

Brew

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Extract Recipe
Issue

July 1998, Vol.4, No.7
Niche Publications Inc.

THE HOW-TO HOMEBREW BEER MAGAZINE

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Cover photo: Kent Lacin

Something in the Air

When I was in high school, I knew a kid who was afraid of germs. Not so much that he wouldn't drink soda from a can. But enough that if he had just opened a soda and you asked him for a sip, he'd give you the whole can. Naturally, being teenage delinquents, we liked to take advantage of that situation whenever it arose.

I bring this up because I find that I've been washing my hands a lot lately, and frankly, I'm a little worried.

My problem is that I'm on a bit of a losing streak. Recently, I brewed two lousy batches in a row. The first one wasn't absolutely unpalatable; it just had a pronounced off-flavor. The fact is I took some shortcuts that I shouldn't have when I brewed it, and I'm paying the price. The second batch is worse, and I'm not entirely sure what went wrong.

Now I have the Two-Brew Flu. I've talked to other brewers who have had the same disease, and the symptoms are all similar.

First you find yourself cleaning the crumbs out of the toaster every day. Then you run vinegar solution through the coffemaker to get rid of that ugly brown goop. Funny that you never noticed it before.

When you cook, it only seems natural to wipe down the counters with iodophor solution before you start.

One day you don't have anything else to do, so you haul the vacuum cleaner into the kitchen and vacuum the ceiling, just in case there are any stray cobwebs up there.

And the constant hand washing.

My wife, of course, hasn't said a word. She's acting like this is completely normal behavior on my part. In fact she's been dropping hints about all the germs hanging

out in the living room carpet, not to mention the wealth of microbes in that messy garage.

I suspect that if she harbored any concerns about the condition of the kitchen after brewing, she's not worrying about them at the moment. She's probably more concerned about whether I'll try to dunk the leftovers in a mild bleach solution before putting them in the refrigerator. Or electocute myself trying to sterilize the stove burners.

I'm also considering whether to burn my "lucky" brewing shirt.

The question now is what to brew next. Do I try the same recipes over again, just to prove I can do it? No. Those have been relegated to the Hall of Losers. The recipes themselves may be fabulous, but it makes no difference. To me they're Losers.

Do I brew something that I've brewed before that turned out well? That might be sensible, but what's the fun in sensible?

No, I need a winner. That's why I asked homebrew retailers across the country to send me their best recipes for clones of great beers. The month's cover feature includes 15 of the best. (Well, how did you think we choose what stories to run each month?) The story begins on page 32. And be sure to follow the recipe directions. It's one way to inoculate yourself against the Two-Brew Flu.



Brew
YOUR OWN
THE HOW-TO HOMEBREW BEER MAGAZINE

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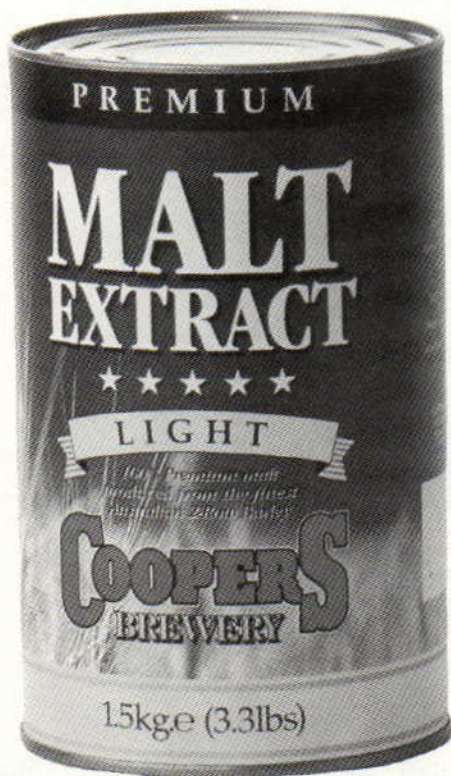
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**The
Return of
a Classic,
With
"A Wry
Smile"
Rye Beer
Recipe**



"A Wry Smile"

recipe formulated by Mark Henry

- 1 lb 6-row pale malt
- 2 lb rye malt

Heat 3 1/2 quarts of water to 160-175°F. Mix in grains and stabilize temp at 148-155°F. Hold temp for 45 minutes to 1 hour. Heat 6 quarts of water to 170-175°F. Dump grain into colander and slowly rinse grains with 6 quarts of water into your brew pot. This liquid will constitute much of your brewing liquor. Top up pot to your normal brewing level. Proceed as normal.

- 3.3 lb Coopers Light malt extract
- 1 lb light dry malt extract
- 1 oz Liberty leaf hops (45 min)
- 1 oz Liberty leaf hops (5 min)
- Coopers Ale yeast
- 1 1/4 cup dry malt extract (priming)

OG = ~ 1.039
TG = ~ 1.012

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CIRCLE 17 ON READER SERVICE CARD

Pete Wolla Tioga, N.D.

My brewpot is an old, copper double boiler that I purchased at an estate sale. After patching some leaks with silver solder, I found it was perfect for full wort boils because it holds 12 gallons.

This pot, like similar ones with copper coils coming from the lid, was originally used to heat large amounts of water before water heaters and indoor plumbing became common. Now that it is my brewpot, it may have been returned to a prior use, as many of these boilers were used for brewing during Prohibition.



Pete Wolla's 12-gallon brewpot could be a relic from Prohibition.

A FAMILY TRADITION!

Does your family brew together? Tell us about it and send us a picture. There's a cool BYO T-shirt in it for you. Send your story to Pot Shots, c/o Brew Your Own, 216 F Street, Suite 160, Davis, CA 95616. Or send us e-mail at edit@byo.com. Be sure to include your mailing address!

Keith Ludwick Riverdale, N.Y.

About a year and a half ago my wife and I moved from California to New York City because of a job transfer. New York is a wonderful city; there is a lot to do and plenty of good beer. We must have tried dozens of beers in several microbreweries in and around New York City. The Poconos, Catskill region, and even Long Island all have several brewpubs to explore. Life, in general, is good.

Lately, though, I have been brewing my own beer thanks to a kit my wife got me for Christmas. Brewing in an apartment in New York City is not exactly the ideal set-up, but perseverance does overcome. (I read with gusto "Overcome Your Closet Anxieties," the April

'96 BYO article on small-space brewing!)

Because of kitchen size and storage constraints for finished homebrew, I only get to brew once a month or so. Luckily, my wife has

allowed me the bottom portion of one closet as equipment storage and the bottom of another for finished product. As it is I end up giving much of my homebrew away to friends, not necessarily out of generosity, mind you; I just don't have the room to keep it.

Kegging equipment, 15-gallon mash tuns, or all-grain? Forget it. Extract only in an eight-gallon pot. I feel lucky if I

find the room to do a secondary fermentation.

I read BYO with a chuckle sometimes. Articles on building huge carboy cleaners, beer engines, or even making your own tap handles remind me of a time when I, too, used to have a garage. Right now my tool chest does double duty as a nightstand in my bedroom. A 20,000 BTU burner for wort? I don't think so. My gas stove takes more than an hour to bring 2.5 gallons to a boil.

Despite all that is stacked against me, I really enjoy brewing and most of it turns out pretty darn good. I enjoy the privilege of selecting a recipe instead of an actual beer, watching and smelling the wort boil, and tasting what I believe to be a good beer. The satisfaction of partaking in your creation is almost spiritual. Anyone who brews already knows that.

My wife and I are looking for a larger apartment now. One bedroom just won't cut it anymore. We would be happy with two bedrooms and a slightly larger kitchen. Secretly I hope for a pantry/brew closet. Maybe then I'll have the room to expand my brewing to lagers and kegs. One can always hope.



Keith Ludwick dreams of one day expanding his closet brewery into a pantry.

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- Australian Sunrise Amber Ale



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Dan Pleshek
President, Brewmeisters
Sherwood, Wis.

What do you do on a soggy October Sunday afternoon in Sherwood, Wis.? The Brewmeisters Beer Club got together and made 10 five-gallon batches of beer, each with its own recipe and brewer. This was all done in member Bill Haen's garage. We had to leave the garage door open despite the cold, damp weather — 10 burners in a garage at one time could make people a bit light-headed. (We get enough of that with homebrew. Our motto is "It takes beer to make beer.")

After cooling the wort, we mixed all of the 10 batches of beer into a 100-gallon container. We pitched two quarts of yeast (donated by Barley Bob, brewmaster at Titledown Brewery, Green Bay, Wis.). After a vigorous agitation we divided the contents among 10 carboys. Everyone came with a different



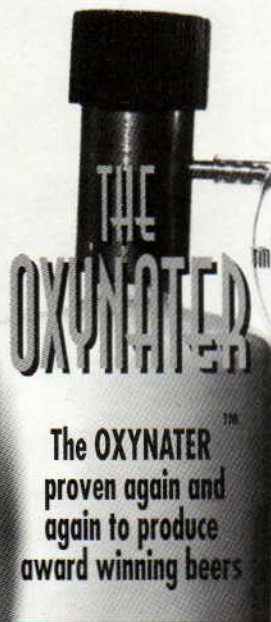
Club motto: "It takes beer to make beer." This must have taken a lot of beer!

recipe but left with the same.

At following meetings we found that the beers tasted different from one another, but we came to the conclusion that the fermentation

temperature was different in each case, causing the flavor variations. What do you call such a brew? Wapatui Brew! A good time was had by all.

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Hey'fa-vy'tzen

Dear Brew Your Own,

After reading "Hefe-Weizen: Mostly Cloudy" (May '98, BYO) I was still left with a few questions in my head. What is the proper pronunciation of all of the different styles? I feel that this issue needs addressing to end the large controversy that plagues today's beer drinking community.

Brian Laurain
Ferndale, Mich.

It's important to remember that although the beer style of hefe-weizen is Germanic, we're 'Merkins and we can pronounce it any dang way we want!

Seriously, the trouble with trying to determine the exact pronunciation of hefe-weizen is that even the Germans pronounce it differently according to region. Much as we have our regional pronunciation (go pahk the cah in the gahrahj...), so do the Germans, Austrians, and Swiss. In some places the High German pronunciation of "hey-fa-vytzen" is used. In others it is referred to as Wiessen, or "Veezn," among other terms. Probably the most common American pronunciation is "heffa vytsen," a version of the High German.

Dear BYO,

In the step-by-step procedure for the Forest Falls Hefe-Weizen ("Hefe-Weizen: Mostly Cloudy," May '98 BYO), is the water amount (5.5 gallons) correct? I think the amount should be 1.5 gallons. Also, what does kraeusen mean?

Steve McCann
Greenville, Del.

To end up with five gallons of cold wort, you need at least 5.5 gallons of pre-boil wort, depending on boil-off and trub formation (unless you are adding additional water to the fermenter, but a full wort boil is preferable).

Kraeusen is simply the foam that forms on the wort during primary fermentation. Kraeusening is the act



of creating secondary fermentation or carbonation by adding a small amount of young wort to a fully fermented wort. For more information on kraeusening, see "The Natural Way to Carbonate" (Nov. '97, BYO).

A Chilly Reception

Dear BYO,

Just wanted to point out a bit of what I consider misinformation in the article "Lagering Without a Refrigerator" (May '98, BYO). The article states, "Ale yeast ferments best at 50° F, lager yeast at 40° F." I believe that both of these temperature recommendations are at least 10° F colder than they should be for a generalized statement regarding yeast fermentation temperatures. In the ale category I would only primary ferment perhaps a Scottish ale around 50° F. As for a lager, I don't think I'd attempt a 40° F primary — the lag time would be endless.

Alan Pearlstein
Walled Lake, Mich.

The temperatures referred to in the article mainly address secondary conditioning, not fermentation. However, pinpointing exact temperatures for yeast isn't as easy as it once was. A famous megabrewer ferments its "lagers" at 65° F. Fine "lagers" can be made with an ale yeast fermented at 50° F. The optimum temperature for fermentation is very strain specific. A good but very general rule of thumb is 65° to 70° F for ale yeast, 50° to 60° F for lagers.

Wine Whine?

Dear BYO,

Upon receiving the April issue of BYO I was astonished, amazed, and eventually pissed off at how many pages in your "beer brewing" publication were devoted to the making of wine. I subscribed to

your magazine believing that it was a magazine devoted to the art of making beer, not wine. I mean doesn't it say so *right on the cover of the magazine?* If I were interested in making wine, I would have subscribed to a magazine devoted to winemaking.

I hope that this is not going to be a continuing trend for your magazine. As a subscriber I would feel that I had been ripped off and deceived!

*Steven B. Guyot
San Diego, Calif.*

Forcing the Issue

Dear BYO,

I've got what might be one of those dumb questions, but here goes. I'm a recent convert to the Cornelius kegging system and since I hate to do things without a clue I bought a little how-to pamphlet on Cornelius kegging.

My question revolves around the topic of forced carbonation. The pamphlet states that to keg your beer, apply 28 to 30 psi of pressure, and then rock. A recent issue of BYO alluded to cooling the beer under pressure, and then shaking it.

Which is the best method?

*David Bruce
Mansfield, Ohio*

Carbonating in a soda keg can be problematic because the only surface area for dissolving the carbon dioxide is the relatively small headspace above the beer.

Rocking the keg with constant head pressure in the 28 to 30 psi range will help the carbon dioxide dissolve faster by providing more contact space between gas and beer. But make sure there isn't any air in the keg or you will be helping that dissolve in your beer as well. Also, although Cornelius kegs are rated to about 60 psi, never fill them above 50 psi.

Once your beer is carbonated, turn off your carbon dioxide source, release the head pressure on your keg, and then set your serving pressure. If you leave the keg at

30 psi, it will overcarbonate and create foaming problems.

Cover Girl

Dear BYO,

I have been a subscriber since the magazine first started. I read it cover to cover. The cover of the May '98 issue reminded me of a former favorite magazine that I used to "read" cover to cover. As such, I caught myself scouring the cover to find the hidden rabbit head. Or should I have been looking for the hidden hop head? I did not find any hidden object. But it was fun to be on the search once again. Are you considering hiding objects in your covers?

*Duane Bavlnka
Waukesha, Wis.*

Dear BYO,

My husband and I both enjoy reading your magazine. We brew together and enjoy discussing articles and trying new recipes. Thank you for the tasteful, professional coverage of topics pertinent to the homebrewer.

I was a little confused when I saw the cover of the May issue.



*Eve, meet your Adam
(September '95 BYO).*

sex sells, I'd like to see a naked man on the cover — after all I am the one who paid for the subscription.

Looking forward to seeing future covers.

*Jill Clark
Hailey, Idaho*

Dear BYO,

What's not to like about a pretty woman and a hefe-weizen? The cover of the May issue is one of your best yet, much better than the fat man in the bathtub. Most people who take the trouble to write are

Calendar Girls

Dear BYO,

I have just had the chance to view the cover of the May issue of BYO. Your editor, Mr. Craig Bystrynski, in his last paragraph of "Editor's Note" states, "If you don't like the cover, it's Carl's fault." Carl, you are a publishing wizard! Now it is time to move on and create the first ever BYO Calendar! Just think of it...if you use the "cover girls" from your May '98, November '97, and February '96 issues, you have one-quarter of the calendar finished. Think about it. It would go nicely with my BYO mouse pad!

*Rich Tews
Villa Park, Ill.*



usually reacting negatively (remember the Bill Clinton cover?), so I expect you'll get an avalanche of mail on this one. I just thought I would give at least one vote of approval.

*Rick Sullivan
Henryville, Ind.*

Amylase Advice

Dear BYO,

In the May issue of BYO, there were a few items that raised my interest plus a bit of apprehension.

In the mail section one subscriber suggested adding amylase at the beginning of the fermentation to get a lower final specific gravity. Be very careful if you use this technique. Because amylase breaks down complex carbohydrates into simple sugars, I have found that beers bottled for more than six weeks will become overcarbonated and eventually will develop dangerous carbonation levels. Instead I recommend that my customers "mash" the malt extract at 150° to 152° F with the amylase for 30 to 45 minutes to get a less dextrinous wort, thereby getting a lower final gravity. And since the amylase is denatured by the boil, it will not result in overcarbonation.

Also, in "Hefe-Weizen: Partly Cloudy" the author discusses putting boiling hot wort into a bottle, capping, cooling, then opening and pitching the yeast into the solution. I have had poor experiences culturing up this way since the solution was in a vacuum (once the bottle cools) and there is no available oxygen, which the yeast desperately needs for growth. I personally recommend after cooling the bottle to drape an alcohol-soaked (150 proof or higher) paper towel over the bottle neck. Then carefully lift the cap slightly with a bottle opener and let the bottle suck air into it through the towel. Shake the bottle vigorously, then repeat the towel technique. Do this three to six times until the bottle will no longer suck in air. Now you have a wort that is properly aerated and will support a vigorous yeast growth. Or

better yet use an O₂ injection system available through homebrew stores.

*Kurt Meyer
U-Brew-It & The King George and
Riverwalk Brewery
Augusta, Ga.*

*Care is indeed needed when
using amylase. Adding it to
the mash gives you increased*

*fermentability, but not as much as
adding it to secondary conditioning.
Be very careful that you have hit
the end of fermentation before you
bottle to avoid overcarbonation.*

A Peck of Porter Peppers

Dear BYO,

In "Design a Brewer's Garden" (May '98 BYO) you mention using



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CIRCLE 19 ON READER SERVICE CARD

pumpkin, peppers, and spices in beer. Could you tell me where to find recipes?

Sue Everson
York, Maine

Funny you should ask. This month's Recipe Exchange features several garden herbs. There are also several past issues of Brew Your Own that have covered the use of spices

and other garden fare. Check out "Spice Up Your Brew," September '95; "Perfect Porter," January '97; and "In Search of the Great Pumpkin," November '95. Back issues can be ordered by calling (530) 758-4596.

Mead Maker

Dear BYO,

I've been told that one of your

readers, Al Dubinsky, brews mead for passover (April '98 BYO). I was chatting with a social worker, who does a lot of charity work for a Jewish old age home here in South Africa. He told me that some time ago a local bloke used to brew and sell mead for Passover, and pass the profits on to the organization in the form of a donation. Since that mead guy has passed on, the social worker thought that it would be a good fund-raising and occupational therapy opportunity to get the residents of the home to brew and sell kosher mead annually. Unfortunately though, the recipe has been lost.

So your article seemed to hit the nail, except for one small snag — still no recipe.

Joe Malkin
South Africa

For a fruit mead check out the Elderberry Melomel in this month's Recipe Exchange (page 12). If you're looking to brew a basic mead, use the following:

- 1/2 tsp. acid blend
- 1/2 tsp. gypsum
- 5 lbs. honey (clover or wildflower)
- Yeast (Red Star active dry yeast for wine is certified kosher including Passover)

Air Relief Valve

Dear BYO,

Where can I find a replacement air relief valve for my keg? The markings on the side of the soda keg said "Multiplex Company, St. Louis, Mo." and the valve is 1 1/2 inches high in the toggle up position. It has a gray plastic, hex top and a gray toggle with a raised "S" (like Suzuki) on both sides. The rubber stopper at the bottom is missing. I checked with my local homebrew supply store where I obtained the keg but we had no luck with any of his catalogs.

C. Adams
Highland, NY

We checked with several sources who were unable to provide an answer. Readers, any suggestions?

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CIRCLE 40 ON READER SERVICE CARD

A Summer Tonic

by Scott R. Russell

Every once in a while the same old beer just doesn't cut it. Malt, yeast, hops, malt, yeast, hops, blah, blah, blah. No, I don't really mean that, of course, but I do sometimes wish there were an infinite variety of traditions and ingredients. So sometimes I brew new things just because they're new, regardless of what I think they'll be like. Or whether I will like them. Just to prove a point. Most of the time, frankly, I'm disappointed by the results. I mean, it usually is okay, usually drinkable, often even good, but rarely is it special. Maybe I'm growing jaded.

Take the traditional IPA. English or American, either way, after a while an IPA is just an IPA. Now don't get me wrong; IPAs are wonderful beers. The blend of rich, malty beer and hoppy, bitter aroma is good for the soul. But try to sample more than four or five different IPAs over the course of a few days and they really do tend to run together. Eventually they just need something different.

This recipe for a YPA (Y for yarrow, one of the principal flavors) came to me one summer afternoon

after mowing the lawn. Yarrow, thyme, and savory have spilled out of my wife's herb garden to become part of the lawn in one place, and they inevitably get mowed along with the dandelions and weeds that pass for grass. The aroma is amazing. One day after mowing, as I sat there sipping a very well-made local, commercially brewed pale ale, the aroma of hops, malt, and herbs mingled and I couldn't get to my notepad fast enough to write down my latest brainstorm. And here it is.



YPA (5 gallons, partial mash)

Ingredients:

- 2 lbs. pale malt
- 0.5 lb. medium crystal malt, 50° to 60° Lovibond
- 0.5 lb. malted wheat
- 6 lbs. unhopped light dry malt extract
- 1 oz. Fuggle hops (4% alpha acid) for 60 min.
- 1 oz. Northern Brewer hops (7% alpha acid) for 45 min.
- 0.5 oz. dried fresh yarrow flowers
- 1/8 oz. dried fresh savory
- 1/8 oz. dried fresh thyme
- 0.25 gal. English ale yeast culture (Wyeast 1098, for example)
- 1/3 cup corn sugar for priming
- 1/3 cup light brown sugar for priming

Step by Step:

Heat 1.25 gal. of water to 165° F, crush your grains, and add them to this water. Hold the mash at 152° F for 75 min. Run off the liquid and sparge with 2 gal. of water at 169° F.

To the run-off in the kettle

add the dry malt extract, then heat to boiling. Total boil is 60 min. Add the Fuggle hops and boil 15 min. Add the Northern Brewer hops and boil 45 min. more. Turn off the heat and add the yarrow, savory, and thyme (in a bouquet garni or fine mesh bag). Steep 30 min. as the wort begins to cool. Remove the herbs and chill the wort in an ice-water bath. Add to the fermenter after 60 min., along with enough cold, pre-boiled water to make 5.25 gal. At 68° F pitch the yeast culture.

Ferment near 65° F for 10 days, then rack to secondary and age an additional 10 to 15 days. Prime with a mixture of corn sugar and brown sugar, bottle, and condition cool (50° F) for three weeks.

Alternatives:

All-grain brewers: Increase the grain bill to 10 lbs. pale malt, 0.75 lb. crystal, and 0.75 lb. wheat. Use 3.75 gal. of mash water and sparge with 5 gal. of sparge water.

Temperature and time are the same, as are the hop schedule and additions, but plan your boil to reduce the volume to 5.25 gal. Chill as quickly as you can after steeping the herbs.

All-extract version: Steep the crystal and wheat as above in 2 gal. of water and gradually heat to 170° F, then remove them. Increase dry malt extract to 7 lbs. and add 1 cup light brown sugar to the boil as well.

Herbs: The hops used in this recipe are for flavor and bitterness only. Aroma hops, a necessary part of an IPA, are replaced by a selection of very aromatic herbs from the garden, used essentially as dry hops. The combination given here is what I prefer, but of course you may use anything you like. This does have a bit of a medicinal aroma at first, but it mellows after a few weeks in the bottle. If you really want a fresh aroma and zing, use these herbs (or some additional) in the fermenter or secondary.

Reader Recipes

Elderberry Melomel (Fruit Mead) (3.5 gallons)

A very delicious and "reportedly healthful" adult beverage.

*Mike Mulhern
Camarillo, Calif.*

Ingredients:

- 11 lbs. desert wildflower honey (uncooked)
- 1 tsp. acid blend
- 1 tsp. gypsum powder
- 4 tsp. yeast nutrient
- 8 oz. rehydrated elderberries, brought to a boil to sanitize
- Red Star active dry yeast for red wine

Step by Step:

Add honey, acid blend, gypsum, and yeast nutrient to 3.5 gal. water. Boil 15 min., skimming top froth. Chill to 75° F and pitch yeast.

Ferment at 65° to 70° F for 10 to 14 days. Rack to secondary, add elderberries, and ferment one month. Bottle and store for at least 6 to 12 months.

Mexican Red (5 gallons, extract with specialty grains)

A spicy brew that makes you feel like you've gone South of the Border.

*Don Bower
DLB Vineyards
Columbus, Ohio*

Ingredients:

- 8 lbs. Edme Microbrewery Series light malt extract
- 1 lb. crystal malt
- 1 tsp. allspice
- 1 tsp. chili powder
- 1 tsp. cinnamon
- 1/2 tsp. ginger
- 2 oz. Hallertauer hops (around 4% alpha acid): 1 oz. for 60 min., 0.5 oz. for 30 min., 0.5 oz. for 10 min
- Edme dry ale yeast
- 2/3 cup corn sugar for priming

Step by Step:

Place crystal malt in a mesh bag in 2 qt. of water. Steep for 20 min. at

155° F. Discard grains and add 2 gal. water, malt, and spices. Bring to a boil and add 1 oz. of hops. Total boil is 60 min. Boil 30 min. and add 0.5 oz. hops. Boil 20 min. more and add remaining 0.5 oz. hops. Boil 10 min. more. Remove hops, cool, transfer to fermenter, and top up to 5 gal. Pitch yeast at 75° F.

Ferment between 65° and 75° F for five days. Transfer to carboy with air lock. Ferment five to 10 days. Rack to secondary and condition for two to three weeks. Add priming sugar and bottle. Age two weeks to carbonate.

OG = 1.050 to 1.052
FG = 1.008 to 1.014

24 Carat (California) Common (5 gallons, extract and specialty grains)

I brewed this beer in the summer and experienced ambient temperature rises to more than 70° F and still got rave reviews.

*Rob Greenberg
Parsippany, N.J.*

Ingredients:

- 12 oz. English crystal malt, 60° Lovibond
- 4 oz. American toasted malt
- 4 oz. cara-pils malt
- 6.6 lbs. Mid-America Stone Light liquid malt extract
- 0.85 oz. Chinook hops (11.8% alpha acid) for 60 min.
- 2 oz. Cascade hops (3.5% alpha acid): 1 oz. for 30 min., 0.5 oz. for 10 min., 0.5 oz. at end of boil
- Wyeast 2112 (California lager)
- 3/4 cup corn sugar for priming

Step by Step:

Add grains in grain bag to 2.5 gal. cold water. Bring to 180° F and remove bag. Bring water to a boil and add malt extract and Chinook hops. Total boil is 60 min. After 30 min. add 1 oz. Cascade. Boil 20 min. more and add 0.5 oz. Cascade. Boil 10 min. more and add last 0.5 oz. of Cascade. Remove from heat. Cool to 90° F. Top up with room temperature water to make 5 gal. Cool and pitch yeast at 70° F.

Ferment for seven days.

Transfer to secondary and age for 28 more days. (Ferment and age at 60° to 65° F, but don't worry about temperature spikes; this brew is very forgiving.) Bottle and condition for three to four weeks.

Lucy Girl Pale Ale (5-gallons, all-grain)

This American pale ale is the one homebrew we always keep on hand. The hops jump out of the glass and stay with you right to the end. The finish is clean, crisp, and refreshing.

*John and Keli Hinson.
Athens, Ga.*

Ingredients:

- 9 lbs. American two-row pale malt
- 8 oz. crystal malt, 20° Lovibond
- 2 oz. crystal malt, 120° Lovibond
- 8 oz. cara-pils malt
- 4 oz. Victory malt
- 2 oz. wheat malt
- 1.5 oz. Perle hop pellets (8.2% alpha acid): 1 oz. for 60 min., 0.5 oz. for 30 min.
- 3 oz. Cascade hop pellets (5.5% alpha acid): 1 oz. for 15 min., 1 oz. at end of boil, and 1 oz. dry-hopped in secondary
- 1 tsp. Irish moss
- 2 tsp. gypsum, added to mash water
- Wyeast 1056 (American ale)
- 3/4 cup corn sugar for priming

Step by Step:

Mash grains at 154° F for 60 min. Sparge with 5.5 gal. of 170° F water, and top up with enough water in the kettle for a total of 6.5 gal.

Bring to a boil and add 1 oz. Perle hops. Total boil time is 60 min. Boil 30 min. and add remaining Perle hops. Boil 15 min. more, then add Irish moss and 1 oz. Cascade hops. Boil 15 min. more, remove from heat, and add 1 oz. Cascade hops. Steep for 10 min. Cool wort to 70° F and transfer to primary. Pitch yeast.

Ferment seven or eight days. Rack to secondary and add 1 oz. Cascade hop pellets. Ferment for two more weeks, then prime and bottle.

OG = 1.060
FG = 1.018 ■

Feeling the Chill of Beer Storage

Mr. Wizard

I have been brewing my own beer for a short time and have just begun kegging it. I have three kegs but just enough room in my keg refrigerator for two. Does it matter if the beer is primed, carbonated, and aged in the keg at room temperature and then put in the fridge when ready for dispensing? I brew only ales.

Gordy Hannula
Nisula, Mich.

Bottle- and keg-conditioned ales must go through several key steps before they can be refrigerated and enjoyed. The first step is to estimate the volume of beer and to add an appropriate amount of priming sugar for carbonation. Most brewers use less sugar to prime an equivalent volume of beer in a keg compared with bottles. After the beer is primed and the container sealed, it should be transferred to a suitable environment for the carbonation or conditioning step. The normal temperatures for conditioning range from 55° to 70° F for ale and 40° to 55° F for lager.

During conditioning the yeast produce carbon dioxide from the priming sugar and also mature the beer flavor by absorbing butter-like diacetyl and green apple-esque acetaldehyde molecules and converting them into flavorless compounds. These changes are good changes and will occur in seven to 14 days in ales that are stored in the 55° to 70° F range. Lagers will take longer and use a different procedure, but your question is about ales, so I will stick to ales!

Once the good changes brought on by conditioning have occurred

there are other changes that will begin to occur that may have a negative effect on your beer's flavor. The first bad thing to come will be yeast autolysis (yeast death and decay). Autolyzed yeast not only has an unpleasant flavor but the intracellular goo that is excreted during autolysis is rich in enzymes and nutrients. Some

of the enzymes secreted, such as proteases, damage beer foam. Others, specifically esterases, change the aroma of fresh beer. As far as the nutrients released from decaying yeast cells go, they make great bacteria food. In fact many commercial breweries continually purge yeast that settles to the bottom of aging tanks. This practice is used as a preventive measure against bacterial growth.

Another change that will eventually occur in beer is oxidation.

Although minimizing oxygen pick-up during beer transfers and beer packaging will reduce the rate of oxidation, oxidation is inevitable. In the early stages of oxidation, beer takes on a wet paper or wet cardboard aroma that some American imported-beer drinkers have learned to love! As the beer oxidizes more, it begins to smell like honey and eventually takes on aromas typically found in sherry and over-ripened dried fruits such as raisins and prunes. Beer drinkers fond of the rich flavors found in aged barley-wines, Belgian strong ales, and the like are responding positively to oxidation, but in most beers oxidation is

definitely considered a defect.

These negative changes can be delayed by minimizing the amount of yeast that is transferred into the bottle or keg, minimizing oxygen pick-up, and by using cold storage temperatures. If you store your kegs at room temperature before tapping, they may taste great for two to three weeks and begin going downhill after that period. If they are refrigerated after conditioning, they can last for months and still taste great.

Mr. Wizard

I recently got an old refrigerator at a garage sale. Armed with a fancy thermostat, I'm ready to brew some lagers.

I normally use Wyeast smack packs that I grow up in an Erlenmeyer flask to make my starter. Should the smack pack and starter be "fermented" at the same temperature as the lager will be fermented? Should the carboy be allowed to start its fermentation at a warmer temperature before it is placed in the fridge to ferment at lager temperatures?

I've been using about 50° F for a fermenting temperature in the fridge and cooling to the upper 30s once fermentation is complete for lagering. What temperatures would you suggest?

Mike Oberbeck
Westminster, Colo.

There are two different schools of thought when it comes to lager yeast propagation and fermentation. The traditional approach is to propagate the yeast and begin fermentation at lager fermentation temperatures. This method results in a slower propagation rate and also tends to start the fermentation off a bit slower compared with warmer propagation and initial fermentation temperatures. Proponents of this method argue that



the finished beer tastes better.

The other school of thought basically argues that warmer propagation gives better cell counts at pitching time and that a warm start to fermentation gets things off to a vigorous start. This reduces the chances of a bacterial problem. Although these are both strong arguments, opponents to these methods cite studies showing an increase in fruity aromas in lager beers produced using these warmer temperatures.

Some brewers use a blend of the two philosophies. They propagate at warm temperatures, usually around 68° F, and carry out the entire fermentation at cool temperatures, typically between 46° and 54° F.

When it comes to lagering, there are also several different practices used around the world. The world's largest lager brewer, the one with the Eagle trademark, ferments its beer near 55° F and holds its flagship brand at the same temperature for its three-week krausen process.

The idea behind this is that the yeast still have work to do and cooling the beer to very cold temperatures will drastically slow the metabolic activity of the yeast. Other brewers slowly cool the beer from around 50° F to 32° F over several days to allow the yeast to finish its work and to start the beer's clarification process. Other brewers quickly cool their beer from 50° F to 32° F and have the "don't waste time" philosophy.

One lagering method that is gaining in popularity, especially in Europe, is to warm the beer to 68° F after fermentation for an accelerated diacetyl rest. After about two days the beer is then chilled to 32° F for lagering. In a commercial brewery tanks are designed to cool beer, not heat it up, and this method requires special equipment. However, at home it is easy enough to carry a five-gallon carboy from one spot to another to change the beer's temperature, so it's easy to try this method at home.

All of these methods of propagation, fermentation, and lagering are used successfully by commercial brewers and homebrewers to make good beer. The method of choice really depends on which one seems to work best for the individual brewer.

My personal preference is to propagate lager yeast at 68° F and conduct the entire fermentation at 50° F. When the beer is about 2° Plato (eight to 10 specific gravity points) higher than the terminal gravity, I transfer it to a soda keg and allow the beer to naturally carbonate at 50° F for four days. Then I cool the beer to 39° F for 10 days and finally cool the beer to 32° F for two weeks.

Mr. Wizard

Is there anything I can do to increase the cell count of my starters without increasing the volume of the starter? I have read that magnetic stir plates increase the cell count, but is it

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a significant increase?

*Jim Bordine
Frankfort, Mich.*

Propagating yeast is like growing any other life form; you need to provide a good environment and a supply of nutrients. Growing yeast is relatively simple on a small scale and becomes more difficult as the size of the propagator increases.

The essentials of yeast propagation must include a pure strain of yeast. This means there should be only one strain of yeast present in the starter and no bacterial cells. If unwanted yeast strains or bacteria are present, they will be propagated along with the yeast you really want to grow. The only way to really know if you are starting with a pure culture is to have a laboratory. Since most homebrewers don't have labs in their basements, it is common to rely on the skills of a reputable yeast supply lab and hope everything goes well. Fortunately for American homebrewers there are several excellent yeast suppliers around the country.

After acquiring a yeast strain to propagate, you need an appropriate nutrient media. Lucky for us brewers, wort is the perfect media for growing yeast. Wort contains amino acids for protein synthesis, nucleic acids needed to synthesize DNA and RNA, essential vitamins and minerals, essential fatty acids for membrane growth, and an abundant supply of fermentable sugars. The three most important points to note regarding propagation wort are specific gravity, hops, and sterility.

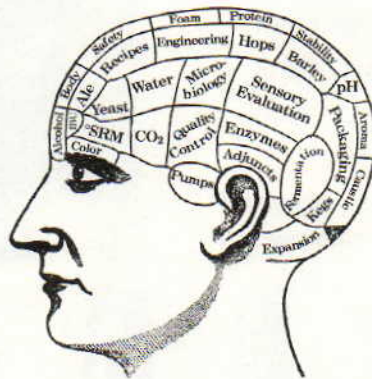
The healthiest yeast is produced from moderate wort strengths, usually in the 1.040 to 1.050 range. If the wort gravity is too high, then the ethanol concentration can reach levels that begin to damage the yeast. If the gravity is too low, the growing yeast soon run out of food. Hops should always be added to propagation worts to suppress the growth of certain beer spoilage organisms. Although hops do not suppress the growth of all bugs, they do prevent the growth of many that will grow in wort and beer. The

third point to remember is sterility. Always boil the propagation wort for at least 30 minutes and store it in a clean and sanitized container. The best method is to sterilize the wort in the propagation container — canning jars and a pressure cooker work well for this method.

Once you have yeast strain and a sterile, hopped propagation wort in hand, it is time to start the

propagation. If you're starting with a concentrated liquid starter, use approximately one part starter to 100 parts of wort. After inoculating the wort with your starter, it is time to set the environmental conditions. Yeast grows fastest and produces higher cell counts at higher temperatures. If you are after high cell counts, conduct the propagation at 75° to 85° F for ale strains and 65° to

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CIRCLE 35 ON READER SERVICE CARD

75° F for lager strains. Although these temperatures will stimulate rapid growth, they may lead to the production of funky flavors, so it is important to pick a temperature that produces a good flavor with your particular yeast strain.

The next important growth factor is oxygen. Although yeast grown in full-strength wort (1.040 to 1.050) always produce energy

through fermentation (as opposed to respiration), they still require oxygen for the synthesis of sterols and fatty acids. These compounds are the foundation of new cell walls. When yeast are growing they must produce a lot of new cell walls.

Oxygen can be infused into the growing yeast with an aeration stone or can be absorbed from the atmosphere. On a large scale the only way

to provide the yeast with adequate oxygen for maximum growth is through some sort of direct injection. However, small-scale propagations can absorb enough oxygen from the atmosphere for good growth. For this to occur, the propagator must not be equipped with an air lock. Sterilized cotton wads have been used for more than 100 years in brewing labs for yeast growth. The cotton wadding allows oxygen to enter the propagation container but traps airborne contaminants. Continuously shaking or stirring the propagator dramatically increases the absorption of oxygen into the wort and increases the yeast cell density. Magnetic stir plates and shaker tables are the two most common ways of incorporating atmospheric oxygen into growing cell cultures used in labs. Shaken or stirred propagation really does make a big difference in the cell count of the slurry.

The last key point to remember is to transfer the growing yeast into a larger container every couple of days to maintain adequate nutrient concentrations for continued growth. The rule of thumb used in many brewing labs is to increase the volume tenfold every two to three days until enough yeast has been produced for brewery use. In the event you produce enough yeast to use in your home brewery but are not ready to brew, simply store the yeast between 32° and 40° F. The yeast should stay alive and well for up to a week under these conditions and will still be good enough to brew with for two weeks. ■

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Mr. Wizard's Address

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

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

CIRCLE 33 ON READER SERVICE CARD

Mastering the Step Mash

Brewer: Daniel Rothman

Brewery: Cougan's Brewery and Grill, Glendale, Ariz.

Years of experience: Eight

Education: Several short courses and on-the-job experience


House Beers: Responsible for maintaining a revolving program of eight to 10 beers on tap

Temperature program mashing, or step temperature mashing, is a process in which the mash temperature is increased in controlled steps. Most large breweries use temperature program mashing to maximize the extraction of sugars and to produce the most fermentable wort possible.

Greater efficiency and greater fermentability happen in this mash because the mash is brought through a range of temperatures at which both alpha- and beta-amylase, the two main enzymes responsible for saccharification (conversion to sugars) of the malt during the mash, are the most active.


Usually, homebrewers aren't interested in eking out the last bit of efficiency from the grain. However, it can be fun experimenting with this type of mash for total fermentability. The key to temperature program mashing is to raise the temperature of the mash over time. Homebrewers can accomplish this in a few different ways. You can prepare a very thick mash at a rest temperature in the 120° to 130° F range, then slowly add boiling water to the tun while mixing the mash to gradually raise the temperature. But with this method, the mash thickness going from thick to thin can affect your

Cougan's Brewery and Grill



"Greater efficiency and greater fermentability happen in this mash...It can be fun experimenting with this type of mash for total fermentability."

Brewer: Daniel Rothman



efficiency and amylase activity, the very things you are trying to control with this type of mash.

The best method is to either heat your mash vessel or use a Recirculating Mash System (RMS). Recirculating systems do not heat the mash itself but heat the wort from the mash and recirculate it back into the

mash to raise the mash temperature.

One popular (and low-tech) method is to heat your mash tun on your burner. If you opt to do this, make sure you continuously stir your mash to prevent scorching.

There are two types of mashing programs, a modified program, usually known as the step mash,

The Tips

- Use this method to create a "lawnmower" beer, an American-style light lager, using adjunct.
- Be careful not to scorch the mash.
- Use a mash on the thinner side, 1.25 to 1.5 quarts per pound.
- Use a RMS system for best results with this method.

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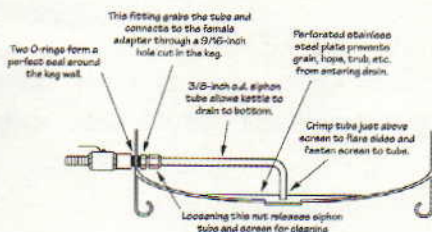
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CIRCLE 37 ON READER SERVICE CARD

Tips from the Pros

and the classic upward temperature profile.

The step mash begins with brew-house calculations to determine what temperature the water needs to be to mash in the malt at about 135° F. A good liquid-to-grist ratio, is important so the mash won't be prone to scorch when the vessel is heated. A ratio of 1.25 to 1.5 quarts per pound will be fine.

After the grain is all mixed in and settled at 135° F, let the mash sit a few minutes and begin ramping (raising the temperature) to the first step. The amount of time spent on the ramp here isn't important as long as you don't scorch the wort. (There may be some caramelization of sugars and darkening of the wort if the ramp is too quick.)

The key here is the step, say 140° F. Raise the heat to this temperature, then allow the mash to rest here for 30 to 45 minutes. This allows the beta-amylase to work. At the end of the rest, raise the temperature again, this time to 152° to 154° F, then rest for another 30 to 45 minutes. This will allow the alpha-amylase enzyme to work. At the end of the rest, ramp again to a final temperature of 160° F to help reduce viscosity. Then run off and sparge.

The classic linear temperature program mash is best done with the RMS system. Mash initially the same as for the step mash, only with this method there is no step or plateau. From the 135° F initial temperature, ramp up to 160° F over the course of an hour and a half. Since this is a 25-degree rise in temperature, you'll need to spend about 3.5 minutes at every degree on the way to 160° F. This is the classic method and takes a bit more equipment and commitment than the standard single-temperature infusion.

Do you need to go to all this trouble? Well, it's certainly possible to create a more fermentable wort. But what about the flavor? Is it better than infusion mash? There is much debate on this topic. By experimenting with one recipe and two brewing techniques, you can discover any flavor differences for yourself. ■

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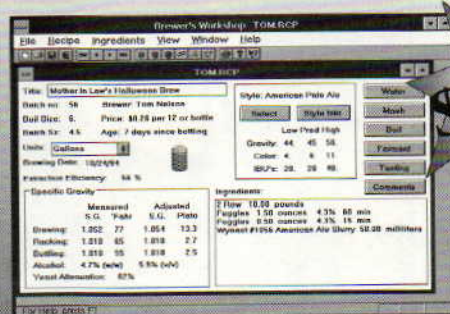
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CIRCLE 34 ON READER SERVICE CARD

by Christina Cavoli

Before arriving in Moscow, my husband and I had been warned that while imbibing alcohol was certainly a daily tradition in Russia, we should not expect to enjoy kicking back with a nice bottle of beer unless we were willing to shell out big bucks for an import at a Western-style restaurant. Always eager to test such truths, we purchased various local brands at kiosks, with varying degrees of success. Although production quality has come a long way since the Soviet era, beer remains remarkably inconsistent from batch to batch. In fact we were actually reduced to pouring several truly undrinkable beers down the drain, an action I would have previously considered unthinkable.

While it is widely accepted that

bread lines and Soviet thought-police have been vanquished in the new Moscow of the 1990s, some stereotypes still linger. It is still hard to imagine any self-respecting Russian reaching for anything other than a tumbler full of vodka when it's Miller time. In 1997 the average Russian drank 12 to 13 liters of beer, hardly worth counting when compared with, say, the 146 liters consumed annually by a typical German.

Beer has never gained a respectable foothold in the Russian pantry, and with good reason. For decades the Soviet-produced Zhigulyovskoye was the only beer available. Based on loose, forgiving recipes, the quality of this beer varied so greatly that consumers could never be quite sure what



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they might taste after plunking down a few kopeks for a bottle. To add insult to injury, even this Soviet-sludge was usually difficult to come by. "No Beer" signs were often permanently affixed to shop windows, and the expression itself came to mean the expected shortage of any desirable good or service. "No beer, right?" was the question heard in regard to almost any product, from tennis shoes to orange juice.

So it was with some surprise that I spotted the familiar white buckets, spigots, cappers, and cans of malt extract lining the window of a small Russian homebrewing shop. Zao Konkord Master is located in a pavilion of the former Soviet Achievement and Exhibition Center. This center, once a paean to the technical and agricultural accomplishments of the USSR, has become a giant, bustling shopping mall with stores offering every sort of merchandise from leather boots to washing machines. Russians with

money throng the pavilions, seeking the latest offerings of merchandise from the west. Konkord Master was opened at this location in the summer of 1997 under the auspices of the Russian beer manufacturer "Konkord."

Russian Homebrewing

The tradition of homebrewing is far from a new phenomenon in Russia. Natives have long fermented their own *Kvass*, a mildly alcoholic drink made with rye bread, and legends abound concerning homemade *Samogon*, a type of moonshine liquor distilled in the balconies, back rooms, and dachas of the Soviet citizenry. Beer, however, has been left out, long considered a drink occupying the lowest rung on the ladder of alcoholic beverages.

But this perception seems to be changing. Zao Konkord Master is one of several stores in Moscow now selling equipment and ingredients for homebrewing. Marina

Nikitina, the store's saleswoman, has been working in the homebrewing store since it opened. She says the equipment and ingredients for homebrewing have been in Russia for about five years, but now the hobby has gained real popularity.

Customer Mikhail Perfilyev began brewing beer about six months ago. "I want to drink good beer, not the kind I can buy at kiosks," he says. "I can make better beer than anything else I've tried." His wife adds that it is important for a person to have a hobby, as well. She doesn't especially like beer but has tried Perfilyev's beer and says it seems better than store-bought bottles. "His friends like it," she says. "No one can believe he can make such good beer at home."

Asked if there were any difficulties in brewing beer at home, he admits that at least half of his first batch exploded. Nikitina says this was because he used tap water instead of distilled, a notoriously bad idea. "The water here has God-knows-what swimming around in it," she advises. "You really have to use bottled or distilled water or else who knows what will happen to your beer." When she turns away, Perfilyev confides that he still uses tap water because it is more convenient; the explosions probably occurred due to the high temperatures of the Moscow summer.

Storage space is a problem. The average Muscovite still resides in a one- or two-room apartment, leaving room for bottles of fermenting beer only on the balcony or in the hallway. Nikitina admits some other customers have also complained of bursting bottles in the summer but says it doesn't seem to slow anyone down. "People want to drink good beer," she says. "They don't mind a tiny mess every now and then."

Coming In From the Cold

So why the changing attitude toward beer? "People have had a chance to try various Western-style beers, and they realize there are a lot of differences among the styles," says Nikitina. "But buying these products in the store is often very

When in Russia...

In case you find yourself wandering the streets of Moscow or any other Russian-speaking town, the following words and phrases may come in handy if you are searching for a good beer and friendly company.

Svetloye Pivo Light beer

Tyemnoye Pivo Dark beer

Samogun Russian moonshine, legendary for its strength and terrible taste

Kvass Another traditional Russian drink; a slightly sweet, mildly alcoholic beverage made from fermenting dark rye bread and water.

Pivzavody Literally, "beer factory"; used to mean homebrewing supplies

Hmyell Hops

Zerno Grain

Solad Malt

Drozhy Brewer's yeast

Pivnaya Pub, alehouse

Pivovar Brewer

Na Zdorovye! Traditional Russian toast, meaning "to your health!"

Zastolnaya Pesnya Drinking song

Pohmyeleet To be hungover

Kleen-Kleenom Literally, "to wedge with a wedge," meaning "hair of the dog that bit you," the Russian solution to dealing with a *pohmyeliye* (hangover).

Zakyska Traditional Russian appetizers served with beer or vodka; usually salted fish, dark bread, and pickled cucumbers.

expensive. Now they realize they can make the same thing at home."

Nikitina theorizes that there has been a shift in attitudes about beer since the collapse of the Soviet Union. "Were you ever here during Soviet times?" she asks. "Thank God for that," she nods to my negative reply. "Back then, you could only buy terrible beer. Nothing else was available. It was a drink for alcoholics," she says, clucking her tongue and snapping her finger at her neck in the traditional sign of drunkenness. "But now, it has become a new trend to try different beers, to select the type of beer that complements different types of food. Now drinking beer can be very prestigious."

Her observations seem warranted. Take, for example, the Beer Lover's Party, one of the 43 officially registered Russian political parties that vied for representation in the 1995 State Duma election. While the stated basis of the party's organiza-

tion may seem frivolous, it does indicate a rather positive attitude toward beer. "Our goal is to reduce stress in society and to make people feel better with the help of beer," said party leader Constantine Kalachyov, quoted by Reuters at a news conference. "People who drink vodka are harsh and mean, while people who drink beer are soft and nice," he said. "We want to put beer drinkers in the Kremlin."

Two glossy Russian magazines aimed at professional brewers and beer enthusiasts have recently entered the market. The Beer Counter had its first issue in the fall of 1997 and includes articles about different beer companies, competitions, and pubs. For Those Who Value Beer is a similar magazine, presented in a tabloid format with lots of photos of beautiful women drinking beer. Among various topics, this magazine covers "Beerophilia," providing tips for collecting various paraphernalia, the

history of beer, recipes, and articles on "Beer and Medicine" and "Beer and Sex." Both magazines have a beer humor section containing the usual sorts of Russian jokes that fail to translate well, although the picture of the Mir space station flying with a keg of beer attached to the top may provide an insight to the uneven performance of last year.

According to a poll by the Russian advertising agency Aurora, consumers with a higher education make up the largest percentage of those who regularly drink beer. The summer of 1997 saw "Moscow Beer Day," the first such festival of its kind. Additionally, the beer industry is busy touting beer as the "healthy" alternative to vodka. It may seem strange to be told that drinking beer constitutes improving your health, but some rather grim statistics might lead one to the same conclusion: Russian men consume on average 13.6 liters of vodka a year and have a life expectancy of only



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57 years, and more than 40,000 people in Russia annually die of alcohol poisoning, mainly due to illegally produced vodka.

Just in case this sort of evidence doesn't convince one of the social prestige of beer, Zao Konkord Master hands out a flier entitled "The Advantages of Beer." This list, taken from *A Book About Beer* by V.N. Dovganya, published in 1995, offers a variety of enticing reasons to become a habitual beer drinker. For example beer cures toothaches. Beer contains a variety of minerals, vitamins, amino acids, and other healthy substances that can lower blood pressure, improve skin color and blood strength, chase away carcinogenic agents from the body, deliver strong and healthy dreams, and in general improve overall health. Beer has fewer calories than fruit juice or soda and does not contain such deleterious substances as sugar or fructose. Beer is also recommended for nursing mothers.


According to the list, almost all of the authors of "old books" agree that after mother's milk, beer is the most suitable beverage for children. Testimony is provided by none other than Arnold Schwarzenegger's mom. Apparently, the Terminator was a sickly infant, and Mrs. Schwarzenegger followed advice to supplement his milk with a bit of beer. It was this diet, she believed, that led him to become such a big, strong adult.

Real Men Drink Light Beers

Two young men enter the store, inquiring about buying a beer kit. They are impressed by the different styles available and by the inexpensive beer possible but are dismayed by the length of time needed before they will have the first batch. "Almost three weeks!" says one. "What are we supposed to do until then?" Nonetheless, they buy a beer kit. Within a half-hour, three customers purchase full beer kits

and several more drop by to buy supplies.

"There is a genuine boom in the beer industry right now," Nikitina says. "As Russians become more health minded and stop drinking so much vodka, the consumption of beer increases." The store sells everything but bottles, which Nikitina says are readily available at any kiosk for free, as recycling has not yet reached Moscow.

All of the available malt extracts and recipes are based on Western styles. Russians have yet to establish a homegrown variety, although a country that created horseradish vodka could be expected to come up with something interesting. Asked for her own personal preference, Nikitina says she likes English ales, although she has noticed that men seem to prefer the lighter beer and women tend to like darker beers, such as porters. "You know Russian men," she says. "They don't want anything to be sweet." 

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BUD PEEN

6 STEPS FOR

by Craig Hartinger

“Malty.” Now just what could that mean? Beer tasters use the term all the time, but isn’t it a redundant term, like saying beer tastes beery? Barley malt provides the fuel for the yeast, but it also



STEEPING GRAINS

provides the heart of beer flavor. Weren't you amazed at how great malt extract tasted when you first dipped your finger into it?

Malt extract tastes great and from it homebrewers can make the

finest beer on the planet — their own. With personal and judicious use of steeped specialty grains, brewers can make this product even finer. You can customize a brew; you can focus on nuances. And

specialty grains are the way to really fine-tune malt flavor.

Back to Basics: Barley Malt

Barley malt is a germinated grass seed. (To a city person barley

looks pretty much like wheat: a stalk with long, tapering leaves that grow along the stalk and a head that contains the seeds.) After harvest, maltsters germinate the seeds, or barleycorns, by moistening them and holding them within a temperature range comfortable for germination. Like any hopeful seed, barleycorns put out tiny rootlets and the "baby plant" starts to grow, until the maltster stops the growth by drying the germinated kernels.

During this malting process enzymes (the chemical triggers) develop naturally in the kernel. Enzymes allow brewers to mash the grains, which converts the starchy interior of the barleycorn to sugar. When you use malt extract, this conversion via enzymes has been done by the extract manufacturer. The sweet liquid has been run off from the husks, concentrated, and packaged for your brewing use. But barley

malt can play other roles, too.

Specialty grains allow brewers many more malt flavor options than

does using malt extract alone.

While malt extract (or base malt of some type for all-grain brewers)

Steeping Terms

Base malt The major source of fermentable sugars and flavor characteristics in beer. Malt extract is the base malt for extract brewers.

Specialty grains Grains that you use to enhance the flavor and color in beer. May or may not add fermentable sugars.

Starch Carbohydrates in the malt that are converted to fermentable sugar. Many specialty grains for steeping do not contain convertible starch.

Lovibond A system of color

measurement for grain, wort, and beer. This scale is a color reference that ranges from 0 (lightest) to 500 or more.

Husk The protective outer layer of barley and other cereal grains. The husk must be cracked before steeping.

Tannins Organic compounds originating in malt husks that can add sharp tastes to your beer if broken too roughly.

Grist Cracked grain that is ready to be steeped or mashed.

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always provides the significant fermentables in beer, specialty grains are used for flavor, color, and body. Specialty grains rarely make up more than 20 percent of the total weight of malt in any beer recipe.

Maltsters can change the flavor of barley malt dramatically just by the different ways they handle it, and various techniques lead to different specialty grains.

Specialty Grains

Crystal Malt: This is pale malt that has been heated under moist conditions. The starch, aided by the naturally occurring enzymes developed during malting, changes to sugar. The sugar is then lightly caramelized.

Taste some crystal, and look at the inside of the kernel under the husk. It's glossy and amber-red, similar to the caramelized table sugar that you make in a skillet for desserts. When added to a beer recipe, crystal malt adds caramelly, rich flavor; body; and the same amber color you see inside the kernel.

Crystal malt is the classic specialty grain in pale ales but also goes into ambers, Scotch ale, dark ales, and whatever you as the brewer want to put it in.

Crystal malt can be lightly caramelized or heated more for a darker color and deeper flavor. Typically, it ranges from 10° to 160° on the Lovibond scale.

Brewers generally use from one-eighth of a pound up to one pound of crystal malt for each five-gallon batch.

Chocolate Malt: When pale malt is heated in a rotating drum it begins to roast. Chocolate malt is heated under dry conditions until the entire kernel is a milk-chocolate brown color throughout. It has a wonderful roasted flavor and nothing at all to do with chocolate other than color.

Brewers use chocolate malt in brown ales and dark bock beers. Some brewers put chocolate in porters for a nutty, soft roastiness that is gentle and deep. Sometimes

as little as an ounce will go into a recipe, providing a bit of color, while other recipes may call for up to three-fourths of a pound for five gallons.

Chocolate malt usually runs about 350° to 400° Lovibond.

Black Patent or Black Malt: Roasted in a drum until the malt flavor has pretty much turned to an astringent roastiness, black patent

(BP) is used for stouts, porters, and black lagers.

Use this one with caution, because it is easy to overdo it. One ounce will provide a deep red color and flavor nuances in a five-gallon batch and a half pound will make any beer black and roasty.

The Lovibond rating is 500° or more.

Roasted Barley: Differs from



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black patent because it is made from unmalted barley. Actually more malt flavor seems to show through instead of just roast flavor. Roasted barley is almost a "must use" for stouts.

Roasted barley also carries a Lovibond rating of 300° to 500° or more.

Others: Victory malt and biscuit malt with their toasted flavor can be used as specialty grains. The same is true of the high (temperature) kilned malts such as Vienna and Munich; malts smoked over wood or peat; and even malted wheat or rye, which extract brewers sometimes handle like specialty grains.

However, these grains can contain greater or lesser amounts of starch and if you choose to use them steeped in a malt extract-based recipe, you will risk putting starch in your beer.

Starch is a flavor you are probably not after, and it can lead to haze problems. It can also con-

tribute to a possibly shorter shelf life because while brewer's yeast can't eat starch, some bacteria can and even the most sanitation-fanatic homebrewer may have a bacterium or two in the batch.

Crystal, chocolate, and dark-roasted grain have no raw starch or significant enzymes left after the handling they have undergone, so they won't lead to starch in the finished product. Of course homebrewers sometimes do steep wheat or other enzymatically active grains and achieve results they are happy with — do what you like, armed with knowledge.

The Procedure:

1. Choose a grain.

Determine what flavor you're aiming for and pick appropriate specialty grains to complement your recipe. A great way to focus on the steeping procedure is to use only one type of grain — crystal

in the 60° to 80° Lovibond range, for example — in an all-extract beer you have made before, writing down the exact amount used.

By adding steeped grain to a recipe you have tried before, you'll really be able to focus on how the grain changed the flavor.

2. Prepare the grain.

Have the grain milled when you purchase it, or crack it with a rolling pin at home. (This is less messy if you crack it a handful at a time in a plastic bag.) Don't use a coffee mill; it's important to maintain most of the integrity of the husk. This will keep sharp-tasting tannins in the husks and not in your wort. Put the cracked grain, now known as grist, into a cheesecloth or nylon mesh bag and tightly tie the top.

3. Prepare the water.

Put water in your kettle and

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turn the heat on just as you always do. Depending on the size of your kettle, you'll be heating 2.5 gallons of water or more. When the water gets hot — hotter than a hot tub, so that you can dip your finger in but not hold it in there — you'll be ready to add the grain.

4. Add the grain.

Gently drop in the grist-filled bag and turn the heat down low.

5. Steep.

The goal here is to make a grain infusion, similar to tea, by holding the grain in the water between 160° and 175° F for 20 to 30 minutes.

Do you need a thermometer? It helps, but you can proceed without one, too. Your beer will be fine if you put the steeping sack in at 130° F but keep the water below 180° F so that those tannins in the husk don't get dissolved into your wort. If you

think the temperature is getting too high, pull the bag out.

If you wish to take an additional step, you can use two kettles: one with a gallon of steeping water at 160° to 175° F (this smaller volume will have a lower pH and will do even more to keep those tannins out of your wort) and the other kettle with two or more gallons of water for your main wort boil. The second kettle can be fired up to a boil as you steep in the other kettle and will save a little time.


The steeping temperature range (160° to 175° F) happens to be one that triggers some starch-to-sugar converting enzymes. Why not use some of those malts that contain unconverted starch and active enzymes, and go for some conversion? Because steeping isn't as efficient as mashing. Also, the enzymes would be dispersed too widely in the ratio of water to grain. In a mash, grist and water are held at these temperatures in a ratio of

one to two quarts of water per pound of grain. We are using far more water with steeped grains.


6. Pull the bag.

At the end of a 20- to 30-minute steep, pull the grain bag out with tongs or a strainer. Don't squeeze the bag (remember, husk integrity will help keep those tannins out of the wort), but give the bag a rinse with some 150° to 170° F water that you have ready in your teakettle.

Once you've removed the grain bag, you can fire the heat back up to high and proceed with the rest of your brew just as you've done in the past: add extract and hops, cool, pitch yeast, and ferment.

As you wait for your water to boil but before you add extract, dip a sample of your lovely grain infusion out of your kettle for evaluation. Look at all the color you got from, say, a pound of crystal malt. Smell your sample; taste it; roll it around in your mouth. Malty, huh? 

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EXTRACT

Creating Taste Twins

Every homebrewer in the world gets asked The Question. Only the brand changes depending on the person's beer interests: "If you know how to make beer, can you brew a



CLONES

Budweiser...Sierra Nevada...Anchor Steam?"

As of now, the answer is "Of course!" We asked homebrew retailers across the country to send us

their best extract recipes for clones of classic commercial brews ranging from Celis White to Old Peculier.

Go ahead, show off to your friends. Brew and enjoy!

Bill Sharp



Liberty Malt
Supply
Seattle, Wash.

clone of Alaskan
Frontier Amber

An aggressive American take on a nut brown ale. Try White Labs California Ale yeast for a more attenuated (drier) version.

Gravity's Rainbow Amber
5 gallons

Ingredients:

- 6 lbs. pale malt extract
- 1 lb. light dry malt extract
- 0.33 lb. crystal malt, 80° Lovibond
- 0.33 lb. crystal malt, 120° Lovibond
- 8 oz. DeWolf-Cosyns cara-pils malt
- 2 oz. Special B malt
- 1 oz. roasted barley
- 2 oz. Fuggle hops (4.3% alpha acid) for 60 min.
- 2 oz. Mt. Hood hops (5.6% alpha acid): 1 oz. for 15 min., 1 oz. at end of boil
- White Labs pitchable English Ale yeast
- 3/4 cup corn sugar for priming

Step by Step:

Steep grain 30 min. at 150° F in 2.5 gal. of water. Remove grains, bring to a boil, and add extracts. Total boil is 70 min. Boil 10 min. Add Fuggle hops. Boil 45 min. more and add 1 oz. Mt. Hood hops. Boil 15 min. more and add remaining 1 oz. of Mt. Hood hops. Cover and

remove from heat. Top up to 5 gal. with cold, preboiled water and cool to 75° F. Aerate vigorously. Pitch yeast at 68° F.

Ferment at 68° F for seven to 14 days. Prime with corn sugar and bottle. Age two to four weeks in bottles.

OG = 1.051 to 1.057

FG = 1.012 to 1.015

Pam Shelton



Timber Country
Home Brew
Supplies
Hoquiam, Wash.

clone of Henry
Weinhard Dark

I like Henry's Dark on tap and decided I wanted to clone it for a brew kit at my store. It turned out well, better in fact. I have people who brew it regularly.

Tail Hold Stout
5 gallons

Ingredients:

- 7 lbs. John Bull dark malt extract
- 2 oz. Fuggle hop pellets (4.3% alpha acid) for 30 min.
- 2 oz. Willamette hop pellets (4.4% alpha acid) for 2 min.
- Edme ale yeast (11.5 g.)
- 3/4 cup corn sugar for priming

Step by Step:

Dissolve malt extract into 3 gal. water and bring to slow rolling boil. Total boil is 60 min. Boil for 30 min. and add Fuggle hops. Boil 28 min. more and add Willamette hops. Boil

2 min. more. Remove kettle from heat, cover, and allow to settle for 10 min. Chill wort and transfer to primary fermenter. Add enough cold, preboiled water to bring wort to 5 gal. Pitch yeast at 75° to 78° F.

Ferment at 65° to 70° F for four to seven days, then rack into secondary fermenter and let finish until cleared and airlock has completely stopped moving. Rack into bottling bucket. Add corn sugar dissolved in 1 cup boiled water. Condition at 65° to 70° F for at least two weeks in bottles.

Julie Froehlich



Stein Fillers
Long Beach, Calif.

clone of
Celis White

This beer is a delicious ale brewed with malted wheat, barley, and oats. The style is characterized by the flavors of coriander and orange peel.

Belgian Wit
5 gallons

Ingredients:

- 6 lbs. wheat malt extract
- 1 lb. Belgian candi sugar (clear)
- 1 lb. oat flakes
- 1 oz. crushed coriander
- 1 oz. sweet orange peel
- 1 oz. Curacao orange peel
- 2 oz. Crystal hops pellets (3.5% alpha acid): 1 oz. for 60



- min., 1 oz. at end of boil
- White Labs pitchable Belgian Wit yeast
- 3/4 cup corn sugar

Step by Step:

Put oat flakes into a grain bag. Add 1 gal. of water and bring temperature to 155° F. Turn off heat and let oats steep for 30 min. Remove bag and drain completely. Stir in malt extract and candi sugar. Add enough water to bring to 2 gal. Bring to a boil. Total boil is 60 min. Add 1 oz. of hops and boil for 50 min. Add orange peel and coriander. Boil 10 min. more. Turn off heat and add remaining 1 oz. of hops. Steep for 10 min., remove hops, cool, and transfer to fermenter. Add 3 gal. cold water. Pitch yeast at 75° F.

Ferment at 68° F for 14 days. Prime and bottle. Age 14 days.

Karl Glarner Jr.



The Red Salamander Grand Ledge, Mich.



clone of **Budweiser**

This is a great, easy-to-make pilsner-style beer made with ale yeast — no lagging required. Comes close to many commercial light pilsners, with just a bit more flavor.

Snides Lawnmower Lite
5 gallons

Ingredients:

- 2.5 lbs. extra light dry malt

- extract
- 1.5 lbs. light honey
- 1 oz. Cascade hops (6% alpha acid): 0.25 oz. for 60 min., 0.25 oz. for 30 min., 0.5 oz. for steeping
- 1 tsp. Irish moss for 15 min.
- 1 tsp. gypsum
- Wyeast 1056 (American ale) or Yeast Lab Canadian ale (A07)
- 3/4 cup corn sugar for priming

Step by Step:

Bring 2 gal. water to boil. Remove from heat and add dry malt, honey, and gypsum. Return to boil. Total boil is 60 min. Add 0.25 oz. Cascade and boil for 30 min. Add 0.25 oz. Cascade and boil for 15 min. more. Add Irish moss and boil for 15 min. more. Turn off heat, add 0.5 oz. Cascade hops, and steep for 2 min. Pour into fermenter and top up with cold, preboiled water. When cooled below 70° F pitch yeast.

Ferment seven to 10 days in primary at 70° F or below, then transfer to secondary and ferment another seven days. Prime and bottle.

Peter Schaut

Beer Unlimited
Malvern, Penn.

clone of
Erdinger
Kristallklar
Weissbier

Kristall is similar to hefe-weizen except it is filtered before bottling and is therefore crystal clear. It has a lot of clove character and can be served with a slice of lemon.

Kristall Weizen
5 gallons

Ingredients:

- 6 lbs. wheat dry malt extract



- 1 oz. Hallertau Hersbrucker hops (3.4% alpha acid) for 60 min.
- 1 oz. Saaz hops (3.6% alpha acid): 0.75 oz. for 45 min., 0.25 oz. for 15 min.
- 1 tsp. Irish moss
- 2 Tbsp. gelatin
- Wyeast 3333 (German wheat)
- 3/4 cup corn sugar for priming

Step by Step:

Bring 5 gal. water to a boil, turn off heat, and add extracts. Return to boil. Total boil is 60 min. Add Hallertau Hersbrucker hops. Boil 15 min. and add 0.75 oz. Saaz hops. Boil 15 min. more and add Irish moss. Boil 15 min. more and add 0.25 oz. Saaz. Boil 15 min. more.

Remove from heat, cool, and transfer to primary fermenter. Top up to 5 gal. with cold bottled water. Pitch yeast at 75° F.

Ferment seven days near 65° F, then transfer to secondary. Add 1 Tbsp. of gelatin to aid clarification. Prime with corn sugar and 1 Tbsp. gelatin, bottle, and age for two weeks.

OG = 1.052

FG = 1.012

Gene Almquist



Homebrewers
Outpost and
Mail Order Co.
Flagstaff, Ariz.

clone of
MacTarnahan's
Scotch Ale



The smokey character results from the Hugh Baird peated malt

and a healthy starter (1 qt.) of White Labs Edinburgh yeast.

Grabarek Scotch ale 10 gallons

Ingredients:

- 10 lbs. light malt extract
- 5 lbs. light dry malt extract
- 1 lb. Scottish caramalt, 40° Lovibond
- 8 oz. Belgian cara-Vienne malt, 20° Lovibond
- 8 oz. Belgian Kiln amber malt, 22° Lovibond
- 7 oz. Hugh Baird peated malt, 2.8° Lovibond
- 5 oz. Hugh Baird chocolate malt, 450° Lovibond
- 1.25 oz. Burton water salts
- 1.25 oz. UK Northdown pellet hops (8% alpha acid) for 90 min.
- 0.5 oz. UK Bramling Cross pellet hops (6.2% alpha acid) for 45 min.
- 0.5 oz. UK Fuggle fresh hops (6.1% alpha acid) for 20 min.
- 2 tsp. Irish moss for 15 min.
- White Labs pitchable Edinburgh yeast
- 3/4 cup corn sugar for priming

Step by Step:

Make 1 qt. yeast starter 24 hours before brewing with 2 cups dry malt extract.

Treat 12 gal. water with Burton water salts (minerals such as noniodized table salt, gypsum, and Epsom salt) and heat to 150° F. Steep grains for 30 min. Remove grains and add extracts. Total boil is 90 min. Bring to a boil and add Northdown hops. Boil 45 min. and add Bramling Cross hops. Boil 25 min. more and add Fuggle hops. Boil 5 min. more and add Irish moss. Boil 15 min. more. Chill wort to 70° F. Transfer to fermenter and pitch starter.

Primary ferment at 68° F for six days. Transfer to secondary and ferment for two weeks at 65° F. Force carbonate or prime with corn sugar and bottle. Age two weeks to carbonate.

OG = 1.052

FG = 1.013

Byron Burch



The Beverage People Santa Rosa, Calif.

clone of Theakston's Old Peculier



Glorious, rich, full flavor, very popular, but hard to come by.

Rather Peculier Strong Old-Style ale 5 gallons

Ingredients:

- 3.3 lbs. John Bull Amber malt extract
- 3.3 lbs. Muntons "Old Ale" malt extract
- 8 oz. Lyle's black treacle syrup
- 2 oz. malto-dextrin
- 4 oz. wheat malt, 2° Lovibond
- 4 oz. light caramel malt, 20° Lovibond
- 4 oz. medium caramel malt, 60° Lovibond
- 4 oz. dark caramel malt, 90° Lovibond
- 4 oz. black roasted barley
- 1 oz. Willamette or Fuggle hops (7.7% alpha acid) for 45 min.
- 1 oz. Northern Brewer pellets for steeping
- 14 g. Nottingham dry ale yeast or Wyeast 1728 (Scottish ale)
- 3/4 cup brown sugar for priming

Step by Step:

Place cracked grains in 0.5 gal. of 158° F water. Steep for 40 min. and rinse through a sieve strainer or mesh bag with 0.5 gal. of 175° F water, catching the run-off in your boiling kettle. Discard the grain.

Add the dry malt extract, treacle, and dextrin powder along with enough water to make 5 gal. Heat to boiling and add Willamette or Fuggle hops. Boil 45 min. Turn off heat, add the Northern Brewer pellets, cover, and cool in a cold water bath or use a wort chiller. Pitch yeast at 60° to 70° F.

Ferment where temperature remains above 60° F. After primary fermentation, transfer to secondary until settled (about one week). Prime with brown sugar and bottle. Age for one to two months before drinking for fullest flavor.

OG = 1.052

FG = 1.012

James Crane

Liberty Malt Supply Seattle, Wash.

clone of Full Sail Golden

The rye adds a pungent fruitiness characteristic of Full Sail Golden ale.

Golden Ale 5 gallons

Ingredients:

- 6 lbs. pale malt extract
- 1 lb. light dry malt extract
- 8 oz. crystal malt, 10° Lovibond
- 8 oz. flaked rye
- 3 oz. Cascade hops (6.1% alpha acid); 1 oz. for 60 min., 1 oz. for 30 min., 1 oz. for 2 min.
- 750 ml. starter of Wyeast 1056 (American ale) or White Labs California Ale pitchable yeast
- 3/4 cup dextrose for priming

Step by Step:

Steep grains for 30 min. in 2.5 gal. water at 150° F. Remove grains and bring to a boil. Remove from heat and add extract. Total boil is



60 min. Return to boil and add 1 oz. Cascade. Boil 30 min. more and add 1 oz. Cascade. Boil 28 min. more and add 1 oz. Cascade. Boil 2 min. more. Top up to 5 gal. with cold, preboiled water. Cool below 75° F and pitch yeast.

Ferment at 68° to 70° F until completed (about five days). Secondary ferment 10 days to two weeks. Prime with dextrose and bottle.

Brent Rannow



**Evergreen
Brewing Supply
Bellevue, Wash.**

clone of
**Pyramid
Brewing
Snowcap Ale**

An amber, full-bodied, winter warmer. Great for the cold holiday season.

Avalanche Ale
5 gallons

Ingredients:

- 6 lbs. Coopers light extract
- 3 lbs. Briess light dry extract
- 1 lbs. crystal malt, 80° Lovibond
- 8 oz. DeWolf-Cosyns chocolate malt
- 4 oz. flaked wheat
- 1 tsp. Irish moss
- 2 oz. Chinook hops (12.5% alpha acid) for 60 min.
- 1 oz. Willamette hops (5.2% alpha acid) for 30 min.
- 1 oz. East Kent Golding hops (6.2% alpha acid) for 2 min.
- Wyeast 1338 (European ale) or

Coopers ale yeast

- 1 cup dry malt extract for priming

Step by Step:

Steep crystal and chocolate malts in 3 gal. of 150° to 180° F water for 15 to 20 min. Remove spent grain. Mix in malt extracts and flaked wheat, then bring to a boil. Total boil is 60 min. After hot break, add Chinook hops and boil 30 min. Add Willamette hops and boil 15 min. more. Add Irish moss and boil 13 min. more. Add East Kent Goldings in last 2 min. of boil. Cool wort and transfer to fermenter, straining out hops and flaked wheat. Top up to 5 gal. with cold, preboiled water. Cool below 80° F and pitch yeast.

Ferment at 68° F for 10 days. Transfer to secondary for 14 days. Prime and bottle. Age several months.

OG = 1.065

FG = 1.020

Marian Heller

**Heller's
Homebrew
Supply
Syracuse, N.Y.**

clone of
Anchor Steam

This has been one of our store's most popular recipes for years — brewed many times by many brewers. Unanimous opinion: a tasty, hoppy brew that does justice as a clone of Anchor Steam.

Full Steam A Head
5 gallons

Ingredients:

- 8 lbs. Alexander's pale malt



extract

- 8 oz. crystal malt, 40° Lovibond
- 2 oz. Northern Brewer hops (8.8% alpha acid): 1.5 oz. for 60 min., 0.5 oz. for 15 min.
- 1 oz. Cascade hops (5.2% alpha acid) for 2 min.
- 1 tsp. Irish moss for 15 min.
- Wyeast 2112 (California lager) or dry lager yeast
- 3/4 cup corn sugar for priming

Step by Step:

Put crystal malt in muslin bag and add to 1.5 gal. water. On medium heat bring water to 175° F. Remove pot from heat and remove bag of crystal. Add extract and return to a boil. Total boil is 60 min. Add 1.5 oz. Northern Brewer at start of boil and boil 45 min. more. Add 0.5 oz. Northern Brewer and Irish moss and boil 13 min. more. Strain out excess hops and add Cascade hops for last 2 min. of boil. Top up to 5 gal. with cold, preboiled water. Cool to 70° to 75° F and pitch yeast.

Primary ferment for seven to 10 days at 65° F. Transfer to secondary and ferment for two weeks at 55° F. Prime with corn sugar and bottle.

OG = 1.055

FG = 1.015

Mike Fredricksen



**Northern
Brewer
St. Paul, Minn.**

clone of
**Summit Great
Northern Porter**



Summit Great Northern Porter is a regional favorite and made Michael Jackson's Top 24 List. It also took a gold medal at the Great American Beer Festival in 1987.

This has always been one of my favorites, with a strong malt flavor to start and considerable hop presence in the finish. This recipe makes for ideal summer brewing with its relatively high fermentation temperature of 69° to 73° F.

Newborn Porter

5 gallons

Ingredients:

- 6.6 lbs. Northern Brewer gold malt extract
- 1 lb. Muntons light dry malt extract
- 6 oz. DeWolf-Cosyns cara-Munich malt, 56° Lovibond
- 6 oz. Pauls dark crystal malt, 80° to 90° Lovibond
- 12 oz. Pauls black malt, 510° to 585° Lovibond
- 1 oz. Eroica hops (12% alpha acid) for 60 min.
- 1 oz. Fuggle hops (4.8% alpha acid): 0.5 oz. for 20 min., 0.5 oz. for 10 min.
- 1 oz. Cascade hops (5% alpha acid): 0.5 oz. for 20 min., 0.5 oz. for 10 min.
- 0.5 gal. starter of Wyeast 1742 (Swedish ale)
- 3/4 cup corn sugar for priming

Step by Step:

Steep grains at 150° F for 25 min. in 6 gal. water. Remove and bring to a boil. Add malt extract. Total boil is 60 min. Add Eroica hops. Boil for 40 min. Add 0.5 oz. each of Cascade and Fuggle. Boil 10 min. Add remaining Cascade and Fuggle. Boil 10 min. more. Force cool wort to 78° F and pitch yeast.

Ferment between 69° and 73° F. When head falls, rack to secondary for two weeks. Prime and bottle. Allow to carbonate 10 to 14 days.

OG = 1.054

Mike Pierson



Wee Bairn Home Brew Supply Snohomish, Wash.

clone of Rodeo Stout by Crested Butte Brewery

This is a Rodeo Stout with an English accent. We've been calling it Oatmeal Cream de la Cream Stout.

Oatmeal Cream Stout

5 gallons

Ingredients:

- 7 lbs. pale malt extract
- 1 lb. flaked oats
- 4 oz. chocolate malt
- 8 oz. crystal malt, 60° Lovibond
- 4 oz. black malt
- 4 oz. roasted barley, 500° Lovibond
- 4 oz. cara-pils malt
- 1 licorice stick
- 1 oz. British Target hop pellets (8.1% alpha acid) for 60 min.
- 1 oz. British Challenger hop pellets (8.2% alpha acid) for 10 min.
- Wyeast 1084 (Irish ale)
- 1 1/4 cup priming malt
- 4 oz. lactose for priming

Step by Step:

Prepare liquid yeast in advance. Steep grains and flaked oats in 2.5 gal. of 160° F water in kettle for 30 min. At end of steep, remove grain bag from kettle. Take kettle off heat and add malt extract, stirring to dissolve. Add licorice stick and Target hop pellets directly into wort. Return to heat and bring to boil. Total boil is 60 min. Boil 50 min.,



stirring frequently. Add Challenger hop pellets and continue boil for 10 min. more. Remove from heat and cool wort quickly. Add wort, straining out hops, to 2.5 gal. cold, preboiled water in primary fermenter. Cool to 70° F and pitch yeast.

Aerate thoroughly, take hydrometer reading, and ferment for seven to nine days. Take secondary hydrometer reading. Prime with lactose and priming malt. Bottle and taste after one month.

FG = 1.023

Robert Gwilt



BrewMasters Home Brew Supply Abilene, Texas

clone of Wild Horse IPA

I received this beer in my beer-of-the-month club. I wrote the club and asked where I could buy it, but no one responded. Since the club included a list of ingredients, I simply made several batches and finally came up with this beer.

Cat Claw Creek IPA

5 gallons

Ingredients:

- 0.6 lb. wheat malt, 2.2° Lovibond
- 0.6 lb. cara-Munich malt, 62.5° Lovibond
- 0.6 lb. crystal malt, 10° Lovibond
- 0.6 lb. Marris Otter two-row malt, 3° Lovibond



- 6 lbs. Munton's extra-light dried malt extract
- 2 lbs. wheat light dry malt extract
- 4.2 oz. Columbus whole hops (13% alpha acid): 0.6 oz. for 60 min., 0.6 oz. for 30 min., 3 oz. for 5 min.
- 1 oz. Columbus hop pellets (13% alpha acid) for dry hopping
- 2.5 tsp. gypsum
- 1.5 tsp. Epsom salts
- YeasTech Pitch 5 English ale yeast
- 3/4 cup corn sugar for priming

Step by Step:

Add grains to 1 gal. water and heat to 158° F for 60 min. Sparge with 1 gal. 170° F water. To the run-off add dry malt extract, and bring to a boil. Total boil is 60 min. Add 0.6 oz. whole Columbus hops. Boil 30 min. and add another 0.6 oz. whole Columbus hops. Boil 25 min. more and add 3 oz. whole Columbus hops. Boil 5 min. more. Remove hops. Add to enough cold, pre-boiled water to make 5 gal. Pitch yeast at 75° F.

Ferment between 64° F and 65° F. Transfer to secondary, add Columbus pellets, and age one to three weeks. Prime, bottle, and age at least a month.

OG = 1.058 to 1.064

FG = 1.012

John Daume



The Home Beer, Wine & Cheesemaking Shop
Woodland Hills, Calif.

clone of Fuller's London Pride



Fuller's London Pride is a classic English bitter. This clone duplicates the strong maltiness of the original London Pride and the honey-flower character from Fuller's yeast.

London Pride Pub Ale

5 gallons

Ingredients:

- 4 oz. Gambrinus honey malt
- 8 oz. English crystal malt, 80° Lovibond
- 4 oz. Belgian aromatic malt
- 4 oz. Franco-Belge cara-wheat malt
- 4 oz. Gambrinus ESB malt
- 5 lbs. light dry malt extract
- 0.5 oz. Pioneer pellet hops (8.5% alpha acid) for 60 min.
- 0.25 oz. First Gold pellet hops (8.2% alpha acid) for 20 min.
- 1 oz. Fuggle whole hops (4.6% alpha acid) for 2 min.
- 2 tsp. calcium carbonate
- 1 tsp. Irish moss
- Wyeast 1318 (London ale III)
- 3/4 cup corn sugar for priming

Step by Step:

In a separate pot, bring 3 qts. water to 160° F. Stir in grains. Turn off heat, cover, and steep for 45 min. Sparge into large boiling pot with 3 qts. 160° F water. Discard grain.

Bring water level to 3 gal. Stir in dry malt extract and bring to a boil. Skim all foam before starting hop sequence. Total boil time is 60 min. Add calcium carbonate and Pioneer hops. Boil 40 min. Add First Gold hops and Irish moss and boil 18 min. more. Add Fuggle hops and boil last 2 min. Remove from heat and cool. Strain as you transfer to primary fermenter with enough cold, pre-boiled water to make 5 gal. Pitch yeast at 80° F.

Ferment for three to six days at 62° to 66° F. Transfer to secondary and condition four to 15 days. Prime, bottle, and age two weeks.

OG = 1.051

FG = 1.011 to 1.013

Greg Snapp



Frugal Homebrewer
Waukesha, Wis.



clone of Sierra Nevada Pale Ale

Hundreds of our customers have made this. Most swear it's identical to the original. Dry hopping is essential for classic Cascade flavor and aroma.

Pale Ale

5 gallons

Ingredients:

- 8 oz. caramel malt, 30° Lovibond
- 6 oz. DeWolf-Cosyns cara-pils malt
- 6 lbs. light malt syrup
- 1.5 oz. Perle hops (8.2% alpha acid) for 60 min.
- 2.5 oz. Cascade hops (5.4% alpha acid): 1 oz. for 15 min., 1 oz. for 5 min., 0.5 oz. pellets (dry hopping).
- Wyeast 1056 (American ale)
- 1 1/4 cup dry malt extract

Step by Step:

Add grains to 1.5 gal. water. Bring slowly to 170° F. Remove grains and bring to a boil. Total boil is 60 min. Boil 10 min. and add Perle hops. Boil 45 min. more, adding water as needed to maintain liquid level. Make first Cascade addition. Boil 5 min. more. Turn off heat. Wait 10 min. Add 1 oz. Cascade. Wait 3 to 5 min. Remove hops and transfer to fermenter. Top up to 5 gal. Pitch yeast at 70° F.

Ferment three days and rack to secondary. Dry hop with 0.5 oz. Cascade pellets. Ferment two weeks at 65° F. Prime and bottle.

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How Extract Is Made

by Craig Bystrynski

Beer is made from four ingredients: barley, hops, water, and yeast. Oh, yes, and some goopy stuff that looks like molasses and comes in a can. Or powdery stuff that looks like Ovaltine and, frankly, tastes a lot better.

If you're a homebrewer and brew like 92 percent of your fellow hobbyists, you use malt extract syrup or powder at least some of the time. A lot of all-grain brewers like to give lip service to the idea that all-grain brewing makes better beer than extract brewing. But the real difference is in the brewer, not whether you start with grain or extract. Do you practice good sanitation? Do you pitch enough yeast?

All-grain brewing gives you an extra measure of flexibility, but extract brews can be outstanding. In fact malt extract manufacturers don't just sell their product to homebrewers. Several commercial breweries use it, too, to supplement their own mash. At least one brewery, Pacific Coast Brewing Co. in Oakland, Calif., has made award-winning commercial beers strictly from extract.

There's no magic in the process of making malt extract, although the outcome is something of a magical substance for homebrewers. Malt extract is produced in a standard big-brewery brewhouse. It's made in large batches of many barrels (a barrel is 31 gallons).

A typical extract manufacturer's brewhouse consists of the type of glistening stainless steel equipment you'd find in a large microbrewery: a mash tun, brew kettle, wort chiller. But there are two important differences. First, you won't find rows of fermenters

because other than for testing purposes, extract manufacturers don't actually complete the beer. Second, you will find a large, stainless steel mechanism with four 70-foot towers called a condenser. The condenser removes water from the wort, making it into packagable extract.

The process begins with a malt bill based on the type of extract to be made, typically two-row or six-row



KRISTINE BYBEE

barley for pale malt extract, two- or six-row plus light caramel and Munich malt for amber malt extract, for example. Kits begin with a suitable grain bill for the style to be brewed. A stout, for example, might include two- or six-row malt, black malt, dark caramel malt and, for a dry stout, possibly black barley.

Generally, the brewer chooses a temperature program mash, sometimes called step infusion. He adds malt to water and heats it to a series of specific temperatures to maximize the amount of useful sugars in the extract. Once he completes the mashing process he sends the grains through a lautering stage in which water is added to collect additional sugars that remain on the grains.

The brewer then boils the wort for 30 to 90 minutes depending on the type of extract being made. Hopped extracts use the longer boil to obtain the hop bitterness. Hopping is generally done at the start of the boil and partway through the boil.

Aromatic hops are not used because the aroma would be lost during the condensing process.

After the boil the wort travels through a wort chiller and into a whirlpool, where the trub settles

out. When the wort clears, it runs through a filter and into the evaporator. A typical evaporator consists of four 70-foot towers and what looks like a typical brew kettle. The wort runs into the towers, which have a

A Sample of Extract, Extract Kit, and Wort Kit Brands

Brand	Country	Brand	Country
Alexander's	US	Ireks	Germany
Barons	Canada	Iron Master	Scotland
Black Rock	New Zealand	John Bull	UK
Brew Canada	Canada	Laaglander	Netherlands
Brewferm	Belgium	Mahogany Coast	UK
Brewmaker	UK	Morgan's	Australia
Brewmart	Scotland	Mountmellick	Ireland
Briess	US	Muntons	UK
Bru-Mix	Canada	Premier	Canada
Coopers	Australia	Spagnols	Canada
Doric	Canada	SuperBrau	US
Edme	UK	Telford	UK
Geordie	UK	Tundra	Canada
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perforated plate at the top. The plate separates the wort into droplets, and the droplets run down 72 small tubes inside the tower. A vacuum actually pulls water through the stainless steel as the wort drops through the tubes. "I know it sounds impossible, but that's really what happens and it's very effective," says Mary Anne Gruber of Briess Malting Co.

By the time the wort makes it to the kettle-like apparatus, called a finishing pan, more than half of the water has been removed.

The finishing pan removes more water to produce a syrup of 80 percent malt solids and 20 percent water. (Dry malt extract, made in a dryer, is about 99 percent malt solids and 1 percent water). Then the extract is packaged and shipped to a retailer, waiting for a thirsty homebrewer to make it into a tasty beer.

Using Extract

The next time you use malt extract, here are a few tips that might make the process go a little easier.

If you're using syrup, soak the can in warm to hot water before you add it to the brewpot. This will make it pour much more easily and quickly.

If you're steeping grains as part of your extract brew, keep the temperature below 170° F and steep for at least 20 minutes. Never boil steeping grains; you'll end up with an astringent taste in your beer.

Add extract to hot but not boiling water. The hotter the water, the easier the extract will dissolve. But trying to mix it into boiling water increases the chance that the extract will scorch — and that you'll burn your hand on hot steam.

Even if you're using a hopped kit, add some aroma hops either at the end of the boil or by dry hopping in the secondary fermenter.

Consider using distilled or purified water for all-extract brews. The extract maker has used water with brewing salts for his mash. If you live in an area with hard water, using tap water may result in too many minerals in the beer.

Say a toast to the brewer of your extract, who made homebrewing quicker, easier, and just as flavorful. ■

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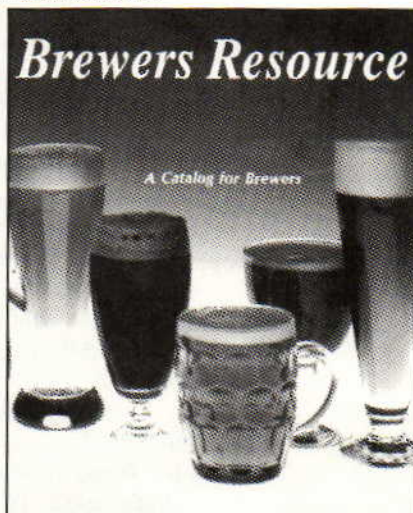
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3 Beers, 1 Mash

by Randy Whisler

Some beers are made for sipping. Some are made for guzzling. And when the mood is right for one, don't you hate it when you only have the other on hand?

Well, there is a way to make both from a single batch of beer.

Back in 18th century England, commercial brewers were looking for ways to produce beer more cheaply and sell it to more people. They developed what may have been the first multi-brand strategy in the history of retailing.

It was all based on a brewing method that could create not two but three different beers from a single mash. The method, called parti-gyle, involved sparging three times. The first sparge, called the first runnings, yielded a high-gravity beer, usually 1.060 or higher. This beer would generally have a fairly

high alcohol content, a lot of body or mouthfeel, and a strong malt taste.

The second runnings would yield a mild, perhaps 1.030 specific gravity, with less malt flavor and a weaker mouthfeel. The third runnings would create what was known as a small beer of 1.020 specific gravity. The beers were then sold at three different prices.

Today, parti-gyle brewing is rarely used in commercial breweries. But you can still do it at home. It's fun, it's challenging, and you'll have the right beer on hand for every occasion.

Getting Started

There are two ways to brew parti-gyle beers. Both are reasonably straightforward. The first method is essentially the method





Special
gravy

Shawn
Turner

used by brewers of 150 years ago. The mash is finished, then a lauter and run-off are completed quickly. This initial run-off makes the large or heavy beer. More water is added to the mash tun and a second running is extracted. This is the mild beer. Still more water is added to the mash tun and a third running is extracted. This is the small beer. This technique is easy to follow, but it is reasonably hard to recreate the three beers batch after batch.

The second way to make three beers out of one mash is more scientific in that you will be able to recreate your recipe time after time.

This technique requires that you run the mash to completion and start the lautering process. As the boiling vessel is filled, you must take periodic gravity readings. When the expected gravity of the heavy beer is reached, the lauter

run-off is diverted to a second vessel, and the gravity of this wort is monitored until the expected gravity is reached. This procedure is followed with the third runnings for the small beer. During this time the lauter remains topped off with sparge water, as opposed to the first technique in which there were three separate lauter runnings.

Either of these techniques will work well. You should choose the style with which you are most comfortable. The following recipe formulations are based on the assumption that a 15-gallon mash and lauter tun is being used. If you are using a five-gallon mash tun, just reduce the recipe accordingly (by dividing by three).

How Much Malt

Both techniques require an estimate of the amount of malt to be used. This will be a personal

judgment to what gravity you would like the heavy, mild, and small beer wort to be. A rough guideline for the wort gravities are 1.080 to 1.060 (19.2° to 14.8° Plato) for the heavy beer, 1.045 to 1.030 (11.2° to 7.5° Plato) for the mild beer, and 1.030 to 1.020 (7.5° to 5° Plato) for the small beer.

To determine the amount of malt you need for a wort of a certain gravity, you can use the calculation on page 49. One easy way to estimate the malt is to add together the desired gravities you have chosen and divide by three.

For example, if you have decided the gravities of your heavy, mild, and small beers' worts to be 1.060, 1.040, and 1.020 respectively, then:

$$60 + 40 + 20 = 120$$

$$120/3 = 40 = 1.040$$

Therefore, the average gravity of your three beers will be 1.040.

You can then use the malt equation to determine how many pounds of malt you need for three batches of 1.040 wort.

Separate Runnings

This malt estimate will get you into the ballpark. However, for this technique (three separate runnings) you will probably have some trouble hitting your exact gravities. You will have to experiment to get accurate results.

After you have determined roughly the amount of malt you need, you are ready to brew. You will need at least two extra five-gallon pots to collect the second and third runnings while the first runnings are being boiled.

Mash in all of the grain and let it set for about one-half hour. It is best not to mash at the top of the temperature scale (above 156° F). After the half-hour mash, start your first runnings. Do not add sparge water. Collect your five gallons of wort. The run-off should be reasonably quick (10 to 15 minutes). If you fall short of the full five gallons, then add a bit more sparge water. But make sure the sparge water



does not exceed 160° F for this technique.

After collecting the first five gallons, shut off the sparge water and refill the sparge vessel with five gallons of 160° F water. Lightly stir the top half of the mash bed and let the mash set for about five minutes. After the five minutes are up, collect your second runnings. Again, collect the runnings fairly quickly and do not add more sparge water unless needed. When the second five gallons are collected, shut off the sparge and add another five gallons of 160° F water, stir up the top of the mash again, and wait five minutes. This time after the five minutes are up, start sparging slowly and collect the remaining five gallons of wort.

While you are collecting the second and third runnings, you should be boiling the first runnings. This will allow you to use your time more efficiently. This is somewhat important since this process can take about three to five hours longer than making a single brew. When the first batch of beer is done boiling, cool it down and pitch the yeast as quickly as possible so that you can get the second runnings boiling. An alternative to this time dilemma is to have a second boiling kettle. This will greatly reduce the length of the brew session.

You may have noticed that your gravities did not turn out like you wanted. This is a common occurrence during the first brews. There are several factors that can affect the gravity. Frequently what you will get in the first runnings is a gravity that is too high, while the subsequent gravities will be too low.

This is caused by the mashing process and the lautering process being too efficient. It can be remedied in two ways: 1) Make the mashing time shorter. 2) Lauter only part of the mash into the first runnings kettle and add tap water to get to the desired gravity. This involves some hardships since you will have to determine by trial and error how much tap water to add. However, you will have left some

sugar behind for the second and third runnings. Generally the method of adding water works fairly well and tends to help balance the second and third runnings.

Again, this overall technique involves some trial and error. After two or three brews you should have a good grasp on your system. At this point it will become much easier to get your desired gravities on all three runnings.

Continuous Runnings

Of the two techniques for multiple beers from one mash, continuous runnings is the more scientific. This way allows you to get your gravity correct every time. The disadvantage of this technique is that you have limited control over how much wort you will end up with for each beer. Experience will help you predict your true extract efficiency and will eliminate the problem.

In this method you calculate the

amount of malt needed for all three beers in the same way as for the separated runnings. If your extraction efficiency is correct, you should have no trouble getting the right gravity and volume in all three batches, as this calculation is based on a simple mass balance equation: Malt in equals malt extract out plus malt extract left behind. The main problem most people have is coming to grips with an extraction efficiency below 50 percent. Lauter more slowly and this will increase.

As opposed to the separate runnings technique, this way you will only be lautering once. It is important to lautur slowly. Mash in at a medium to low mash temperature, 150° to 154° F. Hold this temperature for an hour, and stir the mash at least four times.

At this point start lautering your first runnings (slowly). Periodically stir the runnings and take a gravity reading. Remember that you have



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to cool the wort you are checking to 60° to 65° F for most hydrometers to be accurate. This is easily done with a bowl of ice water and a sealed copper tube that can hold enough wort in a deep enough hole to get a gravity reading. Just pour the wort into the copper tube (the plastic container the hydrometer came in works well, too), put the tube in the ice bath, and stir until it

is within three degrees of the target temperature. Then take a gravity reading.

Continue to take readings periodically until you are 0.002 to 0.004 below your desired gravity. For example, if you wanted a heavy beer at 1.060, then stop the first runnings between 1.058 and 1.056. Your gravity will increase with the boil. The amount of the increase, up

to two points on the stove, five with a high-BTU cooker, will be determined by the vigor of the boil.

While you are lautering you should also be adding sparge water to the top of the lauter. Sparge water should be kept below 170° F, taking into account any temperature loss from the hot water vessel to the mash tun. Hotter temperatures will help work the sugar out of the malt solid but can also create excess astringent tannin extract.

Do not be alarmed if you get too much wort on the heavy-beer run. This is a common occurrence. You can simply pour off some of the high-gravity wort into the small-beer wort container. This will allow you to get the right volume of wort at the right gravity for the first runnings.

When you have collected the needed wort for the heavy beer, start immediately collecting for the mild beer. It is quite likely during this part of the lauter that the gravity of the lauter will go from a high gravity to a low gravity. The second runnings have to be monitored closely once the low-gravity wort starts coming through. You may have to add some of the excess wort you collected from the first runnings to the second runnings to get the desired gravity.

The third runnings can then be collected for the small beer. What, if any, wort is left over from the first runnings will help get the volume you need. However, if you are still at a gravity that is too low at the end of the lauter, you can continue to collect additional wort into another small container. Then you can start boiling the small-beer wort to evaporate the excess water and reach the desired gravity. From time to time add the excess wort you have collected to increase your volume.

Even though there is not a lot of sugar in the very last runnings, there is some and by removing the water you can concentrate that sugar solution. The other option is to accept three gallons of small beer and get on with your life before midnight rolls around. You can then call your small beer a special

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Problem Solving

Low Gravity: No matter which technique you use, the first time you do this you will likely have either low gravities or low volume. This is due to incorrectly assessing your extract potential. The two easy ways out of this problem are to increase your malt bill to account for the lower extract or try lautering more slowly.

When you take more than 45 minutes to lauter (each running in this case) you will frequently find that the extract potential will increase from around 45 percent to 60 percent and beyond. Lautering slower is not recommended in the first (separate runnings) technique during the heavy-beer wort run. The rationale of running the first runnings quickly is to leave some of the sugar behind for the second

and third runnings. However, the third runnings would likely benefit from a slow run-off. A third alternative is to accept the low volume and have less beer.

Wort gravities not cooperating:

This is a very common problem. Frequently the first runnings will be too high and the last runnings too low. You can hold over the excess first runnings. It may also be necessary to dilute the first runnings to

A Rule of Thumb: Determining How Much Malt

$$\frac{(x-1) (\text{gal. of wort desired})}{(\text{extract rating} - 1)} = \text{lbs. of malt needed}$$

x = specific gravity desired

Extract ratings:

malted barley	1.028
specialty malts	1.022
wheat malt	1.029

Example:

15 gal. of 1.040 wort desired

$$\frac{(1.040-1) (15)}{(1.026-1)} = 23.1 \text{ lbs. of malt}$$

1.026 is the combined gravity of the malted barley and specialty malt

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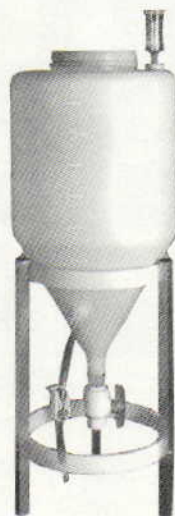


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the correct gravity. For example, say you want a heavy beer with a gravity of 1.060 and you are trying to get the runnings gravity down to 1.056. You have now collected six gallons of wort and it is still at 1.070.

Pour out two gallons of the wort into the third runnings container. Then continue to collect more wort into the first runnings container.

Continue this method until you have the right volume of wort at the right gravity. This technique may take some time to perfect, but after making the same beers a couple of times you will begin to know where the cut-off points are.


Beer recipe formulation: You must take into account that you have only one mash recipe and you are going to make three beers out

of it. The flavor of the last beer will be fairly delicate. Taking this into account, if you made a Russian Imperial stout out of the first runnings, the small beer will likely be very harsh and astringent. If you want to play with dark beers, try making only two beers. The second beer here will be interesting and usually quite good.

For those not quite that adventurous, start with beers that are lighter in color. A strong Scottish ale or an IPA are good candidates for the first-runnings beers. Remember, you can adjust the hops on the recipe. The mash is the only constant. And as a side note, keep in mind that the small beer is just that. It is meant to be guzzled like water. It is not expected to have much body, and it does not need to have 35 IBUs of bitterness in it (10 to 14 IBUs is more proper).

Equipment: Remember that you will need at least two extra buckets for collecting wort, and they can be just that — seven-gallon buckets. An extra boiling pot is also a good item to have, because it will greatly reduce your brew session. It is almost mandatory that you have a wort chiller to facilitate the cooling of the boiled wort.

Yeast: Remember to have enough yeast for three beers. This is not a huge problem for dry yeast, but if you are propagating from a smack pack, keep in mind that you will need one more propagation than you normally make.

This type of brewing takes some practice. Do not be discouraged if your first results do not turn out the way you expected. You will find that if you continue to practice this style of brewing, you will learn a lot about regular brewing. This style forces you to look more closely at the brewing process. And also remember that homebrewing is for fun and relaxation. Enjoy! 

Randy Whisler is the head brewer and lab manager at SmuttyNose Brewery in Portsmouth, N.H., a brewery that does practice, on occasion, multiple beers from a single mash.

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Adding Oak to Your Wine

by Alison Crowe

It was 8:15 a.m. and I'd already worked for more than two hours as I shimmied and bumped another 60-gallon barrel up onto its metal rack. I didn't mind that my next caffeine break wasn't due for at least another hour; the toasty-fruity smell coming out of new oak barrels as I filled them with freshly fermenting Chardonnay was enough to make anyone truly relish their work day, even sans a mid-morning cup of coffee.

During that harvest season at Curtis Winery in California's Santa Ynez Valley, I was using new French oak barrels to give the reserve Chard the vanilla/oaky/spicy notes for which the winery is known. Giving your own homemade wines the same professional touch is surprisingly easy, once you know a few key facts about oak and about the oak options available to the home winemaker.

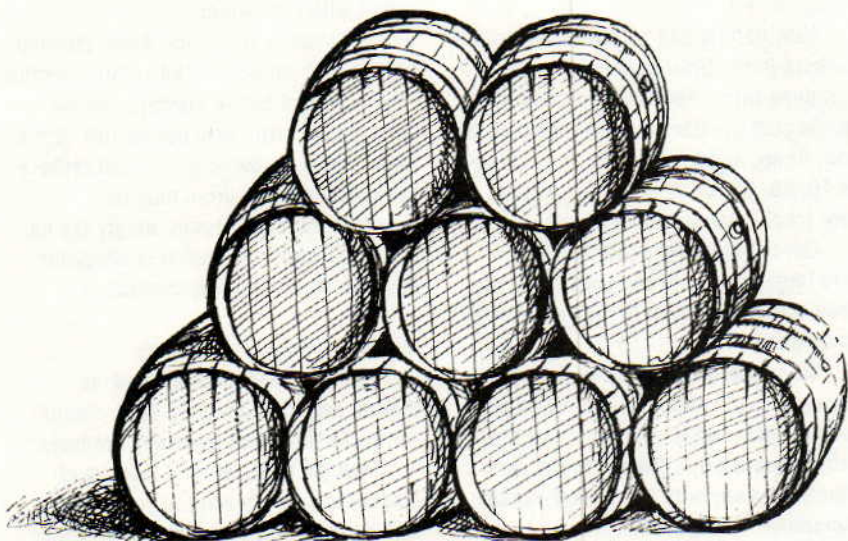
How Oak Affects Wine

The first step in the process is understanding how using oak wood (in the form of barrels, chips, or shavings) affects the wine — and then deciding if you want those results for your finished product.

Wine is essentially a solvent. A solution of ethanol, organic acids, and water (plus some color and flavor components), it will try to react with any material it contacts. The Cabernet skins in a red-wine fermentation, the oak barrel in which a wine is stored, and the oak chips that a winemaker adds to give the wine a final grace-note of spice and toast all will be degraded to some extent by wine's amazing dissolving power.

When wine meets wood, the water and ethanol actually dissolve tannins and aromatic compounds from the wood into the wine, imparting what is known as an "oaky" aroma and flavor profile.

Most of the oak tannin eventually reacts with other solids in the wine, pulling them out of solution and aiding in settling, and is then removed during the racking process. Most of the aroma and flavor compounds, however, remain in solution and are still detectable in the wine's bouquet even after the wine has



KRISTINE BYBEE

been filtered, bottled, and opened up at your dinner table.

To Oak or Not to Oak?

The oaky aromatic profile is typically described using such terms as vanilla, spice, toast, nut, wood, toasted nut, and caramel. If you've tasted a lot of Chardonnays and Cabernets, especially those from the "new world" (California, Australia, and Chile), you may be very familiar with the aromas that oak can contribute to wines. Unfortunately, you may also be familiar with wines that are overoaked. Some wines have been exposed to so much oak (through prolonged storage in new barrels, from aging on too many oak chips) that the oaky aroma completely overpowers the rest of the bouquet. This makes for uninteresting wines and more often than not is viewed as a defect by professionals and consumers alike.

The fact is, many wines don't need any oak exposure at all. Fruit wines are seldom given any sort of oak treatment, and wines made from kits or specific recipes may have their calculated balance of aromas and flavors thrown off by a strong wood aroma. Many grape wines, especially sweet, very flavorful, or even delicately simple whites (such as Muscat, Semillon, or dry Viognier) do just fine on their own and would be either overpowered or overcomplicated by an oak aroma profile.

On the other hand if your goal is to make dry table wines, and especially if your wines are robust reds with plenty of their own tannins, you might want to consider some kind of oak program. As a rule, dry table wines that are oaked tend to age more nicely than their un-oaked counterparts. Even though the aromatic compounds will change in the bottle over time, the exposure to oak will help flesh out the aroma profile over the years as well as contribute to a more complex bouquet in the wine's early stages.

Whatever kind of wine you're making, the main point to remember is this: Always follow your nose.

After the wine is finished fermenting, give it a preliminary swirl, sniff, and taste. If you think an oaky component would be appropriate, go for it! But whichever method of oak delivery you choose, remember to always taste and sniff during the wine's oak-contact time. Less is more in this case, and once a batch of wine becomes over-oaked, home winemakers can't just "disappear" it into 1,000-gallon blends as commercial wineries can.

Getting the Balance Right

Whether you decide that you're going to invest in a few French oak barrels or you just want to dump some medium-toast oak chips into your five-gallon carboy, it's impor-

tant to remember how wine and wood interact to judiciously employ your oak product of choice. The aromas and flavors that end up in the finished wine are a direct result of the wine's contact with the oak wood itself. The concentration of these compounds differs depending on a number of factors including the surface area of the oak in contact with the wine, the time of that contact, the age and type of the barrel, the alcohol content of the wine, the origin of the wood, and the kind of processing the wood underwent.

All this may seem like information overload, so think about these tech-head chemical and physical relationships in terms of a user-friendly analogy. Remember

Using Barrels, Chips, and Shavings to Oak Your Wine

Using Barrels

New barrels can be purchased from coopers in the United States or from European firms that have representatives in this country. Barrels come as small as one, three, and five gallons or as large as 10, 20, 30, or 55 gallons. Consult your local home winemaking store.

Check the barrel itself for flaws or very large gaps between the staves; you don't want your barrel to leak excessive amounts of wine.

Smell the barrel (especially if you're buying it used). If you detect a vinegary smell or other off-odor, do not use the barrel because it is impossible to completely do away with these odor-causing contamination organisms.

Fill your barrel with a solution of Barokleen or other similar product at the rate of about one pound per five gallons (or follow package instructions). Let it sit for a day or two. At this point the barrel should have soaked up enough water to become water tight. If you have a leaky barrel, don't use it to store your wine!

Empty the barrel and rinse it completely with fresh water.

Make up one gallon of a sulfite-and-acid solution (eight to 10 ounces sodium metabisulfite plus about one ounce of citric acid) and pour it into your barrel. Rock the barrel back and forth to expose all surfaces of the inside of the barrel.

Rinse well with water. Fill up the

barrel with your wine!

For storage fill emptied and cleaned barrels with an acidulated sulfite solution (six ounces of sulfite crystals and six tablespoons citric acid per barrel). Store them in a cool, damp place, and replace the solution every three months.

Before using it again, empty the barrel, rinse well, and sniff it to check for any interim storage contamination.

Using Oak Chips or Shavings

Every well-stocked home wine-making and homebrewing store should carry oak chips and other oak products.

Pick the kind, level of toast, and amount of oak you want in your wine, and measure out your chips or shavings according to your recipe or to your taste.

Chips don't need to be washed before hand, but try a quick soak (about 30 minutes) in a sanitizing sulfite solution (about six to eight ounces of sodium metabisulfite per one gallon water) before you add them to your carboys or fermentation vessel. You can use a muslin cloth (though don't pack it too tightly) as a "tea bag" to make future removal easier.

Check wine's aroma frequently and rack into another vessel to remove the chips or shavings. Be careful; shavings and chips can float, so you may need to add a rough filtration or straining step in order to remove all of the matter.

that long-awaited caffeine break? Think about equating oaking your wine to making a cup of coffee.

The strength of a cup of coffee depends on a number of factors: the temperature of the water, the kind of coffee, the amount of grounds used, the darkness of the roast. If you try to make coffee with cold water, you'll end up with something akin to slightly brown water. However, if the water is boiling hot, the roast strong and aromatic, and the brewing time long enough, the water will extract a lot of the material from the coffee grounds and the cup of coffee will be strong, flavorful, and dark in color. However, if you use too much coffee or let it brew for too long, the coffee might become bitter, tannic, and altogether unpleasant.

The same group of concepts holds true when it comes to oaking your homemade wine, whether you put your wine in the oak (using barrels) or the oak in the wine (chips, shavings, or oak sticks).

Surface Area

The more oak you use per volume of wine, the more oaky character will be evident in the finished product. Smaller barrels provide more surface area to interact with the wine — hence, expect oakier wine from two 30-gallon barrels than one 60-gallon barrel.

The surface area issue is especially important when using oak chips or shavings, available in bulk or pre-packaged at any homebrewing or home-winemaking supply store. Oak chips are small (from one-fourth to three-fourths inch cubed in volume) and as such provide much more oak to wine surface area contact than do barrels. This means that if not watched carefully, wine being infused with oak chips or shavings can very quickly become over-oaked — maybe even within a few hours. A good rule of thumb is to use two to four ounces per five-gallon carboy.

Of course, most numbers are meant to serve only as guidelines. The actual amount you use might be less or more depending upon the

size of your chips (shavings are smaller and have even more available surface area!). Constantly taste and smell, and adjust accordingly.

Contact Time

Besides the amount of oak, the amount of time your wine is exposed to oak is the most important factor to consider. The key again is frequent monitoring. Some

chip-using home winemakers check their wines after a couple of hours of contact time. They siphon out a few inches into a wine glass and sniff the development of their wine with a jealous zeal.

While you don't have to be this diligent, it's always a good idea to check your barrels about every other week and your carboys with oak chips at least every other day. If

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your wine is especially susceptible to oak (if it's light on color and tannin, high in alcohol, or has a simple bouquet that could be steamrolled by the oakiness), it's a good idea to monitor more frequently — especially if you're using chips and most especially if you're using shavings. Chips and shavings can be left in the wine (until they're removed by racking) anywhere from six hours to

a couple of weeks. The amount of time depends on how much oak aroma and flavor you like in your wine.

Age of the Oak

It is possible for wine to be stored in barrels for decades and still never become overoaked. The amount of oak character a wine extracts from the wood depends

entirely on the age of the barrel. Not real age, but how many years the barrel's been in service. Because wine extracts tannins, aromas, and flavors from the wood, eventually these compounds become depleted. Enologists at the University of California at Davis have found that after an average of five years, the amount of "oakiness" a barrel can contribute to a wine is negligible. For this reason, be careful buying used barrels from wineries or elsewhere. Depending on how "used" the barrel is, its ability to contribute oak to your wine might be nonexistent.

At the opposite end of the spectrum, chips and shavings are really just meant to be used once. They are made for maximum extraction and as such don't even have the five-year life span that barrels do. But chips aren't necessarily one-hit wonders. One way to "recycle" chips is to toss them onto the coals when you barbecue. What could be better than barbecuing with aromatic oak chips, especially when they've been soaked in your own homemade wine?

Other Factors

There are other factors to take into account when making decisions about oaking your wine. If the wine is especially high in ethanol, the wood will become depleted more quickly and, consequently, more oak character will be extracted into the wine. Say that you've made a port-style dessert wine that has an alcohol content of 18 percent. The higher concentration of ethanol (an even better solvent than water) will extract the tannins, aromas, and flavors out of the wood more quickly than would a table wine with an alcohol concentration of 12 percent. The trade-off in this case is that with such strong flavors and mouthfeel, your homemade port will most likely be able to accept more oak than would its wimpier counterpart. Even though it will have more oak overall, the wine style is beefy enough to handle it.

There has been much fuss about the French oak vs. American oak

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rivalry. Though there are plenty of impassioned proponents on both sides of the debate, the basics are as follows: European oak (species *Quercus sessilis* and *Quercus robur*) contributes twice the phenols (the class of compounds that oak aroma belongs to) and dissolved solids of American oak (*Quercus alba*) but has about half the aroma and flavor. This is because while the European oak has more of these compounds, they're not necessarily the right kind of compounds. Some fans of one type of oak or the other like to cite studies that show taste panels could or couldn't find a significant difference between the two. But

since there hasn't been a definitive study that proves it either way, you might want to go with American barrels based on price. You can't beat it. Home-grown, home-harvested and, well, at \$300 to \$500 for a 55-gallon barrel (the size many commercial wineries use). American oak costs an average of \$200 less than its continental relatives.

Another key flavor/aroma aspect to keep in mind is level of toast of the wood. During the barrel-making process the coopers may char the inside of the barrel, and the differences in the processing yield results that you might expect. The heavier

the toast, the "heavier" the oak aroma and flavor in the finished wine. Mildly toasted barrels (or oak chips — you can buy them toasted, too) have been found to contribute aromas classified as "nut" or "vanilla," whereas heavily toasted barrels tend to lean towards the "Khalua" or "burnt toast" side of the spectrum. Again, the choice of toast will depend on what kind of wine you're making, though a good rule of thumb is: The "heavier" the wine, the heavier the toast it'll accept.

When used judiciously, oak wood in your winemaking program can raise your products to a whole new level. Salut! ■

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Back to the Old West

by Stan Hieronymus and
Daria Labinsky

A visit to Santa Fe Brewing Co. is a step back in time: From the Old West facade to the bridlery that decorates the tasting room walls, the microbrewery captures the pioneer spirit. And that's entirely proper, since the microbrewery was a pioneer in its own right, opening a decade ago.

Some of Santa Fe Brewing Co.'s equipment can rightly be described as historic, as well. The brewhouse and several fermenters are about 20 years old. They originally belonged to Boulder Brewing Co. back when that major player operated out of a goat shed in Longmont, Colo. The brewing kettle had to be built square to fit through the shed doors.

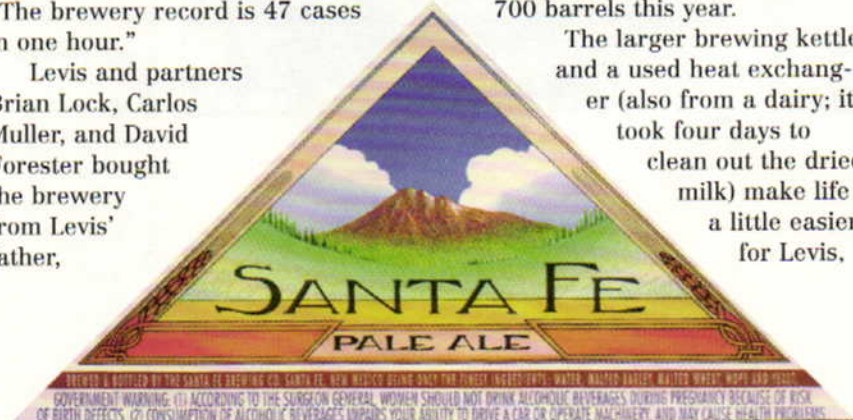
Then there's the bottle capper, a hand-operated, one-at-a-time Super Colonna tabletop capper, the kind homebrewers use. Brewer Ty Levis estimates that the staff has sealed far more than one million bottles with the capper. "I'll cap against any of you guys," Levis told a group of homebrewers during a brewery tour earlier this year. "The brewery record is 47 cases in one hour."

Levis and partners Brian Lock, Carlos Muller, and David Forester bought the brewery from Levis' father,

Mike, in 1996 and moved it from a horse barn in Galisteo, N.M., to the former motorcycle restoration shop it now occupies on the outskirts of Santa Fe. This past spring they were busy converting used dairy equipment to expand the brewhouse. Like many breweries considering expansion recently, Santa Fe discovered that used dairy equipment is becoming increasingly hard to find. "We called about 400 places," Levis says, before finding the tanks in Texas. The rebuilt equipment will increase the brewery from a seven-barrel to a 25-barrel system.

Expansion and modernization are relative terms at Santa Fe Brewing. "We hope to be able to push into new markets, but we know a lot of distributors aren't accepting new beers," Levis says. "We feel the Santa Fe name will kind of help carry us." Operating in Galisteo, the brewery reported 550 barrels produced in 1992, but that slipped to 450 by 1996. Levis says he expects sales to reach 650 to 700 barrels this year.

The larger brewing kettle and a used heat exchanger (also from a dairy; it took four days to clean out the dried milk) make life a little easier for Levis,



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who does all the brewing himself. He was 17 years old when his father started the brewery, and he spent his summers helping out and learning the business from tutors such as Brad Kraus and Laure Pomianowski, who went on to brew elsewhere. Levis took over as head brewer in October 1994, "whether I was ready or not."

He begins the brewing process by hauling a large plate mill from a shelf high above and taking it outside to reduce the amount of dust in the brewery. It takes about 45 minutes to grind 350 pounds, and the mill tends to tear up the grain. The result is messy trub but a high extraction rate. "We deal with the protein as it comes," Levis says.

The hot liquor tank holds enough water for the boil and about

half the sparge, then Levis finishes the sparge with water from the hot water heater. Before the "new-old" heat exchanger went on line, knocking out a seven-barrel batch took an hour and 45 minutes plus 800 gallons of water. Since the brewing area can be 40° F in winter and 90° F in the summer, "it's like you are brewing outdoors," Levis says — which, because the brewery uses unjacketed fermenters, caused inconsistency.

To compensate, the partners built a fermenting room that is constantly at 65° to 68° F. When it's time to bottle or keg, Levis snakes a hose through a drain and into the fermenting room. Since the beer is only lightly filtered, it begins showing chill haze when served at any temperature below 65° F. "For some reason, we do well with

telling people that's natural," Levis says. "It's okay to have beer that's a little rough around the edges. I think having that charm is really important."

The beers are bottle conditioned with dextrose and yeast harvested from the fermenters, but the brewery doesn't own enough kegs to keg-condition the keg product, nor does it have a vessel suitable to use for forced carbonation. Instead, they employ a premise many homebrewers can understand. Each keg gets a shot of carbon dioxide, followed by a ride on a 55-gallon drum shaker that came from a Los Alamos scrapyard. "You find a way to get it done with what you have," Levis says. "We used to bang them against the wall in Galisteo."

Santa Fe no longer makes a "training wheels" beer. "That's what the old wheat was," Levis says. In the spring the brewery abandoned its American-style wheat for a traditional Bavarian weizen made with 60 percent malted wheat and a Bavarian yeast strain.

Santa Fe Pale Ale is the brewery's flagship beer. It's an American-style pale ale made with pale, crystal, and cara-pils malts and measuring 36 IBUs. Other year-round beers are a nutty English-style brown ale and a smooth, chocolaty English-style porter. Although the brewery has only made labels for the pale ale and wheat beer, the porter and brown ale are also regularly sold off-premise in bottles.

Seasonals include a dry stout, malty Scottish ale, India pale ale, and Chicken Killer Barley Wine. This year's barleywine, named for a fowl-killing dachshund whose portrait is among the black-and-white photos that decorate the taproom, started at 25° Plato. The stout, named Maxwell's Silver Stout for another dog who was jealous, has five specialty grains and is balanced with a hefty 73 IBUs. The stout recipe came from one of two homebrew batches Levis made while in college. He entered it in the 1995 New Mexico State Fair competition, and it beat out 55



At the tasting room, which features outdoor seating, visitors can taste beers available only at the brewery.

beers.

"The recipes have changed quite a bit over the years," Levis says. "We've taken steps to improve the beer and still be true to what we think the style should be."

Draft sales have climbed to about 35 percent of production, but even when bottle sales were higher the brewery did best selling directly to restaurants and bars. "We're better paired with food, maybe. That's the way it plays out for us," Levis says.

Food isn't regularly available in the tasting room, but the brewery has hosted some catered events, which boost cash flow while alerting patrons to the fact that the tasting room is open daily. While all the seasonal beers are bottled, they often are available only at the brewery. "We entice (customers) a bit with the exclusivity," Levis says. "They have to come here to get it."

Back when his father ran the brewery, Levis noticed that serving the local market was the key. Even if Santa Fe Brewing begins selling beer in Arizona and Texas, the customers who stop by to pick up a six-pack of the 18° Plato Scottish ale will determine the brewery's

success in the next 10 years.

"They are your foundation; those are your roots," Levis says.

His father almost stumbled into the business. He was trying to sell wine bottles to New Mexico wineries (the state has about two dozen), when he began to wonder why breweries hadn't popped up like wineries. "He thought, 'Why isn't there a small brewery? Why isn't there a little guy making beer?'" Levis says.

Mike Levis saw an advertisement for the Boulder Brewing Co. equipment. "He knew nothing about

brewing, nothing about home-brewing," Ty says. There were just over 100 microbreweries and brewpubs in the United States in 1988. "I was 17 at the time, and (starting the brewery) was pretty impressive," he says.

And keeping one going for 10 years is quite impressive, too. ■

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



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Tonight the Bottles Let Me Down

by Douglas Harwood

There's this girl I've known since I was about four. She lives year-round near where I spent summers with my grandparents. We've always been good friends, a lot of shared history. We wouldn't see each other for long periods of time, but we always seemed to meet up at strange periods in our lives — times of joblessness, singleness, hopelessness. I came to believe it was fate and so did she. We started dating, then brewing together.

She got really into it. I designed the brews and she designed the labels. I poured, she stirred. In our long talks in front of the stove, she would complain about her previous boyfriend's affinity for Coors Lite. Her kitchen was bigger than mine, so I moved my carboy, keg, and bottle capper out to her place. I grew hops in her garden next to her tomatoes. She even let me put a damn tap handle on the refrigerator she had on the porch. The woman of my dreams. Happiness was mine, a cold beer and a warm woman to share it with.

But even this was a small aspect of our relationship. We had much more in common, or so I thought. Then I got "the talk." Actually it was just silence at first, a week or so without a returned phone call. Then the talk. "It's not you, it's me." Blah, blah, blah. "We've just grown apart." Blah, blah, blah. "I really don't have plans to see anyone else." Blah, blah, blah. "Can't we just be friends?"

Stunned. I hadn't seen this coming. After all, we had just returned from what I thought was a perfect weekend getaway. How long had she planned this? What had I done? All my fears were real!

My God! What do I do about all the beer that I left at her house?

I decided to leave her the bottled beer and I would just rescue the kegs. That's fair, right? She had been the one to secure the bottles anyway, and she liked to give them away all decorated in her especially artistic and thoughtful way. She lovingly wrapped them in ribbons and labeled them specific to the occasion. It was a tasty and thrifty way to deal with all the people we forgot to shop for at Christmas or on birthdays. Of course, between the two of us that always added up to a couple



My perfect woman and homebrew partner left me for a Coors Lite drinker.

of cases during the holidays, but we were prepared.

We agreed that I should retrieve my personal effects from her place sometime while she was at work. We thought that would be emotionally easier on both of us. I went to her house when I was sure she was gone and started loading my car. I

simply didn't believe the amount of stuff I had accumulated there. No wonder she was sick of me; I had turned her home into a warehouse for my junk. It took me several trips and all day to move the miscellaneous pieces of my life back home, including one entire car load of brewing equipment.

I had one moral problem left, what to do about the \$75 tap in the fridge door. Did I leave it and buy another or take it and leave the door marred as a reminder of me?

At first I decided to leave it, but the thought of her next boyfriend enjoying its benefits generated incomprehensible rage. So I got the tools and in a fit of that spiteful rage, I began to take the damn thing off just as she came home.

She found me with the spanner around the neck of the tap.

"Hello," I said looking nonchalant.

"Um, hi. You took all the brew stuff?" she remarked.

"Yes, shouldn't I have?"

"Well, I thought we could still brew together sometimes."

I was having a hard time restraining myself. I was almost done though, and I opened the fridge door to get at the nut inside. She stiffened noticeably when I found a 12-pack of Coors Lite there. "Oh, I see," I said flatly. "I usually reserve the honor for people who love me."

I slid the tap mechanism out from the door and screwed the loose pieces together. Then I left without another word and without looking back, leaving a hole in her refrigerator only slightly smaller than the one in my heart. ■

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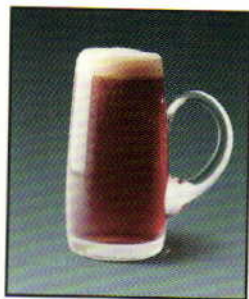
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