

Brew

June 1998, Vol.4, No.6
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THE HOW-TO HOMEBREW BEER M

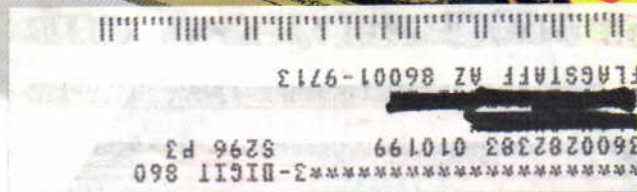
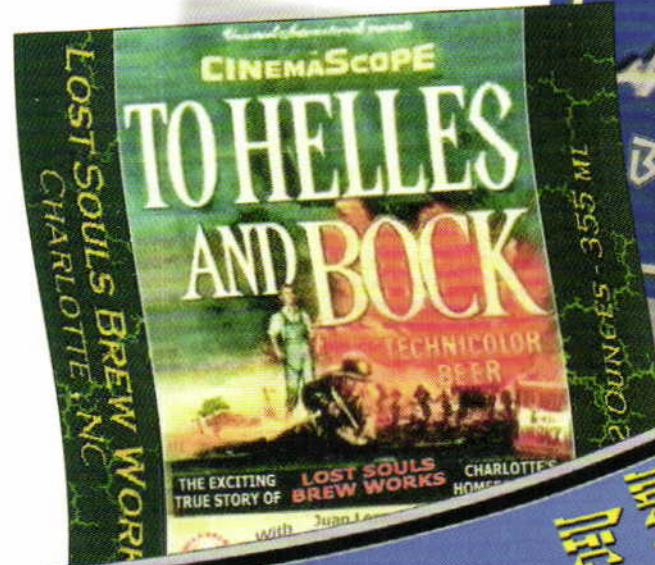
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heat. Bring temperature to
170°F and hold for 20 minutes.

3. Remove and discard grains and boil
for 20 minutes. At the end of the boil, add
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*This recipe is for the 5 US gallon (19 litre) kit. Get in touch and we'll send you the
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CIRCLE 43 ON READER SERVICE CARD

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More Great Labels

I think I can speak for just about everyone at BYO when I say label-contest time is our favorite time of year. Our regret, as usual, is that we had so many great entries — 1,286 in all — and so little room to print the best ones. But let me say that we looked at and enjoyed every entry and if you sent a letter as well, we read it and appreciated it. And as usual, a special thanks to everyone who sent beer! Be sure to check out the outstanding entries (page 32), but first here are a few winners that didn't make it onto the pages of the article.



The Truth Comes Out Award: Dean Nevelos, Marion, Conn., for confessing that he may have named his Cat Spit Porter based on a subconscious desire to make people reluctant to try it.

It Takes Us Back to Places We Didn't Want to Go Award: Keith C. Finkral, Pennington, N.J., for KC and the Sunshine Brew.

It Takes Us Back II: Keven R. Diels, Lewis Center, Ohio, for No Doubt IPA, which for some reason features a photo of Elvis Presley shaking hands with Richard Nixon. Eek!

Very Punny Award: Brian and Becky Newton, Groveton, N.H., for Magnum PA, "A Pale Ale Worth Investigating."

Blue Blood Award: David M. Johnson, San Francisco, for

Knaveheart Scottish Border Brew. Includes an explanation that his ancestral family clan "rustled cattle, kidnapped, blackmailed, and feuded with their neighbors." Wow! Today, of course, we'd call them lawyers. (Just kidding!)

Sensitive Male Award: To Bill Brickey, Ridgecrest, Calif., who created "Ole-9-Toes Homebrew" when his wife had to have her big toe amputated. The label features two footprints with guess-how-many-toes and the statement, "We may be missing something, but it's not our taste for good beer." Bill claims his wife "loves her new nickname..."

Copyright Infringement Award: Scott Adams, Duluth, Ga., whose Merry Christmas Spice Ale featured a photo bearing a striking resemblance to last December's BYO cover.

Good Deal Award: John Bergeron, Lafayette, La., whose Australian Cajun Ale label urges drinkers to "Return bottle for another free cold beer."

Advice We Can Follow Award: Jerre Wilson, Stafford, Va., whose Clarence & Bubba's Olde Time Country Ale label offers the warning: "Do not attempt to do any work during or after drinking. Best if consumed while doing absolutely nothing."

Been There Award: Andrew White, Rochester, N.Y., for Somkindahop Ale, who confessed that he didn't know what kind of hops he used in his beer. For us it's more like Somkindahoprte because we forget to put the hops in at the right time.

Here's to the winners!

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Unusual Brew, for a Restaurant

Barry Baum
Santa Rosa, Calif.

In the summer of 1996, I had been asked by my friend and local restaurateur, Lisa Hemenway, to concoct a special brew for a "Singapore Celebration" dinner. Curry immediately crossed my mind.

I had also recently baked some exceptional bread using fresh cilantro, one of my favorite herbs. And since beer and bread are essentially the same food, voila! Curry and Cilantro Ale it was!

After checking with the local ATF guru regarding the legality of brewing for a commercial establishment, I was told that I could "donate" the beer to a good cause but not sell it.

The resulting brew, "Far

East Amber," was a delightful marriage of the assorted flavors. The curry and cilantro were both present as an overlay of a full-bodied, moderately hopped, malty ale. The dinner was a sellout, and two cases of 12-ounce bottles vanished quickly.

Our next adventure, a garlic and onion brew, "French-man's Breath," in honor of Bastille Day, was not as successful. During bottle conditioning, the flavors somehow interacted in a strange, esoteric manner, yielding a brew with noticeable garlic and onion,



Fishing, like brewing, is about only remembering your success.

plus a musty, skunky aroma. Can't win 'em all!

Brew Buddies

Five years ago my husband began his favorite hobby: homebrewing. I owe thanks to my uncle, who gave him his first plastic



It smells so good that J.J. doesn't understand why they can't drink the root beer he and his dad make (above) right away.

bucket, can of malt, and recipe. He has advanced to all-grain brewing, the making of mead, and wine-making. He has become quite the expert, according to our friends and family. He entered our New Mexico state fair this year and won a silver medal for his J.J.'s black stout.

Our son, J.J., was born in 1993, the year J.J.'s Homebrew and Meadery was established. Little did he know that he and his dad would become quite a team in this brewing venture. I remember watching my husband in the kitchen, explaining to our son the process of fermentation. J.J. was only 2 years old at the time. He listened intently as his father told him how yeast and sugar work

together. Our daughter, Amber, and I sat quietly and chuckled from a nearby room. Amber, who is soon to be 13, has become James' part-time capper. When the time is right and she doesn't have anything "better" to do she will help cap the homebrew and cork the wine.

The first batch of soda the men made together was an orange drink. They kegged it right away and put it in a refrigerator to chill. We are still enjoying that batch. A batch of homebrewed root beer is disappearing slowly because it is stronger than store-bought root beer. J.J. proudly offers this home-made soda to family and friends.

I think J.J. will gladly share the love of homebrewing with his father. They make quite a team smelling up the house, messing up the kitchen, and sharing a "cold one."

Melia Chavez
Albuquerque, N.M.

Head of the Class

Reading, writing, 'rithmetic, and brewing are the courses of study followed by Geoff Halsey and me, two Port Clinton, Ohio, teachers. We began brewing with extract kits before graduating to all-grain two years ago.

We produce about 240 gallons of beer a year. Normally, we brew on specific holidays during the school year but agree that having three months off in the summer is prime brewing time.

Two of our favorite recipes include a double-hopped amber and a light lemon rice beer. In addition we believe we brew an oatmeal stout that is at the "head of the class."

To be an educator of children one must be patient and caring. For us, these attributes are evident in each and every beer we brew.

*Eric Zeitchem
Port Clinton, Ohio*



Taking advantage of a school break to brew — our homework was never quite like this.

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Keeping Kosher

Dear Brew Your Own,

I must mention an oversight in "My Passover Dilemma" (Last Call, April '98 BYO). It states, "Beer contains no animal products." Careful. Most beer finings are animal products. Gelatin and isinglass are both from animals. Kosher gelatin is available.

Alan Talman
East Northport, N.Y.

Dear BYO,

I was a little perplexed by "My Passover Dilemma," making mead specifically for Passover use.

One of the prohibitions during the Passover observance is any form of leavening.

Yeast has to be at the top of this list as a leavening agent. I checked a packet of Red Star champagne yeast and found it is, indeed, kosher. But that does not mean it is kosher for Passover. As the article stated, different rules apply during Passover, and products that are kosher during the rest of the year are not acceptable for use during Passover.

With that said, keep in mind there are wines that are kosher for Passover. As with other products, I suspect these wines are processed differently to ensure that no live yeast remains.

These wines require additional "kosher for Passover" designations. I would argue that for the Red Star yeast to be acceptable for use in a kosher-for-Passover batch of homebrew, it would also require this designation, not merely the kosher symbol.

Perry A. Trunick
Cleveland, Ohio

Easy Label Removal

Dear BYO,

Here's a tip that I've never seen mentioned in any homebrew literature.

To easily de-label empties (so you can sanitize in the dishwasher



or for generally improved hygiene and aesthetics) use laundry detergent!

I kid you not. Two cups in the bathtub with warm water, add a couple dozen bottles, and an hour later the labels slide right off.

Metallized or shiny labels need a two-step process: After peeling off the paper surface give the bottle another 15 minutes and finish the job with a washcloth.

I do suggest that the first time you try this you send your children or parents or easily offended roommates out of the house, because you will remember each and every bottle you ever attacked with a scraper with its very own, individualized curse.

Sean Richens
Winnipeg, Manitoba

Priming Overload

Dear BYO,

Your March issue was the first I've read and I enjoyed it a great deal! I was surprised by your advice in the mail section to Mike Thomas regarding priming his five-gallon kegs with two-thirds to one cup of corn sugar. I package my homebrew in five-liter kegs.

I've always been told (and have learned firsthand) that only one-third cup is required for bulk packaging, or the beer becomes over-carbonated. Prior to reducing to one-third cup I managed to explode a few kegs myself. There is still beer on the ceiling to prove it.

Timothy J. Allinson
New York, N.Y.

Kit Wines

Dear BYO,

We were happy to read "Making Excellent Wine From Kits" (April '98 BYO). This was an excellent forum in which to educate the public about the varieties and techniques used in

the wine kit market.

We thank manufacturers that listed the contents and ingredients of their wine kits accurately.

It is, however, unfortunate that there are some people who when listing the contents of their products used terms such as "may contain" or omitted completely the fact that liquid invert sugar is present in their kits.

It is disappointing when an opportunity such as this one comes along to teach and educate the public that some people would rather misinform readers than just state the facts. Unfortunately those who honestly stated their ingredients may have been punished by doing so.

*Randall K. Bird
President, RJ Grape Products Inc.*

Air Wars

Dear BYO,

Help! "Winning the Air Wars" (April '98 BYO) says not to aerate the wort while it is hot. How hot is hot? Is 140° F still too hot? How about 110° F? Do I need to cool it all the way down to 70° or 80° F before it is safe to aerate?

I used to chill by pouring the hot wort into chilled water, which really helped get a good break going.

Now I use a cold water bath to get the temperature down to the 110° F range before doing basically the same thing. I am an extract and partial-mash brewer.

*David Blaine
Deckerville, Mich.*

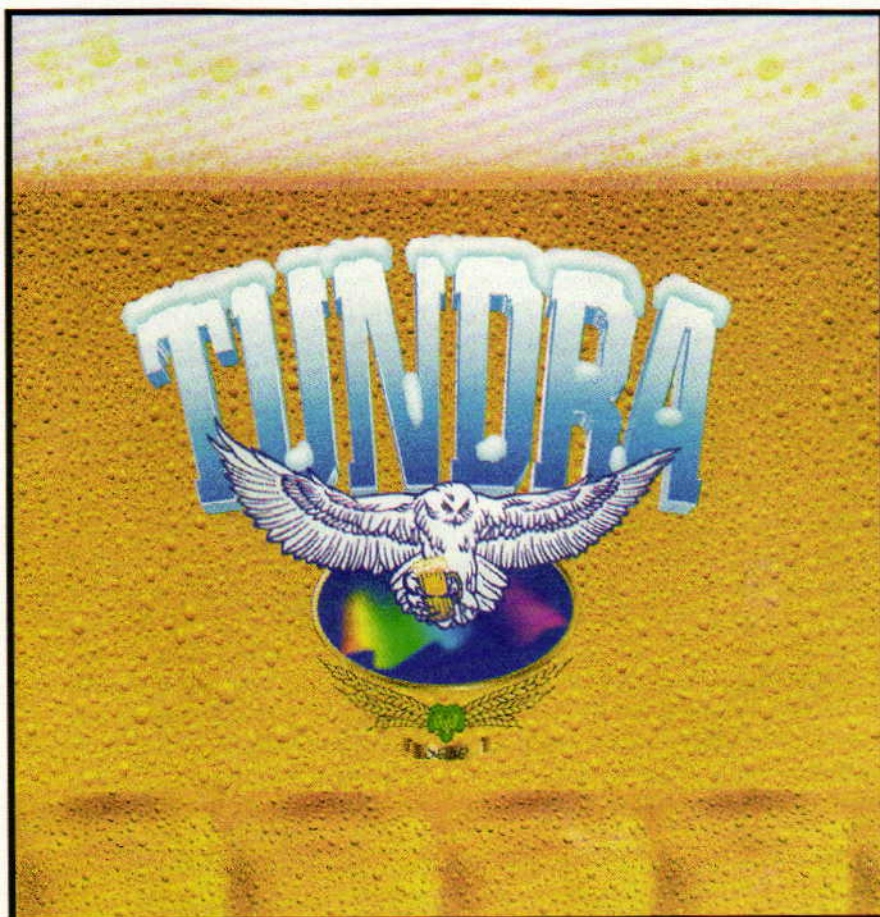
The short answer is that it's not a matter of what's "safe"; it's a matter of what's efficient. Oxygen does not dissolve or remain in solution well in hot wort, so while aerating the wort when still hot won't harm anything, it won't do much good, either. Because solubility increases as temperature decreases, you will get more oxygen at 110° F than at 140° F, but it is probably not enough. The wort should be aerated fully after it is chilled to pitching temperature (generally 70° F for ales) to ensure that enough oxygen can be dissolved for yeast use.

Searching for Beer

I was stationed in Germany during my Army days and loved all the great German beers. Now I prefer ales, especially brown, porter, stout, and IPA. But there's one haunting memory of a certain beer I'd shoot my mother-in-law to get the recipe (or better yet, the kit) for — Belgian White Ale.

*Tom Welch
Marble Falls, Ark.*

Witbier was the subject of our Recipe Exchange column in the November '96 issue (see page 29 to order back issues). We also invite readers to submit their best witbier recipes now. Send them by June 20 to be included in the Recipe Exchange column for the September issue.



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CIRCLE 33 ON READER SERVICE CARD

Sprucing Up a Wheat Beer

by Scott R. Russell

If necessity is the mother of invention, then this may have been the mother of all invented beers. My mission, should I choose to accept it, was to invent a recipe so weird that no one would ever have brewed it before. One that would be relatively easy to do, however, as an educational experiment in brewing techniques and processes. But, most important, it still had to be drinkable. And interesting. Preferably good. As the coded message self-destructed, I tried to imagine a combination of ingredients and process.

A classic style with a kink (not just a twist), I decided, would be the most dramatic way of

teaching about the effects of ingredients on process. As I rummaged through the pile of stuff on my workbench, I saw two things. One was an article about the EEC and the continuing effects of the Reinheitsgebot on beer imports in Europe. (I don't generally read stuff like that, but an economist friend always clips articles having anything to do with beer from the Wall Street Journal and sends them to me.) The other was a four-ounce bottle of spruce essence, nearly empty. Nah, I said to myself. A spruce beer was just not odd enough. Been there, done that. In fact, been there, over-done that. But

what if we added a touch of spruce to an otherwise "normal" beer? Something German, something holy and ultra-traditional? Something that would horrify proponents of the Reinheitsgebot? But something that would still be interesting.

Since spruce is generally a sharp, tangy flavor, it needed to be a contrasting sweet



Fichteweizen (5 gallons, partial mash)

Ingredients:

- 1/4 tsp. winemaker's acid blend
- 2 lbs. German pilsner malt
- 2 lbs. German wheat malt
- 0.5 lb. light crystal malt, 20° Lovibond
- 0.5 lb. cara-pils malt
- 4 lbs. unhopped wheat dry malt extract
- 1 oz. Tettnanger hop pellets (4% alpha acid) for 15 min.
- 1 qt. German wheat beer yeast slurry (Wyeast 3333)
- 1 1/2 oz. liquid spruce essence
- 7/8 cup corn sugar for priming

Step by Step:

Treat 1.5 gal. water with acid blend and heat it to 165° F. Crush grains and add to water. Hold at 151° F for 75 min. Begin runoff and sparge with 1.75 gal. water at 168° F. Add water to kettle to make 2.5 gal., then bring to a boil. Total boil is 60 min. Add dry malt, stirring well. Boil 45 min., then add hop pellets. Boil another 15 min., remove from heat, and set in

ice-water bath to cool. Add to fermenter after 30 min. or so with enough pre-boiled and chilled water to make 5.25 gal. When cooled to 70° F, pitch yeast.

