes

If you don't know what to brew next there are recipe archives such as the Cat's Meow and Gambrinus Mug. Each of these offer beer recipes divided into categories and subcategories. This database is very helpful when you make the move from purchasing beer kits and want to learn how to formulate your own beers. Aside from these, ProMash and Skotrats, also offer a database of ProMash formulated recipes that can easily be downloaded and opened by the program. Likewise, BeerTools maintains a database of recipes generated on their site.

With literally thousands of commercial beers available, you may need some help in determining which one to choose. BeerAdvocate.com, founded, funded and maintained by brothers Jason and Todd Alström, has 24,000 thousand members who review and rate craft beers in straight forward, easy to navigate way.

Shameless Self-Promotion

Finally, *Brew Your Own* also has a



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Website with a searchable database of published articles, a selection of clone recipes from the Replicator, words of the wise Wizard and guides to hop types, grain varieties and yeast strains.

Although this is a long list of websites, there are many, many more out there. Luckily, most brewing sites link to other brewing sites and you can quickly discover a whole bunch of new sites with only a few clicks. In the end, what brewers get is a virtual library of knowledge in any subject matter imaginable, a virtual homebrew store front, quick support if a problem should arise and a place bounce new ideas, recipes and designs around with fellow brewers. It's a place to share views with people who you share one great thing, making fine beer! The next time you're surfing the net, stop by and visit one of the many homebrew related Websites. ■

Author Perry Launius is better known as "Beershasta" in online brewing forums.

WEBSITE addresses

Homebrew Forums and Discussion

Northern Brewer (www.northernbrewer.com) — click on "NB Forum"
Home Brew Digest (hbd.org) — click on "Discussions"
Homebrew Adventures (www.homebrew.com) — click on "BrewBoard" icon
Beer, Beer and More Beer (www.morebeer.com) — click on "Brewing Chat"
Bodensatz Brewing (www.bodensatz.com) — click on "Forums"
Beer-Brewer.com (www.beer-brewer.com) — this is the forum page
EarthWorks Brewing (www.earthworksbrewing.com) — click on "Brewing Chat Room"
TastyBrew.com (www.tastybrew.com) — click on "Forum"
Home Brew Home (www.homebrewhome.com) — click on "Forum"
The Brew Hut (www.brewhut.com) — click on "Brewing Discussions"
Yahoo (www.yahoo.com) — click on "groups," "Hobbies & Crafts," "Hobbies," "Beer" and, finally, "Homebrewing"
Skotrat's Homebrew "Beer Slut" Webpage (www.skotrat.com/skotrat/)
USENET group (rec.crafts.brewing)

Homebrew Text

"How to Brew" by John Palmer (www.howtobrew.com)

Brewing Tools, Recipe Collections and Other

The Brewery (brewery.org) — click on "Recipe Calculator" (for Recipator) or "Cat's Meow" or "Gambrinus Mug" (for recipe collections)
BeerTools.com (www.beertools.com)
ProBrewer.com (probrewer.com) — click on "Tools"
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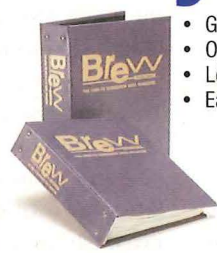

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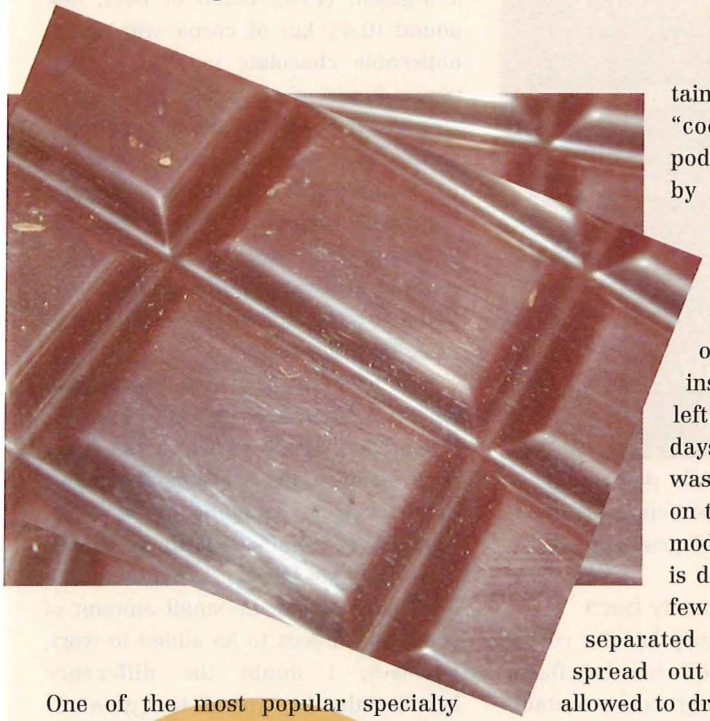
Chocobräu

