

Brew

YOUR OWN®

July 1996, Vol.2, No.7
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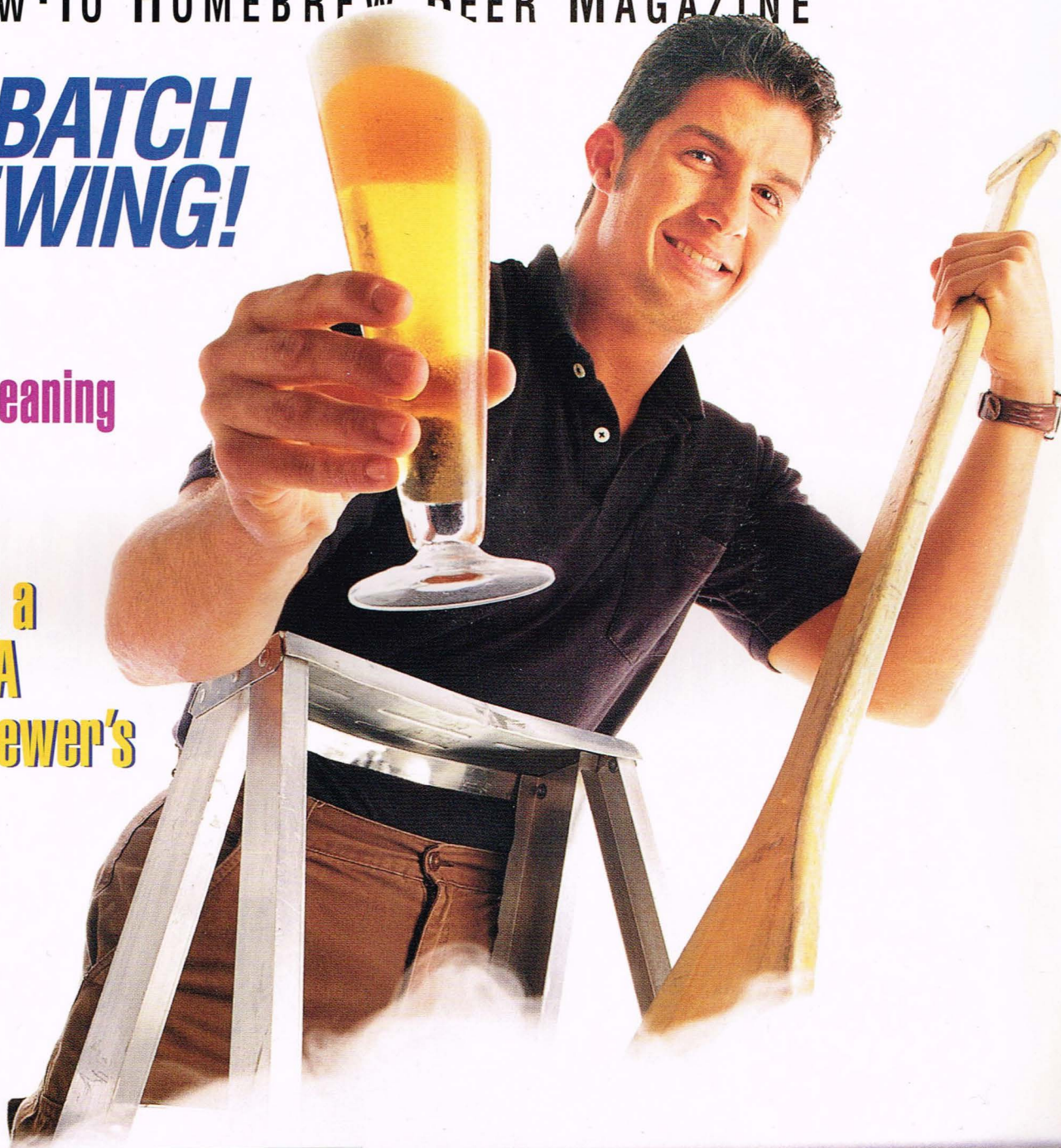
THE HOW-TO HOMEBREW BEER MAGAZINE

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Micro: A
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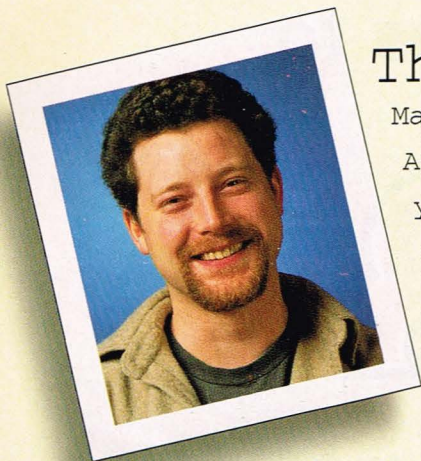
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This is Sean. He's our beer guy.

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for extra aroma and flavour. And true to

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ingredients used. Sean's no dummy. He made Wort Works with his

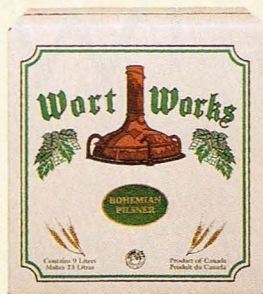
fellow homebrewers in mind, but he also made sure

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Help, I'm Mellllllting

As I write this, the air conditioner is pumping full blast. Outside, the sun's hot enough to melt the ceramic penguin next to the birdbath in the yard next door. The smell of tar hangs in the air, the acrid product of an ill-timed roofing project down the street. The Weather Channel (more reliable than the local paper) says we're heading for 104° F. Summer has come to California.

It wasn't supposed to be like this. When I moved here from the East Coast several years ago, I thought the temperature would be a constant 75° F. I pictured myself wearing shorts and a t-shirt on New Year's Eve, and comfortably sipping hefeweizen on the beach in the summer. I now know there is a place like that — it's called Hawaii.

The summer heat in California's Central Valley makes summer brewing — or more specifically, fermenting — a challenge. We can't use the simple solution that my New England friends count on and just stick the carboy in the basement. No basements in California. Houses here simply don't have 'em. And building my own just to have a place to stick the fermenter seems a bit extreme. Not that I haven't thought about it, mind you.

But don't go feeling sorry for us valley dwellers. The summer heat just nudges the creative process, the homebrewer's stock in trade. Have problem, want beer, will find solution. After all, summer and beer go together like spinach tortellini and sun-dried tomato cream sauce (this is California). Raise your hand if you've tried any of these summer brewing strategies:

- Used the neighbor's shower while a carboy luxuriated in your ice water-filled bathtub.
- Dug up part of the garden — that stuff wasn't going to grow in this heat anyway — so you could bury a carboy in the cool soil.
- Ate out for a week while a carboy took up all of the food space in the

refrigerator.

- Built a plywood "cupboard" in front of a window so the air conditioner would blow directly onto the carboy and nowhere else.

- Left the cupboard in place, blocking the window, despite pleas that your mother-in-law was coming and couldn't that be done somewhere other than the living room?

- Wrapped a carboy in a linen tablecloth soaking in ice water because you knew using the electric blanket for the job would just be wrong.

- Set up a telephone tree to scavenge for empty milk jugs during a sudden heat wave so you could fill them with water, freeze them, and tuck them in next to your latest beer.

I'm not making any confessions here; this is just a list. I am fortunate, however, that even though I have no basement, one refrigerator, one bathtub, and a small garden, my wife is my partner in crime. We brew together, we drink beer together, and we worry about it together during fermentation. We both enjoy eating out, and we're very friendly with our neighbors. We don't quit brewing during the summer, and we've never had a batch go bad due to the heat.

We've been a little unorthodox at times (never should have tried that thing with the dry ice), but we've had fun. And while we're sipping our latest beer and eyeing the spot where the tomatoes used to grow, we can tell each other that there will be plenty in the stores this year anyway.



Brew
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THE HOW-TO HOMEBREW BEER MAGAZINE

EDITOR Craig Bystrynski

MANAGING EDITOR Gailen Jacobs

ASSOCIATE EDITOR/SYOP Susan Walton

TECHNICAL EDITOR Ashton Lewis

PRODUCTION MANAGER Christine Kell

ART/PRODUCTION Kristine Bybee, Jeff Chamberlain, Meagan Greenberg

TASTER Katie Landau

CONTRIBUTING WRITERS Sal Emma, Jeff Frane, Nico Freccia, Tom Fuller, Steve Johnson, Scott Russell

MARKETING DIRECTOR Steve Rank

ADVERTISING MANAGER Corey Gerhard

ADVERTISING COORDINATOR Rebekah Darksmith

CIRCULATION COORDINATOR Ethan Walsh

CONTROLLER Melissa Hagan

PUBLISHING ASSISTANT Evan Felsing

CIRCULATION CONSULTANT Maureen Kaminski

PUBLISHER Carl B. Landau

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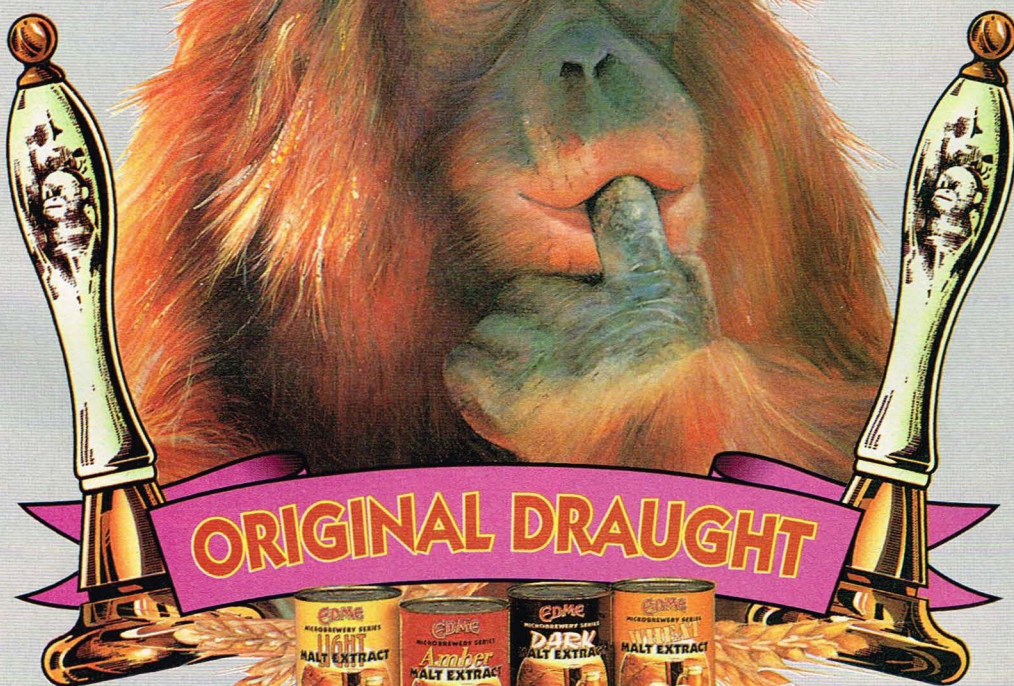
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Law Salotti Glenside, Penn.

Since most homebrew competitions are held during the more pleasant months of the year our club, the Keystone Hops Homebrew Club of Montgomeryville, Penn., decided a competition in January would be a welcome relief from the winter doldrums.

Thus was born the "War of the Worts." We advertised for entrants, found sponsors, prizes, judges, and stewards, and tried to anticipate what else would be needed. The committee even came up with a logo and had it put on commemorative pint glasses. The judges and stewards received them as thanks for their participation.

We had 181 entries from all over the United States. That meant more than 540 bottles had to be logged in, numbered, and transported to the Buckingham Mountain Brewery.

The night before the competition an ice storm blew through and we worried about how many would show. But the day of the competition arrived with the



Judges at the War of the Worts worked to select the best of the 181 entered beers.

sun shining — I guess the patron saint of homebrewing was smiling on us. We even had a few brewmasters from local microbreweries sit in as guest judges.

I was amazed at the generosity of the microbrewery and homebrew community. Everyone donated prizes. One newspaper sent a photographer to take pictures. A local cable company came to tape an interview.

A number of people just stopped in

to see what was happening. We answered their questions and gave them a chance to taste some of the beers. I think the "War of the Worts" may result in some new homebrewers!

Michael Gasman Silverdale, Wash.

A year has passed since I first boiled wort. While I was enjoying the aromas from the pot, my wife was opening all the windows to let the November winds in and "the smell" out. Luckily she decided that my first brew tasted better than the brewing process smelled and allowed further experimentation.

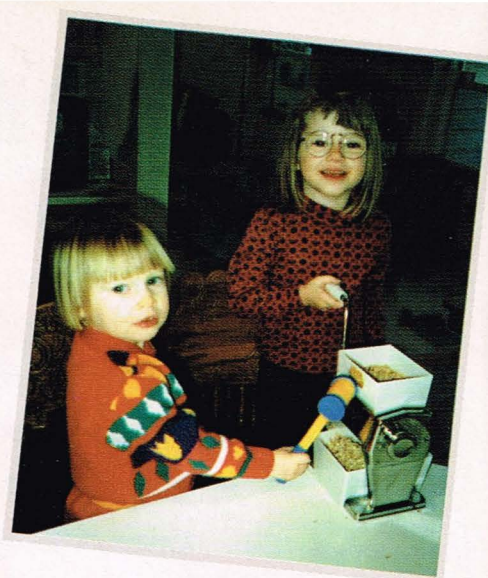
Hobbies shouldn't compromise time with the kids. At first I waited until our now two- and four-year-old girls were asleep before firing up the brew kettle. All-grain brewing was tempting, but if I waited until my daughters fell asleep I would not finish until after 2 a.m.

I began to schedule daytime extract brewing sessions and abandoned my family for a mere three hours. Parties and complimentary friends and family created a demand for my brew.

A fellow brewer asked me why I was using extract instead of all-grain. My response was, "When my daughters can help me, I'll be able to take the time." But I was intrigued by all-grain brewing. So when my wife asked what I wanted for my birthday, I requested what she transcribed as "louder ton, sparger, and hop scale." I opened the large, gift-wrapped box and immediately put the five-gallon buckets to use — as a shield while I explained that I wanted to begin all-grain brewing.

I made my first all-grain batch when the girls were out of town. I longed for more experiences. Then I realized that I could be with the kids and brew at the same time. I turned my first family mash into a real brewing event by inviting several couples, who were fans of my beer, and their small children. I juggled the mash and boil, answered questions, dealt with the training-wheels crowd, and managed to conduct a long mash-brewing session with minimal spousal resentment.

The following Saturday, when I



Rebecca and Sarah crush grains for their dad to mash during some quality family brewing time.

began preparing to repeat the event, my daughters began circling. They wanted to help! As I began to crush grain in the kitchen for my third mash, Sarah, my oldest, insisted on cranking the mill. Not wanting to be left out, Rebecca used her toy hammer to bang the hopper (among other things) to keep the grain moving. All that was left for me to do was to fill the hopper and empty the grist bin of the now automated mill. I stepped back and realized I had achieved my dream of family brewing!

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The Legend of Skinny's Death Day

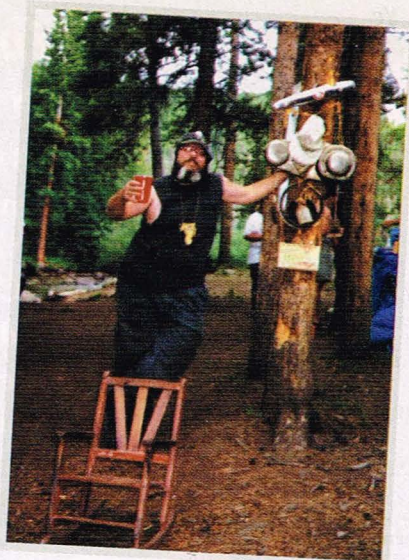
Skinny is a biker who got into a wreck with a truck. He was taken to a hospital and pronounced dead on arrival — but the doctors worked on his lifeless body until he came back from the brink.

Every year to commemorate Skinny's "Death Day," we hold a huge party in the mountains above Silverthorn, Colo., in the Arapaho National Forest. It is attended by bikers and partiers from all around the Denver area.

I brewed "Death Day Brew" to celebrate the 14th annual Death Day. Part of the celebration involves the drinking of an artichoke liquor by all newcomers. I don't know where these guys get the artichoke liquor, but it is very *unusual*.

Traditionally, later in the celebration there is the presentation of the Slithering Drunk Award.

The award is made from old motorcycle parts, a hat, a small ceramic jug tied with a piece of



Skinny, pictured here at his Death Day party, is very much alive.

leather, and a small cast iron frying pan. Each year's winner adds an item to the pole.

A small sign hanging from the pole lists members of what is regarded as a prestigious brotherhood, although women have been inducted, too.

Randy Johnson
Alton, Ill.

Brewing in the Sunshine

In the 1800s visitors to St. Croix (the largest of the US Virgin Islands) were issued a "Traveler's Warning" that stated "On first landing, the craving desire for liquids is almost incessant...and the more the traveler drinks, the more his desire for drink increases, and by indulging this depraved appetite, there arises that vicious habit of tippling in the morning which too often ends in confirmed drunkenness."

There isn't a brewpub or micro-brewery in the islands, so I began brewing about two years ago.

Since then I've brewed many beers. My favorite is a ginger beer which is good to drink while sailing, since ginger is known to prevent seasickness.

Last Christmas, I brewed several cases to give as gifts and chose the name Paradise Ale. My label features a schooner because I live right on Christiansted's harbor.

Patrice Kelly
Christiansted, Virgin Islands

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Should He Stay?

Dear *Brew Your Own*,

I'd like to respond to your request for votes to fire or hire Steve Rank in the most recent issue. My answer: Save Steve! Rank Rocks!

I'm not a homebrewer (my husband is) and I'm really not interested in all the gritty details of homebrewing — I run out of coordination and into trouble when I leave my computer. But your magazine covers are the best of the dozen or so that come to our home.

I'm convinced that building spousal support is key to keeping homebrewers actively involved in the beer world. My favorite covers: Guy in the Bathtub, the Homebrewer in Space, and the Guy with the Grain Bouquet and Heart-shaped box. Keep it bold, keep Steve Rank.