Ferment at 65° to 68° F for seven to eight days, then rack to secondary. Condition cool (58° to 60° F) for 12 to 15 days. Add spruce essence along with priming sugar and bottle. Age cool (55° F) for two weeks.

Alternatives:

Extract: An all-extract version would be possible by simply substituting another 2 lbs. wheat dry malt and 2 lbs. light (barley) dry malt for the whole mashing step. Start with a kettle containing 2.5 gal. of treated water, proceed as above.

All-grain: Mash 5 lbs. pilsner malt, 4 lbs. wheat, and 0.5 lb. each of light crystal and cara-pils in 3 gal. water; sparge with 4 gal., then proceed with the boil, reducing the volume to 5.25 gal.,

hopping as above.

A word about wheat malt: German wheat malt is preferred especially if you brew from grain only, but in the partial-mash recipe it won't make a huge difference if you can only get English or American. Wheat dry malt is usually about half wheat, half barley, but be careful because some malting companies are now selling a 100 percent wheat extract. You need a substantial percentage of barley to ensure a good, even fermentation.

About spruce: Spruce essence is usually available at homebrew supply shops with their soda extracts. It can be used year-round, obviously. If you were to brew this beer in the early spring, you would do better, of course, to go out and gather a pint or so of new, fresh spruce needles, which could then be soaked in vodka for a couple weeks to make a tincture. This would still be added at bottling, as above.

beer, one with interesting aromas to mingle with the spruce's aromatics. Well, that triggered all sorts of Proustian sensory images including, not least of all, bananas and cloves, and suddenly I had it. I would take a classic Bavarian hefe-weizen and spike it with just enough spruce flavor to disorient but not destroy.

The answer was so obvious, in hindsight, that I didn't know how I could have taken so long to come up with it.

The balance has to be right on this beer. Too much wheat and the spruce might as well not even be there. Too much "hefe" and everything else is overwhelmed. Too much spruce and, well, it wouldn't be good for much but floor detergent.

I decided to make it a bigger-than-average weizen, just in case I slipped with the spruce. I decided to use a moderately estery yeast, avoiding the extremes of the Weihenstephan strains. Hops? Didn't need much, I decided, just a touch of

some mild noble hops to give a little zing to the aftertaste.

As an experiment, it worked. Best of all, it was good. You probably couldn't sell it in Germany, but it didn't last long in my cellar.

Reader Recipe

Captain Mike's Backdraft Bock (5 gallons, grain and extract)

Very dark and intense enough to wake you up after a winter of hibernation.

Michael Orloski
Franklin, N.J.

Ingredients:

- 9 lbs. Munich malt
- 1.5 lbs. crystal malt
- 1 lb. dextrin malt
- 0.5 lb. chocolate malt
- 1 lb. weizenmalt dry malt extract
- 2 oz. Tettnanger hop pellets (4.7% alpha acid) for 45 min.
- 1 1/2 tsp. calcium carbonate added

- to mash water
- 1 tsp. Irish moss for 15 min.
- Wyeast 2206 (Bavarian Lager)
- 3/4 cup corn sugar for priming

Step by Step:

Prepare 1 qt. starter three to four days prior. Gradually reduce to 50° F. Add Munich malt and dextrin malt to 13.5 qts. water at 142° F. Protein rest for 30 min. at 131° F. Raise to 149° to 151° F for 2 hours. To mash out add 0.5 gal. boiling water and crystal and chocolate malts. Heat to 168° F. Hold 5 min. Sparge with 5 gal. water (pH 5.7) at 165° to 168° F.

To the runoff in kettle add weizenmalt and boil to reduce volume (about 2 hours), adding hops during last 45 min. of boil. Cool to 50° F. Rack to fermenter, aerate well, and pitch yeast starter.

Let sit at room temperature (60° to 68° F) until fermentation starts. Reduce temperature to 52° to 55° F for 18 days or ready to bottle. ■

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CIRCLE 50 ON READER SERVICE CARD

Scent of a Lager

Mr. Wizard

I am brewing a partial-mash red pilsner. I pitched the yeast three days ago, and fermentation started right on schedule. I moved the carboy to the porch, where the temperature is pretty steady at about 40° F. After one night on the porch, I started getting a strong sulfur smell. I read in one of Charlie Papazian's books that this happens frequently, but he gives no tips as to how to stop it. Will it affect the taste of my beer?

Carl Meier
Riverside, Calif.

Welcome to the wonderful and oftentimes smelly world of lager brewing! The lore of lager brewing is steeped in glorious tales of storing large wooden barrels of beer in deep earthen cellars to slowly mature, patiently awaiting consumption.

These stories may be romantic, and for the most part true, but the plain fact is that lager beers usually have a strong sulfur stench that only mellows with time.

Like ale yeasts, many different lager strains exist, and they each have their own character. It is safe to say, however, that most lager yeast strains produce a greater quantity of sulfur aromas compared with ale yeast. These stinky smells usually begin to blossom after the first two or three days of fermentation and slowly mellow from that point.

Unlike some beer flavors, such as the buttery diacetyl and the green apple-like acetaldehyde, which mellow with time due to their uptake by yeast, sulfur

aromas escape from the beer and pass into the atmosphere.

It is for this reason that lagering in a sealed container is not practiced in commercial breweries. Instead, lagers are aged in aptly named “lager vessels” that are fitted with some type of constant pressure valve. These devices allow the brewer to naturally carbonate the

lager by trapping a certain top pressure of carbon dioxide produced from fermentation, usually about 15 psi, and allow the excess carbon dioxide to escape. The ability for the excess pressure to escape is critical because the vented carbon dioxide carries with it the volatile sulfur compounds produced during primary fermentation. In time the sulfur smells will drop to an acceptable level.

In fact subtle sulfur aromas are a crucial part of the aroma profile of a good lager.

There are some factors that affect the amount and type of sulfur aromas in the beer.

Pitching rate and wort original gravity play important roles in the amount of sulfur compounds produced during fermentation. Usually lower pitching rates and/or high original gravity worts will result in the production of more sulfur aromas.

Yeast nutrient levels also influence sulfur levels. Worts that are low in sulfur-containing amino acids, such as methionine, typically

result in the production of more sulfury aromas during fermentation. Nutrient-deficient worts are not normally encountered when brewing all-malt beers but are typically found when high percentages of nutrient-devoid adjuncts, such as rice and corn, are used. To combat this problem many large-scale brewers add proprietary yeast nutrient blends to their fermentations.

When brewing lagers you will always have a detectable amount of sulfur aromas produced during fermentation.

The key to controlling it is patience. If you are patient and the beer still smells too sulfury, then begin looking at other factors such as yeast strain, pitching rate, original gravity, and adjunct usage.

Mr. Wizard

I recently started all-grain brewing. I'm finding it exciting and challenging. I feel that the brew is more my own homebrew than when I use extracts. Although it's more work and more time consuming, it's more fun. I also like the fact that it is less expensive. Before I began my first all-grain batch I read about the method and process. Since then I have continued my reading about grains and almost every other aspect of mashing. I do have a question about mashing to which I can't seem to find a satisfying answer. In beginning the mash, is it better to add the hot water to the grain or the grain to the water? Or does it really make any difference?

Tim Boekelman
Moorland, Iowa

I too prefer all-grain brewing to using extracts because of the personal touch added to a



brew made entirely from scratch and because of the seemingly infinite array of gadgets a brewer can add to an all-grain setup. Commercial brewers have many options to assist in the mashing-in step.

Most of these grist hydration devices are designed to mix the mash water and grist together as they enter the mash tun so that the mash temperature is more or less instantly hit. The reasoning for this is twofold. The first reason is to produce a uniform temperature throughout the mash bed so that a consistent enzyme reaction will occur.

The second is to avoid exposing the malt enzymes to very hot temperatures that may hinder enzyme activity. This can occur if the grist is slowly added to hot mash water.

For commercial breweries these are valid concerns because it may take 15 to 30 minutes to

mash in.

At home I have always added malt to hot water in my mash tun. This method works well because it is easy to stir the mash and avoid clumping as the malt is dumped into the mash tun. It also allows for the water temperature to be adjusted precisely before adding the grain. This is especially useful if the mash tun is stainless steel and needs to be pre-heated so that it doesn't cool the mash. I suppose a nifty gadget could be made to emulate a commercial grist hydrator at home, but on such a small scale I think it would be technology overload.

Some brewers use a technique that prevents exposing the enzymes to high temperatures while also allowing for a comfortably paced mash in process.

The technique is to start off the mash cool and thick, for example using one quart of water per pound of malt and starting the mash

around 120° F. This gives time to mash in at a relaxed pace and for the mash thickness and temperature to stabilize. After mash-in is over, slowly add boiling water while stirring to hit your desired mash temperature. This technique can be used to hit several temperatures between 120° F and the conversion temperature, or you can go straight to the conversion temperature. In either case it resolves the mashing-in dilemma. Einmaischen away!

Mr. Wizard

I need some advice on water purity. My housemate and I are considering the purchase of a reverse osmosis water purification system. My housemate's interests are for the maintenance of a 135-gallon salt-water fish tank. My overt enthusiasm is for a healthier and better tasting source of drinking water. Privately I

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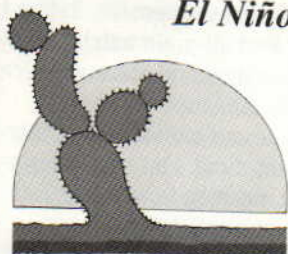
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CIRCLE 49 ON READER SERVICE CARD

am hoping it will improve the taste of my homebrew. What kind of minerals might I need to add to the wort to improve the flavor?

*Cl. Phillips
Portland, Maine*

Reverse osmosis is an excellent method of purifying water. The method consists of a pre-treatment system designed to remove calcium and magnesium hardness and chlorine. The pre-treatment usually consists of a charcoal filter and a salt-based water softener system. After pre-treatment, the water contains no chlorine and the calcium and magnesium have been replaced with sodium. Although this water is good for utility uses in the house, it does not taste very good because of the sodium. The reverse osmosis (RO) part of the system removes about 99.5 percent of the remaining minerals by concentrating these unwanted minerals in a waste stream of water. Most RO systems used in the home produce about four gallons of purified water for every five gallons used by the system.

Reverse osmosis is used in food-and-beverage processing plants that rely on pure water for the products they produce. Soft drink producers are very concerned about pure water and always treat their waters, often-times using RO, before use. Bottled-water producers are also big users of modern water treatment methods and have adopted RO as one of the more common treatment methods. Some breweries also use RO to purify water, especially those that have poor-quality city water.

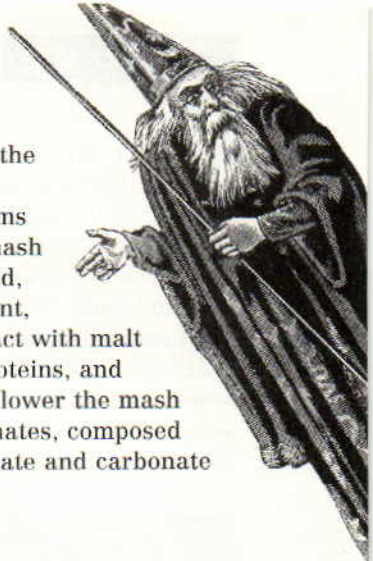
Many users of RO treatment do not want all of the minerals to be removed from the water and end up replacing some. The reason for doing this is that RO is not a selective method for removing certain salts; it removes all of them more or less equally.

Your potential RO purchase is a perfect example of this. Your housemate needs it for a salt-water

aquarium, and you want it for drinking water and brewing. Obviously some minerals must be added for the aquarium water, and I would highly recommend adding some for brewing.

The minerals contained in brewing water really do two things. First and foremost, calcium, magnesium, and carbonate affect mash pH and play a crucial role as

participants in the many different buffering systems that stabilize mash pH. Calcium and, to a lesser extent, magnesium react with malt phosphates, proteins, and amino acids to lower the mash pH. The carbonates, composed of the bicarbonate and carbonate



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ions, act to raise the mash pH through their reactions with calcium, magnesium, and hydrogen. The carbonates very effectively increase pH since they will bind and precipitate calcium and magnesium and they "mop" up hydrogen ions, eventually decomposing into water and carbon dioxide. The removal of hydrogen ions increases pH since pH is a direct

measure of hydrogen ion concentration.

Minerals found in brewing water also affect beer flavor. The minerals that set mash and wort pH have a dramatic effect on flavor by influencing mash enzyme reactions, extraction of tannins from the malt



husk, isomerization of hop alpha acids, and the formation of colored compounds produced in the kettle boil from the Maillard reaction, just to name a few. Other minerals such as sulfate, chloride, and sodium do not alter pH but affect flavor. Magnesium, which does alter pH, also has a distinct flavor. Chloride and low levels of sodium can give beer a full, round, and almost sweet flavor. This may be desirable when trying to brew a beer that displays a rich, full malt palate. Sulfate and magnesium tend to impart dry, metallic flavors and will accentuate the hop bitterness. These minerals are often added to pale, hoppy ales. In excess, minerals can make beers taste salty, very metallic and some, like magnesium, can have adverse effects on the consumer's gastrointestinal tract!

The beauty of RO water is that it allows the brewer to start with a clean slate and tailor the brewing water for a particular beer style.

The homebrewer can create just about any classic brewing water in the world through the use and combination of brewing salts, such as calcium sulfate, calcium chloride, calcium carbonate, magnesium sulfate, magnesium chloride, sodium bicarbonate, and sodium chloride. ■



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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.

CIRCLE 22 ON READER SERVICE CARD

Evaluating Beer Flavor

by Suzanne Berens

Brewer: David Berg

Brewery: Water Tower Brewing Co.,
Eden Prairie, Minn.

Years of experience: 1.5

Education: American Brewers Guild

House Beers: Eden Mill Gold, Pappy's
Brown Porter, Old Tower Amber, Flying
Horse Pale Ale, Pergatory Creek Stout

Each of your senses affects the others, so the order in which you evaluate beer is important. Use a concave glass, which holds more volatiles (gases). The first step is visual. Look to see if the color is the way you want it. Then smell it. Before taking a sip, take a big whiff because once you taste it your sense of smell loses some sensitivity.

When you finally taste the beer make sure it is at serving temperature. Also, testing is best done early in the day before you've deadened your taste buds with coffee or spiced foods. Don't be afraid to drink the beer instead of just swishing it in your mouth like you would wine. The alcohol content is not as high as in wine, so you won't need to worry about overdoing it. Also, taste buds near the back of your tongue detect bitterness, so if you just swish, you may miss this perception. When you drink the beer you can detect any bitterness, whether intended or not. Just like with wine clear your palate with water or crackers between beers and move from light to dark. Don't drink a stout first or your golden ale won't taste like anything.

An important part of evaluating is checking for off-flavors. The lighter the beer the more you can detect off-flavors because the beer

Water Tower Brewing Co.



"Evaluating beer is objective to a point. The rest is about what you like."

Brewer: David Berg

is not powerful enough to hide anything, but we taste all the beers. There are borderline off-flavors. A prime example would be diacetyl, a buttery flavor. Some people actually love it and some hate it. I happen to be one who hates it. But the yeast I use kind of gives all of our beers

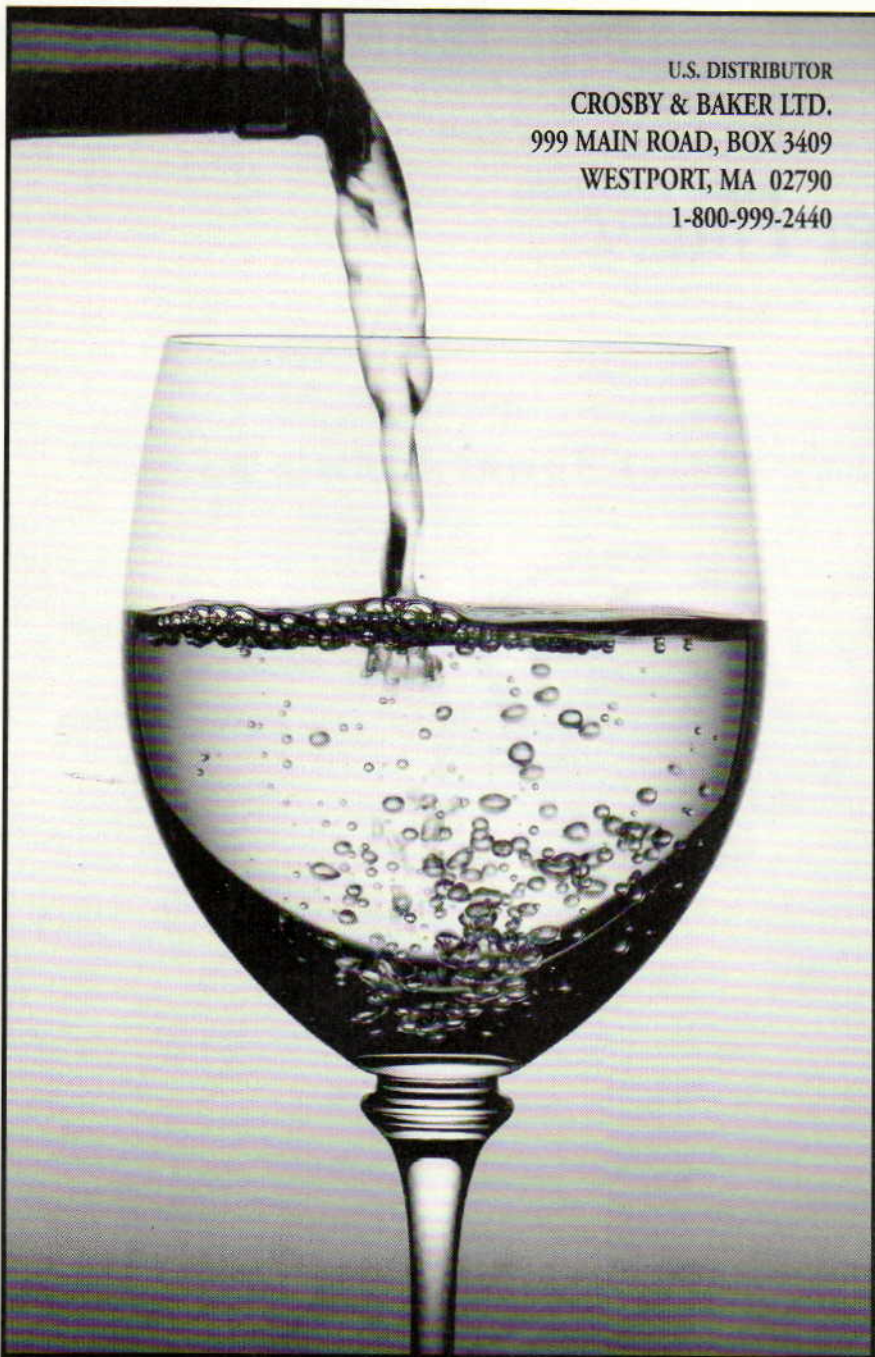
that character. I do what I can to control it, but my threshold for that taste is so low that I could allow more of it and people might not notice or might even like it better.

