BrewY

YOUR

JANUARY 2000, VOL.6, NO.1

THE HOW-TO HOMEBREW BEER MAGA

Good for What Ales You

10 Tips for Great Ales

Classic Czech Beers! 7 Recipes

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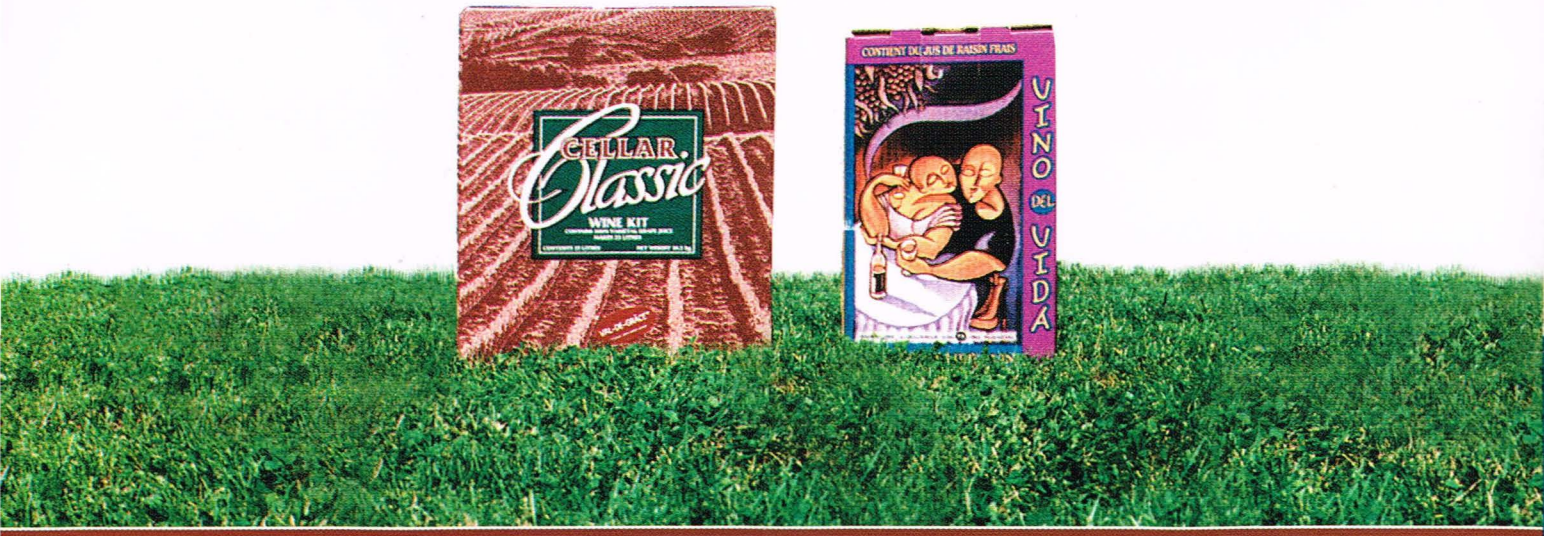


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Cover photo: Kent Lacin

Planning a Vacation

You would think that the editor of a homebrew magazine would get lots of great perks. Sure, I get all the pens and paper clips I could ever need from the supply cabinet, and I don't think I've bought a notepad for 10 years. But that's not really what I had in mind.

I also get plenty of terrific homebrew, and commercial breweries even send me the occasional six-pack of newly released beer. Those are great, but that's not it either.

Specifically, I'm thinking about free trips to the great brewing regions of the world. Call it a fact-finding tour, so I can keep in mind how great the beers of Scotland or Japan or Tahiti are when I'm assigning and editing stories.

Before you start thinking how unreasonable this is, let me mention a little fact. I know someone who worked for a car magazine and got free cars to "test drive." After six months, when she had really explored the functionality of the CD changer and the true comfort level of the contoured lumbar-support seats, she would get a new "tester."

I'm not asking for a free car here. All I want is a simple trip to tour the breweries of, say, New Zealand. Or Bermuda.

I did have a chance a couple of years ago to take a free trip to the Anheuser-Busch malting (or was it hops?) plant in Idaho. If only they had built it in Hawaii, I might have gone.

I bring this up because this month we have a feature from Lynne O'Connor, who spent part of last summer wandering from brewery to brewery in the Czech Republic. And she did it with the Beer Hunter himself, Michael Jackson. Can't you just picture it? "Where shall we go today, Michael? The Pilsner Urquell brewery to taste the world's foremost pilsner, or Budweiser Budvar to meet the brewers of that outstanding and trademark-challenged beer?"

"Well, Lynne, that sounds great for this afternoon. But this morning, let's tour the Bohemian hop fields to see how this year's crop of Saaz is coming along."

Wow!

Lynne is the latest in a series of world-traveling homebrewers who have published their stories in the pages of BYO. Sal Emma visited Dublin ("Stout-Hearted in Ireland," March '96), had an in-depth tour of the Guinness factory, then went pub-crawling with the brewers. Amy Jabloner got a behind-the-scenes look at the unique breweries of Belgium ("Where the Wild Yeasts Are," February '98).

I admit that it's all just jealousy on my part. And I did once live just six blocks from Anchor Brewing Co. in San Francisco, which throws a fabulous holiday party, by the way, so I haven't been completely deprived.

And on top of that, Lynne didn't come home empty handed. She brought us recipes for seven of the great Czech beers so we can brew them ourselves and live vicariously. Check out the story on page 34. But be warned: It might make you start planning your vacation early.

Craig Bystrynski

Brew Your Own
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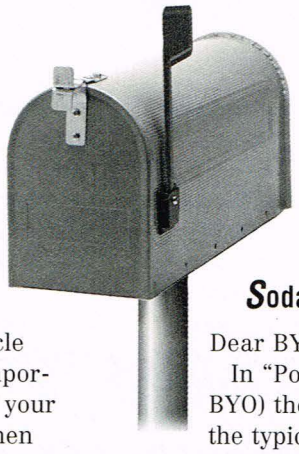
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Starting a Siphon

Dear Brew Your Own,

I just picked up the November '99 issue at the bookstore. The first article I read was "Find a Carboy and Fill It!" The article states that "Cleanliness is important, so please do not attach your mouth and start sucking" when beginning a siphon. Then it suggests one way to begin a siphon by using a two-hole stopper is to "simply blow into" your beer. Wouldn't my breath introduce myriad potentially infectious bacteria?

Perry Hess
Louisville, Ky.

It is important to note that many compromises are made when brewing at home, and no method is perfect. Placing a siphon tube in one's mouth is not advisable because of the enormous bacterial population found in most mouths. On the other hand, starting a siphon by blowing into the headspace of a carboy is not risk-free. But this method is less risky, because bacteria must travel from mouth to air and then from air to beer.

Some brewers use bottled carbon dioxide as the pressure source to start siphons to avoid contamination. Extreme caution must be exercised with this method, because carboys will break at a very low pressure. The following reader tip might be the solution you are seeking.

Dear BYO,

I've used various methods to draw an initial siphon to start beer transfer, from drawing by mouth to little pumpy things that clog up with hops. Nothing works like my little blue ear syringe (never used for its intended function and always sterilized, of course).

Just hold the siphon tube up high and draw the beer up with the syringe. It might take two tries, so just squeeze off the siphon tube in between. The tip of the syringe is just the size to fit perfectly in the end of the hose, and it makes a perfect seal.

John Webers
Mexico, N.Y.

Soda Solution

Dear BYO,

In "Pop Art" (October '99 BYO) the author mentioned the typical problem of sodas permeating the O-rings and making the Cornelius keg unfit for beer use. I have found a method that virtually eliminates the problem.

I mix up a base of sugar water with no flavorings and force carbonate in the keg at 30 psi. I then can make any kind of soda by adding 2 to 3 mL of soda extract to a 12-ounce glass and filling with the carbonated sugar water. I keep several kinds of extract on hand and can make most types of soda on demand. The sugar water doesn't permeate odors into the keg, so with a quick cleaning the keg is ready for the next beer.

David Porter, Head Brewer
Three Rivers Eatery & Brewhouse
Farmington, N.M.

Signature Beer Yeast

Dear BYO,

"Five Signature Beers" (September '99 BYO) contained some great recipes. However the Fall Rye Beer recipe calls for Wyeast 1338 and then calls this yeast German ale. Wyeast 1338 is European ale, and Wyeast German ale has a number of 1007.

Keith Kolstad
Marinette, Wis.

Wyeast 1007 is correct.

Sanitized Bottles in Dishwasher?

Dear BYO,

My wife and I have purchased a new, state-of-the-art dishwasher. I noticed that it has a "sanitization" cycle. Would this be appropriate for sanitizing my beer bottles?

Bruce Kulwicki
New Albany, Ind.

Most dishwashers sanitize their contents with heat. Damp heat is a very effective method of killing bacteria and probably would work very well for beer bottles. The one problem with sterilizing bottles with heat is that it weakens the glass over time. This problem becomes more apparent if the bottles are used over and over again. When the glass becomes weak, you will begin to have problems with bottles cracking.

Carbon Dioxide

Dear BYO,

I was curious to find out whether there is a difference between food-grade CO_2 and CO_2 that you might use to fill welding tanks and fire extinguishers. I have no way of getting food-grade CO_2, but the possibility of a fire-extinguisher place filling my tank might be the only option. Will this affect my brew?

Don Podejko
via e-mail

Food-grade carbon dioxide is considered a food ingredient, unlike its industrial counterpart, and must meet certain standards of purity.

Almost every city and town in the United States has a demand for food-grade CO_2 because it is a key ingredient in fountain soda. Check with your local soda distributor to find out where they purchase their CO_2.

Apple Cider vs. Apple Juice

Dear BYO,

I've decided to brew a batch of hard cider, and I was wondering what the difference is between apple juice and apple cider. I know they look different and they taste different, but what makes apple juice and why is it different from apple cider?

Tom Maycock
Albany, N.Y.

The definitions of juice and cider depend on where you live. In the United States the two terms are synonymous. Usually, the term cider is used to describe apple juice in its natural state. Roadside orchards sell jugs of cloudy brown apple juice and call it cider. When large food companies process the same stuff into a crystal-clear, shelf-stable beverage, they usually call it juice. In England "cider" is only used to describe fermented (alcoholic) juice.

If you want to make hard cider at home, the most important step is finding a source of juice that has no preservatives. Very few grocery stores carry juice without preservatives. The best place to buy juice is from an apple orchard that presses its own apples. But many orchards add benzoates to suppress yeast growth. So it is always important to inquire about these additives before buying five or 10 gallons of juice because you will want your yeast to grow and turn that sweet juice into a crisp and refreshing tipple! ■

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Strange Brews that Taste Great

Bill Winter
Silver Spring, Md.

In the summer of '98, I brewed a pale ale in my brew shack in the back yard. Everything was going fine, and I was keeping a nominal eye on the boil. When that step was completed, I chilled the wort with my homemade wort chiller and set up to siphon the chilled sweet wort into the carboy for fermentation. In those days my boil kettle had no spigot, so to catch any bits of hops or other solids I didn't want in the fermentation, I siphoned through a sanitized stainless steel sieve.

As the siphon progressed, I looked in the sieve and there were about a half-dozen dead bees! I realized that they had been attracted by the sweet wort, got too close to the steam from the boil, and had done a header into the kettle.

I didn't want to throw out the whole batch, so I decided that the bees had boiled long enough to sterilize them and went ahead with the fermentation. The resulting beer was delicious. I called it Bumblebee Bitters in honor of the unwanted guests.



Buzzing down the river is a fine time to plan a new homebrew.



Frank Moradiellos
Tampa, Fla.

My son Stephen is an excellent assistant brewer. He loves to help me during the *vorlauf*, loves to eat the grain (he can tell when it's fully converted), and loves to taste the wort. He is also the inspiration for my strangest brew ever.

During one of our many brewing sessions together, I caught him spitting into the wort. Alas, Old Spittoon Ale was born. It turned out to be the best beer I've ever brewed.

A secret ingredient added by young Stephen earned this beer its special name.

Perhaps I should've entered it into a contest (minus the ingredients list of course). I tried to persuade Stephen to release the recipe, but he said no. Although I don't recommend this type of brewing, I did get lucky with the results.

Hats off to Stephen for his ingenuity with this brew.

Where's the Strangest Place You've...Brewed?

Have you brewed somewhere more exotic than your kitchen or garage? Tell us about your brewing adventure. If we publish your response, we'll send you a cool BYO T-shirt. Send your story and photo to Pot Shots, c/o Brew Your Own, 216 F Street, Suite 160, Davis, CA 95616. Or send us e-mail at erika@byo.com. Include your mailing address!

Michael Neuman and Walt Dooley
Salinas, Calif.

My friend Walt and I have been getting together to brew once a month. Walt does 10-gallon batches and I do 13- to 14-gallon batches. We split them in half so that each one of us ends up going home with two different beers.

The last time we brewed together, Walt made a porter and I made a Belgian ale. I use 7.5-gallon plastic fermenters as primary fermenters. On the way home from the brew session with two full fermenters on the car seat, I turned a corner quickly and the fermenters slid together. The lid of the Belgian ale popped up, and about a gallon of the wort went all over the car's interior. What a sticky mess!

Even though I shampooed the seats and carpet, the car still smells like beer inside. I called my brew Belgianed My Car Ale. It's quite delicious and I regret having shared some with my car.

Rich Fisher
Divide, Colo.

This recipe works well for all American megabrews with a few minor adjustments (for example, add beechwood chips to primary fermenter).



Ingredients:

- 25 lbs. barley
- 1 bale of hops
- 1 oz. bread yeast
- 18 bunnies

Step by Step:

Spread the bale of hops evenly in a very large bunny cage with a drain. Place your primary fermenter under the drain. Put the 18 bunnies in the cage on the hops. Feed the bunnies as much barley and water as possible. After 30 days add yeast to the primary fermenter.

Fill fermenter with water to make 5 gal. (Don't forget to put a new fermenter under the cage drain for the next batch!) Place the full fermenter in the sun until fermentation is complete or until you can't stand the smell any longer. Bottle and...enjoy?

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CIRCLE 2 ON READER SERVICE CARD

Welcome to Y2K

by Scott R. Russell

If you are reading this column, it means one of two things. Either the world and civilization as we know it have not come to an end, or BYO and the homebrewing industry have survived even though other sectors of society have succumbed to the Y2K problems.

If the former is true, donate those canned peas and extra peanut butter to the local food bank. You won't need them. Instead, go out and get the ingredients for a batch of homebrew.

If the latter is true, I hope you had the foresight to get a gas cooker and lay in a few batches worth of malt and extract and hops. Homebrewed beer just might be a great barter item in a collapsed post-Y2K society! ("Hey, I'll trade you a six-pack of my homebrewed stout for that cow!")

Even if we've survived Y2K, there's still an event looming on the horizon. About a year from now, we will enter a new century and a new millennium. You thought we already had? Sorry, that was just a hoax perpetrated by travel agents worldwide.

Look at it this way: Was the very first year called Year 0? No, it was Year 1. Therefore the first year of any new century (and hence any new millennium) has to be the one ending in 1. The one ending in 0 (like the current one, 2000) is the last year of the old century or millennium.

Even if you haven't made your Millennium Eve plans yet, you should commemorate the event with a special brew. I'm making Millennium Ale, a straightforward, rich old ale. It's deep amber, alcoholic, and hoppy, with a smoky/woody character. If you brew and bottle it by late February, it should be perfect for Millennium Eve celebrations. And in a post-Y2K world it might be worth some food.



Reader Recipes

Pimsey's Porter
(5 gallons, all-grain)

Porters are great beers to add richness to a cold winter night.

Dave Pimsner, Senior Brewer
Humboldt Brewing Co.
Arcata, Calif.

Ingredients:
- 10.5 lbs. two-row malt
- 0.5 lb. chocolate malt
- 0.5 lb. wheat malt
- 0.5 lb. crystal malt, 120° Lovibond

Millennium Ale
(5 gallons, partial mash)

Ingredients:
- 4 lbs. pale malt
- 2 lbs. Munich malt
- 1 lb. medium crystal malt, 50° Lovibond
- 4 lbs. unhopped light dry malt extract
- 1 qt. pure maple syrup
- 1 oz. Centennial hops (8% alpha acid, 8 AAUs) for 90 min.
- 1.5 oz. Golding hops (4% alpha acid, 6 AAUs) for 60 min.
- English ale yeast (Wyeast 1098 or equivalent)
- 1/2 cup light dry malt extract for priming
- 1/2 cup maple syrup for priming

Step by Step:

Heat 2.5 gal. water to 164° F. Crush malts and add to liquor. Hold at 152° F for 90 min. Sparge with 2 gal. of 168° F water.

Add 4 lbs. dry malt extract and 1 qt. maple syrup. Bring to a boil. Total boil is 90 min. Add Centennial hops and boil 30 min. Add Golding hops and boil 60 min. Remove from heat and cool the wort. Add to your primary fermenter along with enough chilled, pre-boiled water to make 5.25 gal. Chill to 68° F, aerate well, and pitch yeast.

Ferment at 68° F for two weeks, then rack to secondary. Condition cool (50° F) for four weeks. Prime with remaining dry malt and maple syrup. Bottle and age 10 months in a cool (50° F), dark place.

OG = 1.080
FG = 1.015
Bitterness = 55 IBUs
8.3% ABV

Notes:

Extract: Steep 1 lb. pale malt, 1 lb. Munich malt, and 1 lb. crystal malt in 2.5 gal. of 150° F water for 30 min. Remove grains and add 7 lbs. light dry malt extract and 1 qt. maple syrup. Proceed as above from boiling step.

All-grain: Omit dry malt from partial-mash recipe, increase the pale malt to 9 lbs. and the Munich malt to 3 lbs. Mash in 4.25 gal., sparge with 3.75 gal. Add maple syrup and proceed as above from boiling step. Adjust boiling times and hop schedule to reduce wort volume to 5.25 gal. in the end.

- 2 tsp. Irish moss
- 2 tsp. gypsum (calcium sulfate)
- 0.5 oz. Chinook hops (4% alpha acid, 2 AAUs) for 90 min.
- 0.67 oz. Willamette hops (6% alpha acid, 4 AAUs) for 30 min.
- 1 oz. Mt. Hood hops (4% alpha acid, 4 AAUs) for 15 min.
- 0.25 oz. Cascade hops (6% alpha acid, 1.5 AAUs) for 5 min.
- 2/3 cup corn sugar for priming

Step by Step:

Mash grains into 5.5 gal. of 172° F water for a mash temperature of 150° F. Hold 60 min. Sparge with enough 170° F water to collect 5.5 gal.