*Jennifer Fitz
West Columbia, S.C.*

Dear BYO,

My oh my, you guys are at it again! I thought we resolved this cover thing. Airing your dirty laundry in such a public way is unbecoming. So Steve uses the covers to make personal statements. There's nothing new here. But Steve, your self-destructive compulsion is expressing itself in such base and tasteless ways. It has become undignified. You are clearly overcompensating for a cold and loveless childhood. And Carl, where do you get this power thing? Were your parents too strict in toilet training? Do you chew your pencil? Do you drink beer from the bottle?

I'm Scottish myself and took no offense at the use of a Scottish Tartan for an article on Irish beer. For centuries the Scots have been willing to lend a hand, a foot, or a head for a good cause. We'll even give you the skirt off our backside, as it were. And I must say, the cover was quite something. So chin up, belly up, and button up.

*Douglas A. Green, Ph.D..
Destrehan, La.*

Coming Clean

Dear BYO,

One of your readers

was looking for a magic box to wash bottles (Mail, March '96). I have one — a dishwasher. I've been using mine for over a year with no bacteria or sanitation. The drying cycle gets hot enough to sanitize, and I use B-Brite or any other good homebrewing sanitizer just as you would use dishwashing soap.

*Bill Krostag
Rio Rancho, N.M.*

Dear BYO,

How do I prepare a concentration of TSP? How do I mix it, how much should I use? How should I handle it...do I need safety goggles?

Thanks for your help.

*Jeff Vilenski
Geneva, N.Y.*

Funny you should ask, Jeff. This month Sal Emma performs the Great Bottle Cleaning Shootout. His findings and advice about trisodium phosphate and many other cleaning products (such as "magic" dishwashing soap!) are on page 24.

Definitely A Single Guy

Dear BYO,

"Overcome Your Closet Anxieties" (April '96) was great. Living in a small dwelling, I know about keeping things in miniature. But as my brewing buddies will tell you, I get carried away, and my living room is overrun with brewing paraphernalia that I need in my weekly brewing sessions. Most of the items I've fabricated myself — bottle rack, funnel/filter holder, 25 micron water filter stand, and more stuff that I really need.

*Greg W. Clark
Angola, N.Y.*

Capping on Foam

Dear BYO,

In the March issue Mr. Wizard

talks about foaming the beer and then capping on the foam as opposed to air. I've never heard of this. What does this entail?

*Scott A. Barth
Terre Haute, Ind.*

Capping on foam is the practice of foaming beer immediately prior to bottling. This is done to minimize package air, thereby reducing beer oxidation. Commercial brewers foam the beer by either tapping the bottle before capping to induce foam or by injecting a high-velocity jet of water into the bottle neck. Homebrewers can only cap on foam if bottling carbonated beer.

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Editorial and Advertising Office:

Brew Your Own
216 F Street, Suite 160
Davis, CA 95616

Tel: (916) 758-4596

Fax: (916) 758-7477

E-Mail: BYO@byo.com

Advertising Contact:

Corey Gerhard, Ad Manager
ad@byo.com

Editorial Contact:

Craig Bystrynski, Editor
edit@byo.com

Subscriptions Only:

Brew Your Own
PO Box 1504
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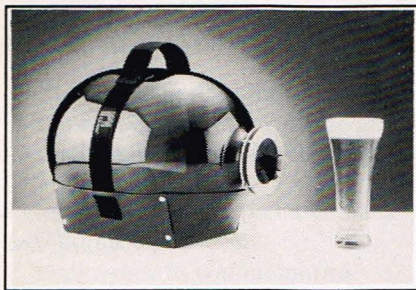
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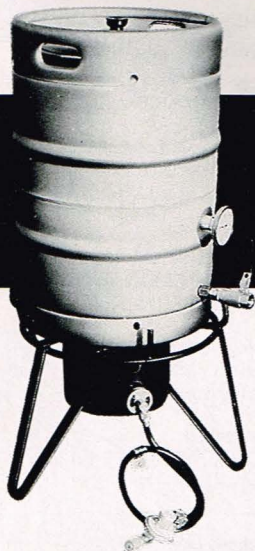
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CIRCLE 58 ON READER SERVICE CARD

Make a Date with a Strawberry Blonde

by Scott Russell

The recent trend among craft brewers to market fruit-flavored beers, especially raspberry, is a sure sign that homebrewers are having more and more of an impact on the whole industry.

A few years ago if you suggested that there would be so many fruited or spiced brews available, you would have gotten some mighty funny looks, even on the West Coast where some of these beers have been made for several years. But look around now. Cherry wheat, blueberry porter, raspberry and nutmeg holiday beer, cranberry lambic — “Zounds!” as Mercutio said in *Romeo and Juliet*.

Some fruits are easier to work with than others, which is why we see cherries, raspberries, lemons, and oranges so commonly used now. My

favorite fruit, though, is the humble strawberry. The German name, *erdbeere* or “earth-berry,” reminds me that this is one of the most basic, common, simple

fruits. Around my property we have literally acres of the tiny so-called “alpine” strawberries, which the French call *fraises des bois*, or woodland strawberries. This triggers in my mind *Robin des bois*, the French name



for Robin Hood. From there it is hardly a half-step to a festive gathering in a mid-summer glade of the forest of Nottingham, with Friar Tuck the brewer presiding over the tapping of a cask of a golden ale lightly flavored with the early summer's crop of tiny, densely sweet “fraises.” The simple pleasures, the good life, and a Strawberry Blonde Ale in my flagon.

Strawberry Blonde Ale (grain and extract, 5 gallons)

Ingredients:

- 0.5 lb. 2-row pale malt
- 0.5 lb. light crystal (15° to 20° Lovibond) or cara-pils malt
- 1/8 tsp. winemaker's acid blend or citric acid
- 6 lbs. extra light dry malt extract (or 6.6 lbs. extra light malt syrup)
- 1 oz. mild flavoring hop (2 to 3% alpha)
- 10 to 14 g. dry yeast (or liquid strain such as Wyeast 1056)
- 4 lbs. fresh strawberries
- 7/8 cup corn sugar

Step by Step:

Toast the pale malt in a 350° F oven for 15 minutes, then crack it coarsely. Steep the toasted malt along with the light crystal or cara-pils malt in 2.25 gals. of cold water. Bring water up to 170° F, remove the grains, and rinse them in a strainer or colander back into the fermenter with 3 or 4 pts. of 170° F water. Add acid blend (available at your local homebrew

supplier) or citric acid, and continue heating the water until boiling. Add extract or syrup to the kettle. Return to boil, add 0.5 oz. hop such as Mt. Hood, Crystal, or Willamette. Boil 30 minutes, add another 0.5 oz. of the same hop, boil 15 minutes longer, remove from heat, and cool. Top up fermenter to 5.25 gals., cool to 75° F, and pitch yeast. Ferment through the primary stage as usual (a bit on the cool side, 65° to 70° F).

When ready to transfer to the secondary, prepare strawberries by immersing them for 10 minutes in 160° F water then cooling rapidly. Place berries in bottom of your secondary fermenter, rack your beer onto them (avoid splashing — strawberries tend to emphasize stale flavors created by oxidation), then age about a week. You can rack this beer into a third vessel for a few days to give it a better chance of clearing.

When you are ready to bottle, prime with corn sugar. Age no more

than two weeks and consume quickly. The delicate flavor of the strawberries will fade in the bottle.

Notes:

All-grain brewers may have a better chance of making this a very light-colored ale by using a single infusion with 7 to 8 lbs. 2-row pale, adding the toasted malt and cara-pils to the lauter tun.

You may brew this as a lager. It will work best if you lager the beer first and add the berries for a week before bottling. The flavor of the berries is too delicate for long-term aging. I would suggest a very clean lager yeast such as Wyeast 2278.

An alternative to using fresh berries (and perhaps the best shot for a lager version) is the different brands of pure fruit essences. I have used essences with very good results. Simply add up to 4 oz. along with your priming sugar (or directly to the keg if you are force carbonating).

Ingredients:

- 7 lbs. amber malt syrup
- 1 lb. dark dry malt
- 1 lb. crystal malt, 60° Lovibond
- 3 lb. chocolate malt
- 3 lb. black patent malt
- 2 oz. Centennial leaf hops (12% alpha)
- 4 oz. Tettnanger leaf hops (5% alpha)
- 1 tsp. gypsum
- 1 tsp. Irish moss flakes
- 2 pkg. Munton and Fison's ale yeast

Step by Step:

Steep grains in 1.5 gals. of water with gypsum at 160° F for 30 minutes and rinse. Sparge with 2 cups 170°F water. Add malt syrup and stir until dissolved. Bring to a boil. Add Centennial hops and boil for 20 minutes. Add Irish moss and boil for 20 minutes. Add 2 oz. Tettnanger and boil 15 minutes. Add remaining Tettnanger, boil for five minutes, and turn off heat. Let cool and transfer to primary with cold water to make 5 gals. Pitch the yeast, ferment in primary for three to four days and transfer to secondary. Bottle after fermentation is complete.



**Sue Glover's New Ulm Berry Lager
(3 gallons)**

Ingredients:

- 1.4 lbs. Alexander's pale malt extract
- 2.6 lbs. barley malt extract
- 2 lbs. 2-row American malt
- 0.5 lb. cara-pils malt
- 1 cup malto-dextrin
- 3 tsp. Celestial Seasonings cherry blackberry tea
- 2 pints sliced strawberries
- 1 tsp. gypsum
- 1 1/2 tsp. raspberry wine flavoring
- 1/2 tsp. Femax nutrient
- 0.8 oz. Hallertauer hops (5% alpha)
- 0.8 oz. Willamette hops (5% alpha)
- 1 oz. Cascade hops (6% alpha)
- 1 tsp. Irish moss
- 1 pkg. New Ulm lager yeast (Wyeast 2035)

Step by Step:

Heat 2 gals. of water and grains to 148° to 150° F. Stir and maintain temperature for 15 minutes. Raise

temperature to 160° to 170° F. Add gypsum and stir for 10 minutes.

Strain off the grains. Return wort to a boiling pot and add extract, malto-dextrin, and 0.5 gal. to 1 gal. of water. Bring to a boil.

Add Hallertauer hops and boil 15 minutes. Add Willamette hops and boil 15 more minutes. Add tea and boil 15 more minutes. Add Irish moss, strawberries, and Cascade hops and boil five minutes. Add raspberry wine flavoring and Femax nutrient, and boil for a final 10 minutes.

Transfer to carboy and add 1 gal. very cold water. Pitch yeast at 70° F for 12 hours. Reduce to 57° F for two days. Reduce to 50° F for another day. Rack wort and store at 40° F for two weeks. Bottle after two weeks, then age. ■



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See Red with Roasted Malt

Mr. Wizard

I plan to brew an all-grain red (something like Jamaican Red from Mad River) very soon. Which ingredient most affects the beer's color?

*Charles Burns
Elk Grove, Calif.*

In general specialty malts are used to change beer color from a pale straw color, when only pale malts are used, to amber, brown, and black hues.

Most "red" beers contain a large portion of crystal malt, usually on the darker side of the scale, to provide the red color. However, the most intense red hues are actually found in black grains, such as black patent malt or roasted barley. This contribution can be observed by shining a very bright light through a glass of porter or stout; the color you will see is a deep ruby red. Some brewers use a small portion of these highly roasted grains to deepen the red color established by the crystal malts.

Use caution with these, since too much will soon give roasted, burnt flavors that are not consistent with the type of beer flavor typically found in red beers. I would recommend starting with about one-half ounce of roasted grain per five gallons of wort and about eight ounces of crystal malt along with your pale malt or malt extract.

Mr. Wizard

As a typical college student who has spent too many weekends drinking rather than studying, I am now thinking of brewing a little of my own beer, maybe harder stuff, too. My question is: Is it possible in the brewing process to make methanol

instead of ethanol? I know that $\text{CH}_3\text{-OH}$ is a nasty poison, and it worries me some.

*Dallas Null
Corvallis, Ore.*

This is a familiar concern; I was worried about the same thing when I first began brewing. Fortunately, yeast are incapable of producing methanol as a by-product. During fermentation yeast convert sugar (glucose) to energy and to a three-carbon compound called pyruvate. Alcohol (ethanol) and carbon dioxide are produced from pyruvate. This process is analogous to the process in our bodies that produces energy, carbon dioxide, and water from glucose.

Simply put, yeast are not biologically equipped to produce methanol. Methanol is made by chemically oxidizing methane (natural gas). You would have to try pretty hard to have this occur in your homebrew set-up!

Mr. Wizard

You believe "those who use the contents of one smack pack (of yeast) are underpitching their wort." (Mr. Wizard, April '96)

I thought smack packs were the purest form of yeast to use. I believe powdered yeast has unwanted yeast spores that give you off-flavors and/or incomplete fermentation. All of my homebrewing friends and the owners of brew supply stores I deal with agree with me. Please clarify this for all fellow homebrewers.

*Don Kohl
Stony Point, N.Y.*

I agree with your point that smack packs usually contain very pure yeast, although the purest form of yeast is obtained by isolating yeast on microbiological growth media and growing it in a sanitary environment.

Yeast purity is a very important concern to brewers, both hobbyist and professional. However, yeast purity and yeast pitching rate are two unrelated issues.

Yeast pitching rate is basically the amount of yeast (expressed as a population or by dry weight) added to a volume of wort. The rule of thumb in most brewing science texts is that one million yeast cells per degree Plato of wort gravity per milliliter of wort is "ideal." For most worts this translates to about 10 million cells per milliliter.

My comment about underpitching was based on yeast counts using a microscope, not on any bias I have against smack packs. I'm willing to expand on my comment and go one step further by asserting that most homebrewers and craft brewers underpitch their wort.

The bottom line is that pitching enough yeast is not always as easy as just adding more. Commercial breweries with adequate financial resources spend quite a lot of time and money on yeast propagation systems to cope with this very problem.

Acknowledging this takes nothing away from those who have pitching-rate challenges. Instead it should be used to improve one's beer.

To clarify my point for fellow homebrewers, I give this advice: Read more about yeast and yeast maintenance.

The best wort is nothing if problems arise in fermentation. Yeast purity is certainly the most fundamental concept, but the importance of yeast quantity should not be understated.



Mr. Wizard

I've heard a lot of talk about "light-struck" beer. Certain wavelengths of light are supposed to react with the hops and cause a skunky aroma. Does this mean I can't take a pitcher of lager out to my pool when the sun is out? Or are some people just paranoid about something that doesn't really exist?

Paul Rybak
Morris, Ill.

What is skunky brew, and is it really a concern? Ever had a Heineken, Corona, or perhaps a Mickey's "Big Mouth" and wonder where the poor dead creature lies? You look around, sniffing and snooping, but can't seem to find any sign of a skunk. Well, look no further than your beer mug and the isopentyl mercaptan that it contains.

Skunky beer, also called "light-struck" or "sunstruck" (but never "star-struck") is caused by ultraviolet light affecting iso-alpha acids present in all beers. This reaction, termed photolysis,

causes the iso-alpha acid (which is created when hops are boiled) to break into two parts. One of the parts goes on to react with sulfur, naturally found in all beers, to produce this unmistakable stench (isopentyl mercaptan).

An easy way to avoid skunky beer is to use brown bottles, not clear or green. Brown glass filters out the ultraviolet light that does the damage. Both clear and green glass allow these wavelengths access to the beer inside and will always produce skunky beer if exposed to light. That's why imported beers smell so distinctive in this country (most use brown glass in their native lands). Beer drinkers can thank Heineken for this peculiar marketing decision.

As with all chemical reactions, there is a time dependency to the lightstruck reaction. If you sit out by the pool with a pitcher of beer, you probably will not notice any skunkiness, unless it takes a couple of hours to empty the pitcher — in which case it will be warm, flat, and oxidized in addition to skunky! I have had some

beers go skunky very quickly on a sunny day, but this is not too common. In general lighter-colored beers turn skunky faster than darker beers, so if you are drinking a light ice draft, watch out!

There is one clever way of preventing the reaction altogether: altering the structure of the hop acids. To do this, a pre-isomerized hop acids preparation is chemically altered before it is added to the beer. (Isomerization is the reaction that occurs when hop acids are boiled.) Breweries that use such techniques can put their beer into clear bottles with no worry of the skunk. This is why Miller can bottle their Genuine Draft and High Life brands in clear glass without any hint of lightstruck aroma.

Mr. Wizard

I read with interest the "10 Good Brewing Questions" (March '96 BYO). I noticed the item about using malt extract instead of corn sugar to prime. I spoiled



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some wheat beer with an overly heavy hand with the corn sugar, so now I prime with dry malt only and have had excellent results both in carbonation and flavor. So I was not surprised to read that the malt extract should be boiled and then allowed to settle before adding it to the beer at bottling.

I was surprised to see that the liquid should be decanted "off the clarified wort" and then added to the brew. Why? Am I doing something harmful (or at least inelegant) to my beers when I add in the whole thing — trub, liquid, and all? Is there enough good stuff in the liquid alone for the yeasties to eat while in the bottle? Interested, somewhat skeptical, but not worried, I look forward to your answer.

*Jim Harlow
Minneapolis*

I completely agree with the author's advice regarding the use of malt extract for priming in the article you mentioned. It is important to clarify the wort before use for two primary reasons. The first is a haze issue: If trub is added to beer during packaging, clarity will suffer. Even if you let the beer clarify in the bottle, it will not be as clear as it could have been. The second issue has to do with flavor. Trub can contribute astringency to beer and should be removed for that reason alone.

If you decide to clarify the wort before using it for priming, you don't need to worry about removing anything valuable. The only compounds you want for priming are the wort fermentables, and these do not precipitate (clump and sink) during boiling. When you asked the question, you were interested, somewhat skeptical, but not worried. Now I hope you are interested, less skeptical, and still not worried! Happy priming.

Mr. Wizard

I visited the Shipyard Brewery's homepage on the World Wide Web and noticed that the malts used to make Moose Brown Ale are crystal, chocolate, and roasted barley. Did I miss something, or did they leave out the pale malt? Without it I would think the final gravity would be very high, as crystal has a lot of

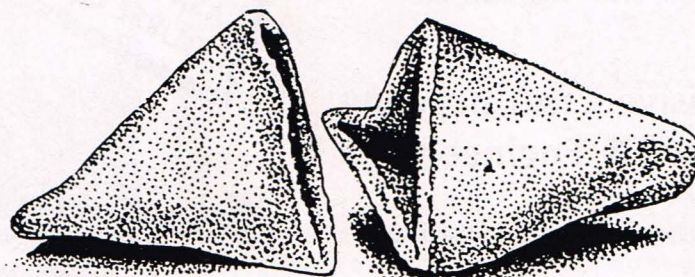
unfermentable sugars. Have I overlooked the obvious? Is this how I should be designing my English brown ales to obtain the high malty aroma and taste?