Brewing with cocoa or bakers chocolate

Story by **Chris Colby**



One of the most popular specialty malts used in brewing is chocolate malt. Chocolate malt contains no actual chocolate, but it is roasted to such a degree that it lends a somewhat chocolaty flavor to beers it is used in. Every year around Halloween, however — when the supermarket aisles overflow with chocolates — I used to wonder if it would be possible to brew using actual chocolate. This year, my question was answered when I tasted a couple chocolate beers made by members of my local homebrew club, the Austin ZEALOTS.

There are thousands of different chocolate products available, but most of these are not suitable for brewing due to their high fat content. (Fat kills the head on beers.) Perhaps the easiest way to explain which types of chocolate are best used in brewing is to explain how chocolate is made.

It grows on trees

Chocolate production begins with the harvesting of the pods of the cacao tree (*Theobroma cacao*). The Latin binomial means "food of the gods." The cacao tree is a small evergreen and its pods, when ripe, look like yellow, orange or red footballs. Each pod contains 20–50 seeds, or "cocoa beans." The pods are cut off the tree by cocoa harvesters with machetes.

The seeds are removed, along with the light-colored, sweet, pulp inside the pods and left to ferment for a few days. Traditionally, this was done in big heaps on the ground. In more modern operations, this is done in bins. After a few days, the seeds are separated from the pulp, spread out more thinly and allowed to dry in the sun. Once dry, the cocoa beans are shipped to chocolate manufacturers.

Once at the chocolate factory, the beans are roasted at around 250 °F (121 °C) for about an hour. This roasting darkens the beans (via some of the same browning reactions that occur during dark malt production). The shells are then cracked and the kernels (called nibs) are gathered. The nibs are then ground into a dark brown, bitter paste called chocolate liquor (or pure chocolate). Chocolate liquor is, on average, 47% cocoa solids and 53% cocoa butter. Despite the name, it is not alcoholic.

Chocolate liquor can be further processed by pressing it and removing some of the cocoa butter. This is the process that produces cocoa and bakers chocolate. Bars of unsweetened bakers chocolate may contain almost as much cocoa butter as pure chocolate, or it may have much of it pressed out. In general, the more crumbly a bar of bakers chocolate is, the less cocoa butter it contains. Some baking chocolate bars have oils added to them so they can be formed into a bar.

Cocoa, a powder, generally contains from 10–35% cocoa butter. Cocoa

recipe

Chocolate Raspberry Stout

by Keith Bradley

(5 gallons/19 L, all-grain)
OG = 1.070 FG = 1.018
IBU = 20 SRM = 59 ABV% = 7.1%

Ingredients

10.33 lbs. (4.7 kg) Briess 2-row malt
0.5 lb. (0.23 kg) CaraPils malt
0.5 lb. (0.23 kg) crystal malt (90 °L)
0.5 lb. (0.23 kg) crystal malt (60 °L)
0.5 lb. (0.23 kg) flaked barley
1.0 lb. (0.45 kg) chocolate malt
4.0 oz. (0.11 kg) roasted barley
1.0 oz. (28 g) black patent malt
0.3 lbs. (0.14 kg) unsweetened bakers chocolate
4.5 lbs. (2.0 kg) raspberries (frozen)
12 tbsp. cocoa
5.1 AAU Challenger hops (60 mins) (0.63 oz./18 g of 8.2% alpha acids)
4 AAU Northdown hops (15 mins) (0.5 oz./14 g of 8% alpha acids)
White Labs WLP002 (English Ale) yeast
0.75 cups corn sugar (for priming)

Step by Step

Mash in with 14.0 qt. (13 L) of strike water at 165 °F (74 °C). Mash at 153 °F (67 °C) for 60 minutes. Mash out to 168 °F (76 °C) for 10 minutes. Collect 6.5 gallons (25 L) of wort for boil. (Heat sparge water to 170 °F (77 °C).) Boil for 60 minutes, adding chocolate, cocoa and bittering hops at the beginning of boil. Add raspberries at knockout and let sit 15 minutes before cooling wort. Ferment for 6 days at 68 °F (20 °C) then cold condition at 40 °F (4.4 °C). (Optional: Use chocolate extract to boost chocolate flavor at bottling, if desired.)