Total boil is 90 min. Add Irish moss, gypsum, and Chinook hops at beginning of boil, then boil 60 min. Add Willamette hops and boil for 15 min. Add Mt. Hood hops and boil for 10 min. more. Add Cascade hops and boil for 5 min. more. Cool to 72° to 80° F and pitch yeast.

Ferment at room temperature (68° F) for five or six days. Transfer to secondary for 10 days. Prime and bottle. Age for 10 days.

OG = 1.070
FG = 1.016
Bitterness = 23 IBUs

"Hot Tub" Honey Porter
(5 gallons, partial mash)

This is a variation of a couple of different beers that I have brewed.

Joey Long
Lake Stevens, Wash.

Ingredients:

- 6 lbs. amber malt extract
- 1/2 lb. chocolate malt
- 1/2 lb. black patent malt
- 1 lb. crystal malt, 40° Lovibond
- 3 lbs. clover honey
- 1/4 lb. flaked barley
- 1 oz. Perle hop pellets (8% alpha acid, 8 AAUs) for 60 min.
- 1 oz. Fuggle hop pellets (4% alpha acid, 4 AAUs): 0.5 oz. (2 AAUs) for 30 min., 0.5 oz. (2 AAUs) for 5 min.
- Wyeast 1084 (Irish ale)
- 3/4 cup corn sugar for priming

Step by Step:

Add grains and flaked barley in grain bag to 1 gal. cold water. Bring to 170° F and remove from heat. Allow to steep for 15 to 20 min. Sparge with enough 170° F water to make 5.5 gal.

Total boil is 60 min. Add amber malt extract and Perle hops to the pot. Bring to boil. After 30 min. add 0.5 oz. Fuggle hops. Boil 25 min. more and add the remainder of the Fuggle hops. Boil 5 min. more. Chill to 70° to 80° F. Pitch the yeast at 75° F and aerate well.

Ferment at 70° F for three days. Transfer to secondary and allow to work 10 to 14 days, or until all signs of activity have ceased. Prime and bottle. This beer is best if it's left to age for at least 30 days.

OG = 1.072
FG = 1.016
Bitterness = 40 IBUs ■



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Pumping Up? It's a Matter of Taste

Mr. Wizard

I have a medical oxygen tank and have purchased an oxygenating stone. How long should I oxygenate the wort before pitching the yeast and at what setting? The person who sold me the stone said a 30-second blast should be sufficient, but I read one article that talked about leaving a pump running for an hour.

Brett Axton
via e-mail



I am tempted to answer this question in terms of oxygen flow rate, time, and the "ideal" amount of dissolved oxygen required in wort prior to fermentation. With some basic assumptions, a constant from the ideal gas law, and a couple of simple calculations, a brewer can determine how long to aerate wort with pure oxygen or air at some known flow rate. The problem with this tactic is that any assumption about how much gas from your aerating device actually becomes dissolved in the wort is no more than a wild guess.

If 50 percent of the oxygen injected into your wort becomes dissolved and you have a fancy flow regulator on your oxygen tank, calculations will say that 84 seconds of aeration at a flow rate of 0.1 liter per minute will result in an oxygen concentration of 10 ppm (parts per million), a normal target oxygen content.

If you use an aquarium pump and a sterile gas filter to aerate wort with air instead of pure oxygen, the required time is longer. The reason for this is that air contains roughly 20 percent oxygen. If the air flow rate and rate of oxygen absorption are about the same, switching from pure oxygen to air would increase your aeration time to about seven minutes.

Most of us don't have fancy regulators and even if we did, assumptions about oxygen saturation are not very accurate without an oxygen meter. Let me flip this question around. Aeration is important because yeast cells require oxygen to multiply during the early stages of fermentation. Lag times are reduced and the amount of yeast collected for the next batch increases when wort is adequately aerated. Aeration is also important because wort oxygen levels influence ester formation. Worts with a low oxygen content at the start of fermentation typically result in beers with more ester (fruity) aromas than worts with more dissolved oxygen. In general brewers are worried about under-aerating wort. Not much is written about over-aeration.

If your fermentations kick off quickly, your yeast crop is healthy, and the aroma profile of your beer is not too fruity for your liking, then you are probably adding enough oxygen to your wort. Some beers, like weizen, are supposed to have some fruitiness to their aroma profiles and actually might benefit from limited aeration. It is easy to overcomplicate homebrewing with technology. In the case of aeration I think keeping good records on the duration of aeration, the performance of your yeast, and the aroma profile of the finished beer is really the best route to take.

Mr. Wizard

My brother has a great deal of hops growing in his back yard. I have several questions regarding how to brew with these fresh hops. First, how and when should they be harvested, and what is the best way to store them? Second, without knowing the species and alpha acid of the hops, how can you estimate the amount to use to reach a certain level of bitterness and aroma?

Tom Arena
Champaign, Ill.

Brewing with homegrown hops can be a lot of fun! Not only are you brewing your own beer but you are producing on of the ingredients. Hops are usually harvested in late August through September but, like all agricultural crops, the growing season and the growing region greatly influence the harvest date. Because hops are not commercially grown in Illinois, you can't follow the commercial hop growers' harvest dates. Commercial growers track the alpha-acid content of hops and the appearance of the cone as indicators of ripeness. Home hop growers can't track the alpha-acid content, but they can visually assess the ripeness of the hop by noting when the cone begins to open up and dry. Try to pick your hops before they begin to turn brown.

The easiest way to pick your hops is to cut the vine down from the trellis. Carefully pick the cones from the vine, and avoid picking hops with excessive browning or obvious signs of insect damage. Also avoid picking leaves and stems from the vine.

Following harvest you have two options. The most conventional thing to do is to dry the hops, pack them into the most compact form you can, and store them cold until needed for brewing. In commercial hop operations large burlap bales containing a

couple hundred pounds of hops are used to store cone hops. At home, Zip-Lock bags are more appropriate because you won't have too many hops to store unless you have several vines. Hops can be dried easily by spreading them on a pan and putting them in an oven set on warm (about 140° F) for about a day.

The other option for homegrown hops is to use them "wet" (not kilned) in a special brew. Several microbreweries make beers with fresh hops during the hop harvest season. The wet hops are added late in the boil for aroma, and the hop character found in these beers is completely different than the aroma obtained from kilned hops. Personally, I really like these beers and have been successful using hops fresh from the field as an aroma hop. Another aspect of these beers that makes them special is that they can be brewed only by those with access to fresh hops. And I do mean fresh, since wet hops only keep for a few days before going bad.

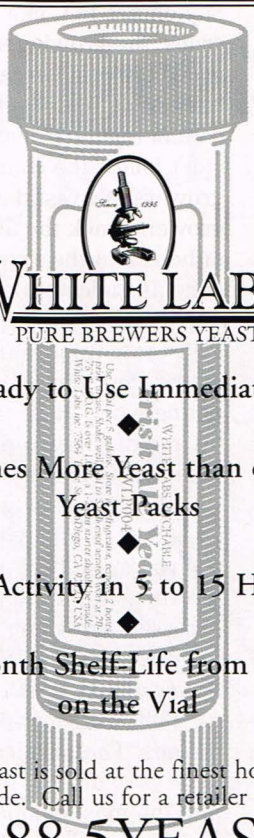
Using homegrown hops is much less scientific than knowing the alpha-acid content of the hop and calculating how much to add. For this reason I like to use homegrown hops for aroma purposes and not bittering. Although you can roughly estimate the alpha-acid range for a known hop variety, you will not be able to get very close to your target bitterness without more information, because ranges can span more than 4 percent alpha. If you have a huge crop, you can fine-tune your recipes over time by good old trial-and-error methods.

Using hops for aroma is a bit easier because you can smell your homegrown hops and gauge the intensity and quality of the aroma. If you really want to feature the hop, going big is usually the idea. For a five-gallon batch, two to three ounces of dried hops added late in the boil or in the secondary will produce a noticeable hoppiness. If you are using wet hops, use five ounces or more in a five-gallon batch, since the hops contain about 80 percent moisture.

Mr. Wizard

Because of space and time constraints, I have limited my brewing to extract recipes so far. However, I am beginning to develop some of my own recipes and have had some great brews! The only problem that still consistently plagues me is chill haze.

I use a vigorous boil, add Irish moss for the last 15 minutes, and also use gelatin finings when I rack to secondary. By the time I bottle, my beer is generally crystal clear. It will cloud briefly in the bottle while conditioning, but within two to three weeks it is again crystal clear. When I refrigerate prior to serving, though, it develops a terrible chill haze after about 24 hours. If I leave it in the refrigerator long



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enough (one to two weeks), the haze drops out. This presents a problem when I want to take a cellar-temperature six-pack to a social gathering to show off my new brew. It looks great when I get there, but after a few moments on ice the haze appears.

Brian C. Werneke
Mauldin, S.C.

Your problem is classic chill haze. Your beer looks great warm but the minute you chill it down, out comes the haze. A vigorous boil coupled with Irish moss and the use of gelatin or isinglass finings are all good starts to coping with your haze woes.

If you really want to produce haze-free homebrew, add one more step to your process — cold storage. As you have observed, chill haze settles to the bottom of beer after a period of cold storage. This is the final step before bottling, and it occurs after your normal primary and secondary fermentation stages. Once the beer is mature and ready for bottling, you need to move it to a cold place for at least one week. The conventional practice is to cold condition the beer at a colder temperature than the normal storage temperature of beer. If you can chill your beer down to about 32° F, you will have the best results. During cold aging, chill haze will form and drop to the bottom along with most of your yeast.

When it's time to bottle your haze-free beer, you might need to add a small amount of yeast for carbonation, depending on the flocculation properties (ability to clump and drop out of solution) of the strain used for primary fermentation. Assuming that most of the yeast drops from the beer while cold, add about one ounce of liquid yeast slurry or about a teaspoon of dry yeast to your bottling bucket. The idea here is to have enough yeast to carbonate the beer but not enough to leave a thick sludge at the bottom of the bottle. Since there is very little fermentation required for carbonating the beer, not much yeast is needed. Any good brewing strain will work.

Mr. Wizard

As I understand specific gravity, it compares the density of a liquid to the density of plain water. Any substance dissolved or suspended in water that is heavier than the water will increase its density and hydrometer reading. As sugars that are heavier than water are converted to alcohol, which is lighter than water, the density of the wort decreases and the amount of change indicates the amount of alcohol produced.

My question concerns the effect of yeast on density. Yeast is certainly heavier than water and should increase the specific gravity. But what happens when the yeast flocculates and settles out? It seems as though it would indicate a decrease in the gravity of the wort and a false reading

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of alcohol production, as well as possibly affecting the targeted final gravity.

If this does happen, how do we allow for the effect and use a hydrometer to get an accurate indication of the alcohol produced?

Joe Lockhart
Parkersburg, W.V.

Your understanding of specific gravity is correct. Anything dissolved in water will affect its specific gravity when measured by a hydrometer. If a substance is not actually dissolved in water but is just floating around, the substance will not affect specific gravity as measured by the hydrometer.

When the gravity of beer or wort is measured with a hydrometer, yeast has no effect on the reading, because the yeast cells are just floating around in the liquid. However, your question brings up a good point about alcohol measurements. When the gravity of wort is measured, all of the dissolved compounds increase its specific gravity. As it so happens, most of these compounds are sugars and a 12° Plato (1.048) wort contains about 12 percent sugar.

When some of these sugars convert to alcohol, the gravity reading is affected by two types of solutes (compounds dissolved in a liquid): those that increase the specific gravity (sugars) and those that decrease the specific gravity (alcohols). Brewers refer to the specific gravity (expressed in degrees Plato) as "apparent extract" because alcohol interferes with the measurement. For example a beer with a hydrometer reading of 2.5° Plato (1.010) is said to have an apparent extract of 2.5° Plato but in reality the value is higher, perhaps 3.5° Plato (1.014). In brewing laboratories "real extract" is determined by distilling away the alcohol (which is collected and used to calculate the alcohol content of the beer) and measuring the specific gravity without this compound.

To make a long story short, using a specially scaled homebrew hydrometer (with alcohol and specific gravity scales) to calculate alcohol content simply provides an estimate of alcoholic strength. Without knowing the real extract the true alcohol content can't be determined, regardless of the presence of yeast. ■

Mr. Wizard's Address

Do you have a question for Mr. Wizard? Write to him c/o *Brew Your Own*, 216 F St., #160, Davis, CA 95616. Or send e-mail to wiz@byo.com.

Mr. Wizard, BYO's resident expert, is a leading authority in homebrewing whose identity, like the identity of all superheroes, must be kept confidential.

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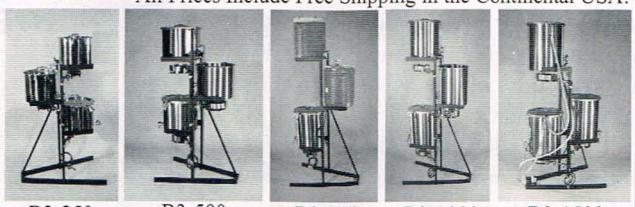
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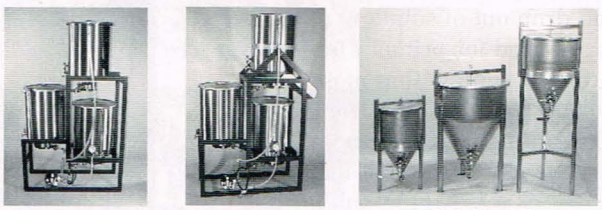
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Starting the New Year Right

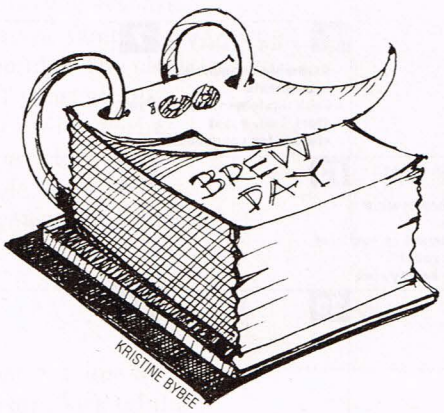
by Mikoli Weaver

Welcome to 2000! Let's start the new year with a new brewing schedule (see page 15). This month we begin the brewing calendar with a refreshing rye ale (*roggenbier*) and continue with our annual barleywine. Hopefully you didn't drink all of the 1999 batch on New Year's Eve. If you have some '99 barleywine left, you can compare it annually with successive batches of barleywine. Just think — a few years from now you will be able to have an incredible tasting of all your vintages.

Roggenbier

Roggenbier is a German ale that is unfiltered, bottle-conditioned, and typically made of 10 percent to 20 percent rye. It is a pale to deep golden beer that's high in carbonation. Because of its unfiltered and bottle-conditioned state, it is slightly cloudy like a hefeweizen. Rye beers are often compared to wheat beers, and in many respects the two styles are similar. The flavor of rye, though, is much different than wheat. Where wheat is earthy and bready, rye lends a slightly spicy and dry aspect to the finish of a beer.

With that said, it is time to confuse you some more. Some rye beers are also wheat beers, brewed with up to 50 percent wheat in the grist bill. And since there is really no official category for rye beers, just about anything goes. Our recipe uses only rye and pale Munich malt with a touch of crystal malt. It's a simple formula that shows off the flavor of the rye and produces a crisp, pale ale in the German tradition.



Commercial Examples

U.S. microbreweries have been producing rye beers over the last decade. Some of the more notable examples are from Thomas Kemper, Redhook, Arbor Brewing (Mich.), and BJ's Brewery (Calif.).

For authentic Bavarian rye ales, look for roggenbier from German and Austrian breweries such as Schlagl Gold Roggen, Erdinger Roggen, and Thurn and Taxis Roggen, which uses 60 percent rye and a lauter system to tackle the high percent of rye. The Thurn and Taxis rye ale has a deep gold, slightly reddish hue from the caramel malt and rye with a spicy finish.

The T and T also is highly carbonated; our recipe calls for two-thirds cup corn sugar for priming at a final gravity of 1.012 (3° Plato). This should be enough corn sugar, but if you have carbonation troubles or if the gravity falls below this before bottling, then increase the corn sugar to three-fourths cup.

Brewing With Rye

Rye grain is a unique brewing source. Unlike barley, it has no husk. Rye is high in protein and

Brewing Schedule Notes

Jan. 3, Monday

The old ale brewed in December is ready to sample. If it is not finished, store one more week.

Jan. 6, Thursday
Prep day for roggenbier

Assemble all ingredients for roggenbier, sanitize equipment, and start yeast culture for brewing on Saturday.

Jan. 8, Saturday
Brew day

Brew the roggenbier, record original gravity, and begin fermentation. Ferment in primary at 69° F for seven days.

Jan. 12, Wednesday
Prep day for barleywine

Assemble all ingredients for the barleywine, sanitize your equipment, and start a yeast culture to prepare for brewing on Saturday.

Jan. 15, Saturday
Brew day/Transfer

Brew barleywine, record original gravity, and begin fermentation at 69° F for 14 days.

Rack roggenbier to secondary and record gravity. Continue for seven days more at 69° F.

Jan. 22, Saturday
Bottle roggenbier

The roggenbier should be done fermenting and ready to bottle. Age at least seven more days before drinking (January 29).

Jan. 29, Saturday
Transfer barleywine

Transfer the barleywine to secondary fermenter, record gravity, and continue for two months or until the gravity has fallen to 1.020 (5° Plato). Check on it around March 26.

February brews: Cream ale and Dublin stout.

diastatic power (it is rich in amylase enzymes), and it's rich in very complex starch. As with most adjuncts, the most convenient form of rye is flaked and pre-gelatinized. It's also available in malt, roasted malt, rolled, flaked, and whole-grain form. Rye is very high in beta glucans, so the raw form is prone to creating a very gelatinous mash and in higher percentages (more than 20 percent) can readily create stuck mashes. Rice hulls added to the lauter tun help aid run-off.

The malted and whole kernel forms of rye can be crushed and mashed with malted barley or wheat, but due to the high concentration of large starch chains, use a step mash or decoction program to help break down the beta glucans into smaller segments.

Rye also lends color to beer in the form of reddish pigments, particularly when it is used in high concentrations. Our beer is not highly laden with rye, so a bit of crystal malt is added for background flavor, body, richness, and color.