*Scott J. Mindrebo
Lake Jackson, Texas*

You are not missing anything; they left out the pale malt. Many of these promotional descriptions of beer only include the specialty malts,

since pale malt is the common denominator of 99 percent of the beer volume produced in the world. Brewing a beer from only crystal malt, chocolate malt, and roasted barley would be pretty terrible, indeed!

If you want to add malty notes to your English brown ales, adding some of these malts may help. Just be sure to use pale malt for the bulk of the grain bill! Using British pale malts instead of



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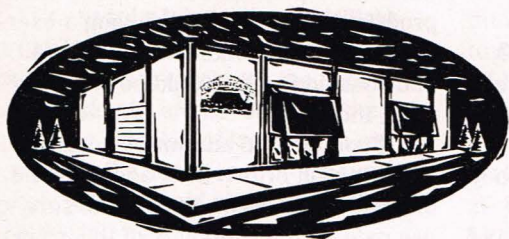
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Mr. Wizard

domestic pale malt can also get you more malty notes. The British pale malts are kilned at a higher temperature, are a little darker than domestic pale malts, and have a lot more flavor than ours.

Mr. Wizard

Here is yet another length-of-boil question. In extract brewing, does the length of boil affect the color of my brew? If so, does it matter if I reduce the length of boil to 15 minutes from 45, hence getting a lighter-colored brew?

Angel Ilarazza
Bowling Green, Ohio

Length of boil affects wort color in all types of brewing. In extract brewing the effect is sometimes even more pronounced due to the practice of boiling a small volume of high-density wort and diluting it up to five gallons after the boil. This causes more wort darkening, since the components that react to form colored compounds are more concentrated in this method of boiling and the reaction leading to color proceeds at a faster rate when the reactants are concentrated.

Reducing the boil to 15 minutes is okay if you are using pre-hopped extracts. However, I would not boil for much less than 15 minutes, because the wort may not get completely sterilized with a shorter boil. This rule does not apply if you are adding bittering hops to an unhopped, extract-based wort. For these brews a full 60-minute boil is needed to gain the full complement of hop acids needed for bittering. ■

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.

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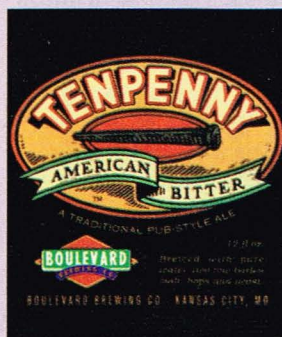
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Turn Pro by Brewing Smart

by Susan Walton

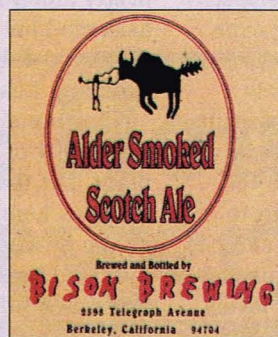
It may have started out as a weekend hobby, but now you're hooked on homebrewing. You're even thinking about how to make your dream of becoming a professional into a reality. In the meantime you can gain valuable experience from the batches you brew at home.



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Brewer: Bill Cherry

"You should brew the beer that will give you the most information. You may want to brew a lighter style where you can check out differences in fermentation temperatures or yeast pitching levels, for example. A lighter beer will show flaws easily."



Bison Brewing Company

Brewer: Scott Meyer

"I think the time when you really set your style is when you're a homebrewer. The more different things you try, the more you're going to learn. Homebrewing is all a great learning process."



Alcatraz Brewing Company

Brewer: Drew Goldberg

"Attention to detail and record keeping are both very important, and I think a lot of brewers can really develop these skills at home. Many have these skills already, but it is good to pay attention to accuracy. Use the records you kept on earlier batches."

Brewer: Bill Cherry

Brewery: Boulevard Brewing Co.

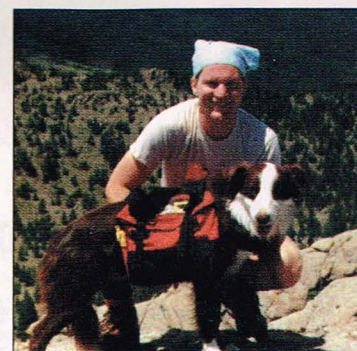
Years of experience: Three

Education: B.S. in Microbiology, M.S. in Brewing Sciences from University of California, Davis

House Beers: Pale Ale, American Wheat Beer, Bully! Porter, Tan Panny American Bitter, Bob's '47 Munich-Style Lager, Nutcracker Ale, Irish Ale

When I think about my own brewing experiences, there are many things that became valuable for me when I

became a professional. One important thing was the work I did with recipe adjustments. A lot of the homebrewers I know don't like to stick with any recipe more than once. They like to brew it and move on. They're interested in doing every style they've ever heard of because that's what makes homebrewing so much fun. But as a professional you are restricted because you can only make and put out a limited amount of products. In a microbrewery (where I work) you are



Bill Cherry

even more limited than in a brewpub, where you can rotate your beers often if you want.

I learned to work on a single recipe. It can be very valuable to try to perfect one. Then you can watch the effects your changes are producing, evaluate your beer, and change a parameter without changing too much at once. Really look at it closely.

In general if you're really serious about using your homebrewing experience to train yourself to brew professionally, you should learn to brew a beer that may not necessarily be your beer of choice to drink. You should brew the beer that will give you the most information. You may want to brew a lighter style where you can check out differences in fermentation temperatures or yeast pitching levels, for example. A lighter beer will show flaws easily.

See how the effects come out. That would be very fruitful if you turned professional: You could detect things in your own beers. Use homebrewing as experimentation. That's what I've

done, and a lot of other brewers I know have, too, and now we do it professionally.

As a professional, most of my recipes are very close to where they are supposed to be and any changes are very subtle. At the homebrew level changes can be a little larger. I've been really lucky with recipes because my original formulations have been pretty much dead on. When someone asks me how I am able to get it so close, I look back on the homebrewing practices I used.

For me it was brewing in the University of California, Davis, pilot plant, but that was essentially the same as homebrewing — it was five-gallon batches in a carboy. We tested different levels of malts, saying, "Well, this much (of a type of malt) was pretty good, but let's try more." Then it's, "Oooh, I've got too much of that flavor," or "I've got too little of that flavor." It gives you the basis to know how flavors blend together, when you're being too aggressive with them or just not making a difference.

Brewer: Scott Meyer

Brewery: Bison Brewing Co.

Years of experience: Three as a brewer, nine as a winemaker

Education: California Culinary Academy, self-taught

House Beers: Honey-Basil Ale, Chocolate Stout, Toasted Oat Molasses Ale

Homebrewers who are starting out (once they get the knack for how brewing works) can set up a lot of experiments. They are actually in a good position. A lot of breweries don't allow the flexibility to do that. As a professional, your time is paid for and you need to spend it brewing. But when you're homebrewing, it is a good time to answer a lot of questions for yourself.

There are a lot of areas in brewing science that change. Opinions and ideas change, and so do different references and what their values are. I think homebrewers should branch into some of that to get a better foundation of brewing principles.

I do as many experiments as I

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Good Tips

Bill Cherry

- Stick with one recipe until you've perfected it.
- Brew the beer that will give you the most information.
- Pay close attention to the effects of your changes.

Scott Meyer

- Set up a lot of experiments.
- Get a good foundation in brewing principles.
- View brewing clean as a challenge.

Drew Goldberg

- Get to know a brewery's equipment.
- Try to take classes in the basics of engineering and chemistry.
- Pay attention to details and record keeping.

possibly can. I have a rare situation at my brewery — almost everything we do is experimental to a certain extent. Our house beers are always changing. We have a kind of seasonal annual production. I am always trying out new ideas. I think there may come a day when I look back on this time as sort of a homebrew experience. We use a 12-barrel system and we double batch into fermenters, so obviously it's a lot bigger than homebrew but smaller than some other breweries.

Every now and then I hear about homebrewers who are trying interesting things with lambics and different bacterial cultures. That's a great area to go into because later on when you're a production brewer, you won't have the opportunity to answer all those questions for yourself. You'll be more committed to the job at hand.

I think the time when you really set your style is when you're a homebrewer. The more different things you try, the more you're going to learn. Homebrewing is all a great learning process.

I don't have time to homebrew. I cook when I go home, and that's a similar creative process. I started out as a winemaker, and I got into beer as an extension of that.

Homebrewers have smaller batch sizes, and an advantage of this is that they can set up a lot of different experiments. Of course you brew all this beer, then what are you going to do with it? You could probably set up a pub in your apartment or something! You can have all your friends over to drink up your beer. But with these small batches, you can really try all sorts of different things.

I really admire homebrewers; I really appreciate what they can do. I figure if you inoculate your five-gallon carboy with a thumbprint's worth of bacteria, the results can potentially be devastating. If you put your thumbprint into a 1,000-gallon tank, it's not as big a problem.

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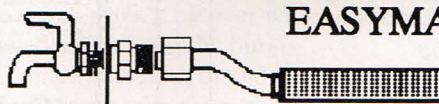
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extremely damaging. In a way it is a disadvantage, but it is a challenge.

Brewer: Drew Goldberg

Brewery: Alcatraz Brewing Co.

Years of experience: Seven

Education: M.S. in Brewing Science, University of California, Davis

House Beers: Big House Red, Searchlight Ale, Weissguy Wheat, Brewberry, Penitentiary Porter, Pelican Pale Ale

A homebrewer who wants to turn pro needs many skills. It's important to understand that the application of science really does play an important part in brewing. Taking classes in the basics of engineering and chemistry could really be a good place to start.

Attention to detail and record keeping are both very important, and are skills that can be developed at home. Many have these skills already, but it is good to pay attention to accuracy. Use the records you kept on earlier batches.

When you bump up from a five-gallon batch to a 10-barrel system, many aspects of the process are going to react differently. What won't change is the importance of paying attention to details in each step of the process and taking notes.

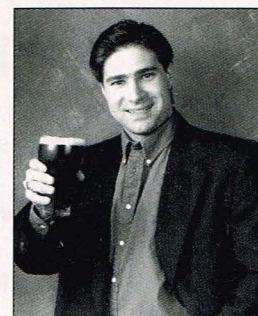
When you brew on a small scale your concerns are different from when you brew on a large scale, so you are somewhat limited in what you can pull from the homebrewing experience. You need to augment your background with hands-on practical skills, which are very important. Apprenticing is a must. It's not going to be glamorous work, but it gives you a very good idea of the things that need to be taken care of in a brewery.

Just like in homebrewing, cleaning is an important detail. When you apprentice in a brewery, doing the cleaning gives you the opportunity to learn more about the equipment. As you clean it, you come to understand how it operates. It is crucial to understand all the equipment and its function. A lot of the work done by an

apprentice is just labor oriented, but it teaches about cleaning, filtering, and other tasks around the brewery. I get many of my apprentices through the American Brewers Guild, because it is part of their 10-week program. It isn't easy, though, so expect to work hard.

When apprentices are brought in, I cover certain ground with them that all breweries would cover, and then there is other stuff that we only do here. So every apprentice is going to have a different experience depending on the brewery or brewpub where they work.

Making good beer depends on being consistent, clean, and careful. These are things that can also be learned on a smaller scale when you brew at home. ■



Drew Goldberg

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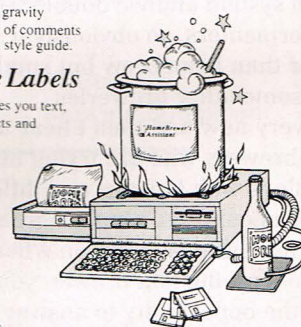
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Scotch Ales: A Sweet Balance

by Jeff Frane

I had a tough time a couple of months back clarifying the distinction between porter and stout. Defining Scotch ales is brutal without a few sample bottles and a glass in hand.

Strong Scotch ale is the classic. Historically, these beers, with original gravities as high as 1.125, were world famous export beers well into the 19th century. Even with their extremely high terminal gravities (1.040 to 1.050, the starting point for most regular ales!), these were thick, alcoholic beers.

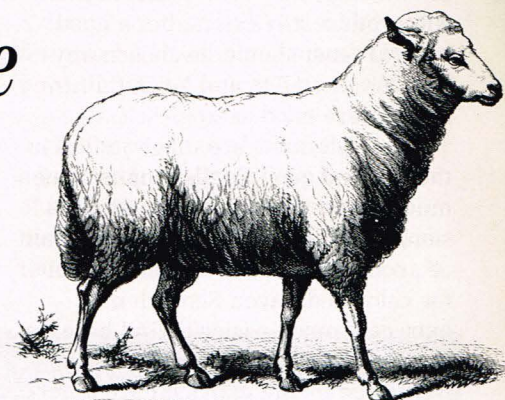
Today's Scotch ales are more subdued but still possess a significant alcohol

content (6 to 10 percent by volume), a rich, malty profile, and a sweet finish.

Caledonia's MacAndrew's ale (1.063) was the first I tasted, perhaps because it looked least like the others and least like the classic profile.

Coppery-brown in color, it was malty yet had a drier finish than the others and significantly more fruitiness. In true Scottish fashion the hops were subdued (unlike their English cousins) but more significant than in any of the beers to follow.

Far more typical was the McEwan's Scotch Ale (1.085), very



dark and sweet. There is a lingering sweetness on the lips, but the careful balance of hops and the characteristic use of roasted barley keep the beer from being cloying. Certainly not a beer to be taken lightly, even if it is a far cry from its ancestors.

The same brewery also produces a stronger version (1.090) for the Belgian trade, where it is labeled Gordon's Scotch Ale. When the beer is to be shipped out of Belgium it is labeled Douglas Scotch Ale, presumably so it isn't confused with the famous gin.

I have loved Gordon's/Douglas Scotch Ale since my first sip several years ago. A perfect beer, given the right moment — something to warm the bones as you gaze out at the gray, dripping sky. They probably have gray, dripping skies in Scotland as inspiration for beers such as these.

Like all good beer styles, Scotch ales are a product of their environment. The beers are malty and rich because the cold weather suits a style like that, the barley is malted for the beer, and the best water for the style is soft and readily available in the area. Scottish malts are very aromatic, and the beer's intensely malty nose reflects this.

The beer is also shaped by the fermentation, which progresses at considerably lower temperatures than those used for English (or American) ales (as low as 50° F — temperatures more commonly associated with lagers than ales). The low temperatures and long fermentations keep down the fruitiness generally found in ales, but a significant diacetyl (butterscotch) component is not uncommon.

Yeast strains, obviously, need to fit the profile. They should be tolerant not

Haggis

(from *The Scots Kitchen*, 1929)

Ingredients:

From a sheep:

- Large stomach bag
- Smaller or knight's-hood bag
- Pluck (including lights, liver, and heart)
- Beef suet
- 1 breakfast-cupful oatmeal
- Onions
- Black pepper
- Salt
- Water

Step by Step:

Brown and bristle (dry or toast) oatmeal in front of the fire. Clean the great bag thoroughly and soak it overnight in cold salted water. In the morning put it aside with the rough side turned out.

Wash the small bag and the pluck and put them on to boil covered with cold water, leaving the windpipe hanging out over the pot to let out any impurities. Let them boil for 1.5 hours, then take them out and cut away the pipes and any

superfluities of gristle. Mince the heart and lights, and grate half the liver. (The rest of the liver is not required.) Put them into a basin with half a pound of minced suet, one or two finely chopped onions, and the oatmeal and season highly with black pepper and salt.

Over the whole pour as much of the liquid in which the pluck was boiled as will make the composition sappy. Fill the great bag rather more than half full, say five-eighths, as it requires plenty of room to swell. Sew it securely and put it into a large pot of hot water (to which half a pint of milk is often added). As soon as it begins to swell, prick it all over with a large needle to prevent its bursting. Boil steadily, without the lid, for three hours. Serve very hot without any garnish. Should the haggis be made before it is wanted, it should be re-heated by being put into a pot of boiling water and allowed to boil, without the lid, for an hour and a half. The small bag may be omitted.

only to cold but to alcohol. At temperatures in the low 50s, few ale strains will produce any esters, but a good neutral yeast should be chosen anyway. Wyeast 1728 and Yeast Culture Kit A34 are good examples.

Scottish malts are tough to find in the US, and good English malts come much closer than any domestic version. A portion of Belgian biscuit malt or aromatic malt are useful additions for color and flavor. Scottish malt extract is much easier to find here. In most extract-based beers I've been frustrated by the malt's failure to ferment out completely, but for Scotch ales this becomes a virtue. The dark color and sweet finish of Scotch ales lend themselves to extract brewing.

Greg Noonan's excellent book, *Scotch Ale*, quotes a knowledgeable Scot on the subject of roasted barley. According to Dr. David Brown, "Roast barley accounts for flavor, rather than caramel malt as the English (use)." To be honest I had never thought of roast barley as a factor in these beers, but in my tasting it became obvious that

there was a faint roasty presence that provided a balance to the sweetness of the malt that might have ordinarily come from hop bitterness. Perhaps the roasted barley provides the faint smokiness that some brewers have mistaken for smoked malts. The malt's

sweetness is enhanced by caramelization in the kettle — turning the heat on full while only a small portion of wort has been run in — rather than the use of caramel malts.

Lately I've seen references in style definitions to the use of peat-smoked

Scotch Ale

(all-grain, 5 gallons)

Ingredients:

- 10 lbs. British ale malt
- 2 lbs. Belgian aromatic malt
- 3 oz. roasted barley
- 2 oz. Belgian special B malt
- 2 oz. Golding hops (4% alpha)
- 1.5 tsp. Irish moss

Step by Step:

Mash the grains at 155° F for 90 minutes in a thick mash (about 1 qt. per pound). Sparge to 6.5 gals., turning the kettle full on with the

first gallon of run-off; add 0.5 oz. of the hops at the same time. Boil 30 minutes. Add the remainder of the hops and boil 30 minutes. Add Irish moss and boil 30 more minutes. Cool the wort, aerate thoroughly, and follow normal fermentation procedures, pitching a 2 qt. starter of good ale yeast and holding the temperatures down as close to 55° F as possible.