Diacetyl and other flavors don't always show up right away. So evaluating your beer not only during the

The Tips

- Smell before you taste. You can better detect aroma before tasting.
- Taste beer in the morning before you eat or drink anything.
- Taste lighter-tasting beers first, then darker ones. Clear your palate between beers.
- Continue tasting your beers even after you serve the first one. They evolve.

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process but immediately after and even after that is important. In homebrewing, for example, after a few weeks your beer might suddenly start going sour. It could mean you had contamination that didn't show up right away. Now the bacteria's reached a point where you can taste the byproducts. Evaluating at all stages helps track what you're doing.

As far as what to look for beyond off-flavors, criteria differs among brewers. Everyone draws the line somewhere between staying true to style and making something unique. My line is closer to "It's my beer and I'll brew it how I want it." For example we have a brown porter on tap, which is not that common but is becoming more so. Brown porter is an example of the way beers used to be made. Most porters today use black malt. But when porters were first around there was no such thing as black malt. Brewers didn't have the roasting capabilities to make it. They used brown malt, which is a lighter kilned malt. Now people are very much of the opinion that a beer is not a porter unless it has black malt in it.

Our porter is lighter in color. It's a dark mahogany instead of black. It's also not opaque like a classical one; you can see red through it. And it doesn't have that acrid bitterness from black malt. It's a lot more chocolatey. We've changed it over time to our liking. You taste, cut down a little here, and add some there, like cooking.

Another example of how evaluating is subject to opinion is when people say adding Munich malt to an English pale ale makes a beer untrue to style. That may be true. But I was always taught that the people who created and tasted these styles are dead. The frustrating thing about following style as if it were dogma is it limits you. If, for instance, Sierra Nevada had decided to make a pale ale but chose not to include Cascade hops because they weren't true to style, we wouldn't have Sierra Nevada Pale Ale today. If you're always strictly adhering to styles that somebody came up with, you'll never invent a new beer. ■

CIRCLE 51 ON READER SERVICE CARD

Expand Your (Hop) Horizons

by Debra Pettric

It's easy to develop a preference for certain hops. But with so many choices available there's no reason not to explore the tried and true as well as the newest varieties.

Experimenting with flavors to make your own unique brew can be a fun and rewarding part of homebrewing. And hop flavors provide a fertile ground for experimentation. We asked hop dealers to tell us about some of the hops they offer to homebrewers. Check with your retailer for availability.

Aroma Hop Profiles

Ahtanum, grown in small quantities at present, yields an alpha acid content of 3.5 percent to 6.3 percent. The fruity flavors and sweet and spicy aroma blend well with English and other aroma varieties. A versatile kettle hop for all types of beer, Ahtanum can also be used as a late hop or a dry hop.

A new aroma hop sold by

Hopunion USA, the **Amarillo**, has an average alpha acid level (6 percent to 7 percent) and low cohumulone level. (See "Hop Concepts," page 20, for definitions of hop terms.) The aroma has floral characteristics similar to that of Cascade.

Alpha acids reported for **Bramling Cross** range from 5 percent to 7 percent. Originally unattractive for its distinctive "American" aroma, the special characteristics of this hop are arousing increased interest for specialty beers. Used for special fruity, black currant, and lemon notes, this hop may also provide an interesting final beer flavor if used as a late or dry hop.

The pleasant, flowery, and spicy **Cascade** became well established after its 1972 release but has since declined to about 4 percent of US production. Alpha acids range from 4 percent to 7 percent, and the mild aroma variety provides good, soft, well-balanced bittering potential. This hop provides an herbal or perfume-like aroma in finished beer. It has achieved a high level of popularity with US microbreweries and homebrewers because of its distinctive flavor. It is often used in American pale ales, California commons, stouts, porters, and American-style wheat beers.

Crystal was developed as a substitute for European aroma hops. It possesses a pleasant and mild aroma and reported alpha acid ranges of 2 percent to 5 percent. It is well matched for use in American and German lagers.

Czech Saaz is a classical noble aroma hop with long, strong traditions. The very mild aroma possesses pleasant notes with a slight spice while the alpha acids



Super Simple Hop Bitterness Calculations

by Mark Garetz

The bitterness in hops comes mainly from the alpha acids they contain. The alpha acids are not very soluble (able to be dissolved in liquid). When hops are boiled, the alpha acids begin to be converted into iso-alpha acids, which are much more soluble. The longer the boil, the more acids are converted. The percentage of alpha acids contained in your hops directly affects the amount that will end up in your beer. But many other factors affect the final bitterness in your beer including: wort gravity, yeast strain/type, boil temperature, finings, and filtration, to name just a few.

Beer is rated for bitterness in IBUs, which stands for International Bittering Units. The IBU is roughly equivalent to milligrams of iso-alpha acids per liter of beer. A beer's IBUs are often included in published recipes. If you follow the recipe closely (boil time, total gallons boiled, and so forth), your beer's IBUs will be approximately the same.

Figuring Your IBUs

Brewers can use formulas to figure out the IBUs of a beer they created or to create recipes to hit a target IBU. Since the conversion from alpha acids to iso-alpha acids is not perfect, we need to calculate how many IBUs we'll get in our beer based on the brewing conditions and the amount of alpha acids we put into the wort (as hops).

A lot of homebrewers shy away from messy calculations, so this example of how IBU formulas work assumes much about the brewing conditions. This is a very simple formula for calculating your IBUs. As simplified, this formula will get you in the ballpark.

The assumptions are that you're a typical homebrewer with

a stove-top partial boil of 60 minutes and you're doing a five-gallon batch of medium-strength beer with a single addition of bittering hops at the start of the boil. In the formula, multiply 3.5 by the hop alpha acid percentage. The correction factor, 3.5, takes into account the boil time, amount of wort boiled, and strength of beer. You'll need to know the alpha acid content of your hops.

First decide how many IBUs you want to have in your beer. Then use the formula:

$$\text{Hop weight in ounces} = \frac{\text{IBUs desired}}{(3.5 \times \text{hop alpha acids})}$$

For example, let's say we want 35 IBUs in our beer and our hops have 5 percent alpha acids. To figure out how much of the hop to use:

$$\frac{35}{3.5 \times 5} = 2 \text{ oz.}$$

First multiply 3.5 times 5 (the amount of alphas in our hops) to get 17.5. Then divide 35 (the number of IBUs we want) by 17.5 to get two ounces of hops. That's it, but remember all of the assumptions we've made. If your conditions don't match the assumptions, you'll need a different formula. More detailed formulas are available in homebrew literature.

IBUs vs. HBUs

HBU stands for Homebrew Bittering Units and is simply shorthand for saying how many ounces of hops of a given alpha acid you put into your beer. The HBU is the percent alpha acids times the hop weight in ounces. Thus two ounces of 5 percent alpha hops is 10 HBUs.

The HBU tells us very little

about the actual bitterness of the beer. Put 10 HBUs in a five-gallon batch and we'll have a certain bitterness, but change the batch size to 10 gallons and use the same 10 HBUs and our beer would be half as bitter. Or change any of the brewing conditions and the bitterness of the beer will vary for the same HBUs going in. HBUs are also known as AAUs or Alpha Acid Units. This was the original designation.

Keeping Recipes Up to Date

While AAU/HBU information will not tell you much about the beer's overall bitterness, AAU/HBU makes it a little easier to re-calculate the amount of hops in a recipe when your alpha acids of the same hop change or if you want to substitute a similar hop.

Let's say the recipe calls for two ounces of 5 percent alpha Cascade hops. You have some 6 percent alpha acid Cascade. If your brewing methods and the recipe have not changed, then you can simply calculate the HBUs of a hop called for in the recipe and divide it by the new hops' alpha to get the same bitterness. In this case two ounces of 5 percent alpha Cascade is 10 HBUs. Divided by 6 percent alpha acid for the available Cascade, we need 1.6 ounces of hops to get the same bitterness.

You can use this technique to correct any recipe you are following for different alpha acid contents.

Mark Garetz owns HopTown, Brewing Co. a brewery in Pleasanton, Calif. and HopTech Homebrewing Supplies. For more detailed information on hops and hop calculations see his book, Using Hops, published by HopTech.

range from 2.5 percent to 4.5 percent. This hop is suitable for Pilsner-type beers and late kettle additions. Associated with the renowned Pilsner lager, Czech Saaz is by far the predominant Czech variety. Clones are grown in Poland and the Ukraine. US-grown Saaz hops are available in limited quantities.

First Gold - United Kingdom has an aroma similar to Goldings and a higher alpha acid content than traditional aroma hops (approximately 6.5 percent to 8.5 percent). The variety is suitable as both a general kettle hop and also for late and dry hopping in all types of beer. The hop is also described as similar to the Fuggle but sweeter. The excellent aroma qualities produce a well-balanced bitterness and a fruity, slightly spicy note in ales.

Fuggle is a traditional aroma hop also known as Styrian (Savinja) Golding overseas. The mild and pleasant hop offers an alpha acid range of 4 percent to 6 percent. The relatively low alpha acid content requires a high hopping rate to achieve desired bitterness. This traditional aroma hop offers all the essential characteristics of flavor, aroma, and balanced bitterness for ales (pale ales, IPAs, porters, stouts, milds) and is frequently blended with Goldings, adding roundness and fullness to the palate.

Goldings consists of a group of traditional English varieties with a long history of cultivation and names of hop growers or parishes where they were first farmed. The alpha acid ranges from 4 percent to 6.5 percent and is recognized as having the most typical English aroma, the best flavor historically coming from Kent where the majority of the crops are produced. Currently attracting considerable interest in North America, these hops are in demand for kettle hopping and dry hopping of traditional ales. Goldings hops are also useful for late hopping lagers when a delicate aroma is desired. The hop is known as East Kent Goldings

if grown in East Kent, Kent Goldings if grown in mid-Kent, and US Goldings if grown in the United States. Suggested for use in English milds, pale ales, IPAs, porters, and stouts.

Hallertauer - German is a traditional German variety selected from the Hallertau region. Very mild, pleasant, and slightly flowery, this is a traditional superior aroma hop ideal for use in lagers. The alpha acids range from 3.5 percent to 5.5 percent.

Hallertauer Mittelfrüh is the classic German aroma hop associated with Bavarian-style lager beers. It has a mild and pleasant aroma and 3.5 percent to 5.5

percent alpha acids. Use in all lagers, especially German lagers.

Hallertau - Tradition is a close descendant of Hallertauer Mittelfrüh bred for disease resistance. It is described as a high-alpha variety with alpha acids at 4.8 percent to 7 percent. This very fine aroma hop follows the tradition of Hallertauer Mittelfrüh yet has a more pronounced aroma and is suitable for all mild-flavored beers.

Hallertauer - US was developed from the German Hallertau aroma hop variety. The mild and pleasant hop's alpha acid ranges from 2 percent to 4.5 percent. The hop is being evaluated as a substitute for

Hop Substitutions

If you want to closely match the hop you are currently using, here are some ideas:

	If You Use...	Try...
Aroma • Aroma • Aroma	Cascade	Centennial (not an exact substitution), Amarillo
	Crystal	Liberty, Mt. Hood, Hallertauer Mittelfrüh
	Czech Saaz	Lublin, Spalt, Spalter Select, Tettnanger, Liberty
	East Kent Goldings	Fuggle, Willamette
	Fuggle	East Kent Goldings, Willamette
	Hallertauer (any)	Crystal, Liberty, Mt. Hood
	Liberty	Crystal, Mt. Hood, Hallertauer Mittelfrüh
	Mt. Hood	Crystal, Liberty
	Styrian Goldings	Fuggle, Goldings, Willamette
	Tettnanger	German Spalt, Spalter Select, Czech Saaz
Bittering • Bittering • Bittering	Brewer's Gold	Northern Brewer, Galena
	Bullion	Northern Brewer, Galena
	Centennial	Cascade
	Chinook	Galena, Nugget, Cluster
	Cluster	Galena, Chinook
	Eroica	Galena, Nugget, Chinook, Cluster
	Galena	Cluster, Nugget, Chinook
	Northern Brewer	Perle
	Nugget	Galena, Chinook, Cluster
	Perle	Northern Brewer, Cluster, Galena
	Pride of Ringwood	Galena, Cluster
	Target	Any bittering hop

European aroma imports and is suitable for use in German lagers and ales.

Hersbrucker now dominates the aroma hop production in the Hallertau region of Germany. It has largely replaced Hallertauer Mittelfrüh, which is more susceptible to the crop disease wilt. Hersbrucker, in turn, is now beginning to be displaced by newer aroma varieties. The hop's alpha acid ranges from 3 percent to 5.5 percent. It has a fine, slightly dry and spicy aroma and is suitable for mild-flavored beers, particularly German lagers and ales. It is often used for late kettle additions.

Liberty is a half-sister of Ultra, Mt. Hood, and Crystal. The alpha acids stand at 3 percent to 6.5 percent. The mildly floral and pleasantly spicy/herbal aroma is similar to imported German aroma varieties. The hop provides good quality bitterness, sometimes with a fruity/floral character, and is well

suitable to all lagers.

The aroma of Polish **Lublin** is mild and typical of noble aroma types. Its alpha acid ranges from 3 percent to 4.5 percent. It is more freely available on the world market since the opening of the former Eastern bloc. This is a good substitute for Czech Saaz. (It is said that the Saaz and Lublin are the same variety, grown in different places.)

Mt. Hood, released in the United States in 1988, is a half-sister of Ultra, Liberty, and Crystal. The mild, herbal, and clean aroma variety bears marked similarities to Hallertauer and Hersbrucker with alpha acids ranging from 3 percent to 8 percent. The herbal aroma may impart a soft, clean bitterness to American and German lagers as well as ales.

Santiam is a mixture of Tettnanger, Hallertauer Mittelfrüh, Cascade, and others. The alpha range is 5.4 percent to 7.9 percent

Hop Concepts

Alpha Acid Content: When isomerized (rearranged at a molecular level through boiling), alpha acids provide the main bitter compounds associated with beer. The alpha acid content varies widely among hop varieties from levels of 3 percent to 4 percent in aromatic hops to 13 percent to 16 percent in bittering hops.

Aroma Hops: Aroma hops can be characterized by low alpha acid and are used as finishing or conditioning hops.

Aroma: There appears to be a general relationship between the type and heaviness of a hop aroma and the flavor and aromatic properties of beer.

Bittering Hops: Bittering hops have a much higher level of alpha acids. These are generally used in the boiling process to extract bitterness.

Cohumulone Content: Alpha acids exist in three forms: humulone, adhumulone, and cohumulone. The proportions of these forms vary with variety. Hops with relatively low cohumulone levels are strongly favored.

Dual Purpose Hops: Some hops are considered dual purpose, such as Northern Brewer and Centennial. These can be used either for aroma or bittering.

Noble Hops: Certain hops grown in Europe that are prized for their aromatic flavor characteristics. The definitive noble hops are Saaz, Hallertauer Mittelfrüh, Spalt Spalter, and Tettnanger. Any other hop is measured against these four. Why they are called "noble" is anyone's guess.

Pedigree: In a description of a hop, it is interesting to trace back the crosses involved in creating a particular hop. In the case of very old varieties, such as Saaz or Hallertauer, we know only that the particular type was selected over many years by growers and brewers in a particular area.

Trade Perception: Over a number of years, a hop variety will find a particular role or niche within the brewing industry. Its particular properties will become known and accepted. This general perception is helpful to brewers considering the use of a variety new to them.

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and it has a low co-humulone content. Its aroma is described as similar to the European Tettninger, slightly spicy with a tendency toward a noble aroma.