Some brewers use 1 percent to 2 percent dark-roasted rye in the

January 2000

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3 TASTING • Old ale brewed in December is ready to drink	4	5	6 PREP DAY • Assemble roggenbier ingredients • Soak equipment in sanitizer • Start 1-pt. yeast starter for roggenbier	7	8 BREW DAY • Brew roggenbier • Primary fermentation starts • Check original gravity and record
9	10	11	12 PREP DAY • Assemble barleywine ingredients • Soak equipment in sanitizer • Start 2-pt. yeast starter for barleywine	13	14	15 BREW DAY • Brew barleywine • Check gravity and record • Transfer roggenbier • Check and record gravity • Check for off-flavors
16	17	18	19	20	21	22 BOTTLE • Sanitize bottles, bottling vessel for roggenbier • Record final gravity • Rack, prime, and bottle • Age at least one week
23 30	24 31	25	26	27	28	29 TRANSFER • Transfer barleywine • Check and record gravity • Check for off-flavors • Ferment until March 26 or gravity reaches 1.020

grain bill. This contributes color as well as a more complete rye profile.

If you're familiar with brewing wheat beers, you probably know that German weizens are at least 40 percent wheat. But rye beers are much more subtle. The lower proportion of rye demands a bit more care than the wheat counterparts. The key is to not overpower the flavor of the rye.

Balance in other grains in the grist bill, yeast selection, and hopping schedule as well as type of hops are all important. For this style, though, more mild wheat beer strains and noble-type hops have been emphasized as well as a fairly generic grain bill.

Hops and Yeast

For this style, the most appropriate hops are of noble lineage. Our recipe uses all Hallertauer hops, but Saaz, Tettnanger, and Hersbrucker hops also work well. When formulating a rye beer, think of the hopping rates like you would for a weizenbier: low bitterness and low hop presence.

The yeast used to make roggenbier is most often a weizen-type strain. But refrain from using the more potently flavored strains; they tend to overpower the delicate taste of the rye. Rye does not stand out nearly as much in roggenbiers as wheat does in weizenbiers. Our roggenbier calls for either yeast cultured from a bottle of Thurn and Taxis Roggen or a slurry of Wyeast 3333 (German wheat) or White Labs WLP300 (Hefeweizen ale). The clove flavor of the T and T yeast strain stands out but is not overpowering. If you wish to make a "cleaner," non-clove-flavored ale, try a standard American ale yeast strain such as Wyeast 1056 (American ale) or White Labs WLP001 (California ale).

Barleywine 2000

January is the perfect time to brew a new barleywine. Kick off the year with something worth saving all year long. In 1999 we brewed a pale, dark golden, slightly amber barleywine. This year's recipe is a dark, more traditional barleywine.

Barleywine is a fairly recent term with respect to brewing history, although the style has existed for hundreds of years. The style has evolved from earlier versions known as "malt liquors, first sort" and bears a relation to old ales, which are also aged.

The barleywines of the early and middle 19th century were dark, strong ales with a high degree of residual sugars. They often were mixed with weaker, young beers. It wasn't until the 1950s that barleywine was brewed as a pale-colored beer by Tennant's. This beer became the famed Whitbread gold label and, after a great deal of U.K. sales success, gave rise to brews such as Fuller's Golden Pride, Bass #1, and many of the American craft-brewed barleywines.

2000 Style Calendar

January **Barleywine, Roggenbier**

Just like last year's schedule, a barleywine to age until the new-year celebration and a flavorful German rye beer to balance out the dark season a bit.

February **Cream Ale, Dublin Stout**

Black and tan brewing month. A light, slightly sweet cream ale and a traditional Irish stout for St. Patrick's Day.

March **Belgian Dubbel, Pilsner**

Belgian Brewing 101 with a Chimay red cap clone followed by Lager Brewing 101 with a traditional Czech pilsner.

April **Maibock, Scotch Strong Ale**

Maibock, of course, for celebrating next month and a bold, peated Scotch ale high in gravity and flavor.

May **IPA, Mild Ale**

An old standby, a highly hopped American-style IPA and a new English beer to the lineup, a mild brown ale.

June **Golden Ale, Oktoberfest**

A "lawnmower" beer for the start of summer. And a tasty Oktoberfest. It will be aged until early September.

September **Dortmunder, Oatmeal Stout**

Dort is a light European export lager. And a new stout to this year's schedule — an English oatmeal.

October **ESB, Weizenbock**

A deep amber, caramel-laden ESB and a gigantic German winter seasonal weizenbock to age until late December to early January.

November **Bavarian Dunkel, Belgian Tripel**

This month has two warming beers to fight the cold winter nights. A dark, chocolate dunkel and a high-gravity Belgian tripel.

December **Christmas Ale, Spiced Ale**

Our annual Christmas ale makes another appearance and a lightly spiced dark ale with a distinctly festive edge to end the year.

Barleywines by design are in the 1.084 to 1.120 (21° to 30° Plato) range for original gravity, with a final gravity of 1.020 to 1.032 (5° to 8° Plato). Bitterness should be 50 to 100 IBUs, color 14° to 22° SRM, and alcohol by volume from 8 percent to 13 percent.

Ideally, fermentation temperatures should be reduced to 63° to 65° F to lower the levels of fusel alcohols, which can have a fruity, wine-like flavor and are a prime cause of hangovers.

Pitching rates and aeration levels should be increased to complete attenuation and reduce higher ester levels.

Keep crystal malt less than 15 percent.

Peated Malt and Mashing

Peated malt, included in the grain bill as an option, is sometimes used in barleywine. For example Pike Auld Baudy contains peated malt. But in general the use of peated malt is considered an exception to the style rules. If you choose to use peated malt, keep the percentages low (5 percent of the grain bill or less).

The procedure for brewing our barleywine will be a bit different than normal, starting with an extended mash. You will be mashing for 90 minutes to ensure good conversion and to extract all the flavor and color from the grain. The boil is longer than normal as well, with an extra 30 minutes to concentrate the wort (which is 0.25 to 0.5 gallons more than normal).

Commercial Comparisons

From the United Kingdom, the birthplace of barleywine, look for Young's Old Nick, the aforementioned Fuller's and Whitbread, J.W. Lees Harvest Ale, and King and Barnes Barleywine (the current vintage is called Millennium Ale).

For some excellent American interpretations of barleywine, try Anchor Old Foghorn, Rogue Old Crustacean, Shenandoah Big Devils Barleywine, Moylan's Old Blarney, Wynkoop Roundhouse Barleywine, and the aptly named "What the Gentleman on the Floor is Having" barleywine from McGuire's brewpubs in Florida. Also try Bigfoot Ale from Sierra Nevada and Old Horizontal Barleywine from Victory Brewing in Pennsylvania.

Roggenbier
(5 gallons)

Ingredients:

- 7.5 lbs. pale Munich malt
- 1.5 lbs. flaked rye (pregelatinized) or pale-malted rye
- 0.5 lb. crystal malt, 40° Lovibond
- 0.5 lb. carapils or dextrin-type malt
- 1.25 oz. Hallertauer hops (3.5% alpha acid, 4.4 AAUs): 0.75 oz. (2.6 AAUs) for 90 min., 0.25 oz. (0.9 AAUs) for 30 min., 0.25 oz. (0.9 AAUs) at end of boil
- 1 pt. starter of Thurn and Taxis yeast slurry or Wyeast 3333 (German wheat)
- 2/3 cup corn sugar for priming

Step by Step:

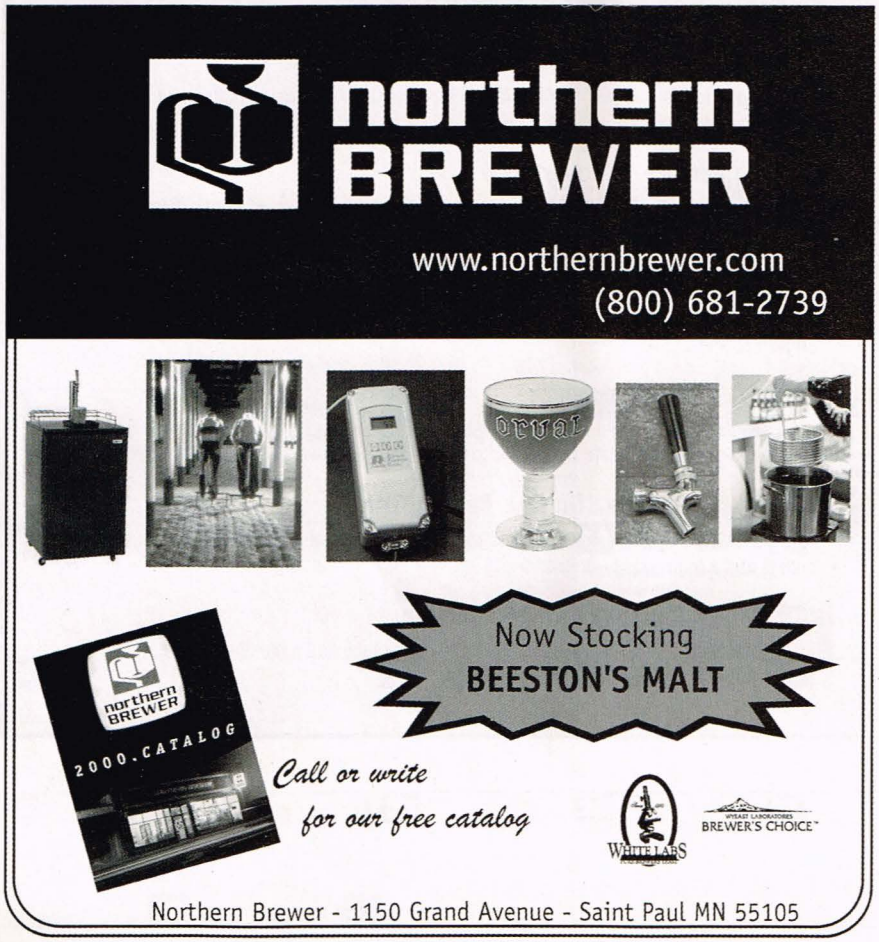
Mash grain in 3 gal. of 150° F water for 60 min. Sparge with enough 168° to 170° F water to collect 5.75 gal. of wort.

Total boil time is 90 min. At beginning of boil, add 0.75 oz. Hallertauer hops and boil 60 min. Add 0.25 oz. Hallertauers and boil 30 min. more. At end of boil, add the remaining Hallertauer hops. Whirlpool and cool to 69° F to pitch starter. Oxygenate/aerate well.

Ferment at 69° F for seven days, then rack to secondary. Continue fermentation for seven days more or until fermentation is done or gravity is about 1.012 (3° Plato). Prime and bottle. Allow to carbonate and age at least seven more days before drinking.

Extract Option:

Substitute 6 lbs. Munich malt extract syrup for the Munich malt. Increase the second Hallertauer hops addition to 0.5 oz. (1.8 AAUs).



CIRCLE 32 ON READER SERVICE CARD

Start with 5 gal. of 150° F water. Steep crushed grain for 30 min. Sparge grain with enough 170° F water to make 5.5 gal. Heat to boiling and add extract syrup.

Total boil will be 60 min. At beginning of boil, add 0.75 oz. Hallertauer hops and boil for 30 min. Add 0.5 oz. Hallertauers and boil for 30 min. more. Add remaining Hallertauer hops and whirlpool.

Follow pitching and fermentation schedule for all-grain version.

OG = 1.056 (14° Plato)
Bitterness = 16 IBUs
Color = 8.5° SRM
5.5% ABV

Barleywine 2000
(5 gallons)

Ingredients:

- 8 lbs. Maris Otter malt
- 5 lbs. ESB malt
- 1 lb. carapils or dextrin-type malt
- 3 lbs. crystal malt, 40° Lovibond
- 1 lb. chocolate malt
- Up to 0.5 lb. lightly peated malt (optional)
- 3.5 oz. Fuggle hops (4.2% alpha acid, 14.7 AAUs) for 90 min.
- 2.5 oz. Kent Golding hops (5.4% alpha acid, 13.5 AAUs): 1.25 oz. (6.8 AAUs) for 15 min., 1.25 oz. (6.8 AAUs) at end of boil
- 2 pt. starter of Wyeast 1318 (London ale III)

Step by Step:

Mash grain in 5.25 gal. of 150° F water for 90 min. Sparge with 168° to 170° F water to collect 6 gal. of wort.

Total boil time is 120 min. Boil 30 min., add Fuggles, and boil 75 min. more. Add 1.25 oz. Kent Golding hops and boil 15 min. more. At end of boil, add remaining Kent Goldings. Whirlpool, cool to 69° F, pitch starter. Aerate/oxygenate well.

Ferment at 69° F for 14 days, then rack to secondary. Continue fermentation for two months or until fermentation is done or gravity is about 1.020 (5° Plato). Bottle and age until New Year's Eve.

Note: If your mash tun is too small, decrease the Maris Otter malt to 5 lbs. and the ESB malt to 3 lbs. and then add 5 lbs. pale malt syrup to the boil.

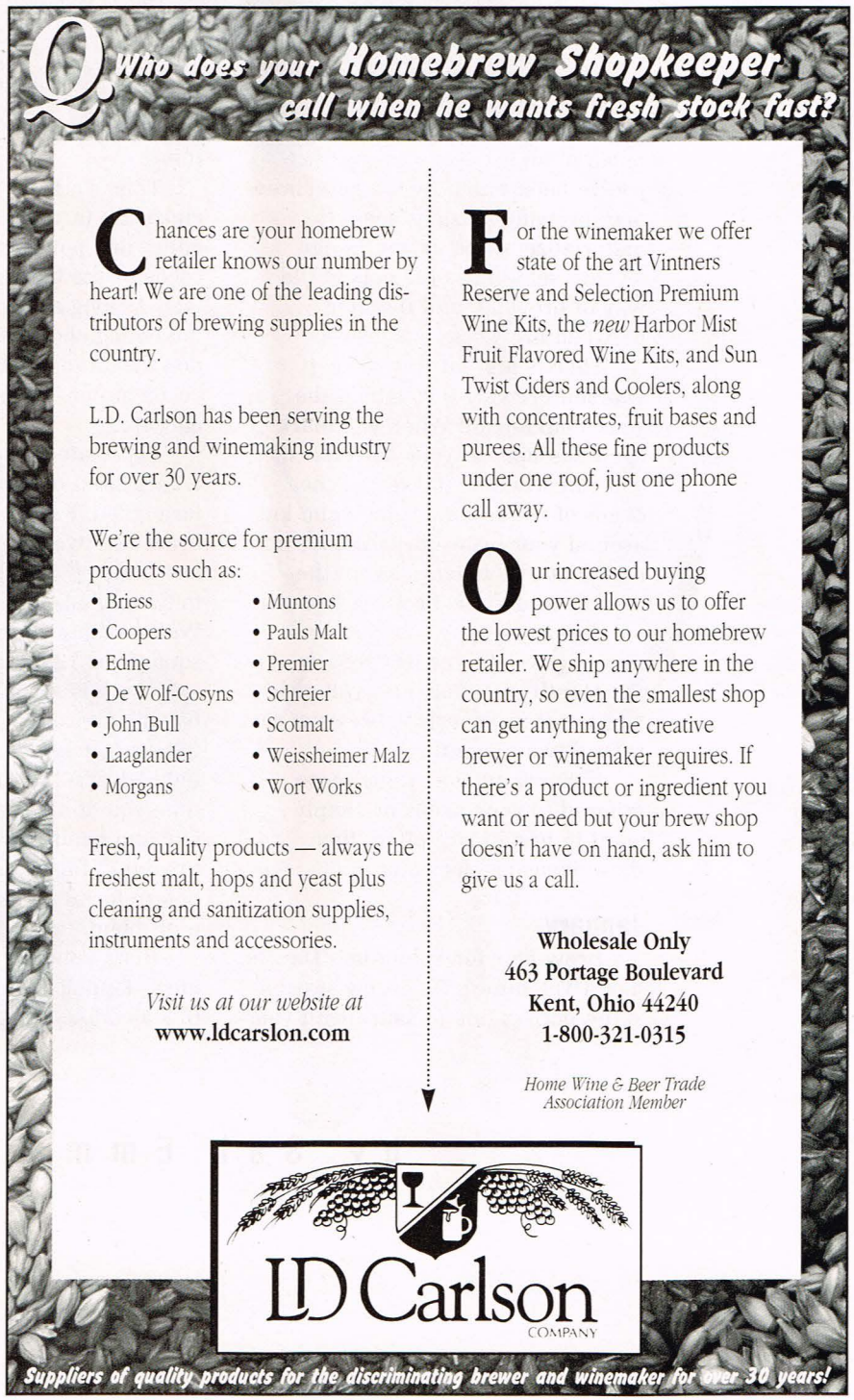
Extract Option:

Replace pale malts with 12 lbs. pale malt extract. Start with 5 gal. of 150° F water, steep grains for 30 min. Sparge with enough 168° to 170° F water to collect 5.75 gal.

Total boil time is 90 min. At beginning of boil, add Fuggles and boil 75 min. Add 1.25 oz. Kent Golding hops and boil 15 min. more. At end of boil, add remaining Kent Goldings and whirlpool.

Follow pitching and fermentation schedule for all-grain version.

OG = 1.108 to 1.112 (27° to 28° Plato)
Bitterness = 65 IBUs
Color = 20° SRM
11.2% ABV ■



A Homebrew for all Seasons



Most homebrewers don't need much of an excuse to brew. Once you've been bitten by the homebrew bug, brewing sessions seem to materialize at the drop of a hat.

But sometimes life gets in the way of brewing, and the time between brew sessions grows.

There's a great way to keep yourself brewing throughout the year. Plan ahead! When you mark brew sessions on your calendar first, you can schedule the rest of the chaos of work, play, school, and kids around your brew days. And it's an excellent way to learn about the world's traditional brewing seasons.

An easy way to schedule your brewing is to follow BYO's Style of the Month calendar. This will give you a variety of terrific brews at the rate of two a month.

If you want something more tailored to your needs or simply want to brew more often, then these ideas are for you.

January

Brew now for Valentine's Day. In fact a Valentine's Day brew session is the perfect one to share with your significant other. Make it a couple thing!

This is a good time to get some chocolate in your beer. You can use either dry, powdered unsweetened cocoa or the bars of baker's chocolate. As long as it's baking chocolate, not eating chocolate, you're safe. You don't want to add the sugar and cocoa butter that is present in eating chocolate.

Chocolate is especially good in a dark stout or porter that is top-fermented. For a mildly chocolate brew, use two squares of baker's chocolate or six tablespoons of cocoa in five gallons of beer during the boil. With medium chocolate, use four squares or 12 tablespoons.

There is a bit of cocoa butter in baker's chocolate, which will rise to the surface of your hot wort in bubbles of oil. Don't panic the first time you do this. Your beer won't be oily and head-free. As long as this tiny bit of fat goes into the beer before fermentation, it won't cause a problem.