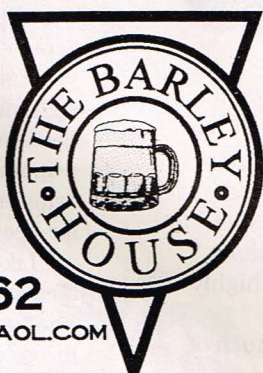
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FG = 1.022

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malts in Scotch ales. Although Greg Noonan does note that one now-defunct beer had the "reek" characteristic of peat in Scotch whisky, it is not a true element in the Scots' beers. Most of the experiments in brewing with peat-smoked malts that I've been aware of have been disastrous — one brewpub couldn't even give the beer away. Rather than smokiness, the malt tends to produce strong chemical flavors, as though someone had dumped kerosene in the beer. Presumably, distillation is required to create something pleasantly drinkable from this malt.

Hopping rates are very low (once

again a reflection of nature, as hops have never been a Scottish crop, and high hopping rates are ill-suited for the water), and Noonan describes a process very like a technique used for fine German lagers: early wort hopping, in which 25 percent of the hops are added as the wort is first added to the kettle. The best English hops, Kent Goldings and Fuggles, are most commonly used.

Scotch ale is well suited to brewing and drinking in the winter months — or a damp, gray spring. After a slow, cool ferment and a couple of months in the bottle, it will be time to put on the wool sweater, pull the chair closer to the fire, and stick your nose into a glass of your own Scotch ale. To put the final touch of authenticity on it, I've included a recipe for the trademark Scottish dish. Enjoy your haggis, lads and lassies. ■

Scotch Ale

(extract, 5 gallons)

Ingredients:

- 2 oz. roasted barley
- 6 lbs. Telfords Amber Malt Extract
- 5 lbs. Laaglander Light Dry Malt Extract
- 3 oz. Kent Golding hops (4% alpha)

Step by Step:

Infuse the roasted barley in a quart of hot water for about a half hour. Add that water and 1 lb. of malt extract to another quart or so of water; bring to a boil, stirring thoroughly so the malt does not scorch. Add 1 oz. of hops at the same time. After the wort has boiled, add enough water to bring the volume to 2.5 to three gals., along with the remaining malt. Boil 30 minutes. Add the remainder of the hops and boil for 60 minutes. Cool the wort as quickly as possible, adding enough cold, boiled water to bring the volume to 5 gals. Aerate thoroughly and pitch a 2 qt. starter of good yeast. Keep the temperature as cool as possible and allow the beer to ferment out, racking to a secondary when the krausen falls.

OG = 1.075 to 1.080

FG = 1.020

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THE GREAT BOTTLE CLEANING SHOOTOUT

The Assignment:

To test six cleaning compounds on an unbelievably grungy bottle and see which one wins.

by **S** a l **E** m m a

We decided to test six cleaning compounds: B-brite and C-brite from the homebrew store, trisodium phosphate (TSP) from the paint store, and bleach, sudsy ammonia, and automatic dishwasher detergent from the supermarket. Prices per gallon of diluted solution ranged from a low of 2 cents to a high of 34 cents.

Each solution was tested on an unbelievably grungy Samuel Adams bottle. We chose Sam Adams because Boston Beer's "metallic" labels are notoriously difficult to remove. The bottles were grunged up by placing

them in front of the stereo and playing Nirvana real loud. In reality, we used a mixture of equal parts milk and ketchup. Because the ketchup would not dissolve well in cold milk, we heated the mixture. This produced a bonus — the milk turned sour, creating a really disgusting matrix of filmy, sticky goo with solid bits of curd clinging to the inside of the dirtied bottles.

After the grunge juice was swirled in the bottle and emptied, the bottles were baked at 300° F for about 30 minutes, until the film of

schmutz baked on hard and caramelized.

The Nitty Gritty

Man, the bottles were nasty when they came out of the oven. Thankfully, baking them removed the odor they might have otherwise produced. To keep the minerals, pH, or impurities in the tap water from interfering with the cleaning agents, we used distilled water for each soak. And we kept everything at room temperature, around 60° F, to eliminate the effect of heat.

We soaked one bottle in plain water as a control example. The others were soaked in the various compounds for just under 24 hours and rated according to the following criteria: grunge removal, label removal, and ease of rinsing. Rinse water was around 110° F from the tap.

To test for cleaning power, the bottles were half emptied and shaken 10 times to gauge the cleaning agent's ability to loosen the baked-on sludge.

What We Found Out			
Compound	Grunge Removal	Label Removal	Rinsing
Water	poor	poor	excellent
C-brite	excellent	good	excellent
B-brite	fair	excellent	excellent
TSP	excellent	poor	excellent
Bleach	good	poor	fair
Sudsy ammonia	excellent	good	good
Dish. compound	excellent	good	poor

Label removal was gauged by scratching the label with nothing more than a fingernail to see how well the glue was loosened.

Each compound was diluted according to label directions, except the dishwashing compound, which is not meant to be used outside of automatic dishwashers and includes no

mixing instructions. For that we used the dilution rate of one table-spoon per gallon.

Dilution Rates:

- C-brite: 1 tbsp. per gallon
- B-brite: 2 tbsp. per gallon
- TSP: 2 tbsp. per gallon
- Bleach: 1/2 cup per gallon
- Ammonia: 1/2 cup per gallon

Cost Per Gallon of Mixed Cleaning Fluid:

- C-brite: 14 cents
- B-brite: 34 cents
- TSP: 20 cents
- Bleach: 4 cents
- Ammonia: 4 cents
- Dishwashing compound: 2 cents

Drawing Conclusions

Our favorite cleaner/label remover was the sudsy ammonia. It's cheap, readily available, and combines all the qualities needed for a good homebrew cleaner: It cleans well, rinses easily, and dissolves label glue without much trouble. B-brite was tougher on labels but not as tough on the grime inside the bottle.

Second choice was the automatic dishwashing compound. It is very strong on cleaning ability, tough on labels, and economical. However, it is difficult to rinse and requires more diligence and more hot water for rinsing than some of the other agents tested. This will marginally add to the cost of using it as a general-purpose cleaner. Anecdotal evidence from "the field"

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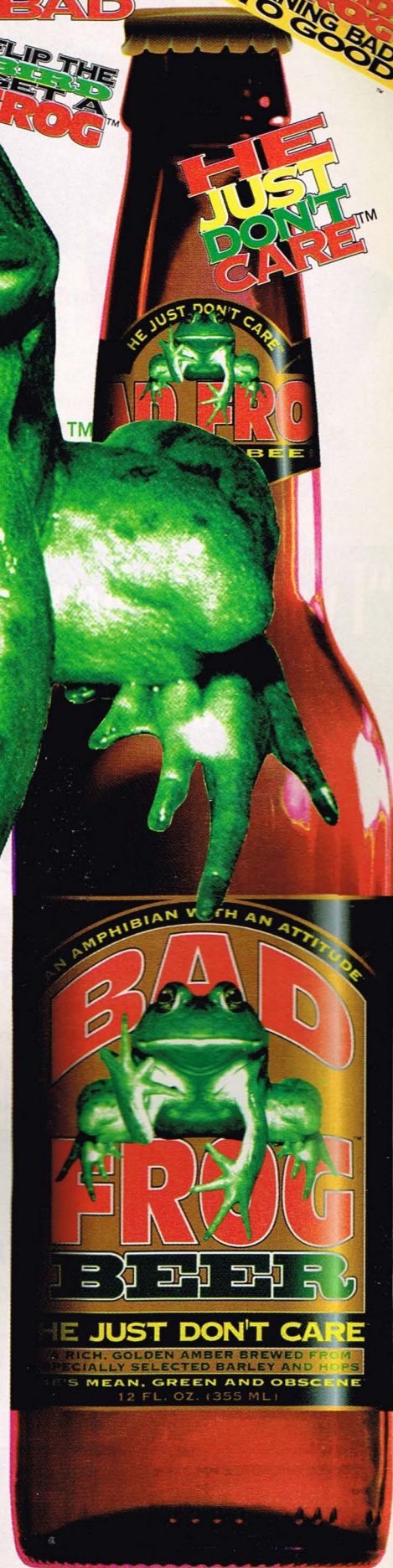
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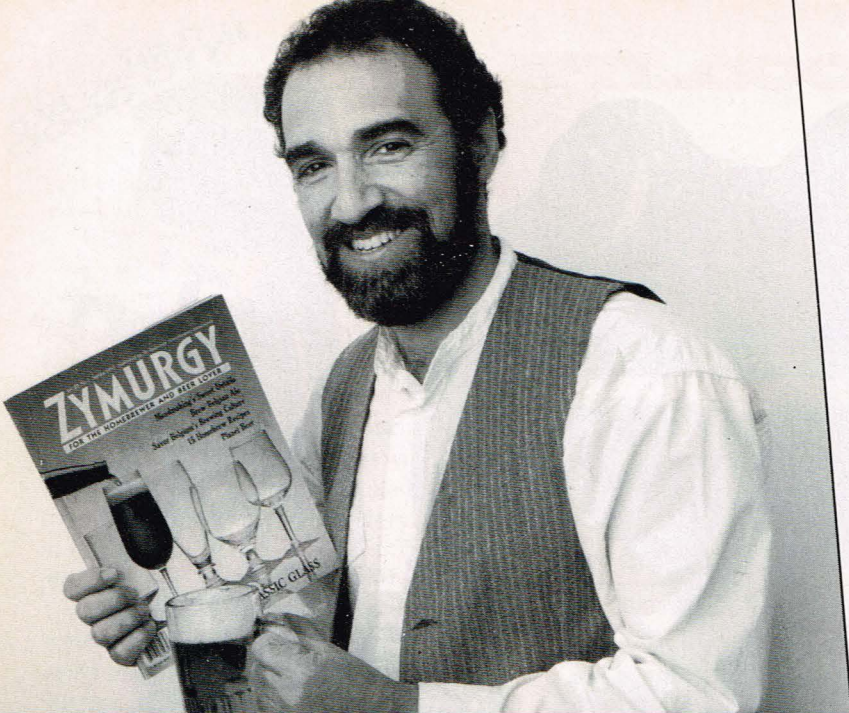
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indicates this is a favorite among keggers looking for a good cleaning product that will not damage stainless steel.

B-brite did not score as high as its price tag, but C-brite did very well. However, sudsy ammonia scored almost as well for 10 cents a gallon less. TSP (trisodium phosphate) did well on the grunge but not well enough on the label to justify using it regularly.

If you are *not* trying to remove labels, any of these cleaners would do the trick. Bleach is an obvious choice because it cleans and sanitizes, obviating the need for an extra step of sanitation with a second soak. Dishwashing compound has chlorinating agents and may have an antimicrobial effect. This theory needs further research!

The B-brite and C-brite are billed as “cleaner/sanitizers” so are good choices for saving labor, but they are the most expensive of the agents tested. Even so, all of the cleaning agents are relatively inexpensive on a homebrew level.

Try This At Home

You should wear rubber gloves and old clothing when working with any of these products. All of them can be irritating to the skin and damaging to clothing. So reconsider that silk cocktail frock you planned to wear during your next brewing session. Also, keep splashing to a minimum to keep the product out of your eyes. To enhance your beer geek image, wear thick, black-rimmed safety goggles (with a head strap, of course).

C-brite is billed as a “no rinse” cleaner, but B-brite was the strongest label remover. Labels positively covered in fear at the thought of B-brite coming near them and practically disintegrated and fell right off the bottles.

Some other things you may need to know: TSP is available in hardware and paint stores. Bleach should not be used on stainless steel. Keep bleach away from all other cleaning compounds, especially ammonia, as mixing the two creates dangerous, poisonous chlorine gas. Ammonia should not be used on aluminum and should

be kept away from bleach.

Hints from Heloise the Homebrewer

Here are a few cleaning tips collected from homebrewers around the country:

See the Light

Mount a night light, with no shade, near your bottle sink. Hold bottles in front of the naked bulb to easily inspect the inside. (Just don't get the lamp wet!)

Taller is Better

"One of the best improvements I made to my brewery setup was the purchase of a kitchen faucet with an oversize, tall spigot," says one homebrewer. "Now I can fit carboys and big fermenters right in the sink and clean them very easily."

Do it Quick!

Nearly everyone agrees when it

comes to cleaning: Do it quick. As soon as you empty a bottle, rinse it in hot water and drain it upside down. This will make cleaning and sanitizing much easier later — compared to letting beer dry and mold grow inside

the bottle.

The same goes for carboys, kegs, fermenters, and anything else that comes in contact with beer, fermented or unfermented. In pursuit of making cleaning a little easier, a variety of innovations have been reported.

Water Tricks

Rick Chapman of Elkhart, Ind., suggests: "Use a faucet adapter and five or six feet of garden hose to rinse carboys and fermenters on the floor instead of the countertop. I bought a 20-gallon rectangular Rubbermaid container for bottle soaking. This doubles as a sink for washing fermenters. It's much less awkward than the kitchen sink or the bathtub. Keep your racking hoses short. If you need a long hose, splice two or three short lengths together with small pieces of rigid tubing. It's a lot easier to clean short hoses."

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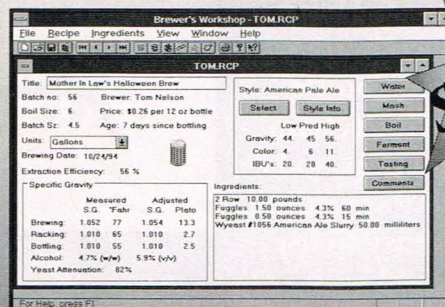
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"I use about a half-cup per five gallons warm water for Cornelius kegs and carboys. I let them sit overnight, or longer, give them a quick scrub, rinse twice, then sanitize with 12.5 ppm iodophor.

"For delabeling I mix the dish detergent and bleach, about a cup of

each in a 32-gallon trash can. This can holds about 100 beer, wine, and champagne bottles. After a soak of at least 48 hours, up to a month, 99 percent of the labels will slide right off. I rinse well, then sanitize with 12.5 ppm iodophor."

When Life Gives You Lemons, Clean Your Brewpot

From Dennis Cobb, Coconut Creek, Fla.: "I brew on an electric stove and

always seem to burn a bit of malt at the bottom of my stainless pot, no matter what. To get this off with limited elbow grease, I squeeze a lemon into the pot and let it soak for a few hours. After this, it wipes right off with a sponge. I have tried bottled lemon juice, which also works."

Wash with Washing Soda

Jeff Lange, Everett, Wash., finds sodium carbonate does the trick for tough dirt:

"For those really crusty, grungy messes — like blow-off hoses — a simple soak in warm sodium carbonate diluted at one tablespoon per gallon melts the grunge right off. Nothing could be simpler." His sodium carbonate came from the homebrew store under the name "Super Grunge Remover." It is also available in supermarkets as washing soda.

Use Soap Now For Easy Cleaning Later

For outdoor brewers, Mary Samuels, Tenino, Wash., and Joe Hyland, Bartlett, Ill., remember the camping trick of using soap on the outside of your kettle to make soot and black carbon easy to remove after brewing. Mary uses liquid soap, but Joe prefers just rubbing the pot with a bar of hard soap.

True Lyes

Dan Listermann of Norwood, Ohio, who manufactures homebrew equipment for a living, uses lye to clean stainless half-barrels, which he sometimes uses for fermenting. "I scrub it with a carboy brush, rinse, then fill it to the rim with hot water and add a little Red Devil lye. This will remove almost all residue after an overnight soak," he says.

Lye, by the way, is what the pros use in their "clean in place" breweries. There it's called "caustic soda." The chemical name is sodium hydroxide. Read all the label warnings if you use it; it can be dangerous.

And remember in the brewery, proper cleaning pays major dividends in uncontaminated, good-tasting beer down the road — assuming you do the rest of your homework! 

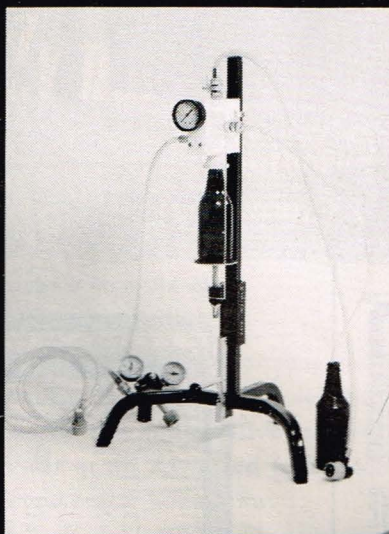
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"Can it really be any good?" a young woman whispered. "Heavens no," Thomas exclaimed. "He's never brewed a drop in his life."



They Laughed When I Told Them I Was Serving My Own Home Brewed Beer, But When They Tasted My Pale Ale!—

Thomas brought a gift of his latest micro-brew discovery that he wanted everyone to try. I decided that this would be a dramatic moment for me to make my debut. To the amazement of all of my friends, I strode confidently over to my Alephenalia Micro Brewery-Home Brew Kit and began to pull out the professional looking bottles that I had placed there.

"Chuck is up to his old tricks," somebody chuckled. The crowd laughed. They were all certain that I couldn't brew any more than I could make potatoes au gratin.

"Can he really brew?" I heard Thomas' partner whisper. "Heavens, no!" Thomas exclaimed. "He's never brewed a drop in his life. But just you watch him. This is going to be good."

I decided to make the most of the situation. Holding up the wing capper, I explained that I had bottled it just for this occasion. With mock dignity, I drew out a bottle and cradled it in my arms like a great wine. "Is this another of those disappearing ink trips," called a voice from the rear. The crowd rocked with laughter.

Then I began to pour.

Instantly a tense silence fell on the guests. The laughter died on their lips as if by magic. I poured a glass for everyone, even those who exclaimed "I don't like beer." I heard a gasp of amazement. My friends sat breathless, spellbound.

I sampled it myself and for a brief moment I forgot the people around me. I forgot the hour, the place, my fellow imbibers. The little world I lived in seemed to fade—seemed to grow dim—unreal. Only the ale was real. Only the ale and the visions it brought me. Visions as beautiful and as changing as an autumn sunset, with its amber hues, just like my homebrew.