Extract with grains option:

Replace the 2-row malt with 5.0 lbs. (2.3 kg) dried malt extract and 1.0 lb. (0.45 kg) of 2-row malt. Steep crushed grains at 153 °F (67 °C) for 45 minutes using 1.4 gallons (5.3 L) of water.

comes in two forms, plain cocoa and "Dutch" or "Dutched" cocoa. Dutched cocoa is cocoa with an alkalizing agent, often potassium carbonate, added. This raises the pH of the cocoa (when in solution) from a pH of around 5 to a pH between 6 and 7. It also makes the cocoa darker colored and — contrary to what you might infer from the color change — less strongly flavored. (Incidentally, the term "cocoa" is an 18th Century corruption of the word "cacao.")

Solid chocolate (also called "eating chocolate") is made from cocoa solids or chocolate liquor to which an excess of cocoa butter has been added. Most eating chocolates contain between 70 and 90% cocoa butter. Likewise, a lot of eating chocolate also contains ingredients other than cocoa solids and cocoa butter. Milk chocolate, for example, also contains milk solids, sugar, vanillin and lecithin (a binding agent).

When choosing a type of chocolate to use in brewing, you want to select one that has a high percentage of cocoa solids, a low percentage of cocoa butter and no other ingredients.

Cocoa (particularly low fat cocoa) is the best way to add chocolate flavor to a beer.

From cocoa to candy bars

Cocoa (particularly low fat cocoa) is the best way to add chocolate flavor to a beer. Even though cocoa contains some cocoa butter, you can add enough to a beer to get a nice chocolate flavor and still have good head retention. For a 5-gallon (19-L) batch of beer, one pound (0.45 kg) of cocoa will add a noticeable chocolate note to a beer. (Some kinds of chocolate may add a stronger flavor than others, depending on how they were roasted.)

I don't know whether plain or "Dutched" cocoa is a better choice for brewing. The pH of plain cocoa (around 5) is very close to that of wort (often around 5.2 after the boil) and has a stronger flavor.

However, calcium carbonate (chalk) is sometimes added to brewing liquor when making a beer with a lot of dark grains. This prevents the pH of the beer from dropping too low. So, Dutched chocolate — with its higher pH — may not be such a bad thing in a dark beer. Given the small amount of cocoa that needs to be added to wort, however, I doubt the difference between the two types is that great.

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Unsweetened bakers chocolate is a good second choice if good cocoa can't be found. Although higher in cocoa butter content, many homebrewers have used it and not suffered any negative consequences with respect to head retention.

There are many brand names of cocoa and bakers chocolate including Hershey, Nestlé, Ghirardelli, Scharffen Berger, Merckens, Saco and many others. Most of these companies have a description of their product line on their Website and can easily be found by an Internet search.

Eating chocolate could be used in brewing, but you would likely suffer some problems with head retention because of the high percentage of cocoa butter in it. In addition, it almost always contains other ingredients as well. Cocoa or bakers chocolate is easy to locate, so there's no reason to resort to using candy bars in your brew.

Fat-free chocolate extracts, including Star Kay White's chocolate extract, are also available. In baking, these are mainly used to enhance or increase chocolate flavor in items that already have chocolate in them.

One more possibility for adding chocolate flavor to a beer is by adding cacao nibs. Nibs are harder to find than cocoa or bakers chocolate, but are available in some specialty stores.

Look for cocoa, bakers chocolate, chocolate extract or cacao nibs in the baking supplies aisle in your supermarket or a store that specializes in baking supplies. Always look at the label and examine the list of ingredients. Pick a chocolate with no "extra" ingredients and the lowest amount of cocoa butter you can find. (If sugar is the only extra ingredient in the chocolate or cocoa, go ahead and use it — the sugar will just ferment away.) Likewise, look at the amount of fat in the chocolate. Remember that serving sizes vary, so divide the grams of fat by the serving size to compare fat content between two products. Also, remember that cocoa and hot chocolate mix are not the same thing. And finally, know that white chocolate isn't chocolate at all — it's usually just sweetened cocoa butter. Don't use it for brewing.