Spalt has been around for many generations and has long been considered one of the finest of the traditional "noble" aroma varieties. It has an alpha acid content of 3.5 to 5.5 percent. It is often used for late kettle additions in European-style lagers and altbier. This hop is grown in small areas in the Spalt region of Germany but is now available in small quantities from US hop farms.

Used for its aromatic properties similar to Tettninger and Saaz, **Spalter Select** is an aroma hop of recent origin (introduced in the late 1980s). It is actually bred from Hallertauer Mittelfrüh and Spalt. It has an alpha range of 4 percent to 6 percent. The flavor is fine like Spalt but is somewhat stronger. Used in German lagers.

Styrian Goldings is a classical aroma variety. Believed to have been derived from the English Fuggle in the 19th century, this hop offers a mild aroma with an excellent, noble hoppy flavor that is distinctive, mild, and somewhat richer than English Goldings. The alpha acid content of Styrian Goldings is 3.5 percent to 6 percent. Beer prepared from this variety has good scores for its bitterness, taste, and aroma. Styrian Goldings is often used as a late kettle addition for dry hopping, particularly in English milds, pale ales, IPAs, porters, and stouts (anywhere you would use Fuggle).

Tettninger is a traditional German variety. Mild and slightly spicy, the hop is a true traditional with a very fine aroma and is often used in late kettle additions (in German lagers, ales, American premium lagers, and wheat beer). In US crops the flavor tends to be slightly coarser, more like Fuggle. The bitter value is medium to low with alpha acids ranging from 3 percent to 5.5 percent.

Ultra is a cross between the Hallertauer Mittelfrüh and Saaz,

and is a half-sister of Mt. Hood, Liberty, and Crystal. With outstanding aroma and an alpha acid range from 2 percent to 4 percent, the brewing quality traits of this hop are similar to Hallertauer and other imported aroma hops and provide a very distinctive taste.

The **US Strisselspalt** is a new aroma hop with low alpha acid, 2 percent to 2.5 percent. The

aroma can be described as medium to strong and slightly spicy. This variety has limited availability.

Vanguard is a recently introduced aroma hop similar to Hallertauer Mittelfrüh. Its aromatic properties and low co-humulone content are similar to Saaz. It has 4 percent to 5.7 percent alpha acid. It has a somewhat noble aroma, with slightly spicy notes similar to



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that of the Hallertauer.

WGV (Whitbread Golding Variety) gives a mild, clean bitterness in traditional ales. It has an alpha acid range of 5.5 percent to 7.5 percent and provides a distinctive flavor in beers, similar to (but more robust than) Goldings. Its aroma is described as quite pleasant and hoppy, moderately intense.

Willamette is a mild, full-bodied, and pleasant hop that has a slight spice to it. It offers a well-balanced bittering potential with alpha acids ranging from 4 percent to 7 percent. Willamette is still perceived as a new but good quality aroma hop similar to Fuggle in brewing character. It can be used in many styles, including English milds, pale ales, IPAs, porters,

stouts, and American ales.

Bittering/Dual Purpose

Admiral, originally bred as a complement to the Target variety, has an alpha acid content of 11.5 percent to 14.5 percent. Early brewing trials showed Admiral as a good replacement for alpha acid and dual-purpose hops when used as a kettle hop. The variety is classified as a versatile hop for brewing purposes.

If you ever used **Aquila** (6 percent to 8 percent alpha acid) or **Banner** (9 percent to 11 percent), get ready to switch. These mid-range alpha varieties came into production in 1988 and will gradually be phased out because they have been discontinued by their major user. They are similar to Cluster.

Brewer's Gold alpha acids stand at 6.4 percent. This is a well-tested bitter hop, perfect for use in English ales and heavier German-style lagers.

Also appropriate for English ales and heavier German-style lagers, **Bullion** was released in 1938. It has been grown in the United States since the 1940s, however, its use declined rapidly in the '80s. It is a rich hop with an alpha acid content of 7 percent to 9 percent. It is used primarily as a bittering hop (not for aroma hopping), and its place today has been taken over by the newer high alpha varieties. It has an intense, black currant aroma.

Centennial has largely Brewer's Gold parentage. The alpha acids range from 9.5 percent to 11.5 percent and are accompanied by a medium aroma with floral and citrus tones. Good for kettle hopping in American pale ales, wheat beers, stouts, and porters.

Challenger - United Kingdom is a cousin of Target and a granddaughter of Northern Brewer. Fruity, almost scented with some spicy overtones and an alpha acid range of 6.5 percent to 8.5 percent, the Challenger is a versatile kettle hop that blends well with other English varieties and is sometimes

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used as a late hop and a dry hop. One of the few recognized dual-purpose hops.

Chinook is becoming increasingly popular. The 1985 release of the bitter variety revealed a high alpha acid hop, 12 percent to 14 percent, with a highly acceptable aroma profile, mild to medium-heavy and spicy. The hop can be substituted for Bullion and is great for use in pale ales to lagers, California commons, and IPAs.

Until recently **Cluster** was the dominant hop in the United States — in 1980 Cluster made up 60 percent of US hop production. Now Cluster is less than 20 percent of production. The alpha acids range from 5.5 percent to 8.5 percent. The spicy, medium-bitter hop is excellent for general purposes and offers a well balanced bittering potential and no undesirable aroma properties. It can be used as a standard kettle addition in any

style of beer.

The **Columbus** hop was bred and selected from the Hopunion USA breeding program in Yakima, Wash. This pleasant hop offers 14 percent to 16 percent alpha acids and dual-purpose capabilities. The high oil content makes this hop acceptable as an aroma hop in ale-type beers.

Eroica was bred in Idaho from Brewer's Gold. The high alpha acid hop, 9 percent to 13 percent, is suitable for general bittering and contains a strong but not unpleasant aroma. Because it does not store well, it is slowly being replaced with other high-alpha varieties. This hop is particularly well suited to use in wheat beers.

Bred from Brewer's Gold, **Galena** is an excellent high alpha acids hop with a range of 11 percent to 14 percent. It was the first high-alpha variety grown successfully in the United States. The medium but pleasant hoppiness

provides acceptable aroma. Galena is now a major US high alpha acids hop that provides balanced bittering qualities as a kettle hop for any beer style.

The high alpha variety, **Green Bullet**, boasts balanced bittering properties combined with an acceptable aroma profile. Developed and grown only in New Zealand in 1972 the hop has 13.3 percent alpha acids.

Horizon's ancestry includes Brewer's Gold and German aroma hops. Alpha acid ranges from 12 percent to 14 percent. Like most high alpha hops it has a high total oil count. It has shown a susceptibility to downy mildew and will be grown in Washington.

Magnum, at 12 percent to 14 percent alpha, is the first hop of super-alpha variety to be specially selected for growing in the Hallertau region of Germany. It combines high alpha with good yield and its area is increasing

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substantially. It has excellent, clean bitter quality and acceptable aroma properties and is useful in all types of beer.

Northdown is a descendant of Northern Brewer and is a relative of Challenger and Target. Providing a less expensive alpha acid than some varieties, 7 percent to 10 percent, it also offers a mild, clean, and neutral flavor and can be used in all types of beer with no harshness of palate. The high level of oil makes this a distinctive dry hop for full-bodied ales while the quality of bitterness can be a little harder than Challenger.

Northern Brewer, a cultivar from England originated in 1934, is a popular hop grown in several countries around the world. It is similar in bittering value to Nugget and is considered a dual-purpose hop with medium bitter characteristics and pleasantly floral and herbal aroma appropriate for California commons and English ales. It is

widely used as a main bittering hop, with an alpha acid range of 6.5 percent to 10 percent. The US variety's alpha acids range from 8 percent to 10 percent.

Nugget offers a good aroma profile, heavy and herbal. The Nugget, 11 percent to 14.5 percent alpha acids, has become a major high-alpha-acids variety in the US since its release in the early 1980s. The hop produces good bitterness and, with late addition, sometimes an interesting aroma contribution. Its aromatic properties are suitable to all styles except light lagers. Its flavor is mild.

Olympic's ancestry includes Brewer's Gold. This moderately strong and hoppy variety possesses 11 percent to 13.5 percent alpha acids and has yet to become established since its 1984 release.

The **Pacific Gem** from New Zealand is 13 percent to 14 percent alpha acids. The hop possesses a pleasant aroma and useful bitter-

ness level.


Perle was bred in Germany from the English Northern Brewer variety and only recently established itself in the US industry. This pleasant and slightly spicy hop provides German-type aroma properties, sometimes with floral or fruity effects nice in American pale ales, porters, German lagers, and ales. With moderate bittering potential, the alpha acids in this dual-purpose hop range from 5.5 percent to 9.5 percent.

Phoenix, a seedling of Yeoman, has an alpha acids range from 8.5 percent to 11.5 percent. The variety appears to be an excellent alternative for high-alpha and dual-purpose hops. Brewing trials have suggested the large, if unexplored, potential of this hop.

The **Australian Pride of Ringwood** is predominantly a bittering hop with pronounced but not unpleasant aromatic qualities. Alpha acid levels stand at

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7 percent to 10 percent and, at time of release in 1965, represented the highest alpha acid hop in the world and gradually dominated more than 90 percent of the Australian crop. It is closely associated with such famous beers as Foster's Lager.

Progress, derived from WGV, was released for commercial growing in 1964 as an alternative to the Fuggle, and its popularity as a useful substitute aroma hop is increasing once more. It is slightly sweeter than Fuggle and usually provides a softer bitterness in beers of all types. With the slightly higher alpha acid content (5 percent to 7.5 percent), the hop represents a good value for bitterness if aroma hops for bittering are required.

The high alpha variety **Southern Cross** was developed in New Zealand in 1994. The hop possesses an excellent essential oil profile and low co-humulone level with approximately 12.2 percent alpha acids.

Sticklebract was developed in 1972 in New Zealand. The hop contains around 13.1 percent alpha acids.

Sun is a new super alpha hop now available from Steiner. It has an average alpha content of 15.4 percent.

Super Styrians, the most common of which is Aurora, is bred from Northern Brewer to provide a higher alpha complement to Styrian Goldings. It has a rich and full flavor, somewhat like Northern Brewer, but without any harsh characters. This versatile kettle hop has an alpha range of 8 percent to 10 percent and is appropriate for use in any style beer.

Target, a cousin of Challenger, provides alpha acids ranging from 9.5 percent to 12.5 percent. The aroma provides robust English flavor and good bittering qualities. Dry hopping with whole hops gives positive floral aromas in some of the stronger ales. Use in all styles of English ales and lagers. Many brewers who have experimented with Target see it as an

underappreciated hop.

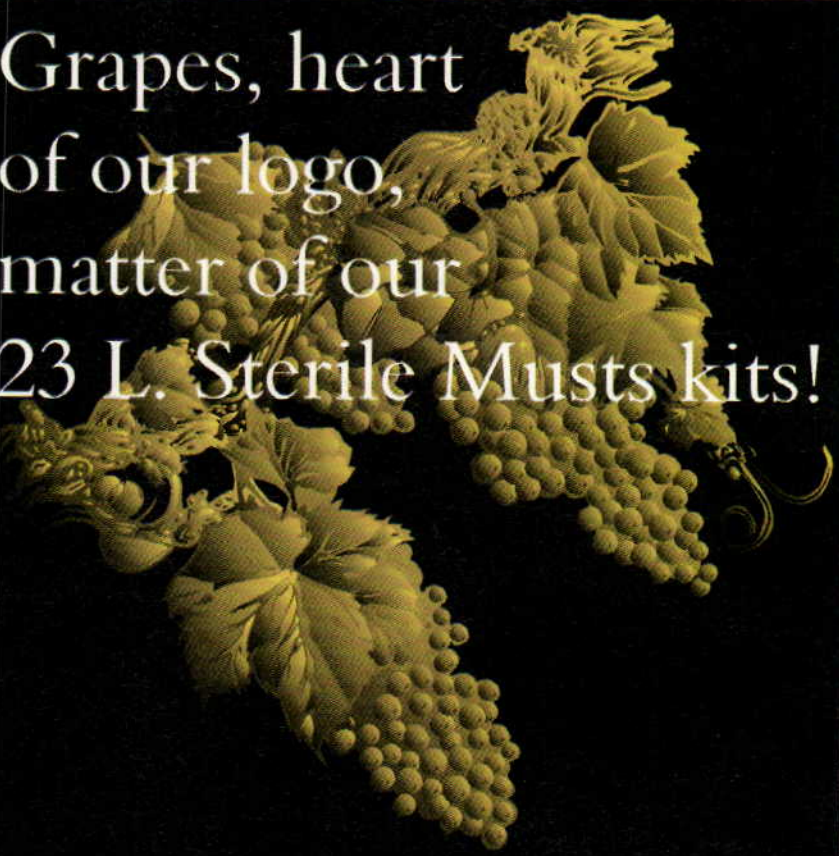
Tomahawk is another name for Columbus with super-high alpha levels ranging from 14 percent to 16 percent.

The **Yakima Cluster** hop originated from mass selection of the Cluster hop, an old American cultivar. With alpha acids at 6.5 percent to 8.5 percent, Yakima Cluster is primarily used as a kettle hop for

bittering.

Yeoman was developed as a high-alpha complement to Target. The pleasant aroma produces a well-balanced bitterness with no harshness, and alpha acids range from 10 percent to 12 percent.

Zuess is a new super alpha hop available this year from Steiner. It has an average alpha content of 14 to 16 percent. ■



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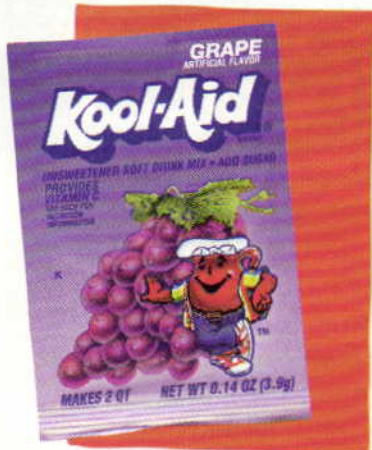
Okay, admit it. You've got them. We all do. No matter how long you've been brewing or how good your beer is or how many people you've converted to the wonders of homebrewed beer, there's always

that odd friend or acquaintance who never developed the taste for our favorite beverage.

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BY LIAM P. BAILEY



sparkling mead. Good idea, but it took forever to mature and, besides, this champagne-like brew is much more at home at a dinner party than on a weekend at the campground. The latter being more my style, I reasoned that my friends needed something more casual. Since my hopeless friends tended to bring a supply of Bartles & Jaymes, I decided to make them something they'd like.

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- 3/4 cup corn sugar for priming

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Boil 1 gal. water in brew kettle. Add dry malt extract and malto-dextrin, stirring until dissolved. Add corn syrup and return to boil. Boil for 30 min. Add to fermentation vessel that has 4 gal. pre-boiled,

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Fermentation should be complete at 65° to 70° F in five to seven days. Following fermentation, mix corn sugar dissolved in one pint boiled water, fermented liquid, and packaged drink mix in bottling bucket. Be careful; the liquid will foam with the addition of the acidic drink mix. Bottle into eight sterilized 2-liter green soda bottles. Tighten on sterilized caps. Cooler is ready to drink when clear (seven to 10 days) but will improve over the next few weeks. Consume within four months if bottled in this fashion.



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- George Washington's Homebrew
- Recipe Conversion

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- Grow Your Own Hops
- 10 Common Brewing Questions

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- Fine-Tune Your Beer
- Small-Space Brewing
- Brew Belgian Abbey Ale

May '96

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- Ultimate Troubleshooter's Guide
- Unlock the Secret of Water

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- Mastering Partial Mash

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February '98

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- 7 Ways to Get to Know Your Yeast

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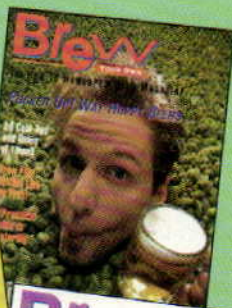
- Pucker Up! Way Hoppy Beers
- 24 Cool Tips and Rules of Thumb
- Brew Pilot Batches Like the Pros

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- Make Great Wine From Kits

May '98

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to make the kind of beer they like.

Although there are many similarities between making traditional beer and making malt coolers, there are several differences as well. Body, color, and flavorings all have to be adjusted for this beverage. In many cases what you use will depend on your (or your friends') preferences. In general, though, you'll want to keep the body fairly thin, the color light, and the malt flavor at a minimum. The color and flavor will change when you eventually add your flavoring agents (such as Kool-Aid). Unlike in beer, you will add no hops. Well, you might want to add half a pellet, just so you can say you're still making beer.

So, we want thinner body, little malt flavor, and no hops. What's in this stuff, anyway? To get the lightest color possible, I've found that dry malt extract (extra light) tends to work best. Liquid malt extract can also be used, but I've found that it tends to darken the wort a little.

Next, forget everything you know about avoiding adjuncts. Sure, some adjuncts tend to make your beer thin and cidery. Go ahead. Add 'em! Thin is in! And any cidery flavors you encounter will be offset by your flavoring agents. I like to add corn syrup. Besides the fact that it's economical and easy to

find, corn syrup ferments easily at ale temperatures and will add the residual sweetness those cooler-loving friends crave. Since we do need a little body, you'll also want to add some malto-dextrin.