A real Triumph!

As everyone finished tasting, the room resounded with accolades. I found myself surrounded by excited faces. How my friends carried on! Men shook my hand—wildly congratulating me—pounding me on the back in their enthusiasm! Everybody was exclaiming with delight, plying me with rapid questions. Chuck! Why didn't you tell us you could brew like that? Where did you learn? How long have you been brewing?

"I simply followed the complete instructions included with the Alephenalia Homebrew kit," I replied. "And just a short while ago, I didn't know hops from malt."

"Quit your kidding," laughed Thomas, a real beer enthusiast. "You've been brewing for years. I can tell."

"Only since Rosie gave me an Alephenalia Microbrewery for my birthday, less than three weeks ago. I decided to keep it a secret so that I could surprise all you folks." Then I told them the whole story. "Ever heard of **Liberty Malt Supply Company**?" A few of my friends nodded. "That's a home brew shop and mail order catalog!" One of the oldest in the entire country!

"Exactly," I replied. "They have a great program for learning how to brew beers like a professional, the Liberty Way."

How I learned to brew without a teacher.

And then I explained how for years I had longed to brew my own beer. I shared that dream with Rosie and when she saw the Alephenalia Microbrewery in the Liberty catalog, she knew it was the perfect gift for me.



A Complete Catalog!

Pointing to the colorful Alephenalia Micro-brewery carton, I explained, "It contains brewing equipment that can be used over and over to brew beers like the professionals." I told them how pleased I was with *The Brewer's Companion*, a real home brewers bible. The Liberty Pack included with the microbrewery contained enough pre-measured, concisely labeled ingredients to brew five gallons of the Pale Ale. I explained that each of the Liberty packs used the highest quality ingredients, exclusive to Liberty Malt and that packs for each of the classic brewing styles are available.

I proudly told them that I have already begun brewing Weekend Weiss, a Bavarian style wheat beer and Liberator Doppelbock, both promptly received by simply dialing Liberty Malt's own toll free number, 1-800-990-MALT (6258).

Favorite brewing styles

"Lets order Liberty's Pils Pack!" Thomas pleaded after seeing the Liberty catalog. He took another sip and said, "Which weekend is that Weiss going to be ready?"

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—Charlie Papazian, founder,
American Homebrew Association

BiG BATCH BREWING

by Nico Freccia

Break out of the five-gallon rut. It's easier than you think to brew BiG!

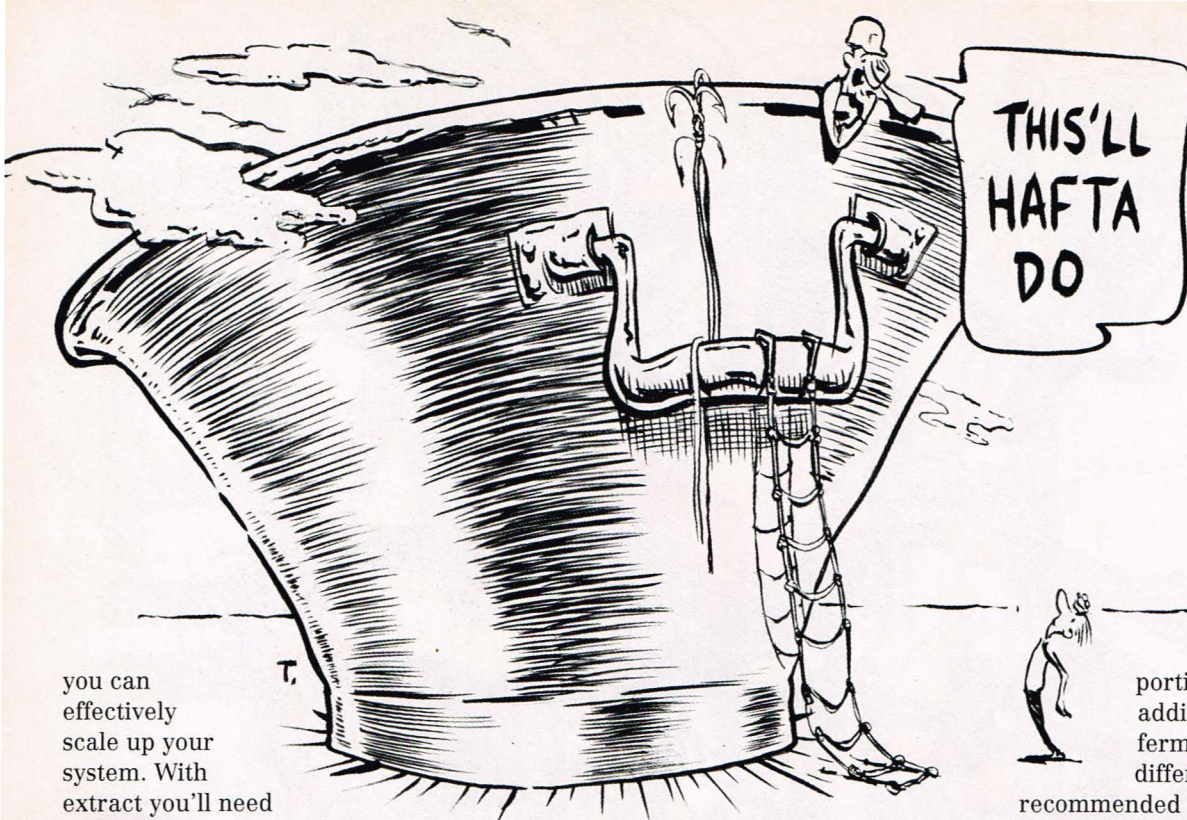
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Five gallons of beer just disappears too fast. You send a few bottles into competitions, give one to your neighbor here and your mailman there, have a poker game, and suddenly that great batch of homebrew is reduced to just a couple of bottles. It's time to scale up your homebrew system. It's easy to double or triple your batch size with a little extra equipment, and it takes about as long as brewing that five gallons did.

Whether you brew with grain or extract,

SHAWN TURNER ILLUSTRATIONS





you can effectively scale up your system. With extract you'll need only a few extra pieces of equipment and you can even continue brewing on your stove top without a lot of additional mess. Grain brewers will probably need a little more equipment, more space, and more cleanup time. But you'll be able to brew like the pros, and the savings of buying bulk grain will make your batches much cheaper.

What Are You Getting Yourself Into?

There are more benefits to scaling up your homebrew system than just making more beer. True, you get lots more beer for roughly the same amount of work. You'll find it easier to experiment with the differences between yeast strains and fermentation temperatures and times, and you can try lagering, dry hopping, and using fruits and extracts.

For instance, if you brew 10 gallons of wheat beer, you might put five gallons in a carboy with a chewy, cloudy ale yeast and the other five gallons in a carboy with a spicy Bavarian wheat beer yeast. Or perhaps you'll add some fresh raspberries to the secondary fermentation of one and not the other. If you take good notes, you will quickly understand the role that subtle differences in process can make. And finally, in the long run you'll save money. Buying in bulk is

always cheaper than buying in small quantities.

Of course, scaling up will cost you, too. You'll need to invest in at least some new equipment, though you can scavenge most of it cheaply. It will mean more bottle cleaning and filling time. But you should find that the benefits of never running out of homebrew will be worth the extra initial effort.

Big-Batch Equipment

Kettle

The main piece of equipment needed to begin big-batch brewing is a large enough kettle. As your system increases in size, you will have more wort loss in the form of trub and evaporation.

If you are brewing 10-gallon batches, therefore, you will need to boil about 12 gallons of wort. To get 10 gallons of finished beer, you'll need to use a 15-gallon kettle, two or more smaller kettles, or brew strong and then top off each carboy with a few gallons of sterile water. You could use several small kettles to make up one big batch, but the quality of each individual boil may make each brew taste different and cooling several pots means more work and more mess for you.

If you are brewing with all grain, you have to do a full-wort boil. If you

are brewing with extract, you can get away with doing a partial boil (boiling a

portion of the wort, then adding water to the fermenter to make up the difference). But it is highly

recommended that you begin with a full-wort boil. Full-wort boils will ensure sterilization of the whole wort and increase hop utilization.

The most popular kettle designs for big-batch brewing call for the conversion of a stainless beer keg. European kegs are 50 liters (13.2 gallons), rather than the standard 15.5-gallon American keg. So you can only get about 10 gallons of finished beer out of a 50-liter keg. You can probably squeeze about 12 out of a 15.5 gallon.

Try your local distributor or brewer for old or damaged kegs. Also, kegs sometimes turn up at salvage yards and garage sales, as do, if you are lucky, other potential kettles such as stainless washtubs from old washing

There are more benefits to scaling up your homebrew system than just making more beer...you'll also make better beer.

machines. Remember, though, that it is illegal to keep and convert a keg if you don't have permission from the keg owner. The owner is always the brewery named on the keg unless the keg has been previously legally sold.

You can convert a standard beer keg to a kettle yourself by releasing the pressure valve, drilling a hole, and using a Sawzall (reciprocating saw) to cut the top of the kettle out. Stainless is very hard steel, so be careful and wear gloves and goggles when drilling, cutting, and filing. It's easier just to take the keg to a local welder and have them cut the top for you.

Cut the center out of the top so you retain the maximum volume of the keg and leave the handles intact. While you're at it, bring a stainless nipple and have them weld the nipple into the side of the keg as close to the bottom as possible for a drain valve. They should do it for about \$40 or some free homebrew. There is a company that offers a weld-free conversion kit, too. You cut the top and drill the side hole, and they provide the fittings for a drain pipe and trub screen.

Restaurant supply stores carry large (60 quarts and bigger) stainless stock pots, but they are generally much more expensive than buying a new keg from a supplier. Many homebrew products companies now sell converted kegs complete with drain valves, false bottoms, and even temperature probes.

Wort Chiller

Now that you're doing a full-wort boil on a big batch, you need a large wort

chiller to cool the boiling wort down to pitching temperature as quickly as possible. Wort chillers come in several designs and are simple to construct.

The easiest is the immersion chiller, a coil of copper tubing that is immersed into the boiling wort. Cold water is run from the tap through the chiller, and the wort is cooled to pitching temperature in about 30 to 45 minutes. Immersion chillers have the advantage of being easy to construct, relatively cheap, and easily sterilized by immersion in the wort 15 minutes before the end of the boil.

Fifty feet of 3/8-inch tubing should cool 10 gallons of wort to 70° F in about 30 minutes. Attach a garden hose or plastic tube to the inlet and outlet of your chiller and use the warm water to clean up or water your yard.

The other common form of chiller is the counterflow or "tube in shell" model. In this system, boiling wort flows directly from the kettle into the fermenter, through a copper tube that is surrounded by cold water flowing in the other direction.

To make one you will need about 25 feet of standard garden hose and 26 feet of 3/8-inch copper tubing. You'll need to buy the outlet fittings for this type of chiller, which are now available in many homebrew shops or through mail order.

The best way to sanitize a counterflow chiller is to let boiling water or sanitizing solution flow by gravity through it before use. The most important thing to remember is to thoroughly flush the chiller with water after each use

You can convert a standard beer keg to a kettle yourself by releasing the pressure valve, drilling a hole, and using a Sawzall to cut the top of the kettle out.

so deposits do not form inside the coil.

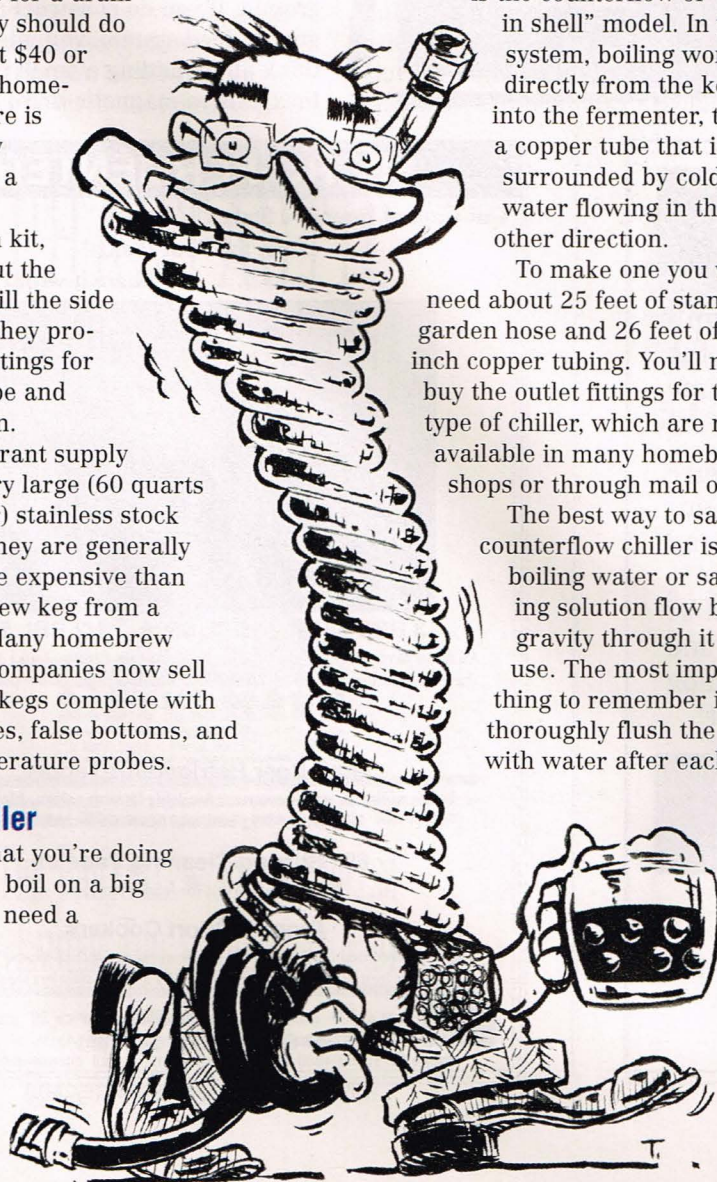
Burner and Gas Source

If you have a gas stove in your kitchen and have been using it to brew beer, you can continue to do so with a larger kettle, particularly if you can place the kettle over two burners. Generally, however, this system is slow and messy.

The easiest solution is to purchase an outdoor-type propane burner. These burners can kick out 100,000 BTUs and more, and will bring 12 gallons of wort to a boil in 15 or 20 minutes. These burners will make your brew day go much faster and often have sturdy metal stands that will raise the kettle to the perfect height for siphoning or draining wort into a fermenter.

You can generally buy a burner with stand, hose, and regulator for \$35 to \$50 in the homebrew shop. Also, kitchen supply and camping supply stores will often have good, inexpensive outdoor burners. Wherever you purchase the burner, look for the ring burner type as opposed to the single jet models. Single jet burners have a tendency to create hot spots. Make sure that whatever you get is sturdy, because the kettle and wort will be very heavy and not all burner stands are built to carry this weight.

You can pick up a new propane tank for around \$20 from camping or



large hardware and garden stores. Tanks usually cost about \$7 to fill.

If you buy a propane burner, please remember that the gas will give off deadly carbon monoxide fumes and should only be used outdoors or in a well-ventilated area such as your open garage. Brewing outdoors will make the whole process easier and faster, as you can quickly hose down equipment and clean up on the spot.

Mash/Lauter Systems

If you are already mashing, chances are you have what you need, though you may need to enlarge. If you are new to grain, you can buy excellent mash and sparge systems or make them simply from camping coolers. Camping cooler mash tuns use a grid of slotted copper pipe to carry the sweet wort away from the grain, leaving the husks behind. Buying a tall, cylindrical cooler works well, too, with a food-grade plastic disk full of small holes set in a few inches from the bottom. This disk, again, will separate the grain husks from the sweet wort. To

make a smooth gravity-feed system, you should add a large (54 quart) cooler that can act as a hot liquor tank, holding the hot sparge water.

A simpler system could use the kettle as a mash tun and hot liquor tank. This system still needs a lauter vessel, which could be double plastic buckets with holes drilled in the bottom of the inside bucket, and a third

vessel to collect the wort from the lauter. You'll have to scoop the mash out of the kettle and then heat the sparge water. It will take more maneuvering and a little longer but should work fine.

Big-Batch Extras

Make sure you have at least two carboys or fermenting buckets, and try to have three. Having three will allow you to do a secondary fermentation, transferring one batch from primary to the third carboy, cleaning the primary, then using it as the secondary fermentation vessel for the second batch.

If you have the space, you may want to aim for long-term ease of use and build a platform to support a gravity-feed system. The top platform supports the hot liquor tank, the middle one the mash tun. The kettle will be on its burner stand a few feet off the ground, and the carboy will sit on the ground. If you do construct a fixed, gravity-feed system, you might want to think about adding a small pump. Inexpensive magnetic-drive centrifugal

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CIRCLE 8 ON READER SERVICE CARD

pumps are easy to find. Pumps will make wort cooling much easier. It's not easy to lift 12 to 15 gallons of hot water six feet off the ground.

If you have access to additional kegs or large stainless kettles, you might want to think about adding more burners to your setup. Heating the mash and sparge water simultaneously will save you time and makes multiple-brew days go much faster. Burners can be added and easily split to run from the same propane tank.

Process Considerations

Brewing in bigger batches should make your life easier, not harder, so design your system with your own comfort and safety in mind. Remember that you are dealing with more of everything. Twelve or 18 gallons of boiling wort or water is not going to be easy to move, nor is 25 pounds of wet grain. If you ever consider going really big and brewing in one- or two-barrel batches, start thinking about equipment that can be cleaned in place, with more efficient mashing,

heating, and cooling systems.

Make sure your lauter system holds more grain, collects as much wort as possible, maintains a deep bed, and leaves enough space for a few inches of sparge water to float on top.

Make sure your hot liquor tank can hold enough water and that it is rated for near 200° F temperatures. Cheap coolers will buckle, crack, and even melt with heat.

Ease the pain of cleaning and filling all those extra bottles. Invest in a kegging system or start using five-liter mini-kegs. Mini-kegs can be naturally conditioned and are a great way to take beer to parties and picnics, and they'll save about a 12-pack's worth of bottling. Try dry hopping one and adding fruit extract to another.

Recipe Calculation

It may seem that scaling up your tried and true recipes is a matter of multiplication. In practice there's a little more to it. Experimentation with your own system is the only way to get a feel for the kinds of recipes

you'll need to formulate.