In the kettle or keg

To use cocoa or bakers chocolate in your beer, just add it to the boil. You can add the chocolate for the entire boil, the final 15 minutes of the boil or add it at knockout (when you turn the heat off to your brewpot) and let the wort sit 15 minutes before you begin cooling. (You may have to decrease the amount of late addition hops if you let your wort sit for awhile before cooling. Some alpha acid isomerization can occur at high temperatures, even if the wort isn't boiling.)

Chocolate extract can be used to boost the chocolate flavor in finished beers. At bottling (or kegging), sample some of the beer and determine if the chocolate flavor needs a boost. If so, add a few drops of chocolate extract

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and taste the beer again. Be sure to stir the extract into your beer, but do it gently so as not to aerate. Keep adding extract until you reach the desired level of flavor. (Be careful not to overshoot your mark, however.)

You could also add cocoa or bakers chocolate at bottling or kegging instead of the boil. To do so, stir the cocoa into hot water and hold the temperature over 160 °F (71 °C) for 15 minutes, then cool quickly and add to your beer.

Adding cocoa or chocolate extract at bottling or kegging allows you to make a "spin-off" batch from a non-chocolate beer. For example, you could make a 5-gallon (19-L) batch of porter, bottle half of it, then add chocolate to the second half to yield two different versions of the same beer.

Brewing considerations

Most of the time we eat chocolate, it is sweetened. Thus, if you want your beer to have the flavor most people recognize as chocolate, you should try to brew a relatively sweet beer. All-grain brewers can perform their saccharification rest at the high end of the range (156–162 °F/69–72 °C) and include some caramel or other specialty malts to leave some residual, unfermentable carbohydrates in their beer. Finally, you could add a little lactose — a sugar that brewers yeast cannot ferment — to the kettle during the boil. For a 5-gallon (19-L) batch, 0.5–1.0 lb. (0.22–0.45 kg) of lactose will give a level of sweetness similar to a milk stout or sweet stout.

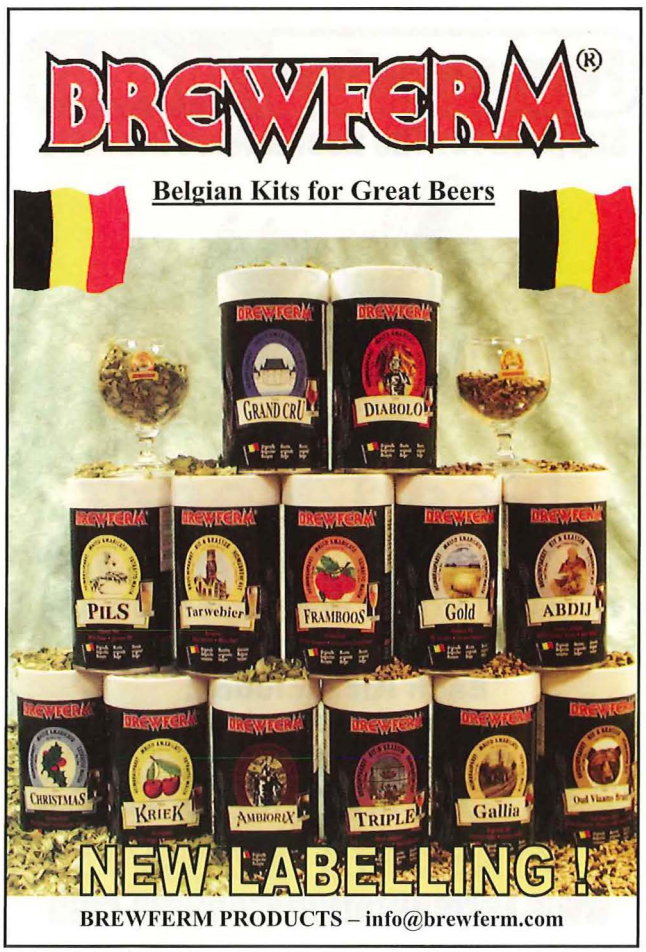
When making a chocolate beer, help yourself out by adding a healthy dose of chocolate malt to your grain bill. Getting some chocolate-like flavors from chocolate malt will mean you have to add less actual chocolate — and the cocoa butter that comes with it — to your beer. In a 5-gallon (19-L) batch, 0.66–1.0 lb. (0.29–0.45 kg) of chocolate malt is a good start.