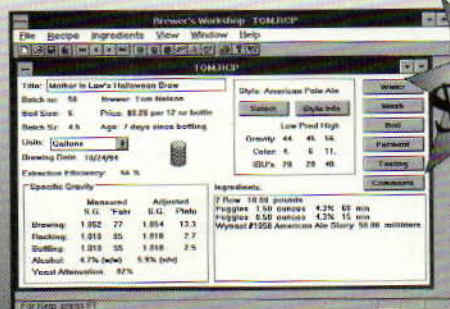
Yeast. Can't brew without it. The thing to remember here is that you're making a malt cooler. It has nothing to do with wine! Don't — repeat, *don't* — use a wine or champagne yeast. If you do, you'll end up with a highly alcoholic, sour concoction that will make your non-beer drinking friends decide they don't like coolers much anymore, either. Use a good-quality ale yeast. Australian or American works just fine. You can use a liquid yeast if you like, but the fermentation on this brew is off, running, and done so fast that I don't see any advantage. Use a dry yeast instead, and save your money for your next big beer!

Brewing is done just like any extract beer you've ever made. Be

Forget everything
you know about
avoiding adjuncts.
Sure, some
adjuncts tend to
make your beer
thin and cidery.
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CIRCLE 31 ON READER SERVICE CARD

sure to boil your ingredients. Since you're not using hops, you don't need to worry about extracting flavor, bitterness, or aroma. The boil is done for clarity and sterilization purposes. Flavoring agents are added after fermentation. One other note of caution: Watch your brew kettle. A corn-syrup wort will boil over so fast it'll make your carboy spin. Continue with fermentation as usual.

When fermentation is complete, you've got an alcoholic, bland, rather tasteless liquid. Now it's time for some flavor. Don't laugh, but I've found that Kool-Aid makes a fine flavoring agent. It's readily available, inexpensive, and comes in an amazing variety of natural and otherworldly flavors. My taste-testers liked a flavor called "Mango-Berry Punch." It's bright red and looks like a cooler. My personal favorite was a basic lemonade, but that's just the kind of guy I am, I guess.

You can't really put this brew into Bartles & Jaymes' bottles, impressive as it may be to your crew. The bottles won't withstand the carbonation pressure, and the screw caps won't give you a good seal. If you put it into beer bottles, all your friends will tell you it "tastes like beer." You can keg it, if that's what you're into. My approach, since I don't use kegs, was to use green two-liter bottles from citrus sodas. The product looks the same as some bottled commercial coolers, and it will keep, with an adequate seal, for four months or a little longer.

Feel free to experiment with these directions. I started this project with an idea, a wing, and a prayer to the brewing gods. I had some good luck and was able to produce some pretty good beverages, even if they didn't fit my definition of beer. You might want to experiment with some other adjuncts or flavoring agents. I'm eager to try a cooler with rice syrup, but I think my very next project will be to use Berry Blue Kool-Aid for flavor. Imagine, a blue (beer) cooler! Experiment, have fun, and let your friends who don't like beer see how talented you are!

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CIRCLE 2 ON READER SERVICE CARD

LABEL CONTEST WINNERS

BY
JULIE
SLAMA

GRAND PRIZE *Tempest*

Jim Scheibel wanted something generic for his bottles. An open label for whatever he happened to be brewing. You see, he had 144 bottles to label. Scheibel was the winner of last year's grand prize, and part of the prize package was bottles sporting his label. Knowing he didn't want 144 of any one style, he set out to create an adaptable label. At the same time he wanted a name for his garage brewing operation. He came up with every word and name he could think of that related to beer.

"A storm is brewing" was the beginning. Then came the *Tempest* name. He wrote the copy on the back of the bottle (pictured on Table of Contents, page 3), then rewrote it with help from a thesaurus.

Scheibel is a designer and illustrator for a national department-store chain. He made the artwork by hand and then scanned it into the computer. The tags around the necks of the bottles identify the contents. The beer in the bottle he submitted is a Belgian ale made with a kit he also received as a prize. "I wanted to

SWIG

FULL body
stout
thick & dark
stout
MALT

brew master's
MINE & GENNA

twenty-two
ounces



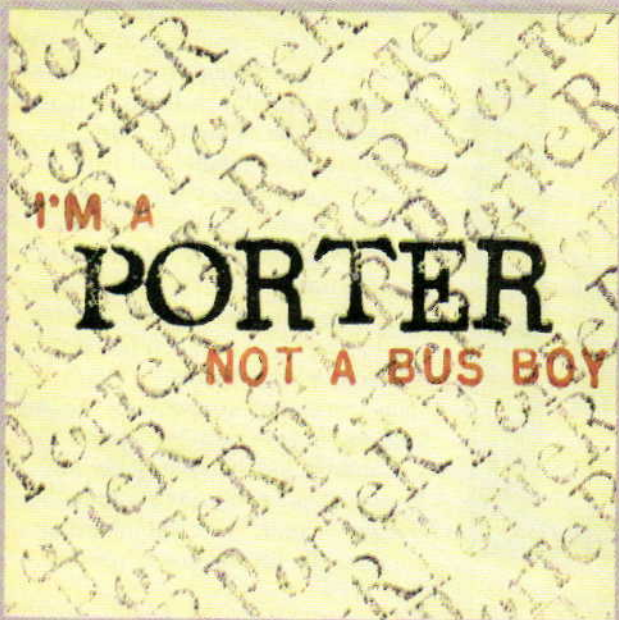
1ST PLACE (PROFESSIONAL)
GENNA HORTON
LAKE FOREST, CALIF.

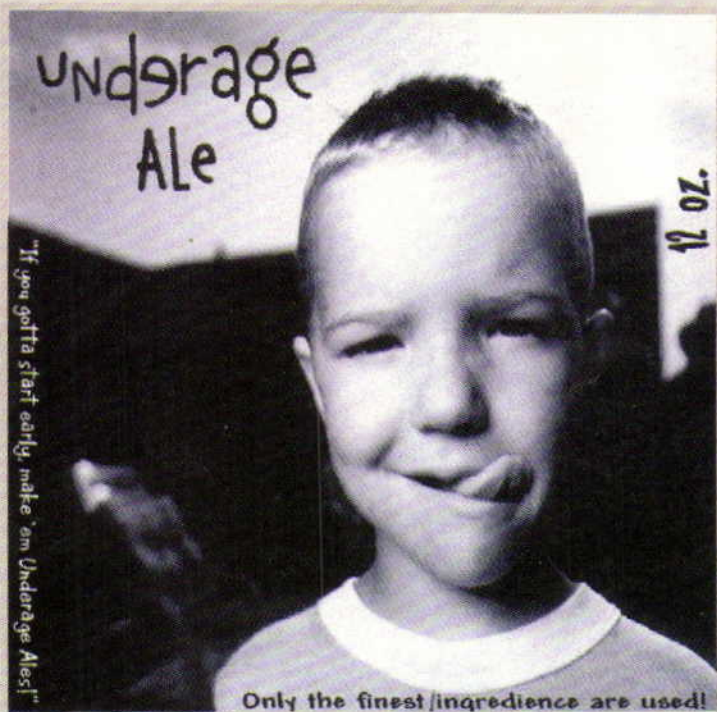


GRAND PRIZE
JIM SCHEIBEL
O'FALLON, ILL.



1ST PLACE (AMATEUR)
MICHAEL SUNDRA
PORTSMOUTH, N.H.



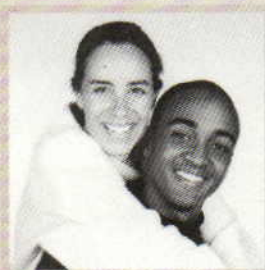


2ND PLACE (AMATEUR)
MATT KOHOUT
MINNEAPOLIS, MINN.

show what great prizes I had received," he says.

Scheibel has been brewing since his wife, innocently enough, got him a start-up kit almost four years ago. "She had no idea where this would go," he says. Since then he has created labels that not only won two years in a row, but his label, Baby Face Porter, was on the cover of the first label issue.

Scheibel was shocked and surprised to hear that he had won, again. We know that feeling, Jim.



2ND PLACE (PROFESSIONAL)
LANDO ETRICK AND MEGHAN COCCI
TUCSON, ARIZ.

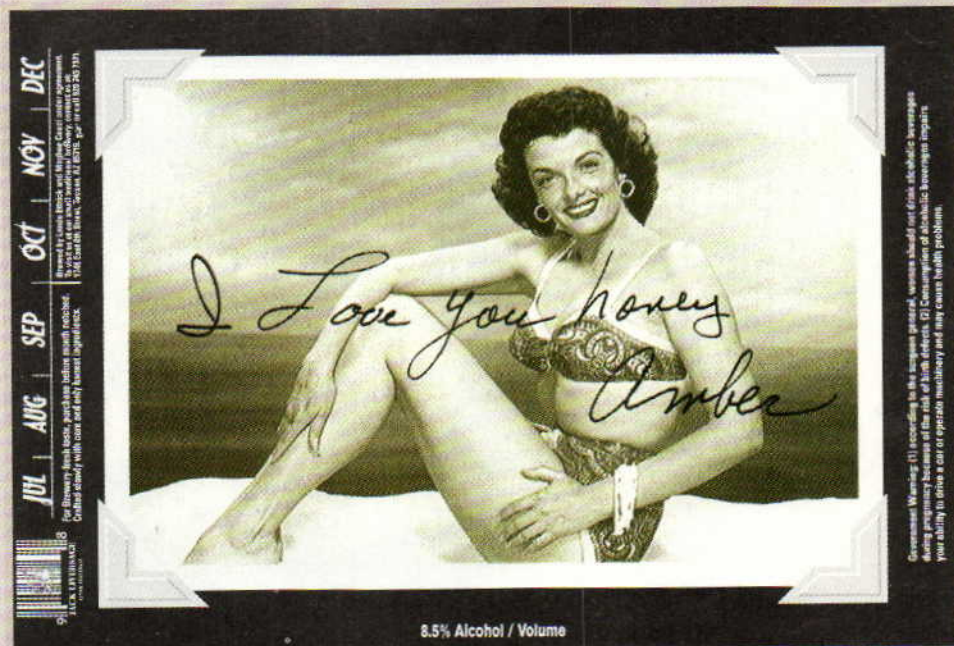
FIRST PLACE, AMATEUR
I'm a Porter, Not a Busboy

"I have this thing with words and numbers," Michael Sundra says. "I like to find a way to incorporate them into things that I do."

That includes homebrewing. The background of his label is stamped with old lead printer's type he has collected. It bothered him at first that the whole word didn't register, that it faded in some places, but eventually it grew on him. A rubber stamp he made was used for the red type. Sundra is a potter by trade and has taken to adding numbers and characters to the pots that he throws in his free time.

Sundra credits a movie line for the bus boy idea, though he can't remember which movie. "These lines from movies stick with me and just pop in my head," he says.

Sundra has been brewing for four winters, generally six to eight batches a year, from fall to spring. He typically brews stouts, porters,



LABEL CONTEST WINNERS • LABEL CONTEST WINNERS

and bocks, although he went really light once and brewed an ESB.

This beer was a clone of Samuel Smith's Taddy Porter, with minor adjustments. The porter was his first attempt at secondary fermentation and turned out pretty well, he says. The glass carboy he recently bought should be perfect for his next brew, a doppelbock called "I'll Be Bock Bock."

FIRST PLACE, PROFESSIONAL Swig Stout

"We wanted to pique people's interest about what it tastes like," says Jenna Horton of her winning label. Other labels she has made were more straightforward: a bee and honeycomb on the honey brew or a snowflake on the winter ale. But for the stout she and her brewing friends "wanted to not be so blunt and to the point," she says. The result is a collage including images of a mouth, steaming chemistry beaker, and even a poison warning. "We wanted to have fun with it," she explains.

Horton, an art director for a bicycle manufacturer, enjoys personalizing her labels with things about her friends, who are often involved in brewing. She and her boyfriend, Mike, stage "brew your own" parties. Everyone brings beer and gets together to brew and design labels.

"My boyfriend is Irish. That explains how we got involved in beer," she says. He was brewing before they met, and Horton got involved within the past year. He guides the brewing and she is the art director.

The quality of homebrew still surprises her, and she admits that sometimes she doesn't recognize the beer they brew, especially this stout. "Mike will pour it into a glass and I have to ask what it is. It's so creamy; I can't believe we made it," she says.

SECOND PLACE, AMATEUR Underage Ale

"It's not me," Matt Kohout says of the young boy on his Underage Ale label. It looks somewhat like his

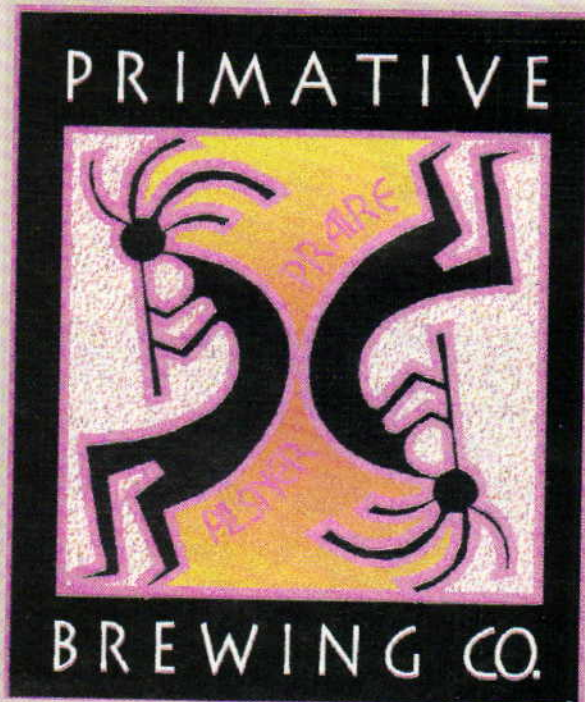


From the untamed wilds of 'Old Brookhaven,' we discharge upon you, the undoubting and steadfast consumer, this fine Canadian-style lager. The bottle you hold before you contains a golden eldör brewed in an old spaghetti pot, spawned from premium Dutch malts and pristine store-bought spring water straight from Maine, a state that comes dizzingly close to actually being in Canada. This all-natural beer masterfully combines the yeasty finesse of Brewmasters Jim Walls and Brian Sullivan with nearly three full weeks of fermentation and maturing in a dark closet. Fuggles hops offer a sublime compliment to our own 'special sauce,' ensuring a taste that is sure to impregnate within you remarkable memories of your foray into the Canadian wilderness.



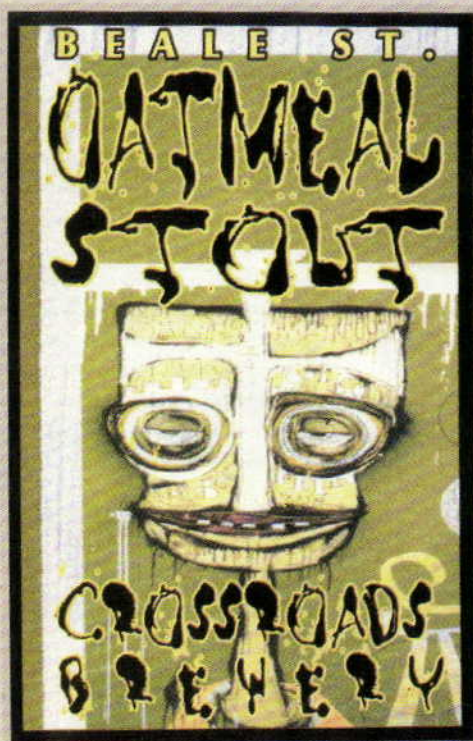
3RD PLACE (AMATEUR)
JIM WALLS AND LAURA SULLIVAN
BROOMALL, PA.

3RD PLACE (PROFESSIONAL)
ANTHONY SUSZKO
HANOVER PARK, ILL.



LABEL CONTEST WINNERS

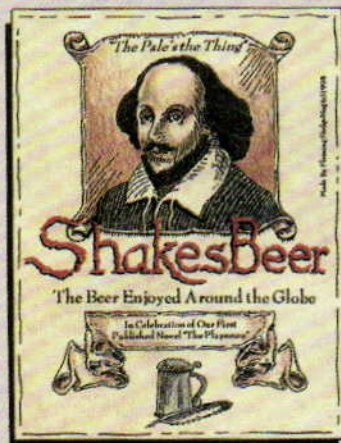
LABEL CONTEST WINNERS • LABEL CONTEST WINNERS



LITERARY DRINKERS AWARD (PROFESSIONAL)
CRAIG AND JERI WESTERSON
 MENEFEE, CALIF.



HONORABLE MENTION (AMATEUR)
QUINT FLOYD
 COLLEGE STATION, TEXAS



twin brother, he says, but that is just a coincidence. The image of the boy came from a random photo that Kohout came across at work.

"I saw this photo and said I have to use it," says Kohout, who is a commercial sales representative for an art supply store.

The beer is a hoppy ale with Cascade and Fuggle hops. Kohout generally brews the more hoppy beers that he prefers. "I am always experimenting, though," he says. "I made a bunch of crappy beers," he says, since a friend got him started brewing two years ago.

Kohout brews at least once a month but has recently started kegging and finds that he's both brewing more often and drinking more quickly.