While big is not necessarily better, since you are up-sizing your equipment you might as well improve the quality as well. A better system means a more efficient one. Making improvements to your milling practice, mash tun design, and mash temperature control can increase your extract yield, making less grain go a longer way. Hop utilization rates will increase with larger-volume boils. Also, a full-wort boil will give better hop utilization.

A larger kettle, more wort, and a better heat source will affect evaporation rate and trub formation. More rapid boiling will produce more hot-break material and more evaporation. Also, a boilover in a larger kettle will lose a much greater volume of wort than a smaller boilover.

Figure out the amount of pounds of ingredients per gallon of finished beer you've used in the past, and multiply by the number of finished gallons you expect from your new system. But expect differences. Record, experiment, and adjust accordingly.

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AGAIN



KRISTINE BYBEE

G GRACEFULLY

by Kirk Fleming

Will your beer grow mellow and pleasing or develop into a crusty old coot? The key is how you treat it in its youth. Learn the science of aging, and keep your beer from becoming disagreeable before its time.

Although aging is normally thought of as something that happens between bottling time and drinking, each step you take in beermaking helps determine the chemical makeup of the final product and how that makeup will change over time. The amount and type of yeast you use, the quantity of oxygen you dissolve in the wort at each stage of handling, fermentation and

storage temperatures, and the storage containers you choose all influence how your beer ages. An important part of evaluating your aging techniques is understanding what flavors are controlled by aging and which change little over time.

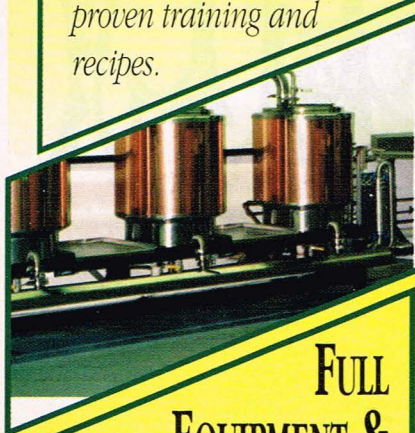
Preventive Beer Maintenance

What you do at pitching time is critical to your beer's flavor and long-term survival. Wort aeration, pitching rate, and fermentation temperature all contribute to the character of the final product. A sweaty or even a solvent-like or banana flavor in your beer that you attribute to aging problems may in fact indicate that it's time to reconsider your yeast choice.

Yeast are incredible little chemical processing plants. Besides churning out ethanol and carbon dioxide, yeast have a

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pretty busy production schedule, making all sorts of things that eventually turn into beer. For example, brewer's yeasts produce a variety of fatty acids that can contribute "goaty," "sweaty," or "soapy" flavors to beer. Each yeast strain produces a quantity and proportion of these acids unique to, or characteristic of, that strain. Other acids are also produced, such as acetic and lactic acid for example.

In addition to the great variety of acids, yeast also produce a number of different alcohols. There are two convenient categories of alcohol for the amateur brewer: ethanol and everything else. The "everything else" group is more often called the fusel or "higher" alcohols. Higher-alcohol production is somewhat unique for every yeast strain and also contributes to the strain's own special character.

Yeast enzymes encourage the chemical combination of acids and alcohols to form esters. For example, acetic acid and ethanol can combine to form ethyl acetate, the source of fruity, solvent-like flavors. Isoamyl alcohol and acetic acid can combine to form isoamyl acetate, which can give beer a banana-like flavor. Since a given yeast strain can uniquely determine which acids and alcohols are produced during fermentation (and in what quantities), it makes sense that ester production is also a characteristic of a given yeast.

Ester production increases with higher fermentation temperature, lower levels of dissolved oxygen, higher gravity wort, and lower pitching rates. If you've noticed fruity, solvent-like, or banana flavors in your beer, try brewing a few mid-gravity beers with original gravities around 1.050 or below, aerating well (better than you have been), and using an adequate pitching rate. A good rule of thumb for pitching is to use about 1/2 to 3/4 cup of yeast solids for a five-gallon batch, minimum.

No Beer Before Its Time

By now you're asking, "That's nice. What does this have to do with aging beer?" In a way, the answer is "Nothing!" Although the use and

choice of yeast do have issues that are time sensitive, the three flavor-contributing families just mentioned (fatty acids, fusel alcohols, and esters) are all components that end up in the final beer and don't change much, if at all, with time. Control of these factors has to be handled through yeast selection and control of the fermentation itself. After fermentation is over, it's too late. If aging doesn't help here, then what *can* it do for you?

Two other substances produced by normal fermentation include diacetyl and acetaldehyde. Diacetyl is described as having a "fresh butter" or butterscotch taste. Over the past several years the American Homebrewers Association style guidelines have reduced the acceptable levels of diacetyl for almost all styles, and most brewers generally consider it an undesirable flavor.

Fortunately, yeast re-absorb much of the diacetyl produced during early fermentation, given the opportunity and if they didn't produce too much to begin with. After fermentation appears to be complete, ales should be kept at fermentation temperature for about two days for this final "diacetyl rest." Carefully racking off the trub at the end of the primary ferment will help ensure you avoid off-flavors from degenerating yeast while still providing ample yeast for diacetyl pick-up.

Somewhat less troublesome but harder to pronounce, acetaldehyde (a-se-tal-de-hide) is also produced naturally during fermentation.

The acetaldehyde level in wort increases during the process to a maximum, then decreases as it is converted to ethanol. Acetaldehyde contributes a flavor described as "green apple" and in small amounts isn't

considered a big defect in many beers. But if it's very apparent, tasters may say the beer needs to spend more time in the secondary or that the beer is very young. Usually, aging will continue to reduce acetaldehyde to unnoticeable levels as conversion to alcohol continues.



Airing Out the Difficulties

One by-product of yeast is hydrogen sulfide (H_2S). Hydrogen sulfide produces a strong rotten-egg smell and is sometimes noticed at the beginning of fermentation. It can be carried over into the finished beer if not allowed to vent from the fermenter. The CO_2 produced during fermentation will scrub hydrogen sulfide from the wort, and open fermentation or the use of an airlocked carboy will allow its escape.

Some brewers use stainless soda canisters (cornelius kegs) for secondary fermentation, and venting is important here, too. An airlock arrangement can be set up on a cornelius keg by bleeding gas from the "in" tube of the keg using a gas fitting and a connected length of tubing. The end of the tubing can be placed in a container of water for air-



lock security. An alternative is to simply bleed the keg twice a day as needed, using the pressure relief valve in the keg lid. Routine or continuous venting will help ensure that the finished beer doesn't contain a sulfur-like or rotten-egg aroma.

Everything Gets Clearer with Time

American beer drinkers are accustomed to crystal clear lagers that are so light and clear you can easily read a book held on the opposite side of the glass. Our expectation of brilliantly clear beer carries over to our enjoyment of ales, also. The larger American ale brewers, such as Boston Brewing Co. (Samuel Adams) and Pete's

Brewing Co., make products that are incredibly clear as well. It's no wonder so many people new to amateur brewing want to make their beer just as clean looking. It makes for a "professional" looking product.



Fortunately, the cost, equipment, and trouble (of filtering) isn't really needed. With patience and proper use of clarifying agents, very clear beer can be yours.

Beginning brewers are sometimes disappointed with their first several batches of beer, which often lack that kind of brilliant clarity. Filtering seems like an obvious solution, but that means more equipment and more money. Fairly coarse filters, used with CO_2 kegging gear, can be used to get very clear beer quickly, without having to strip out color and flavor. Fortunately, the cost,

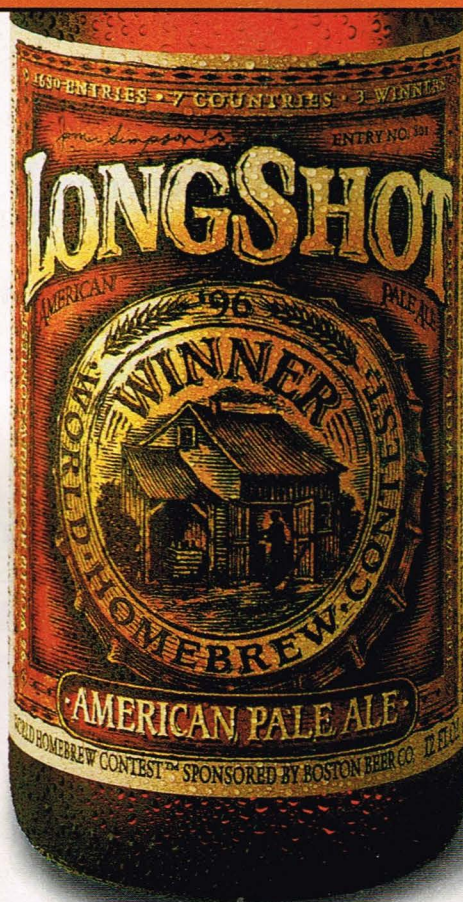
"Do I have to pay for my own beer now?"

James Simpson

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equipment, and trouble isn't really needed. With patience and proper use of clarifying agents, very clear beer can be yours.

As the yeast in your beer finally ferment out all the sugar they can, they begin to drop to the bottom of the secondary. Some yeast strains do this quite suddenly, leaving a very clear beer after only a week or so of fermentation. You can rack to the bottling bucket and bottle, or to the keg for cool storage. If you aerated well at pitching time, there should be no need to rouse the yeast or to pitch more yeast for carbonation, or in any way disturb this clearing beer. Diacetyl reduction should also be right on target.

You can buy a variety of products to help settle out yeast, proteins, and tannins from your beer, and none is very expensive or hard to use. The most common one used in the kettle is Irish moss. Others, used only in the secondary fermenter, include isinglass, Polyclar, and gelatin. Directions are usually included with those products

sold at supply shops.

Gelatin works quite well, is sold at most grocery stores, and is very inexpensive. Dissolve about 1/2 to 3/4 of a packet in one cup cool water, then bring to a boil. Pour into the carboy. This works well for those who keg — after you add the gelatin solution to the room-temperature beer, the keg

can be placed in the refrigerator to cool. The yeast that was in suspension will drop out into a firm cake at the bottom of the canister, where it remains undisturbed during dispense.

Carbonation and Conditioning

There are two popular ways to get that pleasing carbonation that makes beer the delightful thirst quencher it is. By far the most popular is bottle conditioning. The idea is remarkably simple. After fermentation is complete, most of the yeast have either settled out of the beer or are well on their way. But even if the beer looks clear to the eye, there are still millions of yeast cells floating around.

To bottle condition you must give the remaining yeast just enough food (priming sugar) so they can produce the right amount of CO₂ to carbonate the beer. Since the beer will be sealed in bottles when the yeast start fermenting the priming sugar, the CO₂ can't escape. It simply dissolves in the beer.

For those who keg there are two choices for conditioning the beer. One

Priming sugars that are not totally fermentable can be used to add character to your beer, so even if you keg you may still want to prime a stout with molasses, for example.



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is to prime with sugar just like you would if bottling, and the other is to force carbonate. Some brewers just don't like the idea of forced carbonation and prefer to prime, even if they keg rather than bottle. Priming sugars that are not totally fermentable can be used to add character to your beer, so even if you keg you may still want to prime a stout with molasses, for example. More often, keggers just rack the beer carefully into a sanitized soda canister and apply pressure from a CO₂ tank.

A Quiet Rest in a Dark Room

The ability to keep your beer for months depends on everything you do, from putting the kettle on the boil to popping the cap off the last bottle or tapping the last pint from the keg. The beer you've put your heart and soul into can't be treated like a freeze-dried camping ration just because it's sealed in a bottle or a stainless steel canister.

Air (or really, the oxygen in it) deteriorates beer. Whenever you move beer from one container to another, be certain to avoid any sloshing, splashing, or other rough handling that causes any air to be mixed in. When oxygen from the air mixes with the beer, chemical components that would otherwise never be noticed become oxidized and produce paper, cardboard, or wood- or wine-like flavors. This oxidation process degrades a good beer very quickly. It takes only a few short weeks to go from a great beer to an undrinkable one.

High temperatures speed up the oxidation and staling process, too. Beer doesn't like to be stored warm. The best possible storage conditions are dark, cool, and undisturbed. Ideally, store bottled or kegged ale at 50° to 55° F and lager at 40° F, year-round. If that just isn't practical for you, there are several things you can do to help make the last bottle as good or better than the first. Minimize the head space when you bottle. Use oxygen-absorbing bottle caps. Adjust your batch size down so that storage times are shorter (at least in the summer).

Certain hop components, when combined with sunlight, produce a skunky aroma and flavor in beer. A skunked or lightstruck character is a

serious defect that can be easily avoided by using dark brown bottles and by keeping bottled beer out of direct sunlight. Green or clear bottles provide no protection at all and aren't recommended unless your bottles will be stored in total darkness.

As always, keep complete beer handling records including information such as dates and storage conditions. You may want to pick up a guide to

beer tasting, such as *Evaluating Beer* (Brewers Publications) to help you identify changes in your beer over time. If you practice taking careful notes as you sample from the same batch week after week, you can begin to train yourself to detect and describe the subtle (and sometimes not-so-subtle) maturing of the beer. This can be a lot of fun, is very educational, and firmly establishes you as a true Beer Fanatic. 

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Become a Homebrew Judge

by Scott Russell

The Beer Judge Certification Program does more than make you an ace beer taster. It helps you learn more about styles, the brewing process, and beer faults — knowledge that will help you make your own beer better.

On the wall of the homebrew shop where I work, we have a sign reading: "We will gladly taste and critique samples of your homebrew." In the beginning many of our customers figured this was a plea for free beer. Not so, we told them. We're trained professionals, but *do* try this at home!

Knowing what you are tasting can give you a huge advantage as a homebrewer and can allow you to improve recipe formulation, process, and sanitation. It will help you to know more about (and thus be more appreciative of and responsible about) beer.

Having your beer critiqued (judged by someone else who doesn't have as much personally invested in it as you) is an invaluable way to

get honest feedback. Learning to taste and evaluate beer yourself is a natural extension of that — you taste my beer and I'll taste yours!

Besides, beer tasting and evaluating sessions can be lots of fun.

Which brings me back to the idea of being a "trained professional."

Remember the episode of "Cheers" where Norm got his dream job as the head taster at the local brewery? Well, that's not quite what we have in mind here. The kind of beer judge we're talking about does it out of love; it's a hobby, not a job. And the beer he or she evaluates is not the Big Boys' commercial stuff, where consistency is the biggest virtue. No, our beer judges are tasting and rating beer made by people just like them — other homebrewers.

Virtually every homebrewer has heard of local, regional, or national competitions, where specially trained (and yes, "licensed") judges sample, critique, and rate beers sent in by homebrewers like us.

Many homebrewers have already entered their beer in one or more of these competitions. If you've won a ribbon or a trophy or some other prize, congratulations. If you haven't won anything but have at least been given good, honest feedback on how to improve your brewing, you've also come out a winner.

The men and women working so hard behind the scenes have put in a lot of time learning everything they could about beer — the making of it, the flavors and aromas of it (both good and bad), the packaging of it, and more. They are all participants in a nationwide program designed to



further the understanding and appreciation of beer, the Beer Judge Certification Program.

Beer on Trial

The BJCP was started in 1985, jointly by the American Homebrewers Association and the Home Wine and Beer Trade Association, a group of homebrew retailers. Their aim was to increase available knowledge about beer, to improve communication about beer, to "standardize" style guidelines, and generally to improve the state and quality of homebrewing.

To do this they felt there had to be a way to decide who was qualified to evaluate beer. What they initially created has grown beyond their wildest expectations, and the BJCP is now an independent entity, having formally separated from the AHA and retailers' association in 1995.

The BJCP is a volunteer organization of people around the country (and in some other countries as well) who like good beer, but more importantly who *know* good beer — how it's made,



what it should look like, how it should taste. Their mission remains the same: to foster an appreciation of beer as an alcohol-containing beverage and to improve homebrewing by certifying beer judges.

The focus of the BJCP is the judging exam. To become a legitimate beer judge you have to go through a three-hour written exam. During the exam you have to taste four beers and judge them. The essays you write test your knowledge of basic brewing procedures; chemical processes involved in mashing, fermentation, and malting; history and descriptions of beer styles;

and troubleshooting and preventing brewing problems.

There are 10 questions in the written section, which counts for 70 percent of your score. The tastings count for 30 percent, and you are graded on how you perceive and evaluate, how you recognize qualities and flaws, and especially on how you give constructive feedback. The exam administrator and proctors are tasting the same beers at the same time to give the exam graders a basis for comparison.

Study? For a Beer Test?!

I took the exam for the first time this past January. As a veteran homebrewer, beer writer, shop manager at a brewpub's homebrew store (and thus "guru" to dozens of local homebrewers), I should have been very confident. But I wasn't.

I felt I knew a lot of things, but how would I know they were the right things? As we set up to host the exam at our brewpub, more and more pressure was on me (forget the so-called "home-field advantage").

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We registered a handful of local brewers, then set up a series of "seminars" on a couple of topics as training sessions. Our assistant manager Julian Zelazny, himself a National Judge, gave us a rundown on the structure of the exam, some typical questions, what to study, what to expect, and how to answer.

The general opinion was that you can never know enough about the basic style guidelines: color, tastes, and body.

This information and these sample questions, largely taken from past exams, are publicly available on the Internet, and potential examinees are encouraged to use them as a study guide. (This is an educational program, after all.) We sat in a group and compared and critiqued a few commercial samples to point out different approaches to tastings.

A couple of weeks later Greg Noonan (brewpub owner, long-time professional, homebrewer, and author) joined us to demonstrate aromas and flavors to recognize — both desirable and flaws. We watched in wonder, and some horror, as Greg prepared cupsful of everything from lacquer thinner to butterscotch extract, burnt matches to grapefruit peel. With his help we learned to recognize off-flavors and contamination problems (if it smells or tastes like burning plastic bleach bottles, you've got a problem beer!) and got some suggestions on how to prevent them.

In the end, though, we were on our own. No amount of seminars or training sessions substitutes for experience. So we each went our separate ways, re-read all our brewing manuals, style

guidelines, articles on malting and hop rates, and tasted a few beers.

Over the course of the week preceding the exam, my wife and I sat down and tasted more than 20 different styles, comparing American pale ales to Burtons, dry stouts to sweet, pilsners to Dortmunds and Munich helles. Taking copious notes on aroma, color, clarity, head, body and, of course, flavor, I ended up on Friday night with a huge

pile of information to try to digest one more time. The exam was scheduled for 8 a.m. on Saturday.

Judgment Day

So there we were, gathered in the pub at 7:45 a.m.: five examinees, one administrator, and one proctor. We had to be done by 11 a.m. because the pub opened then and the last thing we needed was to be disturbed in the last



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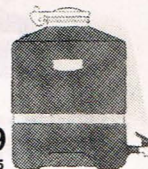
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few minutes of the exam.

We were all understandably nervous, but the last thing the exam administrator said to us, I think, was "Relax, don't worry..." After that, we didn't have time to think about the exam. We were doing what we liked to do best; we were talking about beer and tasting beer!

Eleven came, the administrator said "Time's up," and we handed in our essays and scoresheets. Then we stood around collecting our thoughts, comparing notes ("What did you think sample number two was, anyway?"), and since we were in a pub, after all, we had a beer and some lunch — and talked some more, mostly about what we wished we had studied.

We all had our own "disappointments," but the general opinion was that you can never know enough about the basic style guidelines: color, tastes, and body, certainly, but original gravity and hops bittering levels would have helped to write more convincing essays. We all felt that we

How would you score? Test your knowledge with these sample questions from the Beer Judge Certification exam:

1. Describe and differentiate between a pils, Dortmunder export, and Munchner helles. Give commercial examples of each.
2. Name three hop varieties and commercial beers that reflect that variety.
3. What is the difference between a
- bittering and a finishing hop? Give three traditional examples of each.
4. Describe the life cycle of yeast during brewing.
5. Where in the brewing process is water treatment important, and why?

might have passed, but no one was willing to put any serious money on it. I was most worried because of my handwriting: Would the test graders be able to read my essays? We'd know in six to eight weeks.

After the Exam

If you pass, you're a Beer Judge. Depending on your score and your

level of experience in sanctioned events, you may be higher on the chart than others.

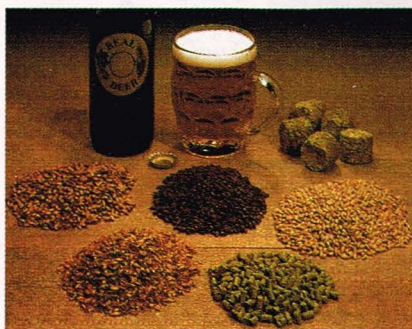
If you get a 60 or better, you are automatically a "Recognized Judge." If you get a 70 or better, you are a Recognized Judge until you earn five experience points (points come from judging or stewarding at competitions, organizing competitions, grading or proctoring exams), when you are promoted to "Certified Judge."

An 80 on the exam combined with 20 experience points makes you a "National Judge," and a 90 combined with 40 points qualifies you as a "Master Judge." There are also the honorary and temporary titles of "Grand Master Judge" and "Honorary Grand Master Judge," but these are not levels that can be earned through the exam and/or experience.

What comes next is up to you. Beer judges don't normally get paid much (if at all) to judge, and unless you achieve Michael Jackson status, fame is not likely to come your way



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Future Test Dates

Exams are scheduled around major beer events, such as the Great American Beer Festival, and on a request basis through homebrew clubs and brewpubs. Two upcoming tests are:

• August 10, Cincinnati, Ohio

• November 9, Utica, N.Y.

For other test dates visit the BJCP Web site at www.execpc.com/~ddavison/bjcp.html.

through beer tasting. However, one of the most pleasant experiences I can imagine is sitting on a panel at a competition discussing beer with a group of people as knowledgeable and enthusiastic as yourself. And of course, knowing more about someone else's beer is sure to make your own brewing better.

Continuing Education

As for study materials to use both before the exam and after to improve your general brewing technique, read anything and everything about beer, brewing, and beer lore that you can find.

I particularly recommend Michael Jackson's *Beer Companion* and *New World Guide to Beer*, Fred Eckhardt's *Essentials of Beer Style*, and the Brewers Publications Style Series (10 volumes and counting) for information about style parameters and history of brewing.

Greg Noonan's *New Brewing Lager Beer* and Dave Miller's *Brewing the World's Great Beers* are invaluable insights into the technical aspects of brewing, from water treatments to temperature control to grain selection for mashing.

There are countless Websites, bulletin boards, and on-line digests where you can probably get the answers to any brewing question in the world. But the most valuable resource is your own experience. The more you brew, especially if you have someone nearby

who can objectively evaluate your homebrew, the more you will learn in the long run, more than any manual or article can teach you.

For information on the Beer Judge Certification Program, contact Russ Wigglesworth, BJCP Administrator, c/o Celebrator Beer News, P.O. Box 375, Hayward, CA 94543. Or visit the BJCP Web page at www.execpc.com/~ddavison/bjcp.html.

Epilogue: I got the results from my exam. I'm pleased to say that I got an 82. Yes! I'm a recognized beer judge now, working my way up. So many beers, so little time... 

Scott Russell is manager of the Seven Barrel Brewery Homebrew Shop, West Lebanon, N.H., and co-author of the forthcoming Seven Barrel Brewery Book of Brewing.

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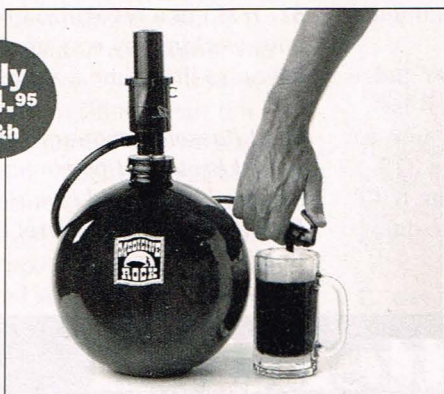
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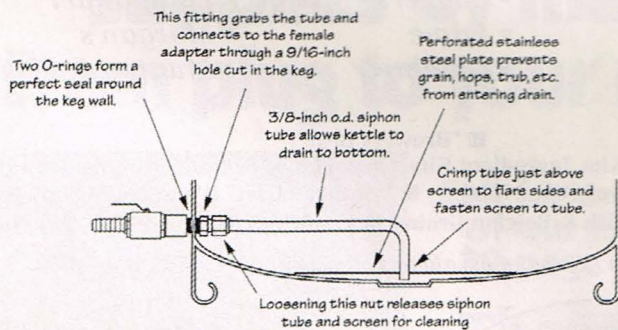
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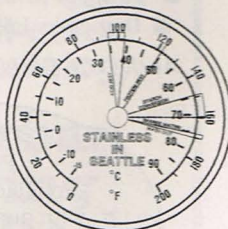


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Opening a Micro: A Homebrewer's Story

by Richard T. Curtin

***H**omebrewer Michael Bryant is working toward his dream, opening a microbrewery in Dunedin, Fla. This three-part series follows his progress.*

Michael Bryant first experimented with fermentation at age 13, when he discovered a recipe for orange wine in his mother's *Old Mr. Boston* drink guide. He followed the directions, bottled the mixture in glass jars, and hid them in the basement.

The result looked so bad that he never even tasted it. "I looked at the stuff in the jars and thought, this is poisonous," he recalls.

"In the early '70s I started making wine again. In the mid-'80s my



brother, who is a homebrewer, came to visit and said, 'You make a pretty good wine. You should try beer.' I thought it would be too complicated. Then he told me a story about that wine I made way back when. He told me that

when he was 14, he and his

friends would pour that clear liquid off the top and sneak into the field to drink it."

Bryant, a restaurant construction contractor, lives in Dunedin, Fla. During his first few years of homebrewing, he bottled in champagne bottles but wanted to try kegging. "It took me more than a year and a good 10 batches of beer that I threw out just to get the kegging straightened out," he says. His problems included finding the correct pressurization level for the keg and then fighting off-flavors, which he accomplished when he learned about venting. "I had the concept of having a microbrewery as soon as I had kegging worked out," he says.

Bryant's dream was to start small, distributing the beer locally. "I thought it would be neat to be able to make beer, put it in these little kegs, and have it sold in downtown Dunedin. No big deal, just a hobby to do this. Then people could enjoy a different beer."

The Dream Grows

The first time Bryant really thought that he could carry it all off was on a trip to California. There were bottles of different microbrews lining store shelves. "There were these small microbreweries putting beer in champagne bottles," he says. "The labels were crooked. There was yeast in the bottom of the bottle. Different bottles of the same style from the same brewery tasted a little different. It was just



Michael Bryant (left) and his mentor Norman Dixon are working to get the new Dunedin Brewery up and running.



While Bryant did much of the start-up work himself, many friends and fellow homebrewers came in on weekends to help with the heavy lifting.

like we were doing at home, but they charged \$4 a bottle!"

The final push to begin his brewery came when his friend Scott Henderson offered him the \$20,000 they estimated a 1.5-barrel brewery would cost. "I thought that if someone else felt as strongly as this, why couldn't I just do it?" says Bryant. "I didn't want someone else to take a chance on me when

there could be problems that I couldn't control. If you have someone else as a partner, then you start carrying a load on your shoulders, and I really wanted this thing to be fun."

Henderson and Bryant had their discussion on a Saturday in May 1995. On Monday Bryant applied for a nine-page industrial development review required by the city for all new

businesses and hammered out a \$400-a-month lease on a space in an industrial area of town.

Following Through

Bryant had worked with his friend and fellow brewer Norman Dixon on Dixon's 1.5-barrel system. "I started looking at different systems and I liked the simplicity of the 1.5-barrel system," says Bryant. The idea of contract brewing and expansion boosted the idea to a seven-barrel microbrewery, which meant a much higher investment than the original \$20,000 estimate. Depending on how much the owners do on their own, the cost of a seven-barrel facility can range from \$50,000 to \$100,000.

In the first week of planning the brewery, Bryant's contracting company was hired to build a series of buildings. "That doubled our sales. We had already taken care of our overhead, so we had the money to invest in equipment," says Bryant.

Everything began to move forward. First he received an assessment of the

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project's feasibility from the city as part of the industrial development review. "I went in there and got a really good response. Then we immediately got the site and the money. From that point it felt like every closed door I had to enter opened when I put my hand to the door handle. It opened and led to another door that opened and so forth."

Forms, Forms, More Forms

Dunedin Brewery officially hit start-up mode with the filing of that industrial development review form, followed by environmental impact studies. Next came zoning board decisions, a series of three public hearings for the City of Dunedin, and numerous other regulatory obstacles. All of this occurred over a period of three months.

Every city has different laws and health and safety codes regulating new businesses, particularly businesses that could have an effect on the local environment. Among other things, Bryant had to show that waste water from the brewery would meet the liquid-refuse removal standards of the area regarding pH, temperature, and other factors. The standards even required him to trace the route of the water leaving the brewery all the way to its end point. Fortunately for Bryant, Dunedin has a very successful waste-water treatment facility where 90 percent of the water is reclaimed.

Then the brewery site had to be inspected by the fire marshal. His first question was, "Where do you distill the beer?"

"Obviously the inspector wasn't a homebrewer, so I explained the brewing process to him and we passed the inspection," says Bryant. "This is a learning experience for everyone involved. In this case the fire inspector will be able to train his people on the process of microbrewing versus distillation and will know what to look for in the next brewery inspection."

The next major hurdle on the way to the first barrel of beer was initial approval from the federal agency that regulates alcoholic beverage sales, the Bureau of Alcohol, Tobacco and Firearms (BATF). This is really a double whammy, because there is also a state Alcoholic Beverage Control

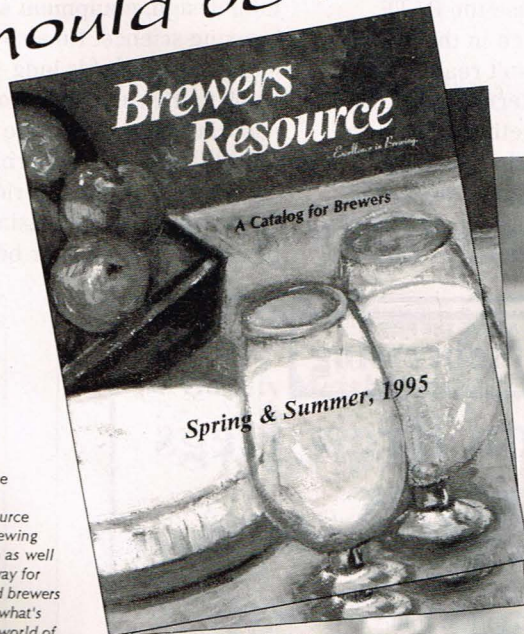
department to deal with licensing and brewery approval.

Then the brewery site had to be inspected by the fire marshal. His first question was, "Where do you distill the beer?"

Part of the BATF's approval process is a background check. BATF agents contact the owner's associates and ask them questions such as, "Do you know any reason why this person shouldn't brew beer?" The owner also has to put up a cash bond to guarantee that the taxes will be paid.

Just getting an appointment with the BATF can take two to three weeks, so you really want to have all your

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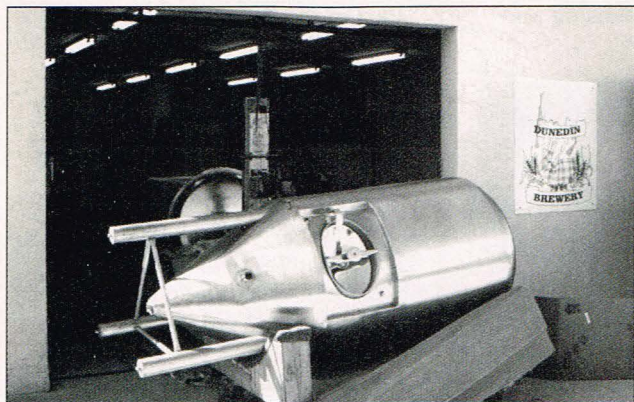
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Although he originally planned to purchase a 1.5-barrel brewing system, Bryant chose a seven-barrel system after deciding he could attract contract brewing business.

ducks in a row before the meeting, Bryant says. In his case the BATF meeting was scheduled in the morning, but his bond wasn't ready from the bank until the afternoon. He had to schedule another meeting two weeks later to appear with check in hand.

"On top of everything, the BATF doesn't give final approval until all the equipment is installed and the brewery

is ready to run. That's way too far into the process to turn back. A guy has to invest all this time and money without really knowing if it's going to go through," says Bryant.

Experience Required

Before opening the microbrewery Bryant attended a two-day seminar by the American Brewers Guild on "How to Open a Brewpub or

Microbrewery" that covered site selection, design, equipment selection, and brewing science. He also culled information through his long-time memberships to the American Homebrewers Association, the Institute for Brewing Studies, and the Masterbrewers Association of the Americas.

"I joined the professional organizations as a homebrewer because I want-

ed to get more information on brewing that was really accurate," he says. So he had a good idea of what to expect and some help to guide him through the morass of bureaucratic paperwork and regulatory demands. Bryant has also owned his own contracting company for the last 10 years, and the firm specializes in providing construction services for the restaurant industry.

"Being in the restaurant construction business has definitely given me an advantage cutting through the red tape," he says. "I know where some of the obstacles are and where to look for others."

Bryant is not a novice brewer, either. His brewing experience includes 20 years as a winemaker hobbyist and eight years as a homebrewer. He also worked for a year as a brewer's assistant at the Brooker Creek Grill in Palm Harbor, Fla., under the tutelage of Norman Dixon, brewmaster.

"Anyone who wants to get seriously involved in microbrewing should first work in a brewery as an apprentice," says Bryant. "It's like buying a car. You

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can't make an informed decision on buying a car if you've never had a driver's license and driven a few."

Manual Labor

Keeping things simple and relaxed was Bryant's goal. "We wanted to keep the construction of the brewery low key at first so there isn't the pressure of others being dependent on our time frame for opening and production," says Bryant, who did most of the work himself.

"I would be there every free moment I had, seven days and evenings a week. Friends helped me lift the vessels up, move equipment, and paint — things you really can't do alone."

Most of the those helping out had some type of construction background and, more important, they were all homebrewers. According to Bryant, people were happy to spend some free time doing everything from muscling a mash tun into position to wiping down construction dust from the walls. They all had the same goal: the successful production of that first barrel of beer.

At times the extra hands were a hindrance rather than a help because Bryant was feeling his way along. People wanted to help but needed him to tell them what to do, which sometimes frazzled the brewer. "It's like teaching yourself to fly with passengers on board," he says. But he would never consider turning them away. "The helping hands and their energy keeps you going. You'll go into little dips of depression where you'll say, 'I'm crazy!' and their energy helps you."

"For homebrewers who are thinking about opening a microbrewery, the first step is to decide to do it. Wanting to is not doing. You have to get to the point when you stop talking about it. Once you've decided, stay open minded. Putting things together won't be easy, but if you're going to do it no matter what, you find a way even if there are problems. You have to be flexible to work out the difficulties."

While there are a lot of headaches, some aspects of the planning are more enjoyable than others. One example was Bryant's decision on a logo. The city of Dunedin has a rich Scottish heritage. The beginning of the logo was an old picture of bagpipes that Bryant

came across. He then added illustrations of hops and grain to it and sent it along to an artist friend to clean up. The logo was emblazoned on t-shirts, coasters, and glasses for giveaways. "I want the brewery to be fun," says Bryant. "What can be more fun than giving things away?"

Next month: Buying and installing the brewing equipment.

Bryant's son, Michael Lyn, played the bagpipes at an unofficial groundbreaking.



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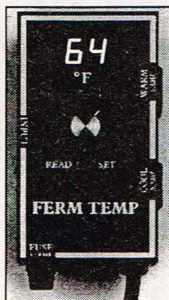
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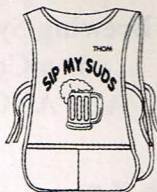
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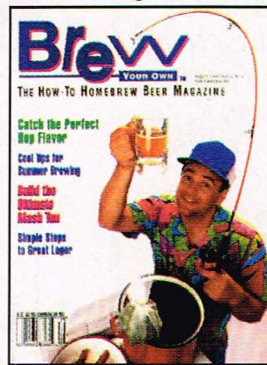
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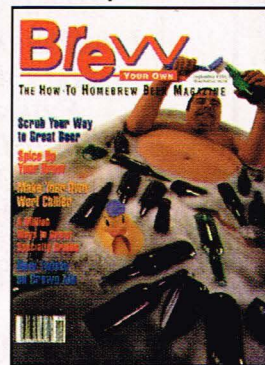
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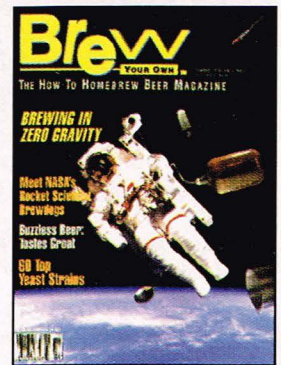
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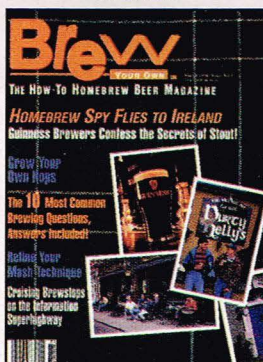
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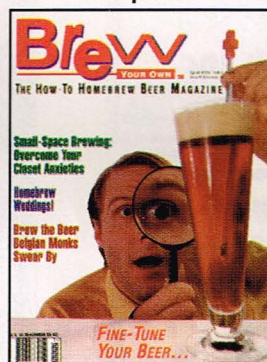
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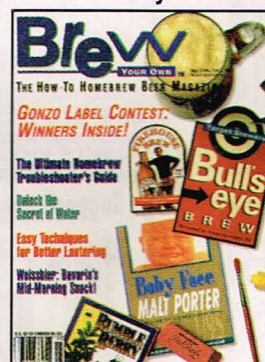
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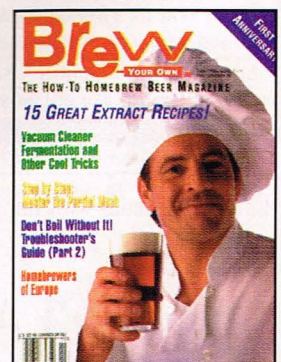
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Great Beer Goes Downeast

by Steve Johnson

Despite this column's name, "Microbreweries You've Never Heard Of," you might have heard of this one. That's because Bar Harbor Brewing, or "Bah Haaabah" as they say in Maine, is smack dab in the middle of one of the Northeast's biggest tourist attractions: Acadia National Park.

Every year about four million vacationers drive by the brewery, and about 90 percent of them do so during the June-through-November tourist season. The rest of the year Bar Harbor does everything but shut down and disappear off the map.

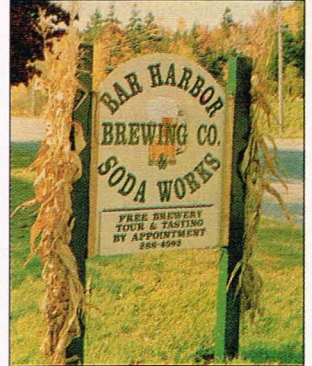
Owners Suzi and Tod Foster are two very hospitable, cock-eyed optimists making beer in their basement and making a living at it. They started with an initial investment of \$20,000. They're not getting rich, but they don't want to. Suzi and Tod sincerely believe small is beautiful. They will never be Ben and Jerry, who went from a garage operation to managing a multi-million-dollar corporation. "We're definitely not executive types, if you know

what I mean," says Suzi. Even though the orders for their beer were piling up and beer-of-the-month clubs were pounding on their door, Tod took off six weeks last winter to relax and take a break from brewing.

The Fosters receive "brew pilgrims" with open arms. "Brew pilgrims" are the tourists who visit their brewery. They'll see a station wagon filled with Mom, Dad, the kids, and the dog go whizzing by their sign. Suddenly, the brake lights come on and the car hits reverse. Then the whole family piles out of the car (Dad has a special twinkle in his eye).

The Fosters are well prepared for this daily occurrence. They have a hospitality log cabin in back where they sell beer and merchandise to go and a porch where visitors can rock in chairs, sample the brews, and talk about beer and brewing. In front of the porch is Alewife Pond, where the kids can play among the cattails and hunt for frogs. For those who really want to spend time at the brewery or in the park, the Fosters have an effi-

ciency apartment to rent by the week, right upstairs from the brewery. What a splendid place to use as your brew vacation headquarters!

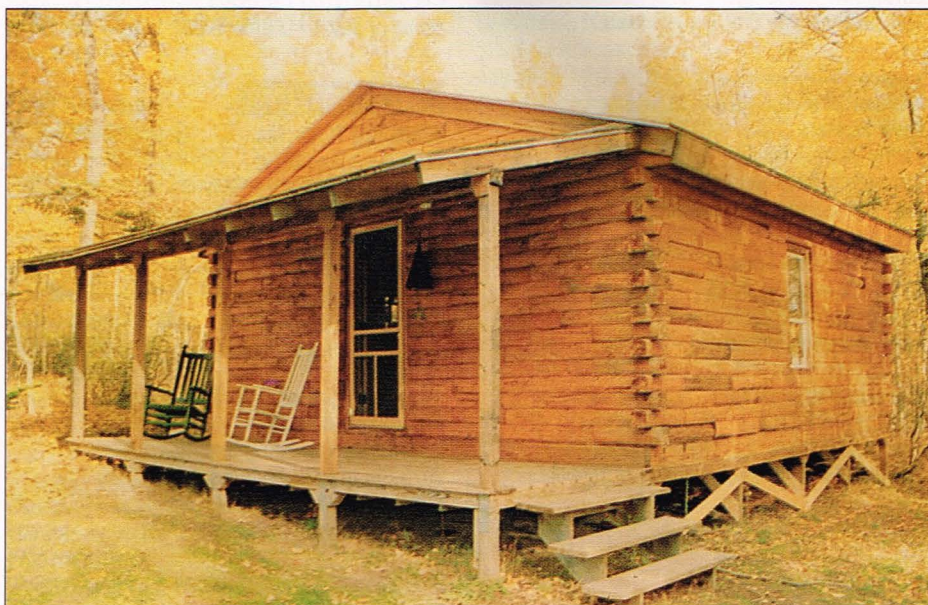


Four million vacationers/beer drinkers drive by Bar Harbor's sign each year.

Although Tod's brewery is tiny (he mashes only two barrels at a time), it is a national trendsetter. Since its opening in 1990 it has been the first cottage brewery to succeed and remain successful at the cottage level. Many others that started at less than seven barrels have enlarged their facilities and increased production.

Brewing comes naturally to Tod. He remembers helping his dad homebrew when he was only seven. Years later, two very good things happened to Tod. First, he took up homebrewing while at the University of California, Santa Barbara, and second, he met Suzi Murphy, a Bar Harbor native. After college he worked on a career as a fisheries biologist in a federally funded project to protect dolphins in Southern California. When funding for the project dwindled, Tod and Suzi moved to Bar Harbor where she worked as a waitress and he tried his hand as a scallop fisherman. After one winter spent diving in 32° F water, Tod turned in his wet suit for a paint brush and began painting houses.

In the mid-'80s Tod renewed his interest in homebrewing. Soon, he heard about the craft-brewing movement and visited D. L. Geary Microbrewery and Gritty McDuff's brewpub in Portland, Maine. The idea



Bar Harbor Brewery visitors can sit in rocking chairs and sip beers on the porch of the hospitality log cabin while the kids hunt for frogs in the pond.

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of opening his own brewery began to ferment in his mind. The advice they received was to forget about the whole thing if they couldn't come up with a minimum of \$350,000.

But a few years later Tod saw an ad in a homebrewing magazine for a two-barrel commercial brewing system. He called the number. Pierre Rajotte, of Montreal, answered. Sure, he could get them started with their

own malt-extract brewery for under \$20,000. "Farewell house painting and waitressing — brewing, here we come!"

Before purchasing the system, they decided to test their market on an even smaller scale. Tod bought a 15-gallon brewpot and constructed a 160-square-foot brewery in their cellar. Tod had been fermenting in five-gallon plastic buckets, so he reasoned he

could just buy 25 more buckets and ferment upstairs in the couple's bedroom. Suzi still remembers the mornings she would wake up to the pleasant gurgling and bubbling of the fermenting beer.

Tod and Suzi decided to name their brewery after the town, because the name Foster was already associated with Foster's Ale from Australia. Their first beer was "Thunder Hole Ale," named after an Acadia National Park landmark. Later they suffered what they call "the Bass Ale fiasco." They planned to name their new ale Bass Harbor Light, after another local landmark. While the first batch was still fermenting, they received a phone call from a New York law firm and the gist was if they used the word "Bass" they would find themselves in court. The beer was released as Harbor Light.

Tod and Suzi kegged Thunder Hole Ale in five-gallon Cornelius kegs and began selling it in a bar in downtown Bar Harbor. It was a tremendous hit, and within a few days it was completely gone. For the rest of the summer it was all Tod could do to keep his one account supplied.

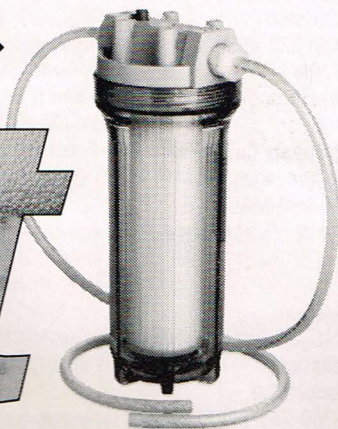
In February 1991 they purchased the two-barrel brew kettle and six two-barrel fermenters and expanded the brewery in their cellar. Tod skipped the mashing stage, making the beer with Munton & Fison malt extract, with specialty grains added.

As distribution spread, Tod and Suzi were able to quit their other jobs. They moved out of Bar Harbor proper to their current location near the village of Otter Creek, surrounded by Acadia National Park. In April 1993 they switched from a kegging operation to a bottling operation only. Both the move and the packaging change slowed things down, but they recovered and now sell 30 percent of their ales directly from the brewery to the customer.

The year after they moved, they purchased a four-barrel kettle, converting the original two-barrel kettle into a mash tun. Tod alternates between malt extract and all-grain brewing. One day he makes a four-barrel batch that is mashed and boiled. The next day he skips the mashing stage and makes a batch using pre-ground malt extract. The

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batches are then blended in stainless steel closed fermenters. Pelletized hops are used exclusively. The ales are unfiltered and bottle conditioned in 22-ounce bottles. The bottles are primed with a small amount of corn sugar and then hand bottled.

Currently they make Thunder Hole Ale (final gravity 1.048), an American brown ale, and Cadillac Mountain Stout (1.070), an export stout. Last year Tod introduced Harbor Lighthouse, a mild ale (1.032). They also use this as a base for two other products: a ginger beer and a peach beer.

The Fosters are familiar with both extract and all-grain brewing and don't favor one method. "I think malt extract got a bad rap because people were using it as a shortcut," said Suzi. Tod added, "We've found that for draft beer you really need to go all-grain. You get better, grainy flavors from the mash. With the bottle-conditioned beer, you can get away with malt extract because there is so much yeast character in the beer — it just keeps evolving in the bottle."

The couple is happy about being professional brewers. "We're really glad that we started when we did,"

said Suzi. "I think being the first was really helpful. It's harder to start a brewery these days. The competition is really amazing. When we first started, we would approach a store or restaurant — actually more than likely, they would approach us. They would say, 'Oh, yeah. Definitely. We will take your product.' Now they are much more selective, and will pick and choose. A lot of the owners will roll their eyes when you come in the door because they've had 30 different microbrews introduced to them during the last week."

If you are ever in Bar Harbor, stop by the brewery for a visit at Route 3, Otter Creek Road, a few miles south of the downtown. Tours and tastings are available in July and August, Monday through Friday from 3:30 to 5:30 p.m., and in June, September, and October



Tod and Suzi Foster had no qualms about leaving their former careers as a housepainter and a waitress for the joys of self-employment and brewing.

on Tuesday, Thursday, and Friday. On weekends and during the off-season, call (207) 288-4592 to make an appointment. Or drop by — if they're not busy, they'll be happy to show you the brewery. ■

Steve Johnson lives in Clemson, S.C., and is author of three brewery guidebooks: On Tap: a Field Guide to North American Brewpubs and Craft Breweries, On Tap New England, and On Tap Northern California.

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My Husband Vinnie

by Tracy Leinberger-Leonardi

I confess! It was my mission to pinch pennies that drove me to present my husband, Vinnie, with a brightly wrapped beer kit on his birthday. The dog logo on the side of the box was friendly and inviting. His teeth weren't bared and he wasn't drooling, so how could I have guessed what was to come? I figured if Vinnie made his own brew, he wouldn't spend extra money on the fancy brands...and anyway the salesman promised "hours of fun!"

Vinnie's new brewing hobby began innocently enough. A few hours on the weekends with the boys (carboys, that is) and a quick scan of *Brew Your Own* before bed.

Then, his hobby began to include beer outings. You know the kind — trips to suppliers, visits to homebrew festivals, consultations with farmers about growing hops. He was spending more and more time with the 'boys and less time with me.

I should have seen I was losing him; the signs were staring me in the face. The episode in the pub supply store should have been the clincher, but I wrote it off as a brief moment of over-stimulation. Lots of people are forced to purchase Pilsner glasses after their brew-spouse has drooled all over them. At least, that's what I told myself. And when I hinted at the possibility of expanding our little family, what could I say when he proudly bestowed on me a deluxe party pig?

Of course I still considered myself lucky. Things could have been worse. He could have been spending hours parked in front of the television mesmerized by every broadcast sports event. Instead, he only watched the Super Bowl halftime show to check out the new beer commercials.

Deep inside I knew I was kidding myself. Sanitized beer bottles battled for space in my drain board. Fallen homemade labels, once speckled with paste, were securely matted to the

kitchen table. Our dog and two cats reeked of beer from the scattered showers that broke out during the bottling process. The house was cluttered with belching, bubbling, gurgling vats of malt liquor, and Vinnie, bursting with pride over his creations, had begun to speak in tongues best described as homebrew babble.

Desperate, I tried to salvage the only time we had left together — dinner time. As he rambled on about



The author was nine months pregnant when she wrote this article. Vinnie, she says, pondered the baby's first words... ale? wort? It was a girl, Savannah, born the night the story was finished.

yeast, fermentation, and wort, I smiled and nodded. At one point a sign of life twinkled in his eye. I thought the old Vinnie was back. I waited for him to tell me about his latest engineering project at work, but instead he jumped up from the table, ran to his primary brew station, and returned with a starting specific gravity chart. "So you can follow along," he told me, but I never could. Two or three times a week he still

excused himself from the dinner table to sparge. My efforts were failing.

The final blow came in the early morning hours of one fateful fall day. Still in a sleep state, Vinnie left our bed, lined up perfume and cologne bottles, and went about the task of racking imaginary beer. At first I thought he was mumbling snuggles, but then he came through loud and clear, "Fuggles."

"Who the heck is Fuggles," I asked myself. "And why is she racking beer with him?" I couldn't hide the truth any longer. I was a homebrew widow.

The next afternoon I did what any red-blooded American wife would have done. I took the carboy by the neck! Over the next few weeks I read all of the books and magazines on homebrewing my hubby had stockpiled. I listened and learned his homebrew babble. I even helped brew a batch of cherry wheat. I was making progress!

As a freelance writer, my new brew attitude opened up another world of article possibilities. When our local newspaper needed someone to cover a beer tasting, I was called in for the job. Vinnie tagged along to partake of, as he puts it, the malt beverage of the gods.

While jotting down notes and gnawing on those delicious sourdough pretzels that often accompany these events, I overheard a couple discussing the mashing process. The procedure the man was explaining to his female companion was completely inaccurate. Without hesitation, the proper definition of mashing spilled from my lips, along with several pretzel crumbs. I'm sure the sight wasn't pretty, but for me it was victory. Without a doubt I was on the road to recovery. From across the basket of snacks, my glowing hubby raised his glass with pride. I had won my husband back from Fuggles! ■

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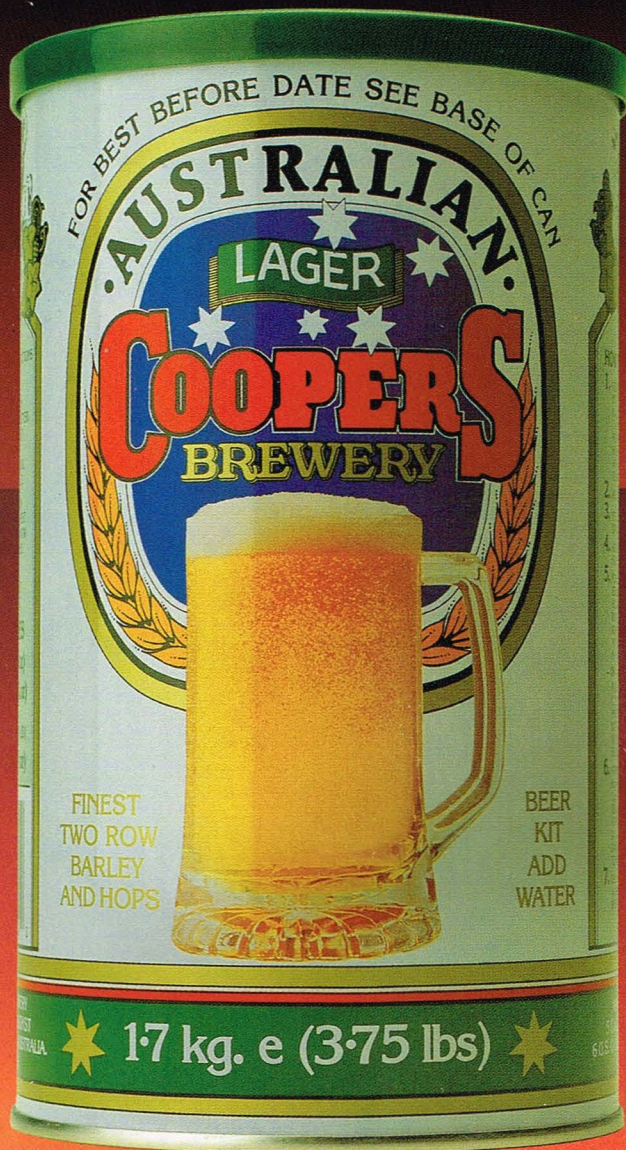
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