Here's another Valentine's Day idea: doppelbock or Belgian dubbel. (It's a couple thing, remember?)

by Sal Emma



JODI WESSEL

February

Brew now for St. Paddy's Day. A nice red Irish ale does the trick, or a traditional dry stout.

And if you really want to go nuts, make a pale amber or light lager and dye it green just before bottling or kegging. A few teaspoons of green food coloring will tinge a whole batch in short order. Or you can do it a bottle at a time, adding the food coloring by the drop.

If you decide your beer should be wearin' the green on St. Paddy's Day, be sure to start with as pale a beer as you can make or the effect will be less than attractive.

Beyond St. Pat's, spring is around the corner and worthy of a brew of celebration. A strong bock is appropriate — and traditional — for the coming Lenten season. In days of old, Belgians and Northern Germans were sure to have plenty of liquid bread around to sustain them during the fasting season.

Modern bock beer is a high-gravity, bottom-fermented lager. However, it's perfectly okay for homebrewers to make bock with ale yeast at room temperature. Just choose a European or German ale yeast, which will flavor the beer appropriately. Bock should weigh in between 1.065 and 1.075 specific gravity and is richly colored and flavored with toasted Munich malts.

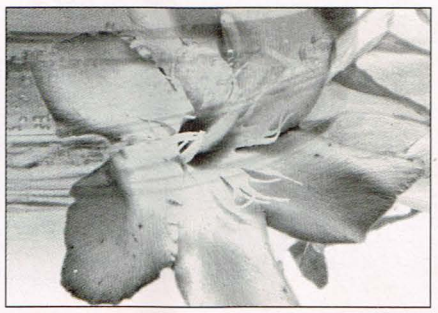
March

It's märzen time! Before refrigeration, märzen — or March — beer was the last beer to be made in Germany before the coming summer months, when it was too hot to brew. Märzen is a high-gravity and aggressively hopped beer that was designed to last throughout the entire summer and into early fall, when brewing could resume. When Oktoberfest was made a Munich holiday in 1810, märzen was the beer of choice for the fall festival.

Today's märzen is probably not as bitter as its pre-refrigeration ancestors. Its dominant flavor note is malt, with some sweetness. Shoot for a gravity of 1.050 to 1.065. Like bock, commercial märzen is bottom-fermented, but it can be made successfully at home with German-style ale yeast.

April

Another Bock for late spring: maibock or "May bock." Each May Day in Munich, the mayor and prime minister of Bavaria tap the



first casks of maibock to celebrate the season of renewal.

Maibock also is described as helles bock or "pale bock." Not as dark as its Lenten doppel cousins, maibock is characterized by a full golden amber color; deep, nutty maltiness; and floral, fruity hop flavor. German maibock is bottom-fermented and weighs in near 1.065.

May

June begins lawnmower season. Thus, thou shalt brew lawnmower beer in May! Here's another advantage of being a homebrewer. Light, refreshing beer does not have to taste like dishwater. When you use barley malt (no rice), fresh hops, and flavorful yeast, you can make an excellent summer thirst quencher.

Keep the gravity below 1.045, use light extract or very pale malt, low-alpha hops, and a clean yeast such as Chico ale yeast (Wyeast 1056, American ale; or White Labs WLP001, California ale), and you'll be enjoying those babies ice cold come summer.

April and May are also good times to whip up a batch of pilsner, another beer that tastes especially good in the summer. The best homemade pilsners are all-grain. It's difficult to get the balance of intense malty flavor and very pale color with extract. And to do it right, you need a way to control fermentation temperature. If you can keep your beer colder than 50° F, you can use a true pilsner lager yeast and give it plenty of time to clear and condition before serving. Good lager is never rushed!

June and July

Another excellent beer for summer is wheat beer. Both traditional German weizen and American wheat beers are great when the weather's hot. They are light, refreshing, quenching, and very tasty cold.

German wheat beer, also called weiss or "white" because of its cloudy appearance, is made with both lightly kilned barley malt and wheat, sometimes malted, sometimes not. The wheat is what gives the beer its light nature and white color.

German wheat beer is distinctive in flavor because of the type of yeast that is used to ferment it. German wheat yeast throws all kinds of interesting flavors in the finished beer, giving it a complex, fruity, phenolic, spicy flavor and aroma. Band-aids, cloves, and bananas are words that describe weizen aroma. It has much of the complex, herbal spiciness of root beer without the sweetness.

American wheat beer has a similar grain bill but is made with regular yeast. No cloves or bananas, but a wonderfully light, refreshing beer that goes well with a twist of lemon or lime.

Wheat beer is best made all-grain, but extract brewers can take advantage of today's high-quality wheat extracts to make this style. Original gravity should be in the 1.045 to 1.055 range. Half barley, half wheat will give you a beer that's true to style in either the German or American style.

Summer is also a good time to get some fruit into your beer. Cherries, strawberries, raspberries, and peaches are all good additions to wheat beer and Belgian styles. When the fruit is added before fermentation, the yeast consume most of the sugar and the resulting beer is full flavored but not sweet.

Without boiling, cook the fruit to a puree in a separate pot. Add this fruit-mash to your brew kettle during the last five to 10 minutes of boil.

August

Because August is such a hot month, choosing the right brew can make all the difference. German wheat is a good choice, because higher-than-normal temperatures will not bother the special strain of yeast. The same goes for complex Belgian-style strong ales.

The phenolic, clovey, unusual flavors associated with higher-than-normal fermentation temperatures are expected in German wheat and many Belgian ales.

Belgian abbey ale is remarkably simple to make. Beyond using lots of malt and a few adjuncts like candi sugar, the yeast is the secret ingredient. Use a quality liquid yeast designed for Belgian ale. You'll have your own batch of tasty monastery brew in no time.

A regular Belgian ale weighs in at 1.045 and 1.055. Dubbel runs 1.050 to 1.070, tripel 1.060 to 1.090. Use a good pint of starter for five gallons and aerate well to ensure the yeast get a good start toward fermenting all that malt.

September

The fresh pumpkins might not be quite ready yet, but the canned stuff is available at the supermarket. That's good, because the canned stuff is better for beer.

Because of the heat process that is used to treat pumpkin in the can, it's mostly converted to sugar. You can toss it right in your brew to make an instant pumpkin beer.

Pumpkin is not only appropriate for the season, it's traditional. After the American Revolution, our malt supplier, England, was not doing much business with its renegade former colony. Malt was hard to come by and our founding fathers made beer from whatever they could get their hands on, including bran, molasses, Jerusalem artichokes, and pumpkins. (Well, founding mothers, really. Women did most of the brewing back then.)

Beer made exclusively from pumpkin was probably only fit for drinking during malt shortages. But as an adjunct, it does your beer good. It brings in an additional sugar source that boosts the strength of the final beer. And pumpkin has a round, fresh, mild flavor that complements malt very well. Some folks add pumpkin-pie spices — cinnamon, cloves, allspice, ginger — but you also can leave out the spices for a nice, rich, malty ale.

Start with any generic, lightly hopped amber recipe. Add a can or two of pumpkin to the brew, in the mash or in the boil. Finish the beer your usual way. Makes a great Halloween-party libation!

September is also the month to brew a batch of märzen (a.k.a. Oktoberfest) if you plan to do some Munich-style celebrating for the harvest.

October

For Thanksgiving make a style that fits your crowd. A plain amber ale to accompany the required TV football session, pumpkin ale, or try cranberry ale.

Cranberries are cheap and plentiful in most supermarkets this time of year. Buy the fresh ones, bagged in the produce section. Cook them down in a separate pot and add the resulting mash to your brewkettle during the last five to 10 minutes. Cranberries are crisp and tart. They are not very sweet but leave a really beautiful pink color and a fruity freshness that makes a great conversation starter.

As with summer fruit beers, it's best to start with a beer that is amber or copper to appreciate the full effect of the cranberry's natural coloring power.

November

The queen of the holiday season is just around the corner. Anything goes when brewing a batch of holiday beer, but there are a few traditions you can follow.

Christmas beer is generally dark, malty, and flavored with "mulling" spices: cinnamon, cloves, ginger, nutmeg, allspice. The same spices that end up in mulled cider, wine, or hot punch.

Any dark, rich, malty beer is a welcome treat for the holidays. Or you can go lighter, to balance the heavy foods and rich desserts that seem to be omnipresent during the season.

December

The spring thaw is many weeks away. Now is the time for a winter warmer. Winter beers come in many flavors and colors. But they share one characteristic: strength. The idea behind the winter warmer is alcoholic strength that will warm the fingers, toes, and soul on cold, dark winter nights. A massive Belgian abbey style fits the bill. Or try an English barleywine.

Barleywine is so named because its strength is closer to that of wine than regular beer, anywhere from 8 percent to 12 percent alcohol by volume. Barleywine gravity is a whopping 1.090 to 1.120!

Alcohol warmth is an important flavor component. Because this beer is so big, you need a yeast that can handle it without shutting down from alcohol poisoning. One trick is to pitch a good, frothy starter of ale yeast, let it work until it's worn out, then finish the beer with a neutral-tasting wine yeast, just to boost the alcohol level.

Barleywine also is aggressively hopped to balance the intense sweetness. And it can be either carbonated or still. It's your choice.

Other beers that make good winter warmers are imperial stout and Scottish ale.

Like IPA for India, imperial stout was made big, strong, and hoppy to survive the trip from England to Russia, where it was relished by the Czar and nobles. Imperial stout is like traditional dry stout, only bigger, maltier, and more hoppy. Imperial stout starts at 1.075 to 1.090.

Strong Scotch ale is another monster beer that makes a great mid-winter treat. Be sure to choose a yeast that can manage the work load, and use a generous starter.

What are you waiting for? Mark your calendar and get brewing! These are just ideas for a brew calendar. Customize your own to fit your tastes, friends, family, and celebrations.

Your First

Making great beer at home takes very little cash, some time, and not much space. You will use your kitchen for several hours; you will also have some cleanup to do. There will be a fascinating week or so of fermentation, as the yeast goes through its life cycle; then another week or so of bottle-conditioning time. You will then have the opportunity to serve the Finest Beer in the World to your friends and family.

By following the steps in this article, you'll make a batch of all-malt ale and bottle it.

I Already Know What Beer Is!

Start by defining beer as a fermented, alcohol-containing beverage made from just four ingredients:

Water. Tap water contains different components in different parts of the world, but what comes out of your tap will be fine unless you have extreme mineral or chemical content. Some famous brewing water has very high mineral content.

Malt. Cereal grain (usually barley, but wheat and rye are other cereal grains) that is moistened will germinate and begin to sprout. The starch in the grain — food for the baby plant — becomes "activated" at this time. But if you dry the grain to stop the sprouting, you have made malt. Malt, germinated then dried, is the heart of beer. It provides food for the yeast (maltose, a sugar); it lends body and color to the beer; and it provides the satisfying, nutty, grain flavor in beer.

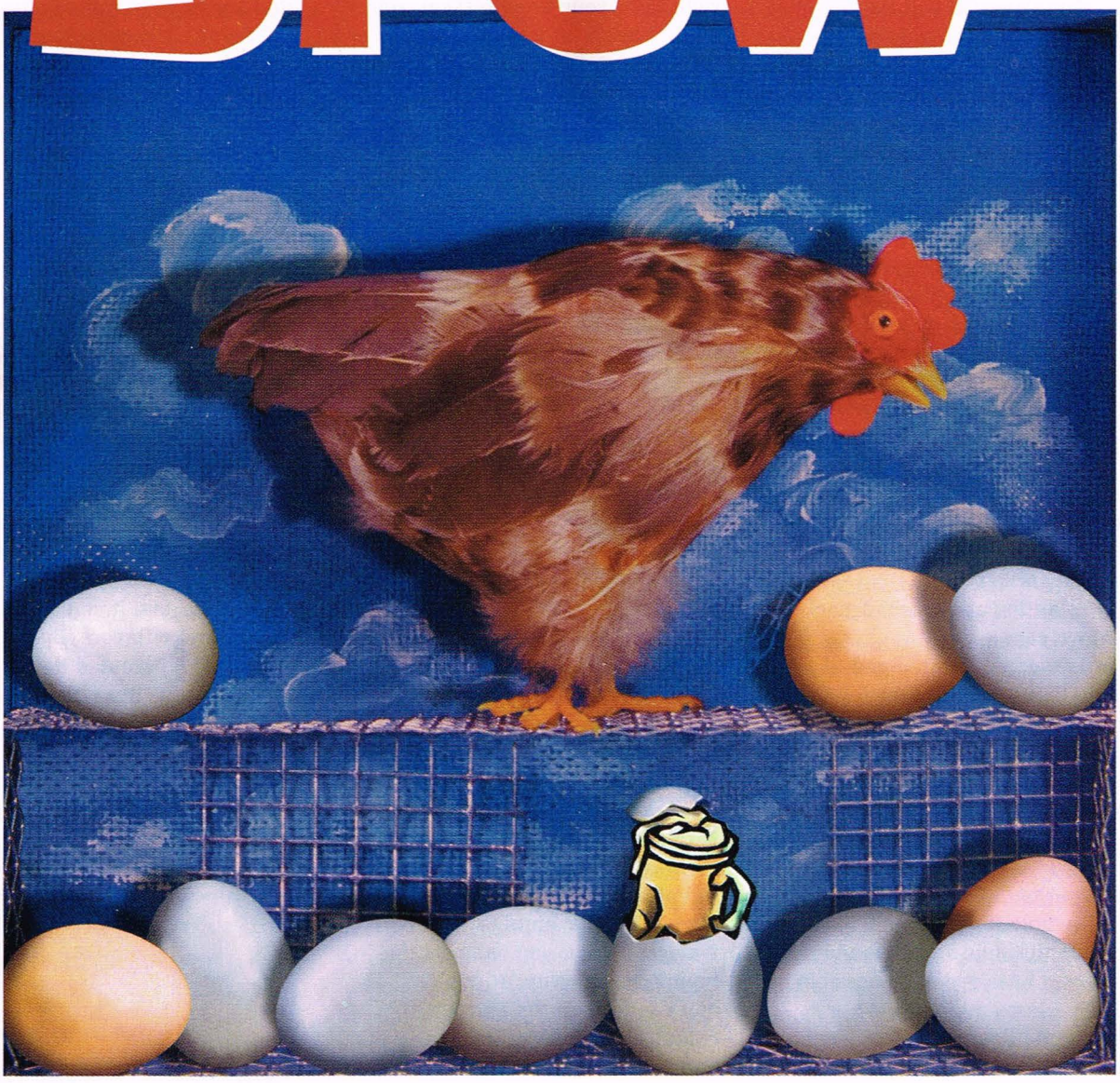
For this first batch of beer, you will avoid using non-malt fermentables such as corn, rice, or sugar and stick with the basics.

Hops. These flowers are the spice of the beer. Pleasant bitter flavors and herbal aromas come from hops. Think of them in beer as the oregano in spaghetti sauce; while the tomato might be the heart of the sauce, it just wouldn't be the same without seasoning. Malt flavors alone in beer would be far less interesting and sometimes even cloying without snappy hops to balance the rich sweetness of malt.

Yeast. The magic ingredient in beer is a single-celled organism (actually many millions of them per batch) that eats sugar, multiplies, and produces alcohol and carbon dioxide as waste products. The most elusive flavors in beer seem to be

by Craig Hartinger

Brew



the ones produced by the yeast during the process of fermentation. Belgian ales and German hefeweizens are notably flavored by their specific varieties of yeast.

Items You Will Need

You will need a few items that you might not already have in your kitchen. You can find these items at your local homebrew shop or in a catalog:

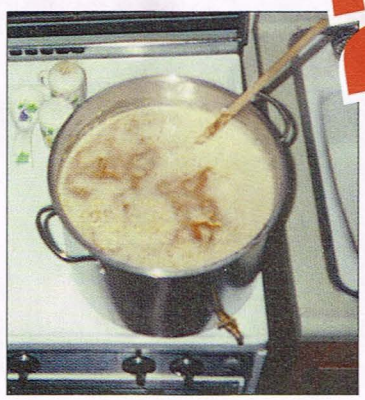
- Stainless steel brewkettle. Anything less than four gallons will be frustrating due to boilovers or scorching. You will want a top for it if possible. This is a good thrift-store item.
- Five-gallon glass carboy and five-gallon (or larger) food-grade plastic bucket, or two plastic buckets. You will use these as a fermenter and bottling vessel. If you choose a carboy, you'll need a #7 drilled rubber stopper; if you go for two buckets, you'll need a lid for one of them with a hole drilled for the airlock.
- An airlock. This allows carbon dioxide produced during fermentation to escape from your fermenter.
- A racking cane (rigid plastic) and 6 feet of vinyl siphon hose that fits over the end of the cane.
- Two cases of clean, non-twist-top beer bottles.
- A bottle capper and a package of crown caps.
- Two cans of unhopped, liquid malt extract (total weight 5.5 to seven pounds); or a five- to seven-pound bulk purchase of malt extract. Choose light, amber, or dark according to your taste.
- Two ounces of hops with alpha-acid levels between 4 percent and 8 percent. Choose pellets or "leaf" (whole flower) hops, but pick one that has a cool-sounding name and is as green as possible. Yellowed hops might be old or losing some flavor.
- A package of ale yeast. Dry yeast, rather than a liquid culture, is fine for this first batch.
- 2/3 cup of dextrose, also known as corn sugar, to use at bottling time.
- Chlorine bleach, for use as a sanitizer.

Around your kitchen you might find a few other items that will make your mission more fun or easier: a measuring cup, a large spoon for stirring, a large funnel (if fermenting in a carboy), and a large strainer (if using leaf hops).

1 Step 1 — Prepare

Your first mission is to choose a day when you have plenty of time. The brew will take more than two hours and probably less than three, but if you have a time commitment right after your brew session, you might have a bit less fun because of time pressure. Also, if you experience a setback or slowdown, you might feel an urge to hurry, which is a bad idea around boiling liquids and for sanitary procedures. Take plenty of time; you're doing this for fun!

Start with a clean kitchen (and be ready to clean it again when you're done) and check over your equipment and instructions one more time.



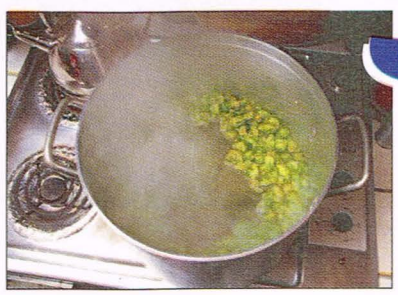
2 Step 2 — Begin the Boil

Fill your kettle about two-thirds full of tap water and put it on your biggest burner on high. As the water gets hot, you can add the malt extract syrup, stirring constantly until the extract is completely dissolved into the water. Some hot water in the can or container will help get all the extract dissolved and into your kettle. After the liquid — now known as "wort" — begins to boil, the rolling action of the boil will keep things mixed up.