Chocolate will lend some roasty bitterness to the beer, so you may want to cut back on the amount of bittering hops or very dark roasted grains to keep this in check.

There are a number of possible flavor combinations possible in a chocolate beer. You could make a mocha beer by combining chocolate and coffee. Adding 16–22 fl. oz. (473–650 mL) of brewed coffee to your beer at bottling should be sufficient for a 5-gallon (19-L) batch. Or, you could pair chocolate with fruit by adding 6 lbs. (2.7 kg) or more of raspberries or 12 lbs. (5.4 kg) or more of cherries to your 5-gallon (19-L) batch of chocolate beer. Or, you could add cocoa powder, lactose (milk sugar) and a hint of vanilla extract or vanilla bean to make a milk chocolate beer.

Chocolate is a flavor that works well in beer and pairs well with many other beer-friendly flavors. Your imagination is the only limit when formulating a chocolate beer. ■

Chris Colby is the editor of BYO.



ProMash Tips

Breeze through hard calculations with this software

Story by Bill Pierce

One of the best and least expensive investments any serious brewer can make is in brewing software. Brewing software allows you to calculate and predict such values as specific gravity, bittering and color. While the relevant formulas can be entered into a spreadsheet, why go to the trouble when the software developer has already done the work for you? Other features allow you to save recipes and brewing sessions and keep track of ingredients. Additionally, various utilities enable a host of brewing-related conversions and calculations. Once you use brewing software, you will quickly wonder how you ever got along without it.

While several packages target advanced and all-grain brewers (see sidebar), perhaps the most popular is ProMash, from software developer and avid brewer Jeffrey Donovan of The Sausalito Brewing Co. A rich feature set ensures that you are unlikely to outgrow the software, whether brewing a one-gallon (3.8 liter) experimental recipe or a 20-barrel commercial batch of beer. A trial version, which contains all of the features except printing, but allows only three recipes to be saved, can be downloaded for free from the ProMash website (www.promash.com). Upgrading to the full version may be done from the website for $25. ProMash may also be purchased from a number of homebrew shops and suppliers.

ProMash is written for the Microsoft Windows operating system (all versions since Windows 95) but also runs on Windows emulators for the Macintosh and Linux operating systems. The hardware demands are modest, making it a good choice for both older and newer computers.

As with any software, there is a learning curve in order to become familiar with the features and how to use them. It is worth spending some time with the package so that you can fully take advantage of all it can do for you. The intent of this article is to get a new user up to speed more quickly and give the old hands some new tricks.

Getting started

Even though the notion that "real men don't read help files" has become part of the popular culture, make a point to click on the Help pull-down menu from the opening screen. Here you will find two useful sub-menus: Contents and Tutorials. Take a few moments to read the Introduction topics; these likely will answer most of the common questions and explain the general operation of the software. The same goes for the Getting Started, Entering First Recipe and Your First Brewing Session tutorials. Why struggle on your own when you can benefit from the collective wisdom of experienced ProMash users?

Most of the program settings are located in the System Settings dialogue box, accessible from the Options pull-down menu on the opening screen. By default, ProMash is set for homebrew-size batches in American measurements, but that can be changed from the Measurement, Sizes, Precision submenu.

Deeper in the System Settings submenus are values for such advanced components as extract potential, the various formulas for bittering and color, setting your monitor to reflect beer color more accurately, and calibrating hydrometers and refractometers. Most of these can be left alone, but they allow professional brewers and inveterate "tweakers" a high degree of control over the precision of the software.

Recipes, sessions and ingredients

The key organizational elements of ProMash are recipes and sessions. A recipe is just what you might think: a collection of components that produce a particular beer, including malt, hop

OTHER PACKAGES

StrangeBrew is a homebrew recipe calculator that has all the features you'd expect, such as a large ingredients database, a mash calculator, inventory tracking, carbonation calculator, customizable printing and shopping list generator. Despite the simplicity of the user interface, there are many features designed for the more advanced homebrewer, including a dilution manager, water manager, alpha acid degradation estimation and refractomter calcualtions. StrangeBrew imports and exports recipes in the XML format and user contributed recipes can be found at www.bodensatz.com/sb. A free 30 day trial of StrangeBrew is available at www.strangebrew.ca. Registration costs $15 and includes free upgrades.