He continues to bottle as well, often giving the beers a simple, low-tech label. For the label contest he wanted to do something different. "I saw the contest," he says, "and I knew this was going to be fun." He does not condone marketing to minors, by the way.

SECOND PLACE, PROFESSIONAL I Love You Honey, Amber

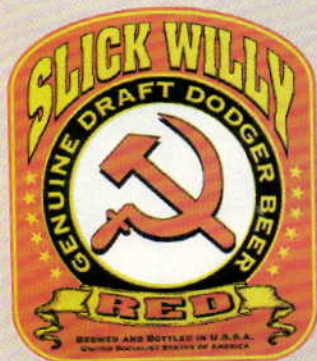
It all starts with a word association game, a few days of exchanging plays on words until something clicks.

"Meghan, who is my brew partner, is my girlfriend, a law student, and my muse. We come up with these goofy names and then I produce labels in my spare time," Lando Ettrick writes.

Ettrick and Meghan Cocci came up with the honey amber idea and sketched it out together. Ettrick, who is a designer, found the Jane Russell photo. By adding the photo corners he made it look like it had come from his grandfather's photo album. He enlisted the help of a friend to pen the inscription in the style of the era.

The Jack Liversage liver football logo was the subject of their first label and is located in the bottom left corner of all their labels, a tribute to Ettrick's other hobby, soccer.

The pair plan to begin brewing



HAIL TO THE CHIEF AWARD (PROFESSIONAL)
BOB HUNT
 W. HARTFORD, CONN.



WHERE'S LUCY AWARD (AMATEUR)
DAVE DOUGLAS
 GODFREY, ILL.

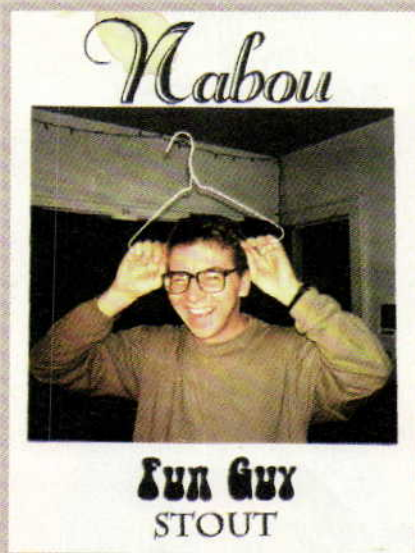
LABEL CONTEST WINNERS • LABEL CONTEST WINNERS

all-grain in the fall when the Arizona weather is more brewing-friendly and another creative name will undoubtedly be born.

THIRD PLACE, AMATEUR Tay River Canadian Style Lager

The third annual Summertime Christie Lake Fishing Trip will inevitably bring fishing and drinking. The question is whether people will be brave enough to drink the souvenir beer.

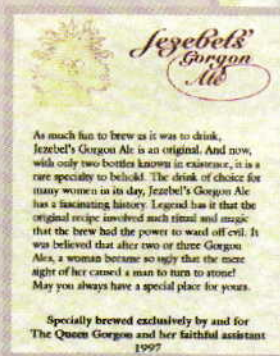
"We're not very professional," says Jim Walls. He and friend Brian Sullivan created the Summertime Christie Lake Fishing Trip Souvenir Beer to mark the annual trip to Ontario. They have had some winners — this '96 Canadian lager



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A.B.V. AWARD (AMATEUR)
JASON CARLOCK
BLOOMINGTON, ILL.



SUPER FREAK
HONORABLE
MENTION (AMATEUR)
MIKE LARY
WARWICK, R.I.

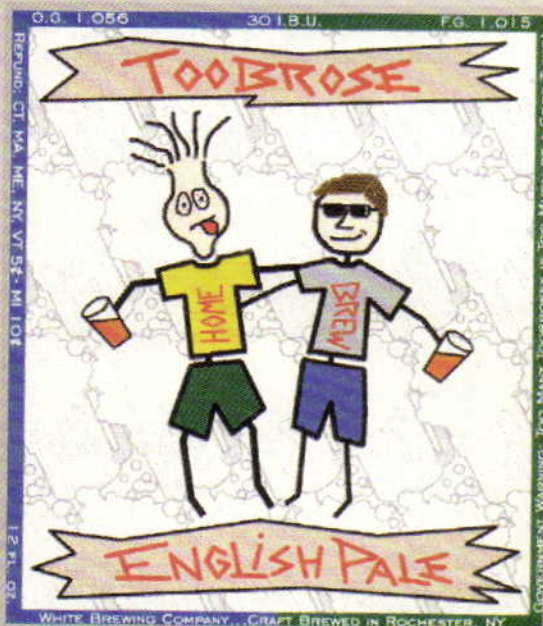


SUPER FREAK
AWARD (PROFESSIONAL)
WADE HAMILTON
CARTHAGE, MO.



EDITOR'S CHOICE (AMATEUR)
ANDY WHITE
ROCHESTER, N.Y.

BEST NON-LABEL LABEL
AWARD (PROFESSIONAL)
BARRY FITZGERALD
LAWRENCE, KAN.



LABEL CONTEST WINNERS

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WEIZENGUY

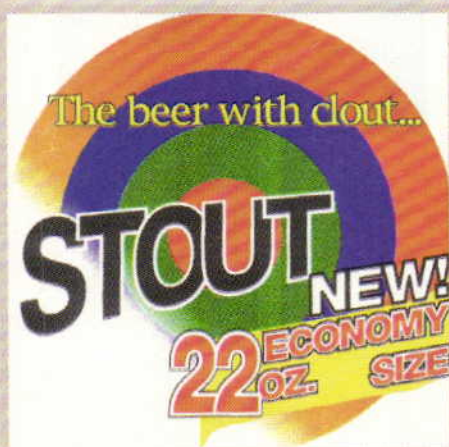


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AWARD (AMATEUR)
JAMES A. NEGRO
SOMERVILLE, MASS.

EVERYBODY'S A
COMEDIAN... (AMATEUR)
GARY SHEWCHUK
WESTLAND, MICH.



came out well, "smooth, crisp, and tasty," he says. But last year's stout was less of a success. "I think it had something to do with Brian's dog licking the pot and sticking his head in the beer," he says. Which is why it's no surprise that some of the guests go home with their souvenir bottle intact, unopened.

A neighbor in college talked him into homebrewing as a way to make cheap beer that he liked, and Walls has been brewing for the three years since. That same friend was coincidentally selling equipment, undoubtedly to finance his college education. Walls is now a certified, "spaghetti pot and wooden spoon," brewer. "We just get the ingredients and throw everything together," he says.

No matter how the beer tastes, it has become part of the fishing trip tradition, each year named after a feature of the lake or region.

Walls, who is a copywriter for an advertising agency, wrote the copy and Brian's sister Laura designed the label. The labels are full of cryptic, inside jokes. "It adds a certain mysticism," according to Walls, "much like the Rolling Rock '33."

THIRD PLACE, PROFESSIONAL Prairie Pilsner

Primitive Brewing Co. may be an appellation for the brewing set-up but not the label design. In fact, the label predated the beer. The raspberry wheat, Anthony Suszko's first batch, should be ready soon, though.

Suszko has always wanted to homebrew but wasn't sure how to get started. The infomercials and bag beer kits turned him off. But then he found some brewing friends, a magazine, and a homebrew shop in Warrenville, Ill. He was on his way.

Label design appeals to Suszko, who does freelance package design, restaurant signage, and menu design in addition to his more than full-time job as a press operator. Originally he worked at a prepress house, but the industry's reliance on computers made him turn to graphic design. His favorite designs use

THE PRIZES

Grand Prize

- King Kooker (170,000 BTU) from Canada Homebrew Supply
- 10-gal. stainless steel brewpot with perforated false bottom and brass valves from Polar Ware Co.
- One year's supply of yeast vials from White Labs
- One mixed case (6 cans) of Oregon Fruit Products fruit purée from F.H. Steinbart Co.

First Prize, professional

- 5-gal. ball lock keg from C&C Distributing
- 5-gal keg parka from Forty Below
- 10-gal. Brew Kettle with built-in thermometer port from Southern Stainless
- One mixed case (6 cans) of Oregon Fruit Products fruit purée from F.H. Steinbart Co.

First Prize, amateur

- 5-gal. ball lock keg from C&C Distributing
- 5-gal keg parka from Forty Below
- 10-gal. Polar Ware brewpot with lid from Canada Homebrew Supply

Second Prize, professional

- Case (6-46 oz. cans) of Alexander's Sun Country malt extract from California Concentrate Co.
- Party pig kit with activation pump from Quoin/Party Pig
- Handmade wooden six-pack carrier from Signature Woodworking

Second Prize, amateur

- Case (6-46 oz. cans) of Alexander's Sun Country malt extract from California Concentrate Co.
- Party pig kit with activation pump from Quoin/Party Pig
- Handmade wooden six-pack carrier from Signature Woodworking

Third Prize, professional

- Handmade wooden six-pack carrier from Signature Woodworking
- Organic beer kit (choice of extract or all-grain) from Seven Bridges Cooperative

Third Prize, amateur

- Handmade wooden six-pack carrier from Signature Woodworking
- Organic beer kit (choice of extract or all-grain) from Seven Bridges Cooperative

Honorable Mention

- One year's supply of yeast vials from White Labs
- Tap handles from Sculpture Concepts

Editor's Choice

- Beer recipe kit from Vinotheque USA
- One each of all products in the brewer's garden line of herbs, spices and Belgian candy sugar from F.H. Steinbart Co., 20 items
- 55-lb. bag Weissheimer Pilsner from L.D. Carlson Co.

Runners-up

- T-shirts from White Labs
- Head-to-Head beer trivia game from Food for Fun
- Rogue Ale hats (5)
- Ace ciders, 22 oz. bottle each of apple, pear, and honey
- Briess pint glass
- Briess waffle weave shirt
- Hat and T-shirt from Lubbock Homebrew Supply
- One each of all products in the brewer's garden line of herbs, spices and Belgian candy sugar from F.H. Steinbart Co. (20 items)
- Beer recipe kit from Vinotheque USA (2)
- Vintage Harvest Hard Cider kit from Vinotheque USA
- Jet bottle washer from Jet Carboy & Bottle Washer Co. (2)
- New York Homebrew kit (12-pint beer kit containing plastic fermenter, airlock, faucet funnel, handbook, and ingredients) from New York Homebrew Inc.

All winners will also receive:

- 25 custom labels from TLC Digital Labels
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bold, bright color, like his labels.

Suszko vows to put the same intensity into brewing as he puts into the artwork. We're convinced. His first brew isn't done yet and he's already speaking of hydrometer readings and hop additions.

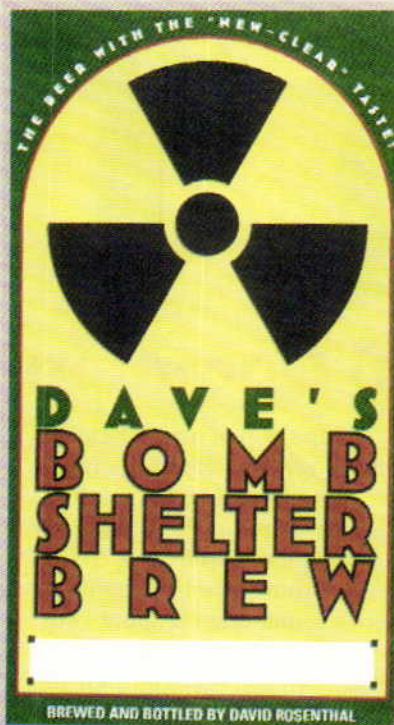
HONORABLE MENTION, AMATEUR Beale St. Oatmeal Stout

With only one brewpub in town, you might think fresh beer is hard to come by in College Station, Texas. If you know Quint Floyd or his brewing partners, though, there are barbecues and crawfish fests with the latest homebrew. Or the wet bar at the local hair salon. Floyd has merged his hobby with his profession, offering his homebrew to clients from the draft system in the shop that he and his wife own. Reflecting his love of beer, the "Sheers" logo resembles that of one famous Boston bar, offering a "cut above the norm."

The draft system works well for Floyd, who has been kegging since he began brewing in October 1994. He bottles the competition beers, but the rest is gone so quickly that he would prefer to use a Sankey keg. He brews every three to four weeks, usually involving a huge group of people, as with a recent crawfish boil. "Everyone gets their hands on it," he says.

The logo was done by Chad Mall, a student at Texas A & M University and "artist and future presidential hopeful." He drew the design while in a coffee house in Amsterdam.

The Beale St. Oatmeal Stout, like all of the beers he makes, carries some blues reference. In 1996 when Floyd and his brewing partners were naming their operation they drew from a legend about blues artist Robert Johnson. After failing to make it big in Chicago, the "father of blues" is said to have returned to "the crossroads" in Mississippi to sell his soul to the devil in exchange for fame and fortune. Lucky for Floyd and his brew partners at Crossroads Brewing, we only asked for beer in exchange for a spot in the magazine.

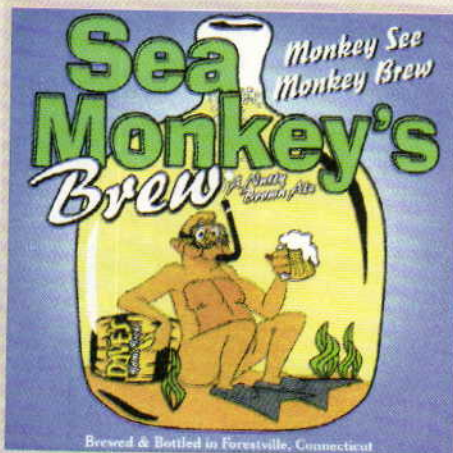


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Oh That

10 Common Off-Flavors and

by Sean Mick

The first sip of a new batch of homebrew is one of the many joys of brewing. It can be devastating when that experience is tainted with an unpleasant sensory jolt. "What is *that*?" your taste buds wonder. There's something off about your beer. It doesn't have to be a complete waste, though. Knowing what went wrong can help prevent it next time. An ounce of prevention is worth at least five gallons of cure.

1. Rub-a-dub, the beers in the tub

Soapy flavors may lead you to

think you dropped a bar of Ivory in your bottling bucket. More than likely the flavor is coming from fatty acids left over in your cold-break trub (the precipitation of proteins after boiled wort is rapidly chilled). They combine with a warm fermentation to produce some unpleasant soap-like flavors.

Avoidance tactics: Cool wort quickly to avoid contamination. Keep most of the hot and cold break out of your fermenter. A neat trick: Rack your wort from a first, temporary bucket, carboy, or kettle into its primary fermenter after several



Smell!

How to Prevent Them

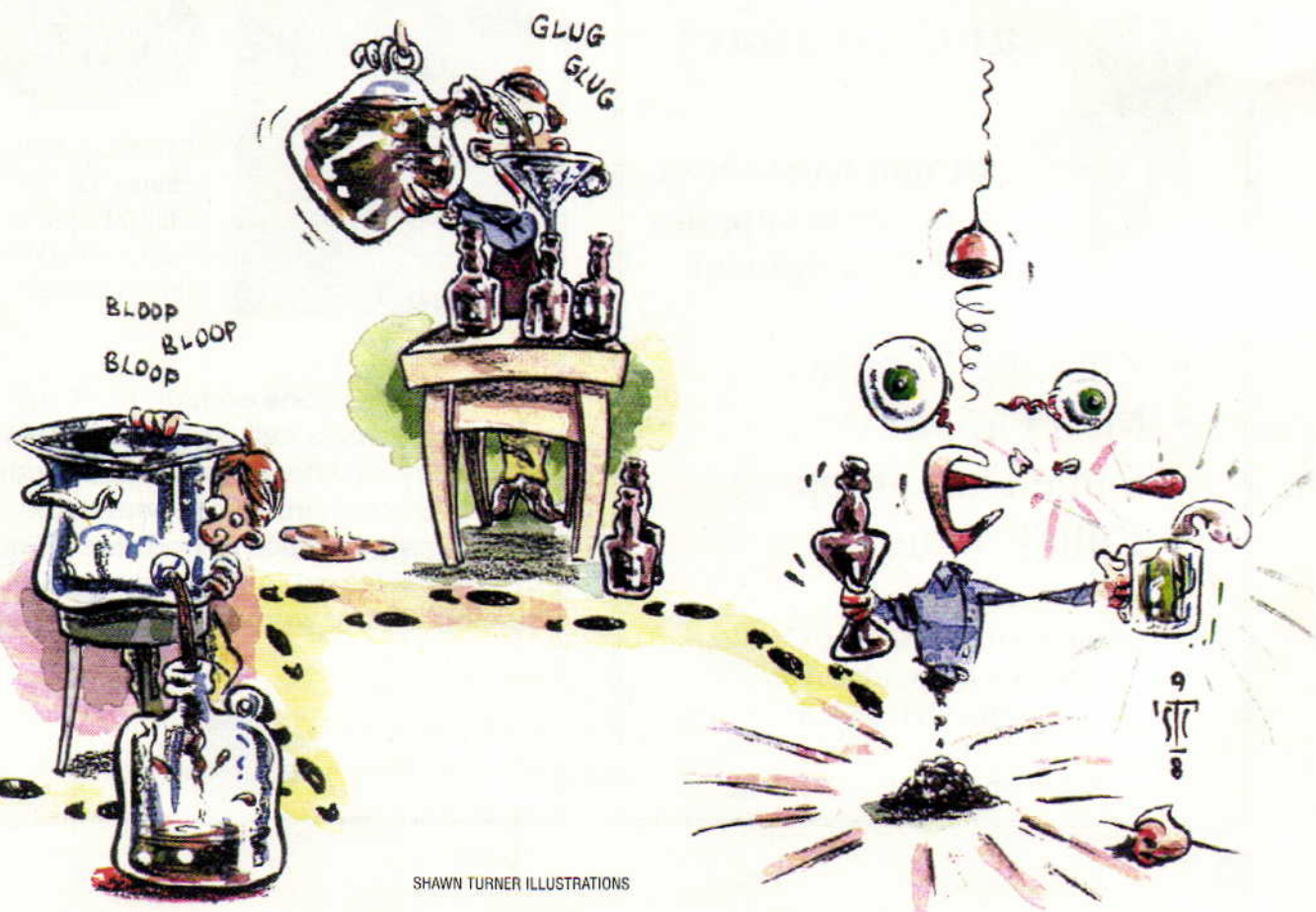
hours of settling to remove it from cold break and dead yeast. It also keeps yeast from the fatty acids.