So what is malt extract? It is a processed product, yes, and some brewers eventually work their way up to starting with malted grain. But extract is simply barley malt that has been "mashed"; it has had its starch converted to sugar (a variety called, unsurprisingly, maltose) through a natural, temperature-triggered process. Then unusable husks were separated out, and the sweet liquid was concentrated into a syrup. Unhopped malt extract is made of barley and water — that's all. Put your finger in there and try some — yummy, huh?

Some extracts contain a portion of dark-roasted grain to lead to roasty or coffee-ish flavor; some use malts that have caramel flavor. If you chose dark malt, your ale will be along stout or porter lines. Amber malts lead to amber ales. Light or pale malt makes paler or light beers, but even these will have a nice amber color, like a classic British pale ale.

You will boil this wort for a full hour. One of the main reasons you do this is to ensure that your wort is free of any living organisms that could spoil the finished product. You want brewer's yeast consuming all that lovely malt sugar, not some funky bacteria that could be floating around your home; if bacteria gets into your wort, it could multiply and create funky flavors. By boiling wort, you've created a microbe-free environment. But it is at this point that you want to start thinking about sanitization. You want to be ready when the heat goes off and the wort cools down.



3 Step 3 — Add Hops

Hops are added early in the boil because the "bitter" component in

them takes time to dissolve into boiling wort. Add about an ounce of hops — maybe a bit more if your alpha acid is below 6 percent or if you prefer a high level of bitterness, maybe a bit less if you have a higher alpha hop or want a milder beer. Add the hops when your wort reaches that steady rolling boil after the extract has dissolved fully. You don't need a food scale to add an ounce of hops. Just estimate as you do when cooking; about half a two-ounce pack is just fine. As you become expert, you also might want to become precise, but don't worry about a scale until then.

The wonderful hop smell that you get now is actually leaving the wort and being sucked outside by your kitchen fan. Remember that this dosage of hops, usually called the bittering hop, is there to provide the basic "bitter" flavor component. To put that delightful herbaceous aroma back into the wort, you add another dose of hops right at the end of the boil. That way they aren't in the boil long enough to have their aroma boiled away.

Add your "finishing hops" right as you turn the heat off at the end of the hour — a quarter ounce or more, depending on how psyched you are about hop aroma. Remember, these hops are not in the boil long enough to contribute much bitterness.



Step 4 — Cool the Wort

It is now time to begin thinking about sanitization, because your wort will start to cool as soon as you remove it from the heat. Begin by putting the lid on your kettle.

The volume of liquid you have heated up means that it will retain heat for quite a while. Pop the entire lidded kettle into an ice bath in your sink or bathtub as you sanitize your fermenter. Don't add ice to the wort, because ice is very likely to have microbes lingering on it. On cold days setting the covered kettle outside in a cold wind or snowbank can help, too. Make sure the lid is securely on and wort stays sanitary.



Step 5 — Sanitize

From this point on, you must provide an environment as free of microbes as you can for your wort. Anything that touches wort — funnel, strainer, fermenter, airlock — must be sanitized via heat or via a solution. Fortunately, a very effective sanitizer can be made from a dirt-cheap product that you are likely to already have: non-lemon-scented liquid chlorine bleach (sodium hypochlorite).

Pour a half cup into your fermenter (whether it's a glass carboy or food-grade plastic bucket) and fill it to the top with cold tap water. Exposing the solution to your beer-making apparatus for at least 15 minutes will kill any unwanted microbe that could spoil your beer. After the sanitizing soak, give the items a thorough rinse to get rid of the chlorine remnants. Residue can leave very unpleasant flavors.

Use this solution to sanitize your airlock, funnel, drilled stopper, and strainer as well as your fermenter. At bottling time, next week after fermentation, fill your plastic bottling bucket with a new batch of sanitizer and use it for bottles, caps, and your siphon hose.

Homebrew supply stores often carry no-rinse sanitizers, which eliminate the risk of contaminants in the rinse water and the extra step of rinsing.

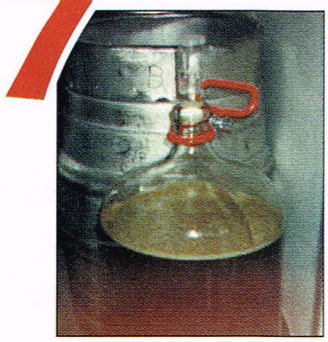
Step 6 — Transfer to Fermenter and Pitch Yeast 6

Empty and thoroughly rinse your fermenter. Then add the wort and top up with cold tap water. You can use preboiled water from the day before if you are concerned about chances of contamination from your water. You also can use pre-chilled water if you want. Water right out of the tap will probably be just fine, however.

Pour your cooled wort from the kettle right into the fermenter. If you are fermenting in a carboy, you'll need the sanitized funnel. If you used leaf hops, you'll need to use the strainer to get them out; pelletized hops tend to go right through the strainer, but that's okay, too. A brewing helper is very useful at this stage to hold the funnel and steady the fermenter as you pour. Shake the carboy or stir the bucket with a sanitized long spoon.

Glass carboys are almost never tempered. The more you can cool the wort in the kettle before pouring the better. The wort needs to be cooled prior to transferring. Ale yeast is most comfortable in the low 70s, so you'll have to wait until your wort is near that temperature before you add yeast anyway. A quick way to check: Put one hand on your forehead and one on your fermenter. When the wort is cooler than you, you can pitch. The temperature will gradually decline to ambient over the next few hours.

Before pitching the yeast, stir and shake your carboy to get as much air into the cooled wort as possible. Now you can simply add the package of yeast to the wort right out of the envelope, or after rehydrating it for 15 minutes in a cup of boiled, cooled water. Put on the lid and airlock and relax. You have about a week before bottling time.



Step 7 – Fermentation

The moment you add yeast, the wort is one step away from becoming beer. The yeast cells you added first turn to dissolved oxygen in the wort (which came from your pouring, shaking, and stirring) and over a period of the next several hours begin to multiply. After their numbers have increased, they begin to consume the sugars from the malt extract and produce alcohol and CO_2. This activity, fermentation, can be very dramatic. Bubbles rise, the beer moves around in sinuous convection currents (which glass carboys allow you to see well — you might find yourself hypnotized for hours) and a scary-looking dirty foam called kraeusen (*kroy' zen*) rises on the surface.

On day two or three, the activity will be so furious that kraeusen is often pushed right through the airlock. For this reason many brewers make a "blowoff tube" out of their racking cane. They put the short end into the hole of their drilled stopper and run the long end down to a jar of water. This "oversized airlock" means that any kraeusen that rises out the top will end up in the water jar, but fruit flies or microbes can't get upstream and back to the beer. Because of blowoff, don't store your fermenter on carpet!

Fermentation can be as quick as a couple of days or can go on for two weeks. A warmer spot tends to speed things up, some strains of yeast are faster or slower than others, and stronger worts (more extract per five-gallon batch) might take longer. When the bubbles in your airlock have slowed to fewer than one per minute, you are probably ready to bottle. Take a look at the wort. If it seems hazy, the yeast has not quite finished settling. If it seems deep colored and more clear than it was during the active (primary) phase, then the following has happened: The yeast consumed the available sugar, became dormant, and settled to the bottom of the vessel. It's finished beer! Time to bottle and condition.



Step 8 – Bottling and Conditioning

You're getting closer to quaffing time! Next you're going to transfer the finished but unconditioned beer (flat — no carbonation) to an intermediate vessel, the bottling bucket, that contains priming sugar, in this case two-thirds cup of corn sugar (dextrose). Leave the thick layer of dormant yeast and hop residue behind in the fermenter.

From the bottling bucket fill each bottle, again with a siphon, then cap each one. The remaining yeast in the beer will begin a small refermentation in each bottle, consuming the primings, and the CO_2 produced will remain dissolved in the beer because the crown cap seals the vessel, preventing the CO_2 from escaping to the atmosphere. This "bottle conditioning" that you are performing produces fine, natural bubbles. Just ask any French Champagne maker, because they use a similar technique.

A day or two before bottling, move your fermenter up to a table. To siphon, the vessel you are emptying must be above the top of the vessel to which you are siphoning. If you move the fermenter a day or so before you siphon, you will allow any sediment you stirred up to resettle.

If you have never run a siphon before, you should practice this a few times with plain water. First, slide your sanitized 6-foot vinyl siphon hose on to the short (or "handle") end of your racking cane. Sanitize and rinse the assembly, then fill it with clean water, keeping your nice, clean thumb over the hose end. Then, invert the cane and plunge it smoothly into your fermenter or practice water vessel. When you lower the hose end to below the tabletop where your "siphoning from" vessel is, liquid will flow downhill and out the end of the hose.

Once you can do this smoothly, boil one to two cups of water and add your two-thirds cup of corn sugar. Boil for 10 minutes, until the sugar is fully dissolved and you know you have a sterile solution. Pour this into your sanitized bottling vessel, and siphon the beer on top, stirring it gently to mix in the priming solution. (The first liquid, water in the hose and cane, can be caught in a small jar and thrown away — you will see the color change as the beer flows down the line.) Leave most of the thick layer of sediment behind in the fermenter — you'll clean it out after your crown caps are crimped on.

Now, lift the priming vessel to the table and restart your siphon to fill sanitized bottles. You can use a bottle filler with a spring-loaded valve on the end, but crimping the flow as one bottle fills before moving to the next bottle and uncrimping can work well. Fill each bottle to about one inch of headspace below the top, and crimp on a sanitized crown cap. Then, just keep the bottles at room temperature for another 10 days or so, while the yeast consumes the priming sugar, and chill a couple down! When you pour, leave the yeast sediment behind in the bottle.

Your beer will be natural and could not possibly be fresher. It will have hops that you chose because you liked the aroma or the name. It will help you determine what you like, so you can move toward your ideal on your next batch. It will most likely be among the best beers you ever tried.

A Word About Troubleshooting

If your first batch is not the best beer you have ever had, there are generally only two possible reasons:

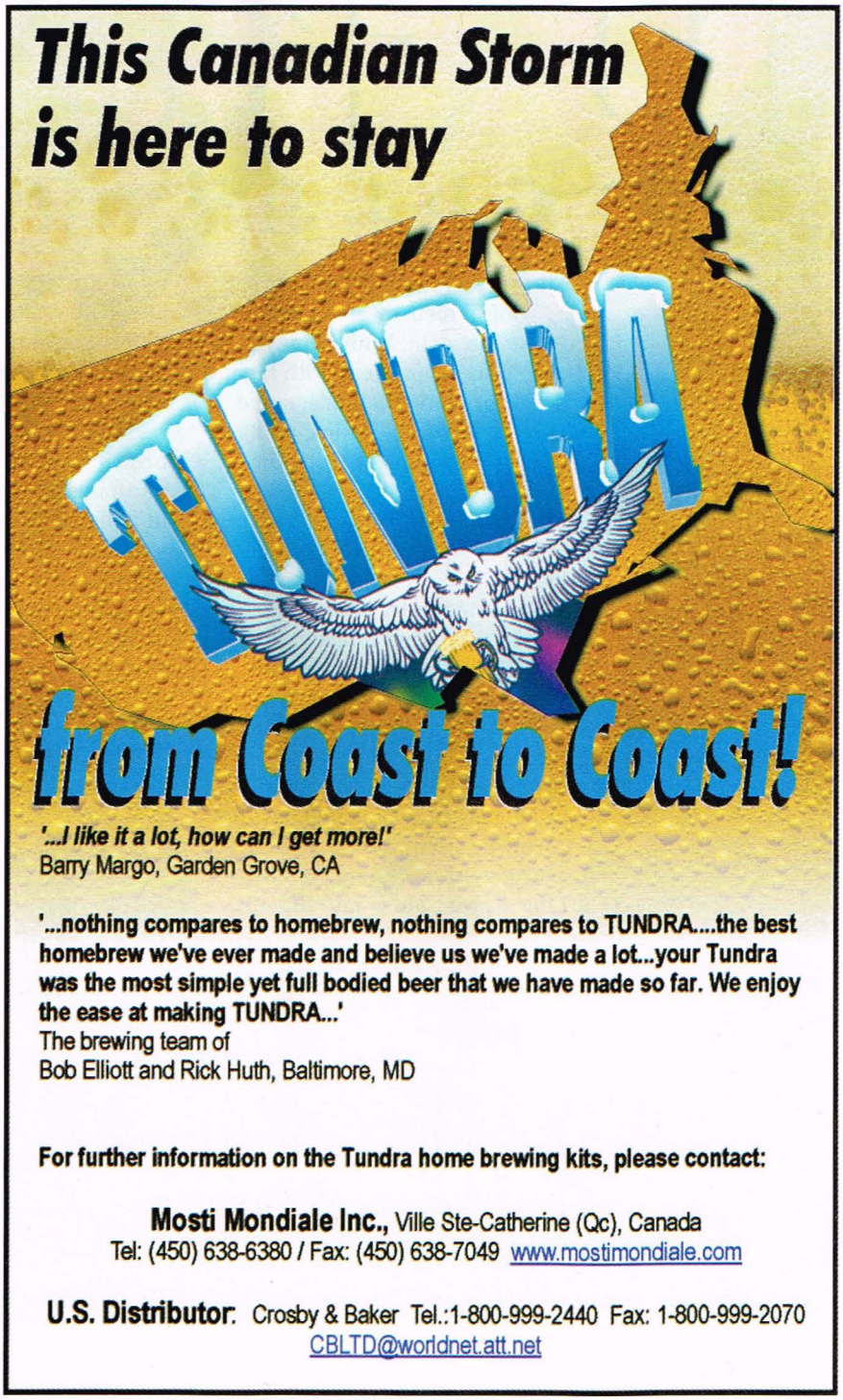
Contamination. If a microorganism other than your brewer's yeast got in your batch you will likely know it. Vinegar flavor, mud puddle, locker room/dirty socks, or compost pile odors are classic signs of contamination. (These contaminators won't kill you, but they might make you sad or discouraged if you have to dump out all that hard work.) Analyze your routine. If you can figure out the source of contamination, fix it and try again. Sanitization does get easier as you brew more.

Not what you expected. There are many nuances you can add as you gain brewing experience, among them: specialty grains, boiling of a larger wort volume (and add less water to the fermenter), more complex hopping, efficient wort cooling, liquid yeast cultures, dry hopping, and all-grain brewing, wherein you start from grain instead of extract. A simple improvement is to add a "secondary fermentation" step: When fermentation has finished, transfer the beer to another carboy for two weeks or so. This can give you clearer, cleaner beer.

These additional procedures offer more options, more ways to tweak your product. Good brewing notes and more attention to details will allow you to customize your flavors, too.

Very faint sherry-like or cardboardy flavors should not discourage you, because they are fixable; as you get more comfortable brewing, handle hot wort and finished beer very gently. Aeration (splashing, spraying, bubbling) of hot wort or of finished beer can lead to oxidation and produce those flavors. The only time you should aerate actively is when your freshly brewed wort has cooled, so siphon gently, stir primings carefully, and so forth. If you have not reached perfection in your routine, you'll still have the ability to make great beer. Don't worry if your siphon hose bubbles when you're filling a bottle, but think about ways to reduce the bubbles next time.

So remember to keep it fun. Brewing resembles other hobbies in at least one way. As you get off the float plane in Alaska, laden with fishing rods, outboard motor, 1,000 lures, and a giant MasterCard bill, remember: That first fish, caught across the street from your grandparents' house on a plain, old worm made you as happy — at that time — as any you might expect on this Alaska trip. At this time, the beer will likely amaze you not only with its tasty flavor but with its glimpse of the magic: It's as easy as dunkin' a worm in a pond. As you sip a tasty store- or pub-bought beer after becoming a brewer, you will think, "Hmmm...finished with Cascade hops, I think I could brew that, only mine would be a bit better."



CIRCLE 30 ON READER SERVICE CARD

10 KEYS TO GREAT ALES

The very first brew for the vast majority of homebrewers is some sort of an ale style. While many brewers also experiment with lagers and other brewing methods, some continue to brew basic ales, and there are many good reasons for this.

The somewhat forgiving nature of ale fermentations combined with the much shorter maturation times usually provide for a product that is simpler to make and quicker to enjoy. Not only homebrewers take advantage of this fact; a large number of brewers at brewpubs and microbreweries do as well.

Because of ale's advantages it might be easy to mistakenly assume that brewing great ales is a matter of natural course. Wrong! While brewing a great ale is not difficult, there are many finer points in ale production that result in the difference between just another good-tasting ale and a truly memorable one.

The major difference between brewing ale and lager styles centers on the yeast used and the manner in which it's used. Generally speaking, ale yeasts are considered to be top fermenting, that is they tend to clump on top of the surface of the beer and operate best at warmer temperatures — in the 65° to 75° F range. Lager yeast, on the other hand, tends to be bottom fermenting and operates best at cooler temperatures, generally in the 45° to 55° F range. These are good generalizations, but there are exceptions to these guidelines such as hybrid-type yeast strains that are

by John Oliver



SHAWN TURNER ILLUSTRATIONS

used in making California common and kölsch styles.

The warmer temperatures that occur in most ale fermentations result in the creation of by-products that remain in the finished beer, can be detected in the aroma and flavor, and are considered an integral part of the profile of most ale styles. These compounds, collectively referred to as esters, provide a wide variety of flavors and aromas associated with most prominent ale styles.

In lager brewing the colder temperatures and maturation times help prevent these flavors and aromas from being present in the finished beer, where they would otherwise be considered flaws. All else being equal, individual yeast strains produce varying levels of different types of esters, resulting in two entirely different flavor profiles even if used in the same style of beer. For that reason many of the tips that follow deal with working with yeast to help create versatility in crafting unique and flavorful ales.

1. Select the right yeast strain.

While yeast-strain selection is critical for any style of beer — since the by-products of the fermentation become a significant part of the flavor profile in the finished beer — it is important to consider the flavor profile of the chosen yeast and how it will interact with the style of ale being brewed. An ale yeast that is described as "finishing dry and clean" might be the perfect choice for a style such as pale ale, but it can be totally out of place in a style that requires a fruity nose and a malty finish, such as an old ale.

Most yeast manufacturers provide flavor descriptions along with suggestions pertaining to the suitability of that strain to particular styles of beer. While this information is helpful, it is no substitute for brewing with and trying beers made from a particular ale yeast.



2. Maintain the proper fermentation temperatures.

For most homebrewers, their first batches are fermented at room temperature (68° F). Temperatures in the 60° to 70° F range usually provide good fermentation results. To obtain precise control over the ester formation of most ale strains it is desirable to maintain the fermentation temperature in a very narrow range with minimal fluctuations.