BeerSmith offers advanced brewing features including a suite of calculation tools and also an easy to use all-grain recipe formulation. The main advantage of BeerSmith is the modern windows interface. Every tool is accessible at a single click and specialized tools are displayed on a separate toolbar tailored to what you are doing at any given moment. It also has features for managing a large library of recipes including the ability to organize them into folders. BeerSmith includes a water profile tool, strike water and infusion calculator, hops bitterness and aging estimator, carbonation calculator, dilution tool and a decoction volume calculator. A free 21 day trial of BeerSmith is available at www.beersmith.com. Registration costs $19.95.

So, if you'd like to move your brewing into the computer age, download the free trials of the different packages and see which of them best fits your needs.

and yeast types and amounts, mash schedule, water profile, extra ingredients and notes. Brewing sessions are templates that hold information pertaining to a specific time and day that you brewed. A brewing session contains a recipe plus additional information for a particular batch and individual brewing system, such as water requirements, fermentation details, bottling information, notes on the session, etc. This allows you to change ingredients and specifics for only that session without affecting the underlying recipe.

Entering a recipe in ProMash is a relatively straightforward process. Click on the Pick Style button and a list of styles (the defaults are from the BJCP Style Guidelines) appears. The appropriate ranges for specific gravity, bittering and color are transferred to the recipe screen. Clicking on the buttons for grains (including extracts and adjuncts) and hops brings up a list of these ingredients. Other buttons allow selection of yeast and other ingredients, such as spices or other flavorings.

ProMash has databases for beer styles, grains, hops, yeast, water and extra ingredients. The relevant ingredient values, such as hop alpha acids and grain extract potential, can be changed and the method used for calculating these values can be selected individually for each element. Descriptions of new ingredients can be added to each database and used in recipes and brewing sessions. New beer styles can also be added to reflect changes in the style guidelines. If you obtain an analysis of your brewing water, it too can be added to the database of water profiles.

Utilities and calculators

The program also contains a wide array of brewing calculators and utilities. Among them are units of measure conversion, hop bittering and storage degradation, strike water and mash temperature calculation, beer and water dilution, and hydrometer correction for temperature. The Water Profiler allows for comparison of the brewing water against values for major brewing cities and calculates the amount of salts or neutral water necessary to make mineral adjustments. The CO_2 calculator assists in determining the amount of priming sugar or CO_2 pressure needed for carbonating beer correctly.

The Mash Designer is a subject unto itself. It allows for simple mashes with a single temperature rest or multi-step mashes with a variety of rests. A mash graphing feature displays the results graphically and can also be printed or exported. Mash schedules may be saved and recalled for use later as well as incorporated into recipes and brewing sessions. The schedules can involve direct heating of the mash, infusions of boiling water or decoctions in which a portion of the mash is removed and boiled. The Mash Designer calculates the volume and

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temperature of strike water, additional infusions and amounts of mash or water to be boiled.

Tips from users

As with any complex tool, it takes time to learn how to use ProMash efficiently. Learning from those familiar with the tool, however, can shorten your learning curve. Here are a number of tips courtesy of longtime ProMash users who are experienced with the software:

- If you brew on different systems, you can save each set of defaults in the System Settings and recall them as needed. One of the saved settings files is selected as the default when ProMash is first opened; it's a simple matter to choose another from the Load from File button on the settings screen.

- Several of the settings can help improve the accuracy of the calculations and your brewing. For example, if you know the typical mash efficiency of your system, it can be entered as the default value from the Brewhouse Efficiency sub-menu. The default batch size (initially 5 US gallons/19 L) may be changed from the Measurement, Sizes, Precision sub-menu. The typical evaporation losses during boiling are set from the Mash System, Evaporation sub-menu.

- Adjusting the ingredients and amounts in a recipe will change the calculated values for original gravity, bittering and color. The mash efficiency value can be specified and adjusted for grains that are mashed. Two handy features, Lock Ingredients to Batch Size and Efficiency Lock, allow the ingredient amounts to be adjusted automatically when the batch size or efficiency is changed, if the appropriate boxes are checked. These are especially useful when scaling recipes from or to other batch sizes or adjusting recipes published for efficiencies other than that of your system.

- The approximate color of the beer produced by a recipe is displayed in a small box next to the estimated color value. Clicking on the CLR button below the box enlarges the color swatch and allows advanced users to adjust the color for more accurate display on their monitor.

