# Amateur Brewer Communications

## FOR THE SERIOUS HOME BREWER

**Amateur Brewer No. 11** 

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Spring-Summer-Fall 1984

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"We glory in the title AMATEUR." G.K. Chesterton.

# TALK to your BEER

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IF THERE'S A RED "R" PENNED ON YOUR LABEL, you've expired. Send money (\$9, if by Jan 31) to renew (add \$1.75 if you live in Canada). If you are also a <u>Listen to</u> Your Beer subscriber, and you wish to renew that publication, add another \$8. (That's \$17 to renew both).

LATE? I suppose you could call it that. When you are a procrastinator late becomes a way of life. We've gotten ourselves a business manager and that should help. <u>Amateur Brewer</u> is not an easy publication to work with. I really can't B-S my way through one of these. The articles must all be accurate and technically correct. The Dortmund beer article is one I did about three years ago, and I've been playing with it off and on since then. I really don't know how many "final" drafts I've made of that article. Dortmunder is one of my favorite beers, but the truth is that you really can not get the proper ingredients, i.e., Dortmund malt. Whatever you do is going to be an imitation, but even the imitation beer is great beer, so I went ahead.

WHEN IS AN AMATEUR?

When I first started this publication (late 1976) I picked the title Amateur Brewer because I didn't want to associate this style of brewing with what was generally known then as "homebrew". Homebrew (continued on page 13)

**Cover Photo:** Beer Still Life by Fred Eckhardt. The "Cheese and Cracker Bus Company?" The C&CBC label is Fred's, of course.

Pulsissipad by Fred Edidnards

#### ON THE VICISSITUDES OF BREWING LAGERS — OR TAKE ME BACK TO MY SIX-PACK

#### by Fred Eckhardt

I believe in traditional brewing. Beer should be made *only* from malted barley, hops, pure water and yeast. Period. Ideally, I'd even exclude malt extract syrup and spend the better part of a day pursuing a grain mash and wort-boil. Malt extracts, cereals, and all other ingredients are adjuncts and additives, and thus no-nos.

Comes the first compromise — I'm not THAT pure, after all. Purity means starting at 10 am Saturday and working more or less continuously until 10 pm just to get a wort ready for ferment. I have done that many times, the results are superb, and well worth the effort; but there's more to life than brewing, so I often compromise. Selective compromise is what makes life interesting. You pick and choose knowing that the more complexity you require the greater the chances of failure and the higher quality the finished product at the end, if you are successful.

You can add hot water to your hop-flavored malt extract, dissolve same, add cold water, a packet of yeast, allow it to ferment, bottle at just the right moment to carbonate the beer, and drink it in five days. You can do that, but you can also get a 6-pack, and leave brewing to people who care.

My purpose, really, is to discuss some complexities of the lager brewing process, since lager brewing seems to be much misunderstood these days.

First, please understand that the word "Lager" is from the German lagern — to store. Aging if you will. Any beer which has been aged is a Lager beer. Here in the U.S., as in Britain, most commercial beer is aged to some extent — so it's nearly all lager.

However, lager beer as we know it, is cold fermented. There is more protection from spoilage bacteria in a cold ferment. "Colder is better," is what I tell people. Ferment as cold as you can manage considering yeast and brewing quarters. Summer-time is not good brewing time. The standard beer yeast *Saccharomyces Cerevisiae* (we call it ale yeast) is not cold attemperated and is not really usable below 58°F (14.5°C) so a different yeast, *S. Uvarum* is needed. *S. Uvarum* is a bottom-fermenting yeast, i.e., it ferments in the body of fermenting beer and settles directly to the bottom without sporulating. The common *S. Cervisiae*, however, ferments in the body of the beer and is carried to the surface of the beer by CO<sub>2</sub> gas before finally settling to the bottom where it becomes dormant and sporulates. Sporulating is the ability of the yeast cells to form clumps within a group, protected by a shell. This shell protects the yeast against alcohol, heat and cold. Lager or bottom yeast has no such protection and is vulnerable to extremes of heat and alcohol but will continue working almost to freezing. This allows us to ferment beer in a very cold environment, free from harmful bacteria.

True lager beer, then, is fermented in primary at 42-56°F (5.5-13°C), finished at 35-38°F (2°-3°C), and finally aged at 32°F (0°C) for a lengthy period. During this time the beer clarifies itself brilliantly to produce a much smoother tasting product because of the long slow ferment and aging. Any good ale wort could be processed in that manner to produce a smoother ale and that is indeed what some breweries do in this country. Such a beer is called "bastard ale" and sometimes cream ale.

A fallacy about lager beer is that it requires "soft" water, i.e., water low in calcium hardness. Most beers need some hardness to maintain a proper pH in the mash to effect enzyme activation. If the water is not hard, the pH balance must be attained by another method. This is less true for dark beers than for pale ones.

The very pale, classic *Pilsen* beer is made by adding the malt to well-water (about 50 ppm hardness) at 54° (12°C). About a third of the volume of water is first drawn off and heated to a boil. This, when returned to the above mash, raises the whole to a temperature range of 95-105°F (35-40°C). This temperature range, and the circumstances, combine to encourage the growth of lactic acid bacteria, which in turn achieves the proper pH level for the mash to continue. At Pilsen, this "lactic acid rest" sometimes takes up to six hours. So there you have the secret of brewing with soft water — a six-hour acid rest! Only a purist would go to that length. Hard water does it better; so add hardening salts as necessary up to 500-650 ppm Burton if you please. Of course, if you are a purist . . .