This is important because just as different yeast strains have different profiles due to the formation of fermentation by-products, one yeast strain can create two entirely different flavor profiles when fermented at a slightly different temperature.

Many authentic Bavarian hefeweizen-producing yeast strains, such as Wyeast 3068 (Weihenstephan weizen) or White Labs WLP300 (Hefeweizen ale), are particularly sensitive to temperature fluctuation, with fermentation temperatures in the low end of their optimal ranges resulting in more of a clove-like character and temperatures on the high side of optimum emphasizing the production of the by-products that result in a banana character.

These temperature variations can be as mild as only two or three degrees. With standard ale strains, many times colder temperatures result in the inability of the yeast to properly reduce the compounds that result in diacetyl, creating a buttery or butterscotch flavor that is the trademark of many British ale styles.

Does this mean that the temperature controls to create good ales need to be as costly or elaborate as those used to produce their lager cousins? Not necessarily, since large volumes of fluid such as a fermenter of wort change temperature much more slowly than their surrounding environment. Keeping the fermentation constant and minimizing

fluctuations in temperature help create consistent yeast performance, and this is easily attained. Simply keep the fermenter insulated or protected with insulating wraps or some type of enclosure such as a closet on an inner wall of the home.

For brewers who do have the ability to precisely control and maintain fermentation temperatures, most yeast suppliers provide technical data on temperatures with regard to particular ale strains. Just because a yeast strain might have a wide recommended temperature range, such as 62° to 74° F, the characteristics that it produces at one end of the range might be considerably different than those produced at the opposite end.

3. Controlled fluctuations in temperature can be beneficial.

This is one area where precise temperature control, along with extensive experience or information regarding the ale yeast in question, can result in the ability to craft unique flavor profiles that would not otherwise be possible at a single temperature. Usually the best results are obtained by starting the primary fermentation in the upper end of the yeast strain's temperature range, then dropping the temperature in a controlled fashion similar to lager brewing, but dropping it within ale temperatures to prevent the yeast from becoming entirely dormant. When performing experiments of this nature, let experience be your guide.

There is one additional step that most craft brewers take. At the conclusion of the fermentation and conditioning process, the fermenter is cooled to temperatures in the low to mid-30s to accelerate the tendency of the yeast to flocculate or settle in the sedimentation phase to facilitate a cleaner, clearer product, while at the same time allowing easier harvesting and reuse of the yeast.

4. Use a secondary or two-stage fermentation.

While this is a good idea with any homebrew, it can be particularly beneficial with ales due to the higher temperatures encountered in the fermentation process. As with most life-forms, the metabolic rate of yeast increases with temperature. When most of the fermentable sugars have been consumed and the yeast cells begin to sediment out, a decay or autolysis process begins to take place. The yeast cells have consumed their own built-in supplies of nutrients.

This can create yeasty or meaty off-flavors in the finished beer. Since ales usually sit and condition at warmer temperatures, the speed with which this begins to take place is not retarded as it is with lager yeast strains at colder temperatures.

One way to avoid this is to promptly rack the wort off the yeast and protein shortly after the vigorous initial fermentation subsides. (Keep in mind that a two- to three-day "diacetyl rest" after initial fermentation before racking decreases the chance of diacetyl in the finished beer.) Don't worry; there still should be plenty of yeast left in suspension in the beer to continue with the conditioning process and any necessary carbonation during the bottling process.

5. Bottle when the ale is ready.

Many beers can withstand additional time in the fermenter without any severe detriment but, much as when using a secondary fermenter, ales can begin to experience degradation more quickly than lagers due to the warmer temperatures involved.

For most ales, the beer is finished when the activity has ceased, specific gravity has dropped to between 20 percent and 25 percent of the original gravity, and the beer has cleared out.

Promptly bottle or keg, allow carbonation to develop, and then place the beer into a cold or refrigerated environment. Thus, the finished ale will have optimal flavor for the longest possible time. Bigger beers such as imperial stout and barleywine take longer to develop and usually benefit from extended conditioning and aging.

6. Use traditional ingredients.

The flavor profile of most ales depends on a combination of the malt and hops working together to create a balance with the flavors and aromas imparted by the yeast. Many of the hop and malt varieties specifically used to create some of the world's most renown ale styles were selected for just this reason.

One great example of how these combinations work can be seen in how the citrusy character of Cascade hops tends to accentuate the slight fruitiness imparted by the yeast in American pale ale. Another is how the residual maltiness and touch of diacetyl work to balance the slight smokiness of a Scottish ale.

This is not to say that you can't vary from using traditional malt or hop varieties to successfully create classic ales. However, careful attention to what each ingredient will contribute and how it will work with the others is what separates great ales from good ones. For example a yeast strain such as Wyeast 1968 (London ESB ale) that accentuates maltiness to create an ESB or bitter probably would be a good choice, providing that a hop with a good floral character such as Kent Golding or Fuggle was used for the flavoring or aroma addition.

In this case a non-traditional hop might present problems. Hallertauer, for example, is an excellent hop variety and is traditionally used in lagers. But it is very clean and spicy and lacks many of the characteristics that can balance a finished beer that's so malty its sweetness is cloying.

7. Use minerals to adjust your brewing water.

While whole volumes have been written regarding the relatively complex area of water chemistry, there are a few simple adjustments that can be made to help create traditional ale flavors. Some ale styles such as dry stout and India pale ale are almost impossible to faithfully re-create without establishing the proper water balance to approximate the water of

the area where the styles originated.

In the simplest terms, you want to be concerned with the degree to which the brewing water is hard or soft and the relative levels of the ions sulfate and chloride. Sulfate, usually added to the beer in the form of calcium sulfate (gypsum), helps accentuate the bitterness and hop character of the beer. Chloride, usually in the form of calcium chloride or sodium chloride (table salt), lends a roundness and fullness to the finished beer that helps accentuate the malt and yeast characters.

For best results get an analysis of your own water (usually available for free from the local water company), then compare it with the water profile for the area where the ale style you're brewing originated. This information can be found in many homebrewing texts ("Brew Beer That Matches Your Water," Feb. '97 BYO), and the minerals used to make the adjustments can be found either in the home or at most brew shops.

For the malt extract or grain brewer without this information, you can experiment by adding one-half teaspoon of the appropriate mineral into either the mash or the boil for a five-gallon batch, and then let your taste buds be your guide.

Make only small adjustments until you determine exactly what effect the minerals will have on your finished beer.

8. Try varying levels of carbonation.

One of the subtle factors that can be used to craft the final flavor of a homebrew is the level of carbonation. For many commercial brewers the effect that carbonation has on their finished product is so dramatic that they have invested enormous sums of money to develop the so-called "widget" dispensers. A widget is a plastic pellet within a can or bottle that helps create a thick, creamy, nitrogen-based head when the container is opened. This subdued nitrogenation is pleasing to the eye and helps lend a smoothness to the beer that creates a unique flavor profile.

While true nitrogenation systems are available, the gasses and equipment necessary are considerably more expensive than traditional homebrew tap systems.

The carbonation levels experienced in most ales can vary from as little as 2.0 volumes of CO_2 for some styles such as mild ale to as high as 3.5 for a crisp hefeweizen, so making adjustments to the carbonation level can make a substantial difference in the taste of the finished product.

Beers with less carbonation tend to be somewhat heavier on the palate, with an emphasis on the malt, body, and flavor, while beers with high levels of carbonation sparkle and prickle the tongue, resulting in subdued malt and increased perception of the hop

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bitterness. Try deviating from the standard practice of three-fourths cup of corn sugar per five gallons by reducing the priming sugar to two-thirds cup — or even as low as one-half cup — per batch.

Switching to dry malt extract (DME) for carbonating also will result in a change in the flavor profile. Start by using one cup of DME for five gallons and then vary up or down to suit your taste buds.

9. Don't be afraid of adjuncts.

Many traditional ale styles benefit from the addition to the recipe of more than just the basic "malt, water, hops, yeast" approach. Adjunct sugars such as Belgian candi sugar, honey, treacle, and sorghum all serve to add complexity and flavor as well as alcohol. Grains such as oats, corn, and rye can further add to a beer already rich with myriad aromas and flavors as a result of the use of ale yeast.

Remember when using any sort of an adjunct to use a minimal amount and then adjust up or down in future batches. Overuse of adjuncts such as cane or corn sugar creates an alcoholic, cidery, and thin flavor that many Prohibition-era homebrewers have worked hard to forget!

10. Pick the right glass and serving temperature.

Creating a memorable ale does not end once the beer is in the bottles or the kegs. The manner in which a beer is served is one of the easiest yet most overlooked ways to affect the character of the finished beer.

While those pilsner glasses look great and are perfect for enjoying a crisp, clean lager, for savoring most ale styles invest in a set of glasses that have wide mouths. Traditional pint glasses or Belgian-style flutes create a large surface area for the beer to interact with the air and allow all of those great ale aromatics to reach the nose with each sip.

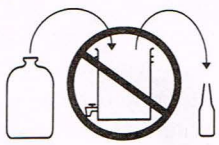
Likewise, the serving temperature is equally important. The cold temperatures that are ideal for serving many lagers result in a harsh, sharp flavor and muted aroma when serving an ale style such as stout or Belgian tripel.

While keeping your homebrew as cold as possible once it is carbonated and conditioned is the best way to extend its serving life, don't be afraid to leave a few bottles sitting out in a quiet corner where they can begin to warm up slightly several minutes before serving. Most refrigerators will keep a beer chilled in the high 30s, yet ideal serving temperatures for many ale styles can be as high as 50° to 55° F.

John Oliver is a BJCP National Judge who brews many award-winning ales as head brewer for BJ's Brewery in Brea, Calif.

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CIRCLE 24 ON READER SERVICE CARD

7 GREAT BEERS FROM THE CZECH REPUBLIC

Beer lovers throughout the world have the lore of Pilsner Urquell (Plzensky Prazdroj) scored into their soul: The first golden, clear beer was produced in the town of Plzen in 1842. The vast majority of beer produced on six continents today emanates from that first pilsner.

Not only is pilsner produced worldwide, there are hundreds of different versions in Europe alone. But the original Bohemian pilsner still retains unique character. In particular, Czech pilsners are hoppier in both bitterness and aroma. The Zatec hop, a Saaz hop grown in the Zatec region of northwest Bohemia, imparts a distinctive flavor and aroma. Czech beers also have a maltier finish and enhanced mouthfeel compared to their European counterparts.

Pilsner beer is still the mainstay of the Czechs, who lead the world in per-capita beer consumption. However, the Czechs also enjoy a wide range of beers, from hefeweiss to garnet-colored, dark-malty, or yeasty lagers. One of the most unique beers worldwide, a beautifully green, clear lager made with eucalyptus, is brewed in Prague's newest brewpub.

Excellent pilsners can be made from any good quality malt or extract. More authentic versions could include Moravian malt or Moravian malt extract. Saaz hops grown anywhere in the Czech Republic are essential for authenticity, but Saaz hops grown in the Zatec region are the highest quality.

The characteristic malty finish of Czech pilsners is more easily imitated with malt extract-based homebrews than are the drier-finishing pilsners typical of Germany. The production of malt extract results in slightly higher final gravities and the associated enhanced mouthfeel. This is in part why one-hour boil times are suitable for extract pilsners, while traditional Czech pilsner brewing includes a two-hour boil.

Every brewery within the Czech Republic brews at least one pilsner beer. Most brew two, and some brew three. Typically, a brewery that makes three pilsners labels them 10 percent, 11 percent, and 12 percent. This reflects original gravity in degrees Plato (or Balling, the term Czechs use), equivalent to 1.040, 1.044, and 1.048, respectively.

by Lynne O'Connor





Budweiser Budvar, the target of a long trademark dispute with Anheuser-Busch, is among the great beers of the Czech Republic. Czechs drink more beer per capita than the people of any other country, and it's no wonder with beers like these to choose among.

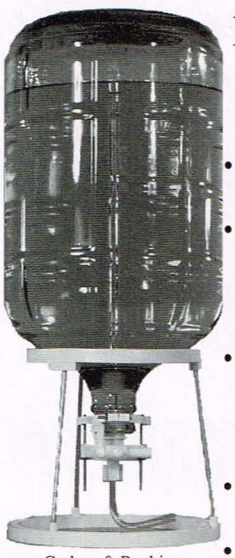
The alcohol content varies from about 4 percent to 5 percent across this range. Pilsner Urquell is the hoppiest, in bitterness and aroma, although some other Bohemian pilsners such as Platan and Regent are also very hoppy.

Numerous amber to dark lagers also are brewed in the Czech Republic. These typically have original gravities of 12° (1.048), 14° (1.056), and even 16° Plato (1.064). Older versions are made with pilsner malt as well as either Vienna malt, Munich malt, or both. Some modern versions contain crystal malt.

The following recipes are based on information from in-depth interviews with Czech brewmasters and maltsters. You will need the yeast solids from an approximately two-quart starter to pitch directly into the wort for primary fermentation. If you have a smaller starter, such as the Wyeast self-contained starter, then keep wort at 65° to 75° F for the first six to 12 hours.



Author Lynn O'Connor, owner of homebrew supply retailer St. Patrick's of Texas, traveled the Czech Republic tasting beers with author and Beer Hunter Michael Jackson. Here, they sample the wares of Cerna Hora Brewery.



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Soft water greatly enhances the delicate hop character of Czech pilsner. Increase hops, particularly the last addition, when using hard water. If your wort cooling is slow, delay the last addition until the last five minutes or so of the boil.

Plzensky Prazdroj (Pilsner Urquell) 12° Pilsner
(5 gallons, extract)

Wyeast 2278 is in fact the Pilsner Urquell strain. Its flavor profile is less sulfury than many lager yeasts, which lets the hop aroma come through.

Ingredients:

- 7.5 lbs. pale syrup extract or 6 lbs. dry malt extract
- 3.75 oz. Czech Saaz hops (3.5% alpha acid, 13.1 AAUs): 1.25 oz. (4.4 AAUs) for 60 min., 1.25 oz. (4.4 AAUs) for 45 min., and 1.25 oz. (4.4 AAUs) for 20 min.
- Wyeast 2278 (Czech pils)
- 1 cup corn sugar for priming

Step by Step:

Bring 5.25 gal. water to a boil, remove from heat, and add extract. Return to boil, add 1.25 oz. hops. Total boil is 60 min. Boil 15 min., add 1.25 oz. hops. Boil 25 min., add 1.25 oz. hops. Boil 20 min. more. Cool to 65° to 70° F, pitch yeast.

Ferment in the primary 12 days at 47° to 51° F. Transfer to secondary, lager for at least three months at 33° to 38° F. Prime with corn sugar and bottle.

All-Grain Version:

Replace extract with 9 lbs. two-row pale malt. Change hop additions to 90 min., 45 min., and 20 min.

Mash grains in 3 gal. of 160° to 162° F water until conversion is complete. Sparge with enough 170° F water to collect 5.5 gal. You also can perform a double- or triple-decoction mash, with rests at 100°, 122°, 146°, and 162° F.

Total boil is 120 min. Boil 30 min. before first hop addition.

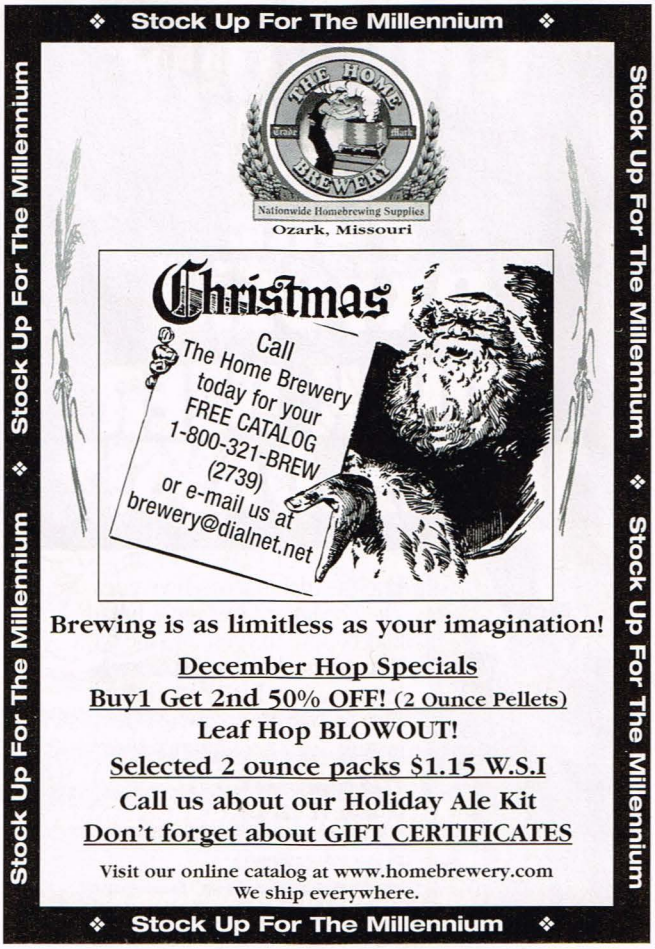
Hostan Moravian Dark Lager 10°
(5 gallons, extract with grains)

The beautiful city of Znojmo lies near the Austrian border in the heart of the Moravian wine region. Notice the unusually warmer lager temperature used at the brewery.

Wyeast 2007 is similar to Anheuser-Busch yeast but produces relatively less sulfur tones, which is appropriate for this beer.

Ingredients:

- 5 lbs. pale syrup extract or 4 lbs. dry malt extract
- 1 lb. Munich malt extract
- 0.5 lb. crystal malt, 60° Lovibond
- 0.125 lb. black patent malt
- 2.5 oz. Czech Saaz hops (3.5% alpha acid, 8.8 AAUs): 1 oz. (3.5 AAUs) for 60 min., 0.75 oz. (2.6 AAUs) for 45 min., 0.75 oz. (2.6 AAUs) for 20 min.
- Wyeast 2007 (Pilsen lager)
- 1 cup corn sugar for priming



CIRCLE 19 ON READER SERVICE CARD

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Step by Step:

Bring 5.25 gal. water to 150° to 160° F and steep the grains for 15 min. before boil. Remove grains. Bring water to a boil, remove from heat, and add extract. Return to a boil and add 1 oz. hops. Total boil is 60 min. Boil 15 min. and add 0.75 oz. hops. Boil 25 min. more and add 0.75 oz. hops. Boil 20 min. more. Cool to 65° to 70° F and pitch yeast.

Ferment in the primary 10 days at 47° to 51° F. Transfer to the secondary and lager for two to three months at 45° F. Prime with corn sugar and bottle.

All-Grain Version:

Replace extract with 4 lbs. two-row pale malt and 2 lbs. Munich malt, 8° to 10° Lovibond, and 2 lbs. Munich malt, 15° to 20° Lovibond, Change hop addition times to 90 min., 45 min., and 20 min.

Mash grains, including crystal and black patent malt, in 3 gal. of 160° to 162° F water until conversion is complete. Sparge with enough 170° F water to collect 5.5 gal.

Total boil is 120 min. Boil 30 min. before first hop addition.

Cerna Hora Moravian Garnet 12°
(5 gallons, extract with grains)

The Cerna Hora brewery produces "Granat," a beautiful, malty, amber-colored lager. The brewery, established in 1530, still operates its own floor maltings.

Ingredients:

- 7 lbs. pale syrup extract or 5.6 lbs. dry malt extract
- 1 lb. crystal malt, 10° Lovibond
- 2.5 oz. Czech Saaz hops (3.5% alpha acid, 8.8 AAUs): 1 oz. (3.5 AAUs) for 60 min., 0.75 oz. (2.6 AAUs) for 45 min., 0.75 oz. (2.6 AAUs) for 20 min.
- Wyeast 2278 (Czech pils)
- 1 cup corn sugar for priming

Step by Step:

Bring 5.25 gal. water to 150° to 160° F and steep the grains for 15 min. before boil. Remove grains. Bring water to a boil, remove from heat, and add extract. Return to a boil and add 1 oz. hops. Total boil is 60 min. Boil 15 min. and add 0.75 oz. hops. Boil 25 min. more and add 0.75 oz. hops. Boil 20 min. more. Cool to 65° to 70° F and pitch yeast.

Ferment in the primary 12 days at 47° to 51° F. Transfer to the secondary and lager for at least 40 days at 33° to 38° F. Prime with corn sugar and bottle.

Bud, the Real King of Beers 16°
(5 gallons, extract)

This recipe is modeled after the 7.2 percent specialty beer produced in Ceske Budejovice.

Ingredients:

- 10 lbs. pale syrup extract or 8 lbs. dry malt extract
- 3.75 oz. Czech Saaz hops (3.5% alpha acid, 13.1 AAUs): 1.25 oz. (4.4 AAUs) for 60 min.,



CIRCLE 22 ON READER SERVICE CARD



CIRCLE 26 ON READER SERVICE CARD

1.25 oz. (4.4 AAUs) for 45 min.,
1.25 oz. (4.4 AAUs) for 20 min.
- Budweiser Budvar yeast (Wyeast 2000)
- 1 cup corn sugar for priming

Step by Step:

Bring 5.25 gal. water to a boil, remove from heat, and add extract. Return to boil and add 1.25 oz. hops. Total boil is 60 min. Boil 15 min. and add 1.25 oz. hops. Boil 25 min. more and add 1.25 oz. hops. Boil 20 min. more. Cool to 65° to 70° F and pitch yeast.

Ferment in the primary 16 days at 47° to 51° F. Transfer to the secondary and lager for three to four months or longer at 33° to 38° F. Prime with corn sugar and bottle.

U Fleku Dark Yeasty Lager 13°
(5 gallons, extract with grain)

U Fleku is a 500-year-old brewpub in Prague. The beer is unfiltered with a very perceptible yeast flavor.

Ingredients:
- 8 lbs. pale syrup extract or 6.4 lbs. dry malt extract
- 0.25 lb. chocolate malt
- 0.25 lb. black patent malt
- 2.5 oz. Czech Saaz hops (3.5% alpha acid, 8.8 AAUs):
  1 oz. (3.5 AAUs) for 60 min.,
  0.75 oz. (3.5 AAUs) for 45 min.,
  0.75 oz. (3.5 AAUs) for 20 min.
- Wyeast 2278 (Czech pils)
- 1 cup corn sugar for priming

Step by Step:

Bring 5.25 gal. water to 150° to 160° F and steep the grains for 15 min. before boil. Remove grains. Bring water to a boil, remove from heat, and add extract. Return to a boil and add 1 oz. hops. Total boil is 60 min. Boil 15 min. and add 0.75 oz. hops. Boil 25 min. more and add 0.75 oz. hops. Boil 20 min. more. Cool to 65° to 70° F and pitch yeast.

Ferment in the primary 13 days at 47° to 51° F. Transfer to secondary and lager for 60 days at 33° to 38° F. Prime with corn sugar and bottle.

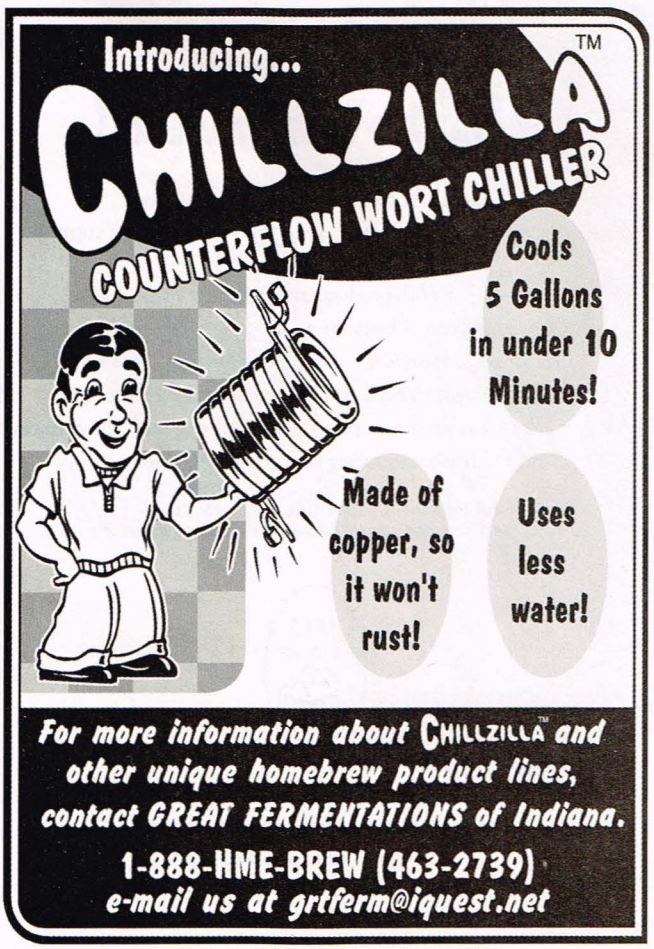
Bernard Special Lager 14°
(5 gallons, extract)

The Bernard brewery lies in the center of the Czech Republic in the beautiful Bohemian-Moravian highlands. The owner, Stanislav Bernard, is the president of the Czech small brewers association and is largely responsible for obtaining tax relief for Czech microbreweries.

Ingredients:
- 8.75 lbs. pale syrup extract or 7 lbs. dry malt extract
- 3.75 oz. Czech Saaz hops (3.5% alpha acid, 13.1 AAUs):
  1.25 oz. (4.4 AAUs) for 60 min.,
  1.25 oz. (4.4 AAUs) for 45 min.,
  1.25 oz. (4.4 AAUs) for 20 min.
- Wyeast 2278 (Czech pils)
- 1 cup corn sugar for priming

Step by Step:

Bring 5.25 gal. water to a boil,



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remove from heat, and add extract. Return to boil and add 1.25 oz. hops. Total boil is 60 min. Boil 15 min. and add 1.25 oz. hops. Boil 25 min. more and add 1.25 oz. hops. Boil 20 min. more. Cool to 65° to 70° F and pitch yeast.

Ferment in the primary 14 days at 47° to 51° F. Transfer to the secondary and lager for at least three months or longer at 33° to 38° F. Prime with corn sugar and bottle.

All-Grain Version:

Replace extract with 10.5 lbs. two-row pale malt. Change hop additions to 90 min., 45 min., and 20 min. Mash grains in 3 gal. water at 156° to 158° F until conversion is complete. Sparge with enough 170° F water to collect 5.5 gal.

Total boil is 120 min. Boil 30 min. before first hop addition.

Vyskov March Hare 12°
(5 gallons, extract)

The beer comes from one of the two remaining state-owned breweries in the Czech Republic. The Vyskov brewery, established in 1680, produces a malty märzen with a detectable Zatec hop aroma upon which this recipe is based. Wyeast 2124 (Bohemian lager) has a low attenuation characteristic that makes it appropriate for a märzen.

Ingredients:

- 6.5 lbs. pale syrup extract or 6 lbs. dry malt extract
- 1 lb. Munich malt extract
- 2.75 oz. Czech Saaz hops (3.5% alpha acid, 9.6 AAUs): 1 oz. (3.5 AAUs) for 60 min., 1 oz. (3.5 AAUs) for 45 min., and 0.75 oz. (2.6 AAUs) for 20 min.
- Wyeast 2124 (Bohemian lager)
- 1 cup corn sugar for priming

Step by Step:

Bring 5.25 gal. water to a boil, remove from heat, and add extract. Return to boil and add 1 oz. hops. Total boil is 60 min. Boil 15 min. and add 1 oz. hops. Boil 25 min. more and add 0.75 oz. hops. Boil 20 min. more. Cool to 65° to 70° F and pitch yeast.

Ferment in the primary 12 days at 47° to 51° F. Transfer to the secondary and lager for at least three months or longer at 33° to 38° F. Prime with corn sugar and bottle.

All-Grain Version:

Replace extract with 5 lbs. two-row pale malt and 4 lbs. Munich malt, 8° to 10° Lovibond, and 0.25 lbs. crystal malt, 10° Lovibond, Change hop addition times to 90 min., 45 min., and 20 min.

Mash grains in 3 gal. water at 149° F and rest for 20 min. Raise temperature to 162° F for a 20- to 30-min. rest. Sparge when conversion is complete with enough 170° F water to collect 5.5 gal.

Total boil is 120 min. Boil 30 min. before first hop addition.

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Brewing: Base Malt Basics

by Gretchen Schmidhausler

If you're an experienced homebrewer, you've probably been formulating your own all-grain recipes for some time now. You might have learned the hard way that the great-smelling smoked malt or tasty crystal malt you used as a basis for your early beers didn't quite work out as you had hoped.

Now you know that the key to using certain malts is moderation. Today, you'd no sooner try to brew a red ale using all crystal than you would a stout with all dark malt. Specialty malts — smoked, crystal, roasted, chocolate, to name a few — typically represent a small fraction of the grist bill, usually 10 percent to 25 percent.



TODD HAMMOND

If you're just beginning to put together your own special brews, the best thing you can do is develop a real familiarity with your basic ingredients: hops, yeast, and malt. As tempting as it might be to bulk up on the specialty grains, resist and read on.

Soon you'll see that the majority of grain bills in even the darkest beers, the porters and stouts, use light-colored malts as their bases. These all-purpose malts are called base malts or "brewers' malts."

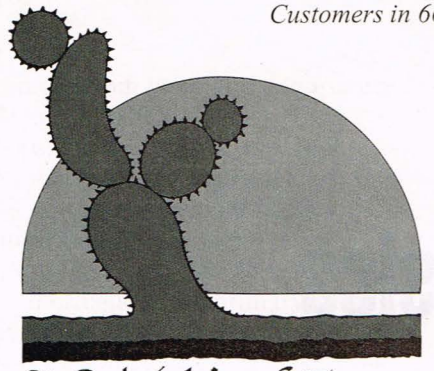
Some fine beers can be brewed using base malts exclusively, although most homebrewers prefer to include several specialty grains for a more complex, interesting brew.

Why Are Base Malts Important?

Base malts provide fermentable extract, color, and flavor. They account for most of the wort's soluble extract and the enzymes that produce the extract.

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lager, pale two-row and six-row, and mild malt. Vienna and Munich malts also are considered base malts, although they often are treated as specialty malts, depending on the style of beer being brewed. Wheat malts, unlike most specialty malts, do contain a significant amount of enzymes (more than most pale malts), but generally are still considered a specialty malt. Wheat often is used to lighten a beer or increase head retention and body.

Pilsner or lager malts are the lightest of the base malts. They are used primarily in lager beers. Pale malt is the standard British malt. Slightly darker than lager malts, pale is used to create ales. Mild malt, again slightly darker, is used in mild and brown ales. Lager, pale, and mild malts have a mild, biscuity flavor. Vienna and Munich are both darker and more aromatic, with more pronounced sweetness and taste. They are used as specialty malts or alone to create darker lagers.

Base malts and specialty grains are created by the same process, although with some variation. To get the most out of these malts, it's important to have a basic understanding of the malting process. Let's start at the beginning.

Barley is a cereal grass, the seeds of which are the basis for malted beverages, including beer. Malted barley is barley that has been partially germinated, then dried. Malted barley is rich in starches and starch-converting enzymes produced during this process. There are two kinds of barley, feed barley and malting barley. The higher-quality malting barley is the one used by brewers.

Brewers' malt is grown primarily in North America and Europe. In the United States the majority of brewers' malt is grown in Montana, North and South Dakota, Wyoming, and Idaho. Two-row barley, used by most microbrewers, accounts for only about 12 percent to 15 percent of the total grain grown.

Well-known maltsters include the British suppliers Muntons, Beeston, and Crisp; Belgian maltster DeWolf-Cosyns; American malt

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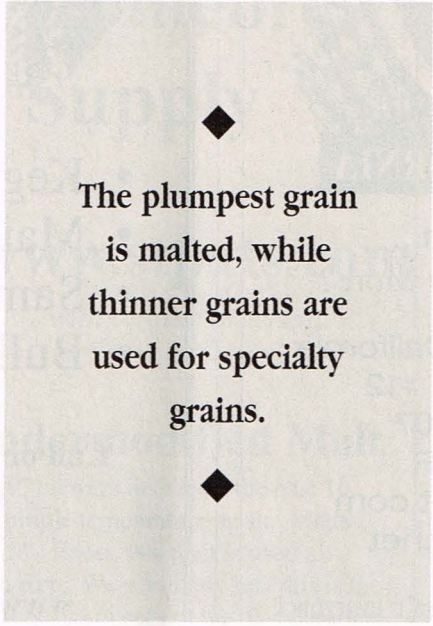
company Great Western; and Briess and Schreier, which have facilities in the United States but roots in Europe. Other notables include Weyermann, Franco-Belges, Gambrinus, Pauls, and many others.

The Heat Is On

The malting process starts with the maltster's selection of a good malting barley. Sought-after attributes include plump, uniform grains; high enzyme potential; high crop yield; high extract yield; low nitrogen/protein content; resistance to disease, infestation, and breakage; and viability.

The malting process is essential to beer production. The biochemical reactions that occur in the mash happen only because of the modification of the barley. Modification refers to the changes that take place in the barley grain during germination, specifically the softening of the endosperm (the starchy sac inside the grain) and the development of enzymes.

After appropriate barley has been harvested, it is dried, if necessary, to reduce moisture content and then stored in silos. Next, the clean grain is separated by size. The majority of the grain — the plumpest grain — is malted, while the thinner grains are used for specialty grains (the thinnest of which are used for animal feed). This phase also serves to remove foreign material from the grain.



The grain is then steeped for 48 hours to further cleanse and evenly hydrate the kernel to about 40 percent to 45 percent water. After steeping, the grain undergoes a controlled germination, or sprouting, and is then dried or kilned. It is the kilning process that produces much of the color and flavor in malt.

Once germination has occurred, the grain bed is heated and dried in stages to halt respiration, and so germination. Heating also removes unwanted volatiles and produces the flavors and colors associated with malted barley. The grain is periodically turned to evenly distribute the heat and to prevent the rootlets

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that grow during germination from becoming entangled.

If the germination process is stopped prematurely, the malt will be undermodified. Microbrewers almost always use fully modified American and European malts exclusively.

The process of kilning is slow and is carefully controlled by the maltster. As the moisture content of the grain is reduced, enzymes become more heat-stable. Base malts are dried quickly and finished at low curing temperatures. As a result they are low in flavor and high in diastatic enzymes, also called diastatic power. Diastatic power is a measure of the malt's total amylase content. Alpha and beta amylase are the only enzymes responsible for converting starches to fermentable sugars during the mashing process.

Pale malts generally are kilned for 24 to 30 hours, while specialty malts are kilned for at least 48 hours. Specialty malts are created during the kilning process. Vienna and Munich malts, for example, are kilned slightly longer than pale malts and at a higher temperature. The result is a darker, sweeter-tasting malt. Chocolate malt is roasted even longer, producing a darker color that still retains some flavor and malt sweetness. Black malt, the darkest malt with the least amount of flavor, is produced by extremely high kilning temperatures.

Most specialty malts contain no enzymes. They do, however, contribute color, flavor, mouthfeel, and aroma to beer, depending on the percentage used.

These steps take place in a variety of different vessels, each designed for that specific purpose. Malting today is an automated process. Floor malting is an important part of history. This centuries-old form of malting results in slower, more even modification than modern methods. There's only a handful of maltsters still floor malting. Most are in the United Kingdom, and floor-malted grain is usually a portion of all the malts they produce.

After steeping, the malt is left in a thick layer on the malting floor for

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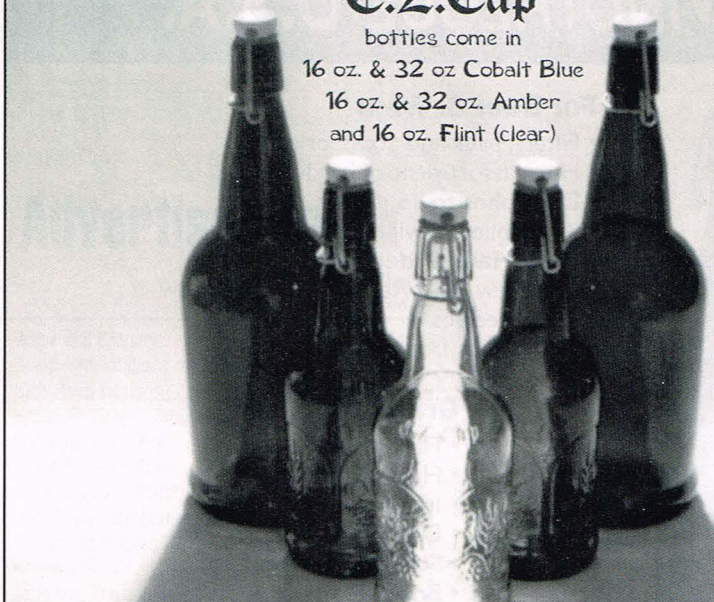
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a day to encourage germination. Once germination occurs, the layer is thinned out and the malt is turned periodically to ensure an even distribution of moisture and heat. Malt is ready for drying and kilning in seven to 10 days. Because the process is more labor intensive, floor-malted barley is more expensive than machine-malted barley.