- The databases for grains, hops, yeast and extra ingredients allow for the recording of inventory so that you can keep track of what is on hand and has been used. Clicking on the Inventory button for each item enables adding, subtracting, adjusting or zeroing of inventory amounts. One of the buttons on the brewing session screen, Analyze Inventory, shows what ingredients are needed for the session and allows you to print a shopping list. Another button, Finalize Inventory, will subtract the ingredients used for that

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session from inventory and adjust the remaining amounts accordingly.

☛ The values entered in the various calculators may be saved as the defaults for brewing session calculations. This allows you to enter and save the most common values for your brewing system. Many of the calculators are also accessible from inside a brewing session as well as from their respective buttons on the opening screen.

☛ In addition to recording values for actual recipes and sessions, you can also use the Recipe and Session screens for hypothetical assumptions and outcomes, "what-ifs" and other simulations.

To do this, merely create a new recipe or session to test the calculated values for a particular set of ingredients. It's no problem to discard the hypothetical recipe or session if you don't wish to save it.

☛ If you use a refractometer in your brewing, ProMash has an outstanding set of utilities for calculating specific gravity and alcohol content, including after fermentation has begun.

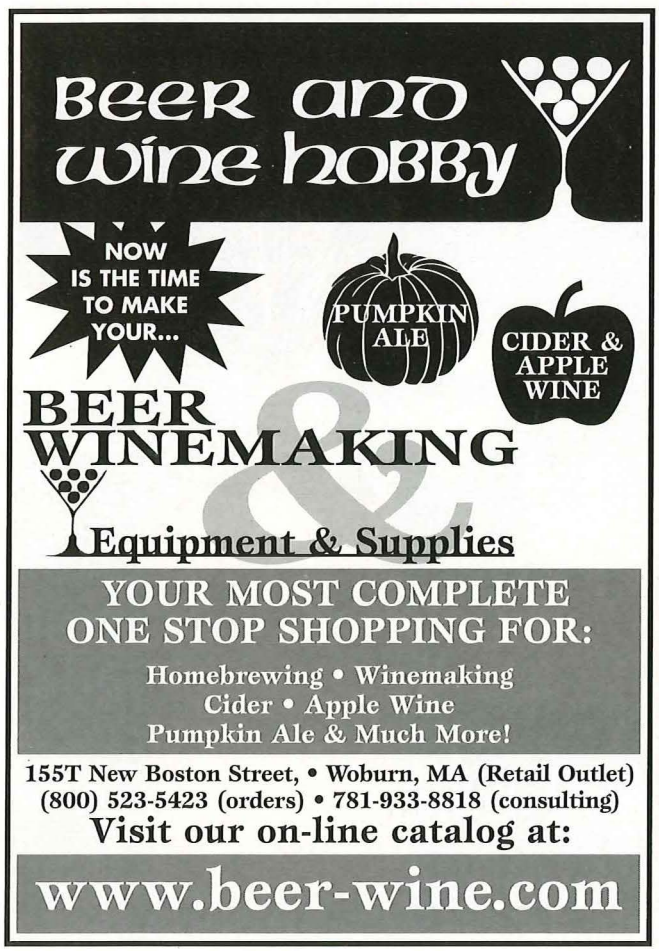
These features are accessible under Refractometer from the Utilities pull-down menu on the opening screen, as well as from the Fermentation section of a brewing session. It is even possible to use a refractometer, along with a hydrometer, to estimate the original specific gravity when it is unknown. The help section on refractometers will allow you to get the most from this useful instrument.

Support when you need it

A variety of support options are available from the ProMash website. It's very much worth browsing the site and acquainting yourself with them. Here you will find FAQs (frequently asked questions) and tips and tricks for both beginners and more advanced users. A multi-section message board allows users to post questions and answers and share knowledge and experiences. Author and developer Jeffrey Donovan provides answers, usually within 24 hours, and a collective of experienced users also offers their insights. Additional individual support questions may be asked via e-mail. The site has a database and exchange for recipes.

Good brewing software allows you to grow as a brewer, to test theories, measure them against actual outcomes and record the values you encounter in your brewing. It also helps to provide an understanding of the formulas and some of the principles that result in quality beer. This encourages the consistency that will make you a better brewer and enable you to produce excellent beer batch after batch and time after time.

Bill Pierce writes the Advanced Homebrewing column is every issue of Brew Your Own.