2. Popcorn, anyone?

If your fermentation aroma is reminiscent of movie-theater butter, chances are you've got diacetyl in the making. The finished beer will have varying degrees of a buttery, sometimes rancid butter or butter-scotch, aroma and flavor. In small amounts diacetyl lends body fullness, which is a desirable roundness acceptable in some stouts and pilsners but found to be a fault in

most other styles. Certainly, copious amounts are not welcome at all. Guinness Stout, Pilsner Urquell, and Redhook ESB all exhibit diacetyl at levels above the threshold where your senses can perceive it.

Diacetyl is usually created chemically in beer from byproducts of yeast fermentation. Yeast typically convert it to another compound that can't usually be detected at such a low threshold. The degree of conversion depends on several factors, including contact time with yeast, temperature, type of yeast, and yeast viability.



Yeasts aren't the only organisms that can create diacetyl. The bacteria strains *Zymomonas*, *Pediococcus*, and *Lactobacillus* can create abnormally high amounts of this compound. Usually, bacteria contaminations are also accompanied by a sour, acidic smell and taste and a stable haze throughout the beer. If your beer reeks of diacetyl but you did not ferment it above the optimum temperature, crash cool it, or remove it from the yeast too soon after fermentation, chances are you need to review your sanitation procedures. Do not, for instance, use your mouth to start a siphon. *Lactobacillus* thrives in your mouth.

Avoidance tactics: In general to reduce diacetyl, choose a strain of yeast that is recommended as a clean fermenter, keep the fermentation temperature within the range recommended for the yeast, and allow the yeast a diacetyl rest. That is, keep the beer in contact with the

yeast for one to three days past fermentation at the high end of the temperature range. If you use a large amount of adjuncts, such as simple sugar syrups, rice, and corn, that are deficient in FAN (free amino nitrogen), add yeast nutrient with amino acids, because this will decrease diacetyl. Kraeusening your beer will also help. This is especially true for lagers, because lager yeast ferments and reabsorbs diacetyl at a slower rate due to temperature.

3. Rotten eggs

Burnt match, rubbery, cooked/rotten vegetables. Sulfur compounds, mainly dimethyl sulfide (DMS), are responsible for these types of odors. DMS is found in malt and, to a lesser degree, in hops, but it can also be created by yeast and wort-spoiling bacteria. The naturally occurring amount of DMS is usually scrubbed out by an adequate wort boiling between 30 and 90 minutes and may be blown off as

CO₂ bubbles knock it out of solution during fermentation. In general, though, six-row malting barley has more DMS-precursor than two-row. Also, more highly kilned malts (Vienna, Munich) will make beer that has less DMS.

Avoidance tactics: Preventing DMS is easy. Keep the lid off your boil kettle to allow all volatiles — compounds that turn to gas during the boil — to escape. Clean work surfaces and all equipment that comes in contact with the wort, so as not to introduce bacteria. Do not pitch unhealthy yeast. Also, don't leave the beer in contact with the primary fermenter's sediment of trub and dormant yeast more than one week past initial fermentation. Also, properly aging lagers reduces sulphur compounds in some lager yeasts. Finally, choose the appropriate malt for each style of beer. Light lagers allow for a certain amount of sulfur in their aroma, hence the use of lightly kilned malt, whereas pale



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ales are usually without DMS.

4. Cotton mouth

Does the beer leave a feeling like bitter grape skins in your mouth? It's not quite the clean bitterness of an IPA but a mouth-coating sensation that is distracting and unpleasant.

Astringency can come from hops, grains, and bacteria. When used liberally without the balance of malt, hops can leave a grassy astringency. Grains, if extracted at high pH, will impart tannins from the grain husk to the final beer. To a lesser degree bacteria can leave an astringency accompanied by more prevalent rancid, acidic, or vinegar-like flavors and smells.

Avoidance tactics: Usually, astringency can be minimized by keeping the recipe in balance (bitterness of hops vs. sweetness of grains), keeping the ratio of water to grain low when mashing and sparging, and watching your mash runoff pH (keeping it below pH 6 to minimize phenolic, tannic extraction).

5. I can't hear you; I've got a banana in my beer

Fruity, estery, sometimes even solvent-like aromas are often the tip-off that you've got a lot of esters in your beer. Ethyl acetate (fruity, solvent-like, or nail-polish remover), isoamyl acetate (banana), and ethyl hexanoate (apple) are among the main contributors to fruitiness. While fruitiness is a component of all beers — it is a main competitor to alcohol production — it can be unwelcome in some styles. Lagers in particular should normally have below-threshold amounts of esters. On the other hand doppelbocks and other high-gravity lagers are notable exceptions. As the gravity increases, so do esters.

Avoidance tactics: If your ester levels are unpleasantly high, there are several practical remedies. Obviously, choose a strain of yeast that ferments with low levels of esters. Refer to published data or ask a supplier for recommendations. To minimize any yeast's ester

production, ferment cool, aerate the wort well before pitching an adequate amount of yeast, lower the original gravity, and use a yeast nutrient that has biotin powder.

6. Day-old (liquid) bread

Hints of cardboard, paper, sherry-like, and sometimes rotten vegetables typically indicate degrees of oxidation in your beer. Oxidation

is accompanied by a reduction in the malt and hop flavor in your beer. The problem: Low levels of aldehydes (one type of flavor chemical in beer) that once were reduced or fresh have oxidized.

If your beer is exhibiting early signs of staling, your yeast can to some degree reverse oxidized aldehydes. (Remember, yeast are great scavengers!) This may be your only

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defense once oxidation sets in. Once oxidation has progressed to the more pronounced sherry-like or vegetable-like flavors, there isn't anything you can do to reverse it.

Avoidance tactics: Oxygen has many opportunities in the brewing process to stale your brew. Transfer your homebrew from vessel to vessel with the least amount of splashing possible. At bottling time minimize headspace in the bottle to three-quarters of an inch. Just prior to capping, some homebrewers even tap the sides of their bottles to release CO₂ out of the beer and "push" oxygen out of the bottle, capping quickly thereafter. It is true that yeast will absorb some of the oxygen in the bottle but certainly not all of it, as they are no longer in their vigorous growth cycle. This often leaves plenty of oxygen left to cause staling reactions.

For all-grain brewers there is at least one more area to fight oxygen ingress. Although this is a subject of debate in some brewing circles, hot-side aeration could be staling your beer. Minimize splashing, frothing, or otherwise violently stirring your mash during the mashing and sparging process. While it is certainly beneficial to thoroughly mix your grains, try not to let the surface of the mash bed get disturbed.

7. Band-Aid

Chlorophenolics. It's a scary word and a powerful compound that can be tasted when it's present in only a few parts per billion! Phenols found in malt (and to a lesser degree in hops) can combine with free chlorine in water to



Off-Flavors/Aromas & Their Diagnoses			
Symptom	Cause	Remedy	Preventative
astringent, mouth coating	tannins; polyphenols	Cold conditioning may help remove tannins; Polyclar may help.	Watch pH runoff during sparging, thicker mash; reduce leaf hops in boil.
sour, acidic	bacteria; low pH	If prior to pitching, reheat wort to 150° F and pitch plenty of yeast (cross your fingers, too).	Review sanitation; use sterile air filter for aeration of wort; watch pH, lactic acid during sparge.
soapy, rancid	fatty acids	none	Rack earlier, less trub carryover, reduce fermentation temp.
fruity	esters	Aging will blend flavors somewhat; oxidation may hide esters.	Reduce fermentation temp.; switch yeast; pitch more yeast; aerate cooled wort really well, especially when using liquid yeast.
stale; rotten vegetable; reduced flavor/aroma	oxidized	Yeast contact may reduce oxidized aldehydes.	Rack carefully; purge headspace with CO ₂ ; mash and transfer mash to lauter carefully.
sulfur; burnt match; rubber; rotten eggs	DMS; old yeast; autolysis	Bubble CO ₂ through beer in keg; extended lagering.	Pitch fresh yeast; rack off initial trub promptly; change malt.
hot taste with no head retention	fusel (higher) alcohols	Aging may change fusels to esters.	Lower fermentation temp.; change yeast.
yeasty; toasty	autolysis; nonflocculent yeast	Rack, then cold condition or use fining agents.	Replace yeast with more flocculent strain; rack more promptly. Use gypsum in boil.
buttery; butterscotch; rancid butter	diacetyl (normal byproduct); inability of yeast to reabsorb diacetyl (petite mutants); excess diacetyl from bacteria	Two to three days yeast contact in secondary at fermentation temperature; excess diacetyl will get raunchy over time.	Do not crash cool too soon, use biotin powder nutrient, replace sugar with malt; replace mutated yeast; use less flocculent yeast; watch sanitation post boil, do not "suck and spit" siphon; use sterile yeast propagation techniques.
skunky; catty; lightstruck	mercaptans; light-struck beer	Hold your nose and take your medicine.	Use amber bottles; rack in a darkened room; keep beer out of light; keep beer cool; use light-stable isohop oils (good luck procuring these!).
medicinal (desirable in some German wheats); Band-Aids	phenols in malt; wheat yeast produce 4-vinyl-guaiacol; wild yeast; chlorophenols from residual bleach or chlorine	none	Change yeast; omit ferulic acid rest (at 110° F), careful sanitation, use inline sterile air filter for aeration; rinse bleach thoroughly; change sanitizer; check water source for chloramines, chlorine.

form chlorophenolics.

Avoidance tactics: Watch your use of chlorine-based cleaners/sanitizers, and find out if your area's water is chlorinated. Ask also what steps you can perform to remove such chlorine. Certain chlorines can be boiled off. Others may require charcoal filtering.

Wild yeast may also be the cause of Band-Aid type flavors, especially in the summer when they are more prevalent in the air stream. Keep the cooling wort covered, particularly after your wort boil, and use a 0.5-micron or tighter sterile air filter when oxygenating your wort.

8. Heavy metal

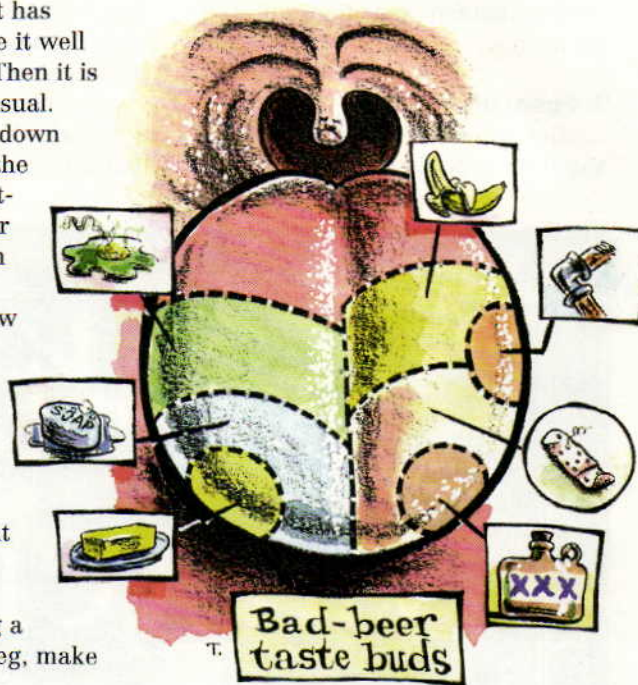
Does your beer taste like metal? Tinny, slightly astringent? Usually this indicates an excess of free metals in the water supply. Bloodlike, metallic tastes can also come from residual iodophor in the beer. Some people say iodophor can taste "shrimp-like."

Avoidance tactics: Soak your copper wort chiller in an acidic solution of vinegar prior to throwing it into the wort. This will remove most of the oxidized copper before your wort does. After it has soaked in vinegar, rinse it well with warm tap water. Then it is ready for the wort as usual.

To additionally cut down on metals, check with the municipal water department to make sure your brewing water is low in metals, reduce trub carryover from the brew kettle to the primary fermenter, and be careful of the hops you choose for dry hopping. Willamette hops, for example, can leave an unpleasant metallic flavor when used for dry hopping.

Also, if you're using a German-style tin minikeg, make

sure the keg isn't ruptured on the inner plastic coating. These items were originally meant for one-time use, so you need to be extremely



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careful when cleaning them. If only your minikegged beer is tainted, you'll need to buy a new keg. Rinse the new keg after emptying it, and soak it in a sanitizing solution. No need for abrasives, as they will ruin the liner.

9. Fusel oil

Hot, spicy, nail polish remover. And how come there's no head

retention? You've got fusel alcohols. Although these aromas and flavors are characteristic of a strong ale, they should be minimized or eliminated if possible. Fusel alcohols are very aromatic, being the product of a hot fermentation or a high starting gravity.

Avoidance tactics: Your best weapon is the right yeast. Find one that is neutral and temperature

tolerant, such as an American ale. This is a good choice if you want to minimize fusel alcohol in a big (high starting gravity) beer. Otherwise, keep the fermentation on the cool side and make sure you follow general guidelines for yeast pitching quantities and wort aeration. Over time fusel alcohols can combine with acids to become esters, which tend to be more mellow on the palate. This is one of the reasons barleywines and the like age gracefully.


10. An apple a day

Despite your plans to make homebrew, you've got something more reminiscent of hard cider. There are two possible diagnoses here. First, you used some type of refined sugar in an excessive way. Second, your beer is still very young and is left with lots of acetaldehyde.

Avoidance tactics: Using sugar, especially table sugar, is a tricky proposition that can often leave a cidery flavor if the sugar is used without regard for balance. There is no hard rule or percentage, but you may want to back off or replace the sugar with malt if your beer tastes like cider or has an undesirable cidery quality.

Acetaldehyde is another story. It is most often identified with the bruised-apple/green-apple aroma. This compound is low in most commercial beers, but Budweiser contains enough so that you can taste it. Aging the beer in the presence of yeast should reduce acetaldehyde. In the future keep beer at a stable temperature and choose a different yeast strain if the problem seems to be yeast dependent.

Detective work

Taking good notes, noting temperatures, mistakes, insights, and substitutions is a good preparation for sensory troubleshooting. Once the beer is ready to be tasted, retrace your steps if it is problematic. Combining what your senses are telling you with what your notes have to say will usually lead you to a cause for your problem. 

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Bringing Out the Best in Your Wine

by Steve Friedman

If you're like me, you're intrigued by the labels on products you consume. And if you've ever visited any respectable wine retailers, you are familiar with the many sale signs highlighting the merits of various wine varieties. Each offers a brief

synopsis of flavors other than grapes. Often they refer to elements of flavor such as essence of pear, citrus zest, or mild oak.

What many beginning home winemakers don't realize is that they have an advantage over commercial wineries. Professional winemakers rely on raw materials to induce non-wood flavors and are prohibited by law in the United States from adding flavorings such as glycerin and chocolate. But making wine at home means there are no restrictions to what you can add to produce some very creative flavors.

The first step is to find a good home winemaking retailer with a wide array of natural additives that can provide these accents of flavor.

Oak is one of the most commonly used accents. It can add a great amount of flavor and is most commonly used with red wines such as Merlot and Cabernet. It is also frequently used today in Chardonnays. For years the French have been aging their wines in oak barrels. California vintners, too, have become infatuated with the use of oak. It can impart aroma compounds such as vanilla, clove, nutmeg, caramel, toast, and butter.

Types of oak range from mild to toasted as well as authentic French oak barrel shavings or chips for that highly regarded, traditional oak flavor for which French wines are renowned.

American oak is also now coming of age and is being produced specifically for wine, whereas in the past it was used primarily in the production of whiskey. American oak has a noticeably bolder character than



TODD HAMMOND

One of the most commonly used accents, oak is often used with red wines such as Merlot.

French and is therefore better for full-bodied reds.

After soaking the oak chips in a sulfite solution for a few minutes, add them to your carboy. Do not leave the chips in your wine too long. The best way to tell when they should be removed is by smelling the wine. A good guideline is to add a couple of handfuls per carboy during the last half of fermentation, no more than two days, and remove at press.

The other alternative is to add the same amount to the wine and remove it at racking time. The level of oak extraction is ultimately determined by your taste. Once the desired level of oak aroma is reached, rack the wine off of the chips into another carboy. In general too little is better than too much. Otherwise, the flavor can overpower and mask the aromas of the grape varietal.

If you're looking for additional aroma, try dried elderflowers. They

impart a delicious floral bouquet and are ideally suited for fruitier wines such as Riesling. The recommended proportion is one ounce per five gallons steeped in

◆
**Many
 beginning
 winemakers
 make the mistake
 of overdoing
 additions and
 accents.**
 ◆

wine 10 to 15 hours during primary fermentation. Again, too much is worse than none.

Dried woodruff adds vanilla overtones and is popular with Rhine-style white wines.

I have discovered that a few vanilla beans or small doses of vanilla extract can add desirable flavor elements to Chardonnays and other white wines.

Almost any red wine style can benefit from the addition of berry extracts such as raspberry or blackberry. Cherry too can add a nice nose and flavor. The many possibilities for adding flavor depend only on the individual winemaker's taste and preference.

A good guideline is to add one teaspoon for a five-gallon carboy in the same way that you would add oak.

Chocolate is wonderful when used in certain red wines. We have had exceptional results adding fine Lindt dark chocolate loaded with

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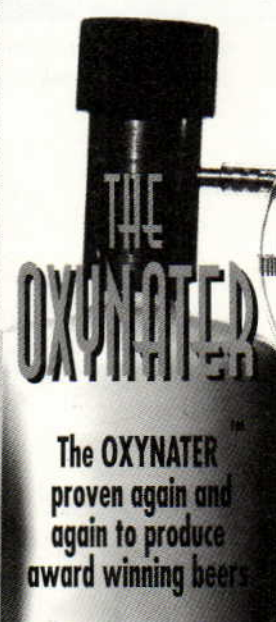
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cocoa flavors to our Pinot Noir, Petite Syrah, and Cabernets. Many imbibers of the fruit of the vine enjoy the combination of a fine wine with chocolates, so adding a bit to your wine can produce a desirable combination of flavors. Choose chocolate with a low oil content and add about one-half cup if using powdered chocolate.

Another popular additive includes glycerin, a non-fermentable sugar that adds sweetness without stimulating renewed fermentation. It results in improved body. Glycerin is therefore best combined with reds that are more full-bodied such as Cabernets and Merlots. The proper dosage is approximately one ounce to four or five gallons of wine.

Tannin, which imparts dryness and adds a good keeping quality to wine, is yet another common additive. Tannin contains phenolic compounds and is found in the skins, seeds, and stems of the grape.

Tannin helps to clarify your wine naturally by pulling out of suspension heavy proteins and solids while adding astringency and mouthfeel. Here you can be more liberal in the amount you use because it is difficult to overdo. One-eighth to one-quarter teaspoon per gallon is a good amount. If you use dry, powdered tannin, be sure it is fully mixed in or it will have little effect. Liquid versions are available and ensure better results.

A medley of spices is another option that adds flavor to wine. Unlike other additives a bag of spices can be added to the finished wine. To create mulled wine steep a tea bag filled with cinnamon, clove, orange peel, allspice, and orange oil in a cup of wine.

One error many beginning winemakers make is overdoing the addition of accents, flavors, or sweeteners. A wine should have intensity of flavor and aroma but maintain balance. It is best to check with your home winemaking supplier for the proper proportion of additives for the particular wine you are making. Ultimately, decid-

ing what items to use in producing your wines stems from your own style preferences.

For best results beginners should consult their winemaking retailers. Keep a winemaking record for each batch you produce in order to track the results of each recipe. After mastering the processes and ensuring your results, a little variety helps you discover the nuances

that wines are capable of having. Winemaking is a fascinating journey that can provide a lifetime of enjoyment. ■

Steve Friedman is the owner of Red, White & Brew, a beer and winemaking on premises as well as a supplier of home beer and winemaking materials in Manchester, N.H.

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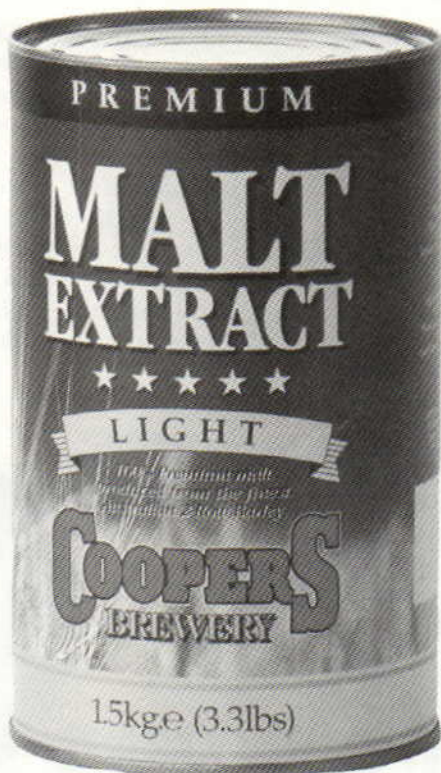
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The Complete Source for Beer, Wine & Mead Makers

Great Scot! These Beers Are German

by Stan Hieronymus and
Daria Labinsky

Don't be fooled by the McFarlane name; brewer Peter McFarlane's red hair and bushy, red muttonchop sideburns; the Scottish crests on the office door; or the logo with man clad in tartan. The beers coming out of McFarlane Brewing Co. in Phoenix, Ariz., are strictly German.

McFarlane has been asked by customers to brew a Scottish ale, but so far he has resisted. "Sure, you'd get the hardcore micro drinkers, but that beer would never go in this market," he says. His family tree is actually more German than Scottish, he explains. He brews

German beers because he thinks that's what he makes best and because German styles make sense in the Phoenix Valley, where summer arrives early and stays late.

Selling a German-style craft beer in an area where mainstream lagers dominate and craft beer drinkers think in terms of ales has been a challenge. That it is available only on draft makes it even tougher. "It was a lot of education," McFarlane says. He invited retailers to the brewery to learn about his beer and how to sell it to customers, and several evenings a week he visited bars and talked to consumers.

He knew he could make a good hefe-weizen — one he brewed for Hops! Bistro & Brewery won a gold medal at the 1992 Great American Beer Festival — but there wasn't another distributed in the Phoenix Valley when McFarlane Brewing opened in 1996. Nonetheless, it became the brewery's flagship beer and accounts for half its sales.

The hefe is made with 50 percent wheat and 50 percent two-row barley and fermented with Bavarian yeast. The beer has a clovy nose and a citrusy, sweet flavor that's cut with hops in the finish. It's a straightforward beer made in a straightforward way.

McFarlane keeps it that way, handling all the brewing himself while his wife, Jane, manages the office and marketing. "It's all process," he says of brewing. "That's the most important thing. Hands-on experience, knowledge, and education are important, but to get a good-quality beer you have to know what you're doing and why you're doing it."

The beers are named simply — McFarlane Hefeweizen, McFarlane Pilsner, and McFarlane Red (a Märzen) are the year-round beers



Together Peter and
Judy McFarlane offered
the Phoenix Valley
its first hefe-weizen.



Peter McFarlane had a gold medal and several years of professional brewing experience before opening McFarlane Brewing Co.

— because “we don’t name our beers after animals,” he says, and the recipes are traditional.

The Pilsner is styled after a Bavarian pilsner, emphasizing malt more and hops less than a Czech or Northern German pilsner. All the ingredients are German, and the German Tettnanger hops are apparent throughout, although McFarlane estimates the International Bittering Units at 12 or 13. A bit of cara-pils

in the recipe adds a touch of nuttiness to the taste.

The Red is made from two-row malt, crystal malts with varying Lovibond, and Munich malt, then hopped with German Northern Brewer and Perle. Although there are no smoked malts, the beer is biscuity and slightly smoky tasting.

Although he started as a homebrewer and then was a pub brewer, McFarlane is content with focusing

on making a few very consistent beers. “I have seasonals,” he says. “I get enough variety with specialties that I don’t get bored.” The brewery usually has five beers available, most of them light in color if not in taste. “People don’t drink dark beers here,” McFarlane says. He made a schwarzbier once, but only a 40-barrel batch.

This spring he went with a Maibock rather than a darker bock, producing a dangerously smooth beer, 7 percent alcohol by volume, from two-row, caramel, cara-pils, and Vienna malts and Northern Brewer and Perle hops. The beer spent 25 days in the unitank, then 40 more lagering (all McFarlane lagers spend about six weeks lagering).

The 1997/98 holiday beer was a spiced porter that included fresh ginger root, nutmeg, and orange peel. “I wanted to make sure you can taste the beer first, then each of those flavors,” McFarlane says. The spices mellowed as the beer

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aged for a few months and became something you could drink for breakfast.

McFarlane first looked into opening a brewery in the mid-1980s when he was living in Flagstaff, Ariz., but the city was in a recession at the time and he couldn't find the money. He studied professional brewing and went to work for Hops! Bistro & Brewery in Scottsdale, Ariz., brewing there for 3 1/2 years. Meanwhile, he raised the capital to open his own brewery.

McFarlane Brewing Co. is in a district of warehouses and businesses near Sky Harbor airport. The brewery moved into the concrete-brick building in January 1996 and had its first beers out early that May.

The brewery has a 20-barrel JV Northwest brewhouse, five 40-barrel fermenters, and two 100-barrel lagering tanks. It's the largest brewery in the state. "Mathematically, it worked out well," McFarlane says. He brews two batches in one day usually two times a week year-round, then blends fermented batches, filling a 100-barrel lagering tank with 80 barrels of beer. A large, wooden room that was part of the original building proved exactly the right size for the lagering tanks, and it was converted into a cold room. "It was nice, convenient, and really cheap," McFarlane says. The room stays at 34° to 36° F year-round.

Two grain silos sit behind the building with an auger leading inside. McFarlane Brewing buys its two-row a semitrailer load at a time, with a typical delivery consisting of 45,000 to 47,000 pounds of grain.

The building itself will provide a lot of room to grow. McFarlane figures its maximum capacity is around 25,000 barrels, which he hopes to achieve one day. He has produced 2,300 to 2,400 barrels each of the years McFarlane Brewing has been open, although it was only operating for eight months that first year.

"Competition is pretty tough," McFarlane says, with tap handles going to out-of-state breweries at the expense of in-state breweries. "I don't think many places in Phoenix and the Phoenix Valley support the locals."

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The beer is available at 95 to 100 accounts in bars, restaurants, resort hotels, and the nearby greyhound park.

Peter McFarlane thinks bottling is essential to the brewery's future success, and he is in the process of raising money for a bottling line. That would allow for more diversification of the product line and would help sagging summer sales. Draft sales drop sharply for everyone in the Phoenix area in the summer, he says, in part because restaurant business suffers. Bottling "would keep sales on an even keel year-round."

The brewery has a staff of four, which includes, in addition to the McFarlanes, a salesman who also does the bookkeeping and a full-time driver. The brewery self-distributes and does all its marketing and advertising in-house.

They have distinctive ceramic tap handles, made in Canada. "They're a great marketing tool," McFarlane says. "You can read them from across the room, and the name and type of beer are visible from any angle."

Despite competition, McFarlane's beers have found a receptive audience. A 1997 readers' poll in the local weekly New Times chose it as the best local brewery. The brewery's tasting room, the Green Door, has proven popular. "We just wanted a small tasting room, but it turned into a destination area," McFarlane says. "It's hard to find, but once they find it they keep coming back."

McFarlane Brewing's tasting room is open 3 p.m. to 9 p.m. Tuesday through Friday, 2 p.m. to 8 p.m. Saturday. Pints are \$2.50, pitchers \$9. For \$7 you can get a full 20-ounce souvenir glass, with refills of that for \$3.

McFarlane Brewing Co., is at 202 S. 29th St., Phoenix, Ariz. 85034. Call (602) 914-9190. Web address: www.mcfarlanebrewing.com ■

Stan Hieronymus and Daria Labinsky are authors of the Beer Travelers Guide, which lists more than 1,700 brewpubs, bars, and restaurants in the United States that serve flavorful beer.

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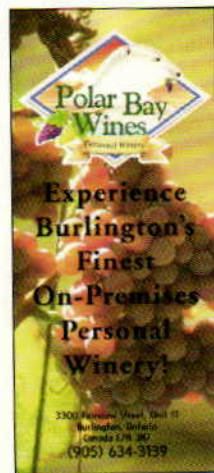
a 12-pint batch: grains, hops, yeast, sanitizers, and a muslin bag packaged in reusable brewing equipment. Also included is an instructional video. The kit

yields a Gotham Gold (pilsner style), and refills are available in other styles including Empire Black and Tan (dark ale), Coney Island Wheat (light wheat), and Big Apple Red (copper tone ale). The full brewing kit retails for \$49.99.

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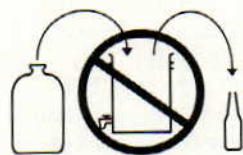
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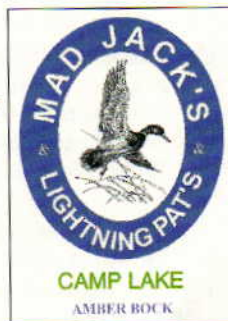
The kits contain optional non-organic materials such as corn sugar, minerals, and Irish moss. The result is a 95 percent organic finished beer. The following kits are available: American Pale Ale, India Pale Ale, Oatmeal Stout, Oktoberfest, Pilsner, and Robust

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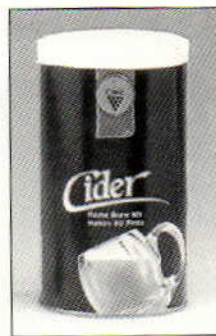
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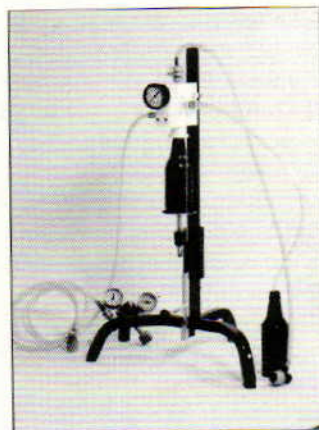
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Beating the Homebrew Blues

by Thomas Miller

Homebrewing is the perfect hobby for anal-retentive personalities. "Cleanliness is next to godliness," I once read in Charlie Papazian's *The New Complete Joy of Home Brewing*. I took those words literally.

Brewing a five-gallon batch of extract brew became a ritual. The night before a brew, I would stand on a ladder and wipe cobwebs from the ceiling and windows. I would dust light fixtures and scrub the top of the refrigerator. On my hands and knees, I would scour the kitchen with cleaning solutions and bleach, attacking every crack and corner I could see. I punished my brewing equipment with caustic and sanitizing solutions.

Brew day was hardly different. I ordered take-out food and ate in the living room. My wife and dog were banned from the kitchen unless they planned to help.

As a result I never experienced a contaminated homebrew. In that I take great pride. But my homebrew angst went beyond cleanliness. The first time I tried a partial mash, my heart almost exploded when I saw trub settling in the bottom of my glass fermenter.

"Oh, my god," I screamed, convinced that my brewing procedures had spawned a mutant bacteria. "Something is alive in the bottom of the fermenter."

I adroitly assembled a complex straining system, grabbed a sharp knife, lifted the carboy, and began to pour. Five gallons later, my unfermented beer was back in the boiling kettle.

But no sign of a killer bacteria. I called that beer Overreaction Oktoberfest and thankfully, I was able to drink it. No one has ever

heard this story before now.

I moved several times over the next few years and never again established my sanitary kitchen dominion. Some of the kitchens I brewed in were downright disgusting. In North Carolina and St. Louis our knives, forks, and spoons shared their bed with giant cockroaches. And I couldn't do anything about it. So I kept brewing. With filthy kitchens as a handicap, I concentrated doubly on cleaning and sanitizing my equipment.

Guess what? My beers still turned out great! In North Carolina, in fact, our apartment was so tiny that I named my brewery Hair of the Dog. My slogan: There's a hair in every bottle.



Anal retentive by nature, it took me years just to relax while brewing.

I suspect that my slogan was accurate. My dog sheds more than any dog I have ever known. Once, while frolicking around the living room, he even knocked the airlock off the carboy. In my mind's eye there was an army of bacteria diving into my beer for a giant party.

After that experience I took a year off from homebrewing and

moved to Germany, where I had the good fortune to work in Augustiner Braü, Munich's oldest brewery. My colleagues taught me a thing or two about the old days before stainless steel and microbiology. "Don't be afraid of nature," they said. "Sometimes it can be your friend."

As those words sunk in, I suddenly understood Charlie Papazian's words of advice: "Relax, don't worry, have a homebrew."

Honestly (sorry, Charlie), when I first read those words I thought they sounded pretty stupid. They reminded me of that popular song, *Don't Worry, Be Happy* of the late 1980s.

But now everything made sense. Big breweries make perfect beers.

Homebrewers make homebrew. And homebrew is prone to flaws. Since that revelation, I have joined forces with filth. This summer I moved into a single-room log cabin in western Wyoming. I reside with mice, ants, and a variety of flying insects.

I have stopped worrying about the spiders under the sink and the dust particles floating through the kitchen. Instead of stressful evenings filled

with scrubbing, scraping, and washing away the grime in my kitchen, I sit beneath a lamp, sip on a homebrew, and ponder the flavor of my most recent summer ale.

Friends say I'm brewing better than ever. I feel relaxed and happy. Homebrewing is a true pleasure. But there is one problem: I think the mice are trying to drink my beer. ■

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