Malting is a precursor to mashing. What happens during malting is halted by hot air drying the malt and putting the enzymes into stasis. Mashing reactivates the process by rehydrating and heating the grain much like what occurred during malting.

Battle of the Rows

There are two types of malted barley used today: two-row and six-row barley. Two-row varieties develop fewer fertile corns. Two-row varieties are plumper, higher in potential fermentable extract, and lower in nitrogen. Along with the higher starch content, they have less protein and husk, as a result yielding slightly higher extract. Two-row is kilned at lower temperatures to preserve enzyme activity and minimize color.

Most microbrewers prefer two-row barley while macrobrewers, because of their use of adjuncts such as rice and corn, prefer six-row.

Among the two- and six-row base malts are specific varieties, such as the English Maris Otter, a traditional, floor-malted, two-row winter barley variety available through several maltsters, including Beeston and Crisp. Maris Otter is readily available to homebrewers but tends to be more expensive due its limited production.

There are dozens of varieties of barley used for brewing in North America. Two common ones are Harrington, a two-row barley released in 1981, and Robust, a six-row barley released in 1983.

As a homebrewer, you might find your malt choices more limited than microbrewers. Buying your malt in bulk might open up more doors for you, though. The base malt you choose for your recipes will depend on the style being brewed and availability of the malt. ■

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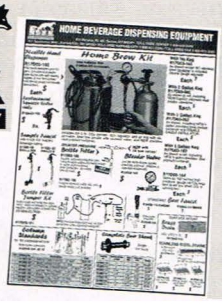
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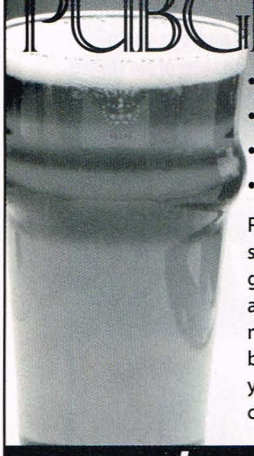
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CIRCLE 42 ON READER SERVICE CARD

Creative Traditions: Homemade Apèritifs

by Alison Crowe

Americans have a love affair with cocktails. The Manhattan, the martini, and the old-fashioned all are sipped at bars, in homes, and by wheelers and dealers during the business lunch. The French, on the other hand, choose apèritifs. Like cocktails, apèritifs usually contain alcohol. However, apèritifs seem to leave the city clutter and the ritz and glitz behind and become instead beverages that are meant to be enjoyed slowly, with family and friends.

Apèritifs are served at two times of the day: before the noon and evening meals. Apèritifs come in many forms. They range from a simple glass of the local white wine enhanced with crëme de cassis (black currant syrup) to a bracing concoction of ice, water, sugar, and Pernod, a fortified wine flavored with bitter and aromatic herbs.

It is believed, however, that the very first apèritifs — and the social traditions that surround them — were developed 200 or more years ago by the home winemakers of the French countryside. These farmers, dairymen, and winegrowers would relax before the evening meal with flavored wine-based beverages that they and their families had created.

Their apèritifs were, and still are, sweetened, fortified wine-based drinks that take on the flavors of whatever material is added to them. Spices, citrus peel, flowers, and fruit are still some of the favorite ingredients.

Each of the following recipes is geared toward finding something to do with that spare gallon of red or white wine every home winemaker has sitting around somewhere. Neutral wines — those that aren't necessarily your most stellar creations — work best for making your own apèritifs.

Another great way to mix up some creative beverages is to start with a kit and designate those five gallons as your apèritif-base wine. Distinct varietal characteristics might overpower the delicate apèritif ingredients, so neutral kit wines are the best. For whites, choose Semillon, Chenin Blanc, or Sauvignon Blanc. For reds, go with Grenache, Merlot, or Gamay.

Feel free to use the following recipes as inspiration for your own flavorful concoctions. Ingredients such as nuts, herbs, dried roots, fruit tree leaves, and dried fruits are all traditional apèritif flavorings. Just start with a base wine and then flavor, sweeten, fortify, and bottle!



Special Equipment and Ingredients

Fortunately, it's possible to make delicious apèritif wines with things that winemakers commonly have on hand. However, there are some ingredients that can only be found at specialty stores. Try Dean & DeLuca, New York, (212) 431-1691; or Williams-Sonoma, San Francisco, (415) 652-9007. For these recipes, it's only necessary to have the equipment on hand that most home winemakers have anyway: cheesecloth, strainers, large stockpots, and non-reactive stirring spoons.

Guignolet

(about five 750-mL bottles)

This is a sweet, bright red, cherry-flavored wine that is a great way to show off local fresh fruit — and your own homemade red wine!

Ingredients:

- 1 gal. neutral dry red wine
- 7 1/2 cups powdered sugar
- 5 lbs. sweet black cherries

- 3/4 cup vodka
- 3/4 cup kirsch

Step by Step:

Wash and pick over the cherries under running water, discarding any bruised or unhealthy fruit. Carefully pit the cherries with a cherry pitter and combine with the wine and sugar in a large, non-reactive stockpot.

Place over medium-high heat and stir gently as the mixture comes to a boil. Turn down the heat and simmer for about 5 min., stirring to ensure all the sugar is dissolved and the cherries become macerated in the wine. Turn off the stove and let the mixture cool. Add the vodka and kirsch, stir, and cover the pot with cheesecloth.

Let this stand in a cool, dry place for two days. After two days, strain the fortified wine mixture into another clean, non-reactive container using a sieve that has been lined with cheesecloth.

At this point the wine is ready to be bottled into individual 750-mL wine bottles, or it may simply be racked into a 1-gal. jug for bulk storage. Store in a cool, dry place and store any open bottles in the refrigerator, where they will keep for at least a few months.

The wine is ready to consume after it has been strained off the fruit, though it will improve with a few months of bottle aging and should be consumed within a year. Serve two to three ounces of the guignolet, slightly chilled, in clear, heavy-bottomed wine glasses to display the bright red color.

Vin Marquis a la Pays Basque
(Makes about seven 750-mL bottles)

Vin Marquis is an old, very traditional apèritif with a flavor base of citrus and spice. This twist on the original uses flavorings from France and Spain to reflect the unique culinary history of the Pays Basque, the area on the French-Spanish border.

Ingredients:

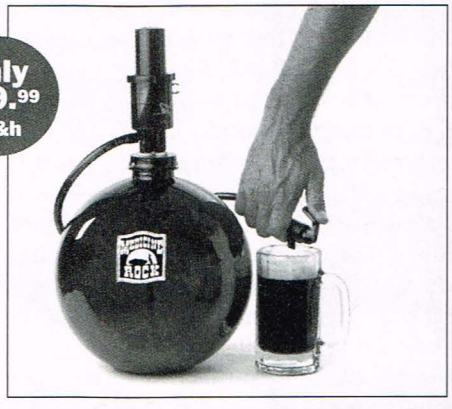
- 1 gal. neutral medium-dry white wine such as Chenin Blanc or Semillon
- 5 oranges
- 1 lemon, peeled
- 3 1/2 cups granulated sugar
- 1 cup vodka
- 1 cup Armagnac or other brandy
- 1/4 cup dark rum
- 1/4 cup anisette
- 1/4 cup orange-flower water
- 1 Tbsp. almond extract

Step by Step:

Peel the lemon, reserving the skin. Cut the oranges and the peeled lemon into quarters. Gently crush the lemon peel with the back of a knife to release the aromatic oils contained in the skin. Combine all of the above ingredients plus lemon peel in a clean, large, non-reactive glass, ceramic, or stainless steel container. Cover and let sit in a cool, dry, dark place for five weeks.

Strain into a clean container

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using a sieve lined with several layers of cheesecloth. Discard the solids. The wine at this point is ready to be bottled but can be stored in a larger container for bottling at your convenience. Age for at least six months before drinking. It will keep in the cellar for up to five years.

Sangria for a Crowd
(makes about 25 servings)

Even though sangria does not follow the "fortified" method of bottled apèritifs, it is a very traditional Mediterranean way to share the apèritif hour with a large group.

Ingredients:

- 1 gal. dry red wine, chilled
- 4 lemons, cut into thick slices
- 4 oranges, cut into thick slices
- Juice of 4 oranges
- 2 cups cherry juice, fresh or bottled (cranberry may be substituted)
- 3 12-oz. bottles sparkling mineral water, chilled

Step by Step:

Combine all ingredients in several large pitchers or punch bowls. Float chunks of ice or an ice ring in each container. Serve immediately in large tumblers or sturdy wine glasses.

Definitions of Additional Ingredients

Anisette: A liqueur flavored with anise or other licorice-type plants, anisette can be found at large, well-stocked liquor stores and gourmet food stores. If you can't find any, substitute 2 tsp. licorice flavoring or macerate a few stalks of licorice plant (fresh) in 1/4 cup vodka.

Armagnac: A grape-wine-based distillate, armagnac is said to be a more fiery and tempestuous version of its polished cousin, cognac. Armagnac is far more than a brandy; the French say it is a way of life. Armagnac should be available in most wine and liquor stores that carry an array of European imports.

Kirsch: A distilled alcohol that is flavored with cherries, either naturally or artificially. Kirsch can be found in liquor stores and in supermarkets that sell wine and spirits.

Orange-Flower Water: This lovely-smelling water is distilled in France from the petals of the flowers of the orange tree. Though orange-flower water is often sold in drugstores, do not buy this kind because it is invariably adulterated with artificial ingredients.

Orange-flower water is available from Williams-Sonoma and Dean & DeLuca as well as other gourmet food and bakery-supply stores. ■

Alison Crowe works at Byington Winery & Vineyards in Los Gatos, Calif. She has a degree in winemaking from the University of California, Davis.

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Competition Steward for a Day

by Steve Pelzer

Like many of you out there, I was faced at some point as an amateur brewer with the question of whether I should enter a homebrew contest. Being the egotistical fool that I am, I decided I would enter and began dreaming about what I would do with my Best of Show prizes.

Before submitting one of my beers, the owner of my local brewshop told me that I should be a steward at a local homebrew contest to get the inside scoop. He said I'd be able to listen to the judges' comments and probably learn some new tricks about how to judge a good beer. He also told me that at the end of the contest there's a party held to celebrate the event and to drink all of those extra bottles of beer that were sent in. The idea of free homebrew was hard to pass up, so a brewing buddy and I signed up to be stewards.

The competition was at a "community center" about 45 miles from my home. Neither my friend nor I knew that this town had a community center. We drove to the street address for the contest and found that the building doubled as both a community center and a funeral home! That first shock was just the beginning of an experience that I am sure my buddy and I will never forget.

I am a self-professed beer geek and am well versed in irrelevant beer facts. But I can't hold a candle to a "beer judge." Judges take beer geekdom to a new level. They claim to be able to tell the type of hops, grains, and procedures used just by tasting the beer. If you've ever entered a contest, you've seen their knowledgeable comments, phrases such as "good drinkable beer, a little thin for style."

After two or more judges and a steward are assigned to each style category, a commercial version of the assigned style is judged as a test run. The appearance of the bottle is judged first (very scientific). Then each judge pours about an ounce of the beer into a small, clear cup. From that point on everyone has his or her own personal judging style. Some hold the sample up to the light to check for clarity. Others carry a pocket thingy that they hold up next to the beer to get the exact SRM rating. The judges carry on like this for a few minutes, and then they begin writing down those great comments that we all live for.



A day behind the scenes at a homebrew competition can be a real learning experience.

If they have too big a gap between scores when their numbers are discussed, the judges must re-score until they get within the guidelines. (This explains why everything is done in pencil and why you sometimes see a lot of erasing.) The samples are kept lined up in case the judges have to go back and re-score again to determine placing. For example if they feel that Beer A is the best in the category and not Beer B, but originally Beer B had a higher score than Beer A...well, out come the erasers. The category is finished when the place rankings are set, and First Place is sent into the Best of Show judging.

Best of Show judging takes only the geekiest of beer-judging geeks. These judges must take a variety of styles and decide which one best fits its style's guidelines. After sampling all those beers — some good, some not so good — I am not sure how anyone could be in the best shape to pick a winner at that point.

As soon as the Best of Show is selected, the party begins. My buddy and I wrote the contest off as a learning experience and left, feeling tired of the whole judging process and a little bit strange that we had drunk all that beer in a funeral home.

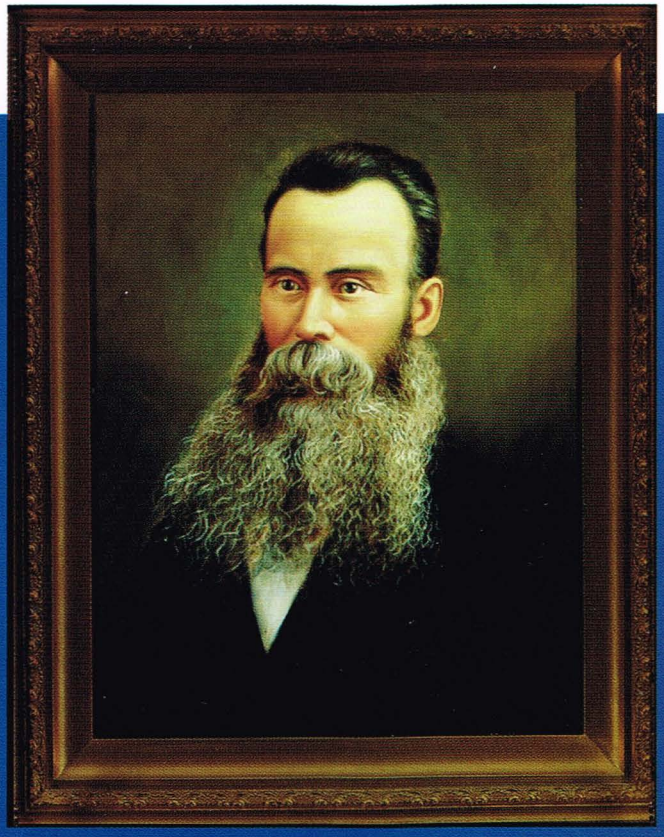
I have entered quite a few contests since then. Some of the beers that I was very proud of did well, others didn't. No, I have never fulfilled that initial expectation of Best of Show (and of course I still have that expectation every time), but I have had a few first-place finishes. And now I know first-hand what a homebrew goes through just to get a ribbon. ■

Do you have a 750-word story for Last Call? Mail it with a color photo to Last Call, c/o Brew Your Own, 216 F St., #160, Davis, CA 95616.

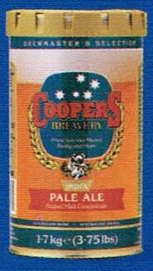
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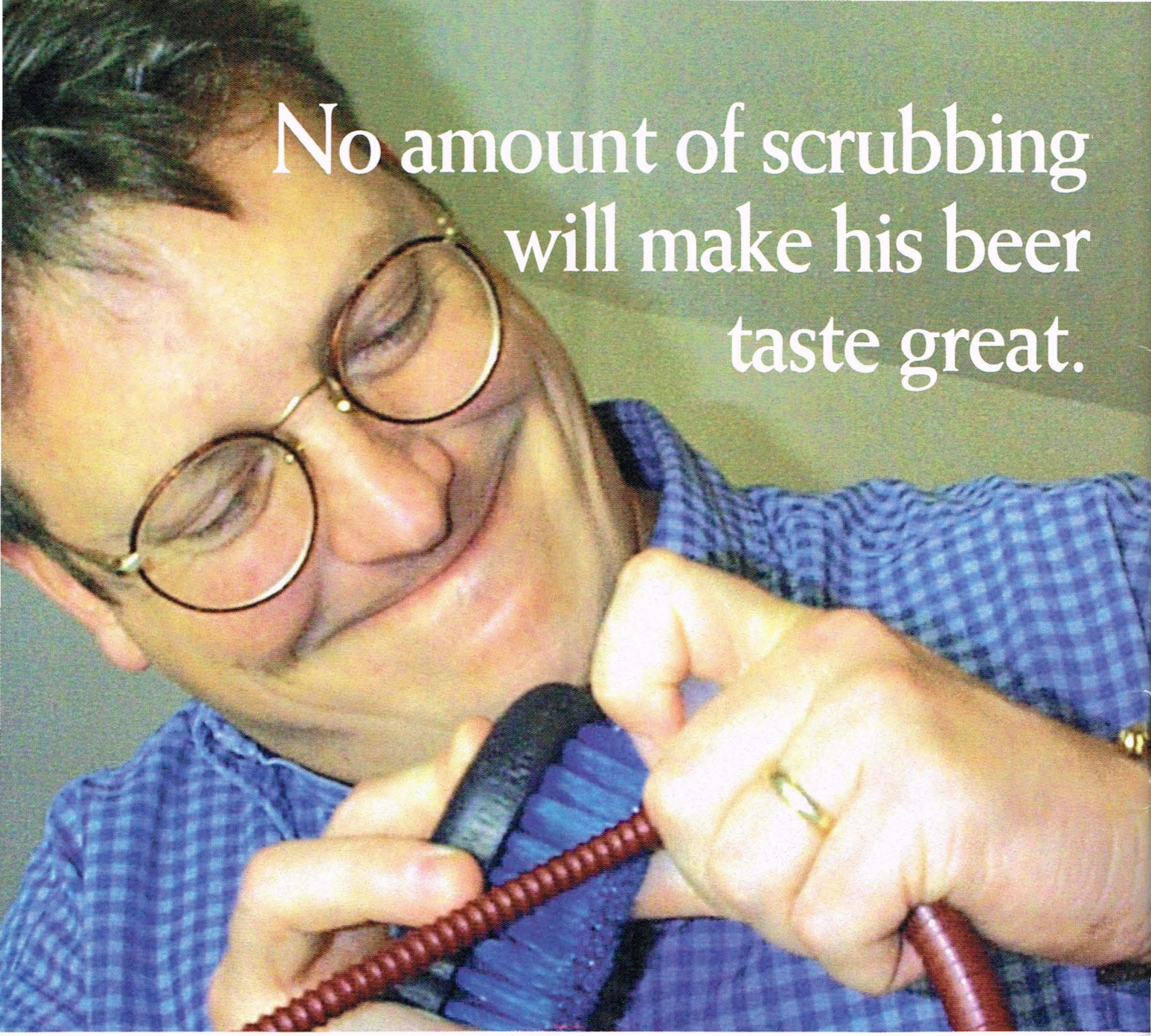


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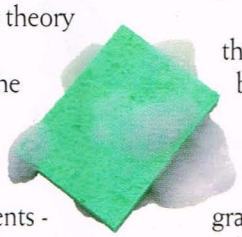
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