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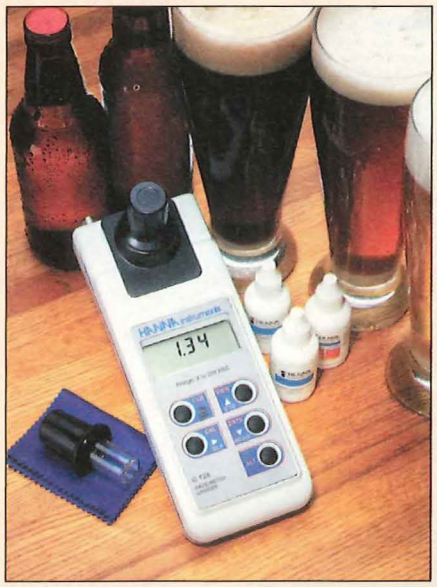

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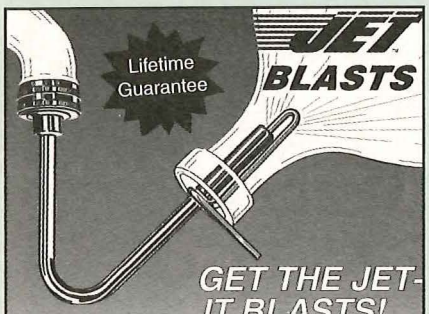

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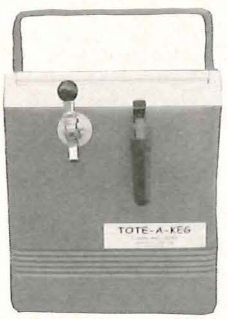

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Last Call

Homebrewsters

Looking for a few good women

by Rashelle Brown
Hastings, Minnesota

Rashelle Brown has a dream that one day, brewing will no longer be a "boys only" club.

I'll admit, I used to be one of them. At age 21 you couldn't have paid me to drink a beer if there were wine coolers or daiquiris anywhere in sight. Then one day I tried my first microbrew, a raspberry wheat from a small brewpub in Colorado . . . and liked it. By most standards that was still a "chick beer," but the door had been opened. At age 25 I moved to England and began my true love affair with beer.

By the time I started homebrewing, I had long forgotten about the no-beer and chick-beer days of my youth. But when I took a job at a local homebrew supply store, my eyes were opened to the stereotypes about women and beer. Rarely does a workday go by that a customer doesn't say, "Is there someone here who can answer a brewing question for me?" One guy even asked, "So how did you come to work here? Did you marry into the business?"

It is a well-documented fact that in ancient societies and as late as the 17th century in Europe, the brewing of beer was exclusively the domain of women known as "brewsters." Over time this fact was forgotten and brewing became essentially a "boys only" club. Wondering how women could have fallen so far in the brewing culture, I did some research. When brewing moved outside the home in the mid-17th century and became a profitable enterprise, men, who were more experienced at running large-scale businesses, took over the trade. For about another century, women in much of Europe continued to make beer for home consumption. But as commercial mass-production made reasonably priced beer widely available, this too died out.

Now skip ahead some 300 years, to 1960s America. This was the low point in American brewing, when there were just over 30 breweries left — down from over 2,000 in the mid 1800s. This left beer drinkers with precious few choices, and so the 70s and 80s gave birth to the brewpub and microbrewery. As the idea of handcrafting small batches of great brew caught on, brewing at home became popular again, but this time it wasn't considered woman's work — or even a woman's drink.

The lack of information on homebrewing women is even more pronounced. When I searched Yahoo! for the words "women" and "beer," seven matches were for poster or "art" Web sites that offered "scantily clad women and beer." Another four were joke sites such as "Why beer is better than women." There were only three legitimate web sites that discussed women and beer and I only found one legitimate book about women brewers: Judith Bennett's "Ale: Beer and Brewsters in England."

So where can we go from here, ladies? To brew pubs and well-stocked liquor stores of course! We can start by trying new beers. Lisa Morrison, homebrewer and beer writer, founded the Beer Appreciation for Women course at Portland Brewing (AKA MacTarnahan's), Portland, Oregon. She also has an online "Beer Tasting 101 Class" at Realbeer.com. From there, the leap to brewing beer is a logical one for women. After all, beer is usually made in the kitchen, right? ■

Not only does Rashelle brew at home, she works at a homebrew shop.

Rashelle takes pride that women were the primary brewers in the 17th century.

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