A word here about mashing. At Pilsen the mash is continued by the traditional three-step decoction method: a third of the mash is brought to a boil and returned to the main mash kettle, with the result that the mash temperature is raised to 125°F (52°C). This activates protein conversion enzymes, a necessity when you use continental-style malts made by a more primitive malting system than that employed in England. A protein rest is useful for U.S. malts and beneficial even for English malts.

A second third of the mash is again boiled, and returned to the main mash, raising the temperature to about 150°F (65.5°C). This permits the starch

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breakdown to be completed. Another, and final, third is brought to a boil and returned, resulting in a final mash temperature of about 170°F (76°C), which deactivates the enzymes. The mash is transferred to a straining vessel, called a lautering tun, where it is sparged, drawn-off and boiled in the usual manner. The decoction system was needed because of the rather primitive style of malting used on the continent.

British malting traditions have provided a more complete product, reducing the need for temperature steps. The third-portion decoction method was the only way to get proper temperature: and let us remember there were no thermometers in the old days. The British brewer of that era was able to find a proper single temperature (without thermometers) by looking at his reflection. His face was best reflected at 65-71° (150-160F) a proper range for starch conversion. Early English brewers use a single-step decoction method. A significant portion of the water had to be boiled and added to the mash tun to arrive at a proper conversion temperature. Decoction mashing requires more equipment, while an infusion mash may be carried out in one vessel — a mash tun.

The highly modified British malt gives a more harsh product with the single step infusion system, while the more primitive German malt produces a smoother beer wort by decoction methods. U.S. brewers developed an intermediate malt and methods to deal with that in the beer making process.

The final, (big) difference is hops. We've come to expect a certain hop flavor in our continental lager. *Saazer* or *Hallertauer* hops are extracted and traditional.

The truth is that you can mix and match to make some very interesting variations. I've tested some excellent German ales obviously made from continental malts and *Hallertauer* hops and there are many lagered American "bastard" ales still around. We can mix and match any way we want, but if it's smoothness you desire, an upward-step-infusion-mash, followed by cold ferment aging will improve your ale.

There are at least four Northern European brewing traditons. The oldest is **Bavarian**, rich and dark but not as rich and dark as *stout*. **Bavarian** brewers were the first to discover cold brewing methods around 600 A.D., when they learned to pack their beer in ice, (harvested from nearby lakes and streams), and allowed it to age, ("lager"), all winter in deep caves. The resulting "Summer Lager," strong in alcohol and rich in color, was consumed during the summer. The last of it was used to celebrate the harvest — Oktoberfest — in September. No beer was produced in the summer (true also in England). German law restricted lager brewing to a period form Sept. 29 to Apr. 23 each year. This **Munich** lager was a blend of winter brewings, and when the first beer was ready, it was used to celebrate spring (*Bock* beer).

Bavarian brewers, notably the second Gabriel SedImayr of Spaten Brauerei pioneered the use of mechanical refrigeration to produce "artificial ice" by 1875.

The traditional Bavarian beers are made with diastatic medium-dark malt

similar in some ways to traditional British pale malt (pre-war). Added color was obtained by using dark roasted malts. Of course, in medieval times, neither German nor English brewers could brew pale beers due to their miserable malting methods and lack of quality control under any circumstances. The alcohol content of **Bavarian** beers is medium to high 4.2-11% by volume (3.4-9%/wt.) *Hallertauer* hopped, at 2-3 grams per liter (0.3-0.4 oz/USgal), they were mild beers.

The Bohemian (Czechoslovakia) brewers had always produced fine beer, but in 1842 a monk carried some of the hitherto closely guarded Bavarian yeast to Pilsen. The yeast was used to produce the very pale light beer which carries that city's name. This amalgamation of two great brewing traditions produced the most successful beer style of all time. **Bohemian** malt is very light in color, having been kilned at fairly low temperatures and medium in alcohol (4.2-5.4% by volume — 3.4-4.3%/wt). The color is very pale, and the beer is well hopped at 4-5 gm/liter (0.5-0.7 oz/US gal) with *Saazer* hops. This great beer has been copied all over the world with some interesting variations. There are even some very pale English ales in this style, and U.S. brewers have produced nearly hop-free and low alcohol "lite beer." Original *Pilsner* (**Pils**-



KLAGES • MUNICH • VIENNA • CHOCOLATE • CASCADE HALLERTAUER • MALT • BLACK • HOPS • TETTNANGER

WH MO		E	BRE	WINC	G SI	P	ECIAL	ΓIF	ES	MET DER
STC BRE		(4	HOTLI 14) 873	NE 3-4556			RE MAIL	ORI	DER	MEL TER
TAI	2	768	North	Sherman	Blud	-	Milwaukee	W/I	53210	LEY

MILDALE • PALEALE • YEAST • CARAMEL • FUGGLES GOLDINGS • BARLEY • STOUT • BULLION • COMET • RICE **ner Urquell**) is made in direct fired kettles, fermented and aged in wood (lined with pitch), and produced by blending four different batches, fermented by four different pure yeast strains.

Meanwhile, in the mid-1800s, (1836-1860), the great Austrian brewer Anton Dreher developed the third great lager style from *Wiener* (Vienna) malt, sort of a cross between **Bavarian** and **Bohemian** malts, and which I understand is no longer being made. My information is scanty, but an 1888 analysis shows **Vienna** beer (see Table) alcohol at 4.9% by volume (3.9%/wt), hop levels, 3-4 mg/liter (0.4-0.5 oz/USgal). The color of the beer was similar to that of pale ale, i.e., between that of the two beers described above. DeClerck, in his *Textbook of Brewing* (Vol. I, 1957), states that the taste was "at the same time aromatic and bitter . . . not compatible [qualities]." This Austrian style of beer was picked up in Munich where it was made to celebrate the famous Oktoberfest, although in our day the beer is made from a blend of Bohemian and Munich style malts rather than from true Austrian malt.

The fourth of the great lager styles originated in the mid-nineteenth century comes from Dortmund. Dortmunder beer is a pale beer similar to, (but not quite as pale as), Bohemian lager. It has a less bitter and mellower palate, is fully attenuated (fermented down), and brewed from *Dortmunder* malt, which differs from Bohemian malt by being more fully modified — almost English — yet kilned more rapidly with a lower terminal temperature (167°F — 75°C), as compared to 230°F (110°C) for English pale malts. *Dortmunder* water is almost as famous as Burton water, with 1110 ppm hardness compared with Burton 1790 ppm. Dortmunder beer is medium high in alcohol content: 4.8-6% by volume with medium hop content (traditionally 3-4 mg/liter 0.4-0.5 oz/USgal). These days most of the beer shipped from Dortmund to the U.S. is of the Bohemian style, but sometimes one can find D. A.B. Original and Dortmunder Kronen Classic (Malt Liquor only) as samples of the true Dortmund style of beer.

The table shows a comparison of analysis of late nineteenth European and American beers.

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eer-type, Brand, (year) UU	5	Beer SG	A Leott			est hop b.u. *	% tart
ilsner Burgerliches 10 1901)	052.2	1013.6	4.7	3.7	4 -5	26	0.082
uenchner Lowenbrau 10 1888)	060.2	1014.2	4.2	3.3	2 -3	16	0.186
iener Michelob 10 1888)	054.2	1015.2	4.9	3.9	4 -5	24	0.125
ortmunder <u>Victoria</u> 10 1884)	065.4	1019	5.4	4.3	4 -5	24	0.125
.S. Milwaukee lager 10 all malt) (1901)	052.3	1012.7	4.7	3.7	3 -4	30	0.34
ale Ale Bass & Co. 10 1896)	061.1	1007.2	6.7	5.3	6 -8	77	0.195
raught Ale Somerset 10 1879 analysis: 1882)	087.5	1008.6	10.3	8.2	10-13	150	0.525
ream Ale, U.S. ** IC 1901) .	055.4	1009.0	5.7	4.5	4 -6	50	0.120
xtra Stout Guinness 10 1896)	067.5	1018	6.8	5.4	7 -10	85	0.59
ortmunder Adambier (alt) 11 1864 analysis: 1897)	101.8		8.8	7.0	1	242	1.96
trong Ale Worthington 11 urton (1800 analy: 1890)	100	10301	10.4	8.3		150?	3.32

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#### WHEAT BEER by

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Wheat beers have long been respected in continental Europe as an important specialty beer. In recent years, however, this has been transformed into a literal explosion of interest. In fact, wheat beers are now by a wide margin the fastest growing beer style in sales there.

They were once popular in North America, particularly with the small neighborhood breweries found in many urban areas near the turn of the century. Wheat beers, however, do not lend themselves to mass production techniques, and hence it has been decades since they have been available here as a commercial product. Nevertheless, wheat beers are a natural product for the small scale brewer, and this article was written in the hope that it would stimulate some interest.

For brevity attention is confined to Bavarian wheat beers commonly called Weizenbier (the Berliner weiss is another story!). Even here a great deal of latitude is possible. Wheat beers are typically hand-crafted products specially brewed to reflect a "house character." Thus the following should be viewed only as a guideline and a possible place to start.

**GRAINS.** There is a good deal of evidence which suggests that for best results wheat beers should be brewed in strict compliance with the *Rhenheits-gebot*. In particular, all the extract should come from malted wheat and malted barley. Even the turn of the century North American wheat beer brewers followed this purity law in spite of their deviations with other beer styles.<sup>2</sup> The old phrase, "wherever wheat beer is brewed there will be a Rheinheitsgebot and wherever there is a Rheinheitsgebot there will be wheat beer" is not an ideological statement but a simple reflection of practical experience.

Two basic issues are pertinent:

1) The ratio of malted wheat to malted barley;

2) The total amount of grains to be used.

Both of these are "house options," and there is considerable variation. As for the first issue, a good starting point is for there to be slightly more barley than wheat; say 60% barley malt to 40% wheat malt. The data in Table 1 assumes this proportion.

As far as original extract (starting gravity) is concerned, one can find two

	Brewing Data Measurements: U.S., Metric, British			
TOP OF OF OF OF	Traditional	Modern		
Original Gravity (extract)	1040 (10°B)	1051 (12.5°B)		
Beer Gravity (apparent extract)	1006 (1.5°B)	1012 (3°B)		
Mash Thickness (water/grains)	61-floz/lb 4-liter/kg 63-Ukfloz/lb	61-floz/1b 4-liter/kg 63-Ukfloz/1b		
Protein rest	108°F42°C 1:00 hours	108°F42°C 1:00 hours		
Starch Conversion	151°F66°C Hold 1:00 hours past conversion (about 1:45)	154°F68°C Hold until starch conversion		
Sparge Temp	174°F79°C	174°F79°C		
Sparge water (water/grains)	77-floz/lb 5-liter/kg 80-UKfloz/lb	50-floz/lb 3.25-liter/kg 52-UKfloz/lb		
Kettle Boil	10% volume reduction	10% volume reduction		
Grains ratio b:w (barley malt)	57:43 11-oz/USgal Barley M 80gm/liter " 13-Oz/UKgal "	60:40 14-oz/USgal Barley Malt 105gm/liter " 17-oz/UKgal "		
(wheat malt)	8-oz/USgal Wheat M 60gm/liter " 10-oz/UKgal "	9-oz/USgal Wheat Malt 70gm/liter " ll-oz/UKgal "		

vields. In such cases one would realigative grains than cited in Table 1, to get

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extremes. In one style a normal original extract of 2-12.5°B (1048-1050) is used with a standard mash (see Table 1). This style was summarized in the excellent article by William Petrij.<sup>3</sup>

The traditional wheat beer style, on the other hand, uses a lower starting gravity (9-10°B, 1035-1039), but the wort is highly attenuated. Like many English ales this is achieved by holding the mash well past starch conversion in order to achieve a favorable ratio of maltose to dextrins. (See Table 1.)

It should be noted that wheat malt is rich in proteins, and it is very important for the flavor profile and foam stand of the finished beer that these be degraded into subunits (peptides, amino acids) in a proper protein rest. This is particularly important for those using water with a low permanent hardness (250 ppm or below) and malt with relatively weak diastatic and proteolytic enzyme systems (e.g., most 2-row malts). In Table 1 a time of 1 hour is cited for the protein rest. Many can probably use a shorter time, however this is a point that should be carefully checked. The mash is also slightly thinner than usual to assist enzyme activity.

It is assumed in Table 1 that the yield of both the wheat malt and barley malt is 75%. This figure is fairly reliable for wheat, however, as is well known, the yield of barley malt can vary. For example, some 6-row malt can drop to 65%

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yields. In such cases one would need more grains than cited in Table 1, to get the same original extract. Top quality 2-row malts, on the other hand, can always be counted on to yield at least 75% of their weight in extract.

**HOPS.** In wheat beers hops play a secondary role in the overall flavor profile. The figure cited in Petrij's article,<sup>4</sup> namely 1/10 kilograms hops per hectoliter of wort is typical. One nevertheless should use top quality hops and Hallertauers are favored. When fresh they should have an alpha acid content of 6%. Thus, using Eckhardt's formula<sup>5</sup> the bitterness units should be near b.u.=9, which is about right for wheat beers.

To illustrate Table 1, suppose we want to brew 1/4 hl (25 liters (6.5-US gal). For the modern formulation we need:

10.5/4 = 2% kg. barley malt (5.8-lbs)

7/4 = 1¾ kg. wheat malt (3.8-lbs)

or a total of 43% kg. of grains (9.6-lbs). This is combined with:

 $4 \times 4\frac{3}{8} = 17\frac{1}{2}$  liters (4.6-US gal)

of water in the mash. Following this one sparges with:

 $3\frac{1}{4} \times 4\frac{3}{8} = 14\frac{1}{4}$  liters (3.75-US gal)

of water at 79°C (174°F). Of the

 $17\frac{1}{2} + 14\frac{1}{4} = 31\frac{3}{4}$  liters

of liquid only

28 liters (7.4 US gals)

(approximatley 90%) will be delivered to the brew kettle due to moisture remaining in the grains. Assuming a 10% volume reduction in the kettle boil, one should wind up with approximately 25 liters of wort at 12.5°B (1050).

For the traditional formulation, on the other hand, we need

 $8 \times \frac{1}{4} = 2$  kg. barley malt (4.4 lbs)

 $6 \times \frac{1}{4} = 1\frac{1}{2}$  kg. wheat malt (3.3-lbs),

or a total of 31/2 kg. (7.7-lbs) of grains. Thus

 $3\frac{1}{2} \times 4 = 14$  liters (3.7 US gals)

of water needed in the mash, and

 $3\frac{1}{2} \times 5 = 17\frac{1}{2}$  liters (4.6-US gal)

of water is used for the sparge. Again, approximately 28 liters of this is collected, and with a 10% volume reduction in the kettle boil one should get 25 liters of wort at 10°B.

**FERMENTATION AND AGING.** There are two basic options in this area. With the traditional approach the wort is top fermented at 21°C (70°F) which generally takes three days. Following this it is racked off its sediment into "warm tanks" and held for one week at 17-18° C (63-40F). It is then racked a second time and combined with fresh wort and top yeast (saccharomyces cerevisiae). The amount needed is discussed below. When this is completely dissolved it is transferred to bottles where a second fermentation takes place. (Old hat for amateurs!)

There is no attempt to clarify traditional wheat beer, and it usually murky from beginning to end. This is not the case for the modern style developed at Weihenstephan.<sup>6</sup> Here the beer is also top fermented — this is crucial for the proper flavoring of any wheat beer — but at a slightly lower temperature (16-18°C — 61-64°F). This will take around four days, and following this the beer is racked and the temperature is lowered to 0°C. The beer is left in cold storage for one week, following which it is given a primary filtration, kraeusened with fresh wort and bottom yeast (Saccharomyces uvarum), and held at 10°C (50°F), until the second fermentation is complete (approximately one week). At this point it is filtered under counter pressure into bottles.

Such a procedure can be used by small scale brewers with micro-filtration and bottling units such as manufactured by Zahm and Nagle of Buffalo, N.Y. If such equipment is not available then the beer can be left in cold storage until it clears naturally. Only a few weeks should be needed. One could then use the traditional conditioning procedure described above except with bottom fermenting yeast.

It has been my experience that priming sugars are not a satisfactory substitute for all malt wort in any of these procedures.

**CO2 LEVELS.** These run high in wheat beer, sometimes as high as 3.5 volumes. Needless to say, at this level, one should carefully inspect the bottles used for any cracks or other defects.

With equipment like that produced by Zahm and Nagle, carbonation is straightforward. Using a sufficiently large Kraeusen (say 25% of beer to be primed or more) one can be assured that a sufficient amount of CO<sub>2</sub> will be generated. Referring to pressure-temperature-CO<sub>2</sub> charts one can bleed off excess pressure to achieve the desired CO<sub>2</sub> level. For example, at 10°C (50°F.), 25 psi will yield 3.25 volumes of CO<sub>2</sub>.

For the procedures using bottle conditioning the following has proven to be effective. First, the yeast, (top or bottom) is completely dissolved in a sample of the beer to be primed. This is then added back to the beer after it has been racked.

The general rule for wort addition is:

1 vol.  $CO_2 = .18^{\circ}B$  fermentation extract.

Thus, to get 3.25 vols. — a reasonable figure for wheat beers — one would need to increase the gravity of the beer to be primed by:

 $3.25 \times .18 = .6^{\circ}B$ 

with fermentable extract. Now, wheat malt is typically 75% fermentable and barley malt 60% fermentable (65% in the traditional mash cited in Table 1). Thus if one is using 60% barley malt and 40% wheat malt, the overall fermentability of the wort to be added is:

 $(.6 \times .6 + .75 \times .4) \times 100 = 66\%$ 

Thus this wort should be added to the beer to be prime until the gravity of the mixture has been increased by:

#### $.6/.66 = 1^{\circ}B$

Once this has been well dissolved, it is then transferred to bottles where the second fermentation takes place.

**SANITATION.** Wheat beers are notorious for their propensity for bacterial infection. One point that was repeatedly made to the author by German brewmasters, in visits there, is that in 95% of the cases sour wheat beer can be traced back to less than ideal sanitary conditions. (How often amateurs tend to blame such problems on a grain mash!) This caveat is mentioned not to scare people away from wheat beers, but merely to note that the margin for error with respect to sanitation is rather small. By all means one should constantly think "clean, clean, clean" with these beers.

FLAVOR PROFILE. Wheat beers are a balance of the following:

- 1) A clean acidity as well as esters from the top fermentation,
- 2) A snappy and zestful contribution from the high CO<sub>2</sub> levels,
- 3) A unique smooth and rich contribution from the malt, especially the wheat malt.

As this suggests, wheat beers are best consumed young, right after reaching peak conditioning.<sup>7</sup> They tend to fall completely apart when subjected to a hostile environment (e.g., prolonged agitation and excessive temperature variations), and this is one reason why they will never be mass produced. What I find amazing about them is that they are certainly in the "less satiating" beer category. However, *bland* they are not!

#### FOOTNOTES

<sup>1</sup>The author is grateful for the hospitalilty and technical information given by Max Graff, Jr. of the Hirschbrau Brauerei at Ottobeuren and Manfred Modinger of the Wurzburger Hofbrau Brauerei at Wurzburg. This article could not have been written without their help.

<sup>2</sup>Zimmermann, Adolph, "Brauereibetriebslehre," Buffalo, N.Y., 1904. (unpublished)

<sup>3</sup>Amateur Brewer, No. 10, Winter, 1983-4.

<sup>4</sup>The 100 grams per liter of hops on page 9 of Petrij's article should read 10 grams per liter.

<sup>5</sup>Amateur Brewer, No. 4, Fall 1977, pp. 59-60.

<sup>6</sup>The traditional style is sometimes called Weizen-Hefe to indicate that yeast (Hefe in German) is \_present. The modern style is generally called Weizen-Klar.

It is also traditional to add a slice of lemon to the glass of beer.

George Fix lives in Upper St. Claire, PA, where he makes superb beer, having won prizes in many competitions. George is a classic example of the true "amateur brewer." His beers are technically superb as well as merely being superb homebrews in the usual sense. George's qualifications are of such calibre that he has been accepted as a member of the prestigious (professional) American Society of Brewing Chemists!

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(continued from page 1) had a particularly bad reputation, and I was trying to build a new base for something else. Real beer, made at home, is definitely not the same as "homebrew". The title Amateur has a long and distinguished history. The world's finest swimmers are "amateurs', but in photography the comparison is truly appropriate. The professional photographer may or may not be a fine craftsman, but in every case he must bring home acceptable pictures. The amateur photographer, on the other hand, may be a superb craftsman when he takes the time to do good But he doesn't have work. to make good pictures every time out in the same way his professional brother does. The amateur has no deadline, and only needs to satisfy himself. The professional needs to be consistantly good, but not necessarily great. This is what I mean when I talk about the amateur brewer. As an amateur brewer, you may make better beer than many professionals in their



breweries, but you don't have to repeat the performance on command. It is my hope that we can provide information and inspiration to just this class of homebrewer.

George Fix is such a person, his home brewing equipment is of such quality that it could easily pass for a large brewery's pilot brewery. The finished product is equally superior, and if you follow the methods outlined in his article "Wheat Beer" (page 8), you too will brew a beer of superior quality. There are many amateurs of distinction out there, and we hope to bring their ideas and formulations to you on these pages.

In nearly every issue of this publication I have also made certain to provide good recipes and procedures for those of us who really don't care to go to such lengths on every brew. The Dortmund formula has been adapted to simpler brew in the extract recipe for that beer, and also in the "Munster Hefen Alt-bier" recipe. Both recipes use Hansberg German malt extract available in many stores around the country. You can also make use of any other malt extract you find.

Authenticating what suppliers call German malt extracts is another matter. A major West Coast supplier refuses even to discuss the (continued on page 28)

#### DORTMUNDER VICTORIA LAGER BEER by Fred Eckhardt, © 1984

Dortmunder lager is cold fermented; you will need a second refrigerator. Before using a refrigerator to make beer, you must sterilize it thoroughly. Rinse the interior with a very strong solution of 1600 ppm sodium hypochlorite (4 Tbspn household bleach: 1 guart/liter water). Saturate a cloth with the solution, and wipe/rinse all over the interior. THEN RINSE THE RESIDUE OFF. Bleach is VERY corrosive, and the solution should not remain long in contact with metal. Next, burn a sulphur stick, available from most suppliers. In a clean catfood tin (or similar) place sand, and stand the lit sulphur stick in the sand. Close the refrigerator, but leave the door slightly ajar, for oxygen to enter. Needless to say you should do this outdoors, or in a very well ventilated room. Finally you need to calibrate your refrigerator's temperature settings. Stand a carboy, filled with water, in the refrigerator, and determine the temperature of each of the refrigerator's temperature settings. I found mine to hold a nice 54°F(12°C) on defrost, and 42°F(5.5°C) at the highest regular setting. I use Defrost for primary ferment, #6 for secondary, and #1 for lager (33°F - 0.5°C), Perfect,

Alternately, you might brew at first frost in the Fall, conduct the ferment as cold as possible and lager in the traditional manner by leaving it all winter in your cellar or basement. Keep the carboy well insulated. Even temperature is the key to success in lager brewing.

Two recipes follow, a malt-extract beer (Table 2), featuring Hansberg Malt Extract from Germany, the only German malt extract I have found to be available widely in this country. (I have a copy of the Hansberg import certificate on file). Unfortunatley it is not a true Dortmunder malt extract, and none are currently available in this country to my knowledge. Nor is there a Dortmunder malt available for the grain recipe (below). If Dortmund malts (extracts) become available by all means substitute them for similar amounts of pale malts described here. These are Dortmund *style* beers, but the recipe is adapted form that in my book, which has always been one of the most popular of them. Use pale crystal malt, if you have a choice, and the lightest colored 2-row malted barley in the all-grain recipe. I crush my own malts, but if your dealer does that job, by all means save yourself the effort. Watch it done to be sure your malt will be as fresh as possible. Use *Hallertauer* hops, if you please, but I generally use Oregon Cascades, from habit.

#### POINTS TO REMEMBER

1. Clean and sterilize all of your equipment. Use Household bleach (sodium Hypochlorite 5.25%), 2-Tablespoons (30ml) per USgallon or 4-liters. This solution may be used to rinse your equipment and does not need to be removed (except from metal and rubber). Have no fear that your beer will be contaminated with chlorine as this is only a concentration of about 440ppm, and most of that will dissipate by the time you get your equipment in use. There will not be enough residue to harm you or your beer or your yeast, and the extra bacteriacidal action is well worth any inconvenience this may cause you. Do not use strong bleach solutions in your aluminum equipment as the aluminum reacts with the bleach to form chlorine gas!

2. Colder is better. The colder that you can manage your ferment, the better chance you have to keep stray bacteria from the beer. Most harmful bacteria are ineffective in cold temperatures. Lager beer is, by definition, cold fermented and aged, so warm is risky.

3. Keep air out. After the initial yeast buildup, during which the oxygen is very necessary, the ferment will only be damaged by contact with air. The easiest way to conduct an oxygen free ferment is to use the single stage carboy ferment outlined in my book (**Treatise 7th Ed**) or in *Talk* newsletter 9-1, March-April 1983.

4. Use only the highest quality ingredients. Always buy first class malt extracts and grains, and buy them from reputable merchants, even if doing so costs you more. Quality, or lack of it is a hidden ingredient in everyone's beer. Send a stamped, self-addressed-envelope for a listing of quality mail order merchants near you.

#### MALT EXTRACT RECIPE — see Table II

Grind the crystal malt grains and place them in a cheesecloth bag, and put that in your brew kettle with about two gallons water. Steep at about 155-158°F(68-70°C) for about a half hour. Temperature is not at all critical when dealing with crystal malt in this primitive fashion. Rinse the grains with hotter water and press the liquid from the grain bag, and discard the grains. To this add the malt extracts, dry and syrup, and the malto-dextrin, and bring the kettle to a boil with as much extra water as you have space for (to volume plus 10%). The wort boil is described below. If you are making the malt extract recipe (above) skip the following and go to "Wort Boil," below.

#### ALL-GRAIN RECIPE — see Table III

The next section describes an upward-step infusion mash sequence. This is a thinner mash than you may be accustomed to working in single step mashes. Remember to stir regularly. 11 generally use Oregon Cascades, from habit

#### DORTMUNDER VICTORIA EXTRACT-GRAIN RECIPE (TABLE II)

5-USgallons	Finished Beer	20-liters
5.8-gals	total beer to make	23.25-liter
2 × 3.3-lb	Hansberg malt extract two cans needed	3.0-kg
2-lb	pale dry malt extract	1.0-kg
1-lb	pale crystal malt	1.0-kg
5-oz	malto-dextrin Hops: <i>one</i> of below	140-gm
2.5-oz	Hallertauer 7% a.r.	75-gm
2.0-oz	Hallertauer pellets 8.5%	60-gm
3.0-oz	Cascade 6%	90-gm
2.5-oz	Cascade pellets 7.2%	75-gm
26 HBU	Total Hop Bitterness Unit (see AB 4,p59)	26 HBU
1063 (15.4°B)	estimate Original Gravity	1062 (15.2°B)
1017 (4.3°B)	est Beer Gravity (terminal)	1017 (4.3°B)
4.8% (wt)	est alcohol content, beer	6% (vol)

#### **DORTUMUNDER VICTORIA ALL-GRAIN RECIPE (TABLE III)**

5-USgallons	Finished beer	20-liters
5.8-gals	Total beer to make	23.25-liter
about 11.5-lb	2-row pale malt (based on 1030 yield)	about 5.4-kg
1-lb	pale crystal malt	450-gm
0.5-lb	dextrin malt	225-gm
Hops — see hop r	notes in the Extract recipe (above).	
26 HBU	Total Hop Bitterness Unit (see AB 4, p59)	26
1065 (15.9°B)	estimat Original Gravity	1064 (15.7°B)
1020 (5.1°B)	est Beer Gravity (terminal)	1020 (5.1°B)
4.6° (wt)	est alcohol content, beer	5.9% (vol)

#### **UPWARD-STEP INFUSION MASH**

Naturally, if you were doing a *proper* Dortmund beer the mash would be decoction. If you wish to do that, the directions are found in our **Mashing Notebook** (or **Mashing II**). The following upward-step mash is simpler.

Assuming good hardness in your water, grind your malt so that the malt will be crushed with the husks mostly intact. Do not pulverize. In a large vessel, such as your brew kettle, place about 45-oz water per pound of malt (2.9-liter/ kg), about 16 qts or 15.5-liter of water. The amounts are not critical, nor are the steps which follow, please remember that. Almost anything you do will probably be OK. There's plenty of room for error, so don't worry, have a beer and relax.

Bring the water to 122°F (50°C), add the malt (both pale and crystal) and stir with a wooden spoon or paddle thoroughly and regularly. The temperature will drop to 116°F (47°C), now bring the mash back up to 122° very slowly over a 30-minute period and hold it there for another 30 minutes, stirring regularly. Do not worry about temperature variances — do your best — everything will work out nicely.

Now raise the mash to  $140^{\circ}F(60^{\circ}C)$  in about 10 minutes and hold there for about 5 minutes. Keep stirring regularly. Next, raise the temperature to  $153^{\circ}F(67^{\circ}C)$ , and hold that until conversion is complete. Keep stirring. Use an iodine test to determine starch conversion. (a drop of iodine to a drop of liquor, if it turns blue, continue; brown, conversion). Test at 5-minute intervals until conversion. About 30 minutes should be enough. Whatever it takes, when the iodine test shows conversion, raise the mash to  $167^{\circ}F(75^{\circ}C)$ , keep stirring until then.

Now transfer (pour) the mash into whatever container that you use as a lautering or straining vessel, (after warming that vessel with hot water). Now let the mash settle for 30 minutes in your lauter or mash-tun.

Meanwhile, heat the sparge water in your brew kettle, (about the same amount of water you used originally in the mash), heat to about  $170^{\circ}F(76.5^{\circ}C)$ , and tap your mash-tun to draw off some sweet wort. At first the flow will be cloudy, but it will soon clear. Return the first-draw cloudy wort to the mash-tun and run the clear wort into your brew kettle(s). The total volume will be about  $6\frac{1}{2}$  to 7 gallons (25-27 liter). Now the wort is ready to boil, and of course you need a brew kettle of about 8-gallon (30-liter) capacity, but I use two smaller units of 5-gallons each. I boil them half an hour apart to simplify the procedure.

#### WORT BOIL (BOTH RECIPES)

You must boil the all-grain formula vigorously until the wort concentrates to just less than the total volume required 5.8-gallons (23.25 liter), which will take up to two hours.

The malt extract recipe must be boiled vigorously for at least an hour and a quarter.

UPWARD-STEP INFUSION MASH

The wort must be boiled *vigorously* for the entire time, you are not steeping tea, simmering has no place in this brew.

The vigorous boiling process has three purposes:

- 1. Rejection of unwanted and unusable proteins.
  - 2. Incorporation of hop resins into the wort.
  - 3. Concentration of the wort to improve flavor, color and yield, especially in all-grain brews.

The initial boil, in your kettle, will result in what the brewer calls "first break." This will be small, whitish flakes being thrown out of the vigorously boiling wort, against the wall of the kettle, above the liquor level. These albumen or protein constituents must be eliminated or they will affect the taste and fermentability of your beer.

The hops are never added until *after* the first "break." Separate about a fifth (20%) of the hops and save them for use as aromatic hops at the end of the wort boil. About an hour before the end of the wort boil, add a third of the remaining (bittering) hops. This will result in a "hop break," more protein and tannin rejection.

Thirty minutes later, add half the remaining bittering hops, and ten minutes after that, the last of the bittering hops. More "hop breaks."

We classify hops as bittering and aromatic hops. Bittering hops are selected for their resin content and aromatic hops for their aroma.

Bittering hops may be older, may be pellets, or even hop extract, (not in MY beer, however). Add the oldest first, save the best for last. High resin is the criterion, use more as necessary. Fresh hops are desirable, but pellets, too, are quite acceptable.

Aromatic hops are added at kettle strike or when you remove the kettle from the heat. I think fresh hops are best for aromatic hops, but of course, pellets are also acceptable, too.

At the end of the wort boil, you should set the kettle off the stove, or even better, pour the finished wort into your mash tun, over the aromatic hops. Allow the wort to settle there for at least half an hour.

Separate your Krausen-wort at the time: about 38-oz (1.25-liter). Take it right from the kettle while still very hot. Cap or stopper the bottle, cool and store in the refrigerator until bottling time — see later. This is also the time to save some wort for a yeast starter for your next brew (if so you should have made a larger batch of wort). If you have no mash tun for settling the wort, use another kettle. Whatever you do — don't worry about it, have another beer. The volume here allows about a half gallon (2-liter) extra for racking loss, etc.

During this half hour the "hot break" (more proteins and the hops) will settle in the kettle or mash-tun. Draw off the finished hopped beer wort through your mash-tun, sparging the hops to rinse whatever extract they retain. If you use a kettle, decant the wort from it, or remove through your wort cooler.

The wort is now in another vessel. Cover it and cool quickly to yeast

pitching temperature (68°F — 20°C) and then *rack* the wort to your fermentor. This allows a "cold break" — more protein and tannin rejection. Leave the dregs (called trub) in the bottom of the settling vessel. The best fermenting vessel is a carboy filled to the shoulder. In the five gallon carboy there will be about  $\frac{34}{2}$ -gallon extra. Ferment this separately in a 1-gallon bottle, but a 25-liter (6½-gallon) industrial carboy is better.

#### **THE FERMENT**

Beer making is a three stge process. Wort preparation, ferment and finishing. We have completed stage one: Preparation. The beer wort is now ready for ferment. You may ferment and bottle this beer by whatever method you use regularly with any beer you make.

My recommendation is the traditional cold ferment in a carboy followed by long storage (lagering) in a refrigerator as I've already suggested.

Lager yeast (saccharomyces Uvarum) is necessary. Follow the directions, find a culture if you can, as the dry packet is not always reliable. If you use dry yeast use three packets for this batch, rather than the two called for in the directions. Pitch the wort at the above 68°F temperature, and move the carboy into the refrigerator (on defrost — 55°F/13°C). Next place a 1″ (25mm) plastic tube in the mouth of the carboy, as described in my book (**Treatise on Lager beer, Seventh ed**). After about 20 hours a cauliflower head (the Germans call this stage krausen) will develop. Krausen stage beer is truly beautiful to view. After the krausen head collapses, lower the temperature to 50°F (10°C). Attach a fermentation lock, with a cotton plug, instead of the tube. After about four days the beer will be in secondary ferment stage. Top it up with water or wort (or even commercial beer!) or rack to a five gallon carboy if you've been using the larger 6½-gallon size.

By the 8th or 10th day secondary ferment should be complete. The gravity will be 1007 to 1012 depending on malt combinations, manufacturers, etc. Rack to a 5-gallon carboy if you've not already done that (above). Set the temperature to lager,  $31-33^{\circ}F(-0.5 \text{ to } +0.5^{\circ}C)$ . Store, or lager, for about five months at this temperature. Close the fermentor (loosely) during this time. Stage II, ferment and aging is now complete.

#### FINISHING

Stage III — finishing — consists of bottling or packaging the beer. The yeast will be almost completely removed, or dormant, by now, so you must use a bottling method called krausening (worting, as it is called in England). This is the reason you saved the bottle of wort from the original brew, (see earlier). Warm the wort to room temperature, transfer to a half-gallon (2-liter) bottle, add new lager yeast, and allow it to set, under cotton plug, for about four to eight hours. Also remove the finished beer from the refrigerator and allow it to warm to room temperature.





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Now you are ready to bottle the beer by krausening — natural all-malt ferment in the bottle. Rack the lagered beer to an open container and add the fermenting wort to it and bottle by your usual method. The krausen will provide natural carbonation in the bottle or keg.

As we all know, lager beer has no sediment, so if you want sediment-free beer you must bottle in champagne bottles and disgorge the beer. (Cheap champagne comes in bottles which may be crown capped), but any good, strong, longnecked beer bottles will do. You do need additional krausen, however, and because this would mean yet another revision of the basic recipe, let us merely add malt priming to the krausen. I call this hop-krausen, and it will add a lovely hop bouquet to the finished product much the same as dry hopping.

The basic krausening we have described will yield about 2.5-gas volume  $(C)^2$ ), or less than 1.2-atmosphere  $(1.2-kg/cm^2)$  pressure at 50°F(10°C). We need an additional atmosphere pressure, because that is the approximate pressure loss in the disgorgement process, hence the following priming mix must be added to the krausen, for the bottling sequence, prior to disgorgement.

#### HOP-KRAUSEN METHOD (PRE-DISGORGEMENT)

Dry malt extract, at a rate of 6.5 gm/1 will provide sufficient additional pressure increase for the disgorgement to be successful. The amount for this recipe: 4.5-oz (130-gm).

Draw off two cups of the finished beer (before adding the wort as described above), to that add the dry malt extract. Dissolve and bring to a boil for about 5-10 minutes, add aromatic hops at about  $\frac{2}{3}$ -oz — 20-gm, and boil for another 5 minutes, strain and cool. Be sure to rinse the hops with a little extra beer, and press them to extract all of the sugars. *Hallertauer* hops are best. Add this mix, with the krausen wort, to the beer to be bottled. Fill the bottles (champagne or other very strong bottles, please) to a slightly higher level than usual, about 50-mm (2") from the cap in champagne bottles.

#### DISGORGEMENT

After about two weeks of storage in the usual manner, turn the bottles upside down in their case. About twice a day lift each a few inches, and drop it to the bottom of the case, turning it a quarter turn or so. This is called *riddling*, and you should be careful to wear glasses or other eye protection while doing it. After another week or so, the sediment will settle on the cap. Stand another two weeks or a month, so the sediment will harden a little.

Place the beer to be disgorged in your refrigerator to lower the temperature. Keep the bottles cap downwards.

After the bottles are thoroughly chilled, you are ready for the final process which involves freezing the sediment in the necks of the bottles. This will be done below), and leaving them for about 10 minutes or until ice crystals can be seen forming in the neck of the bottle.

#### THE FREEZING MIXTURE

An old one-gallon plastic bleach bottle will make a nice container to hold a bath for 2-3 bottles at a time. Cut the top of the plastic bottle away, the part with the neck and handle. Use the cheapest alcohol you can find (methyl or even rubbing). You need about 16-24 oz (500-750 ml) of the alcohol. The freezing solution is produced by adding a two or three pound block of dry ice (CO<sup>2</sup> ice, 1- 1.5 kg), available in many places such as Baskin and Robbins Ice Cream Stores. If you wish, you may substitute a strong brine solution for the alcohol, but this is very corrosive.

#### PROCEDURE

You should wear heavy clothing (with sleeves) and face/eye protection while disgorging your beer. The process is less complicated than it seems. I have done it in front of a class, so it has to be simple.

1. Place one or two bottles at a time in the freezing mixture, caps down, and leave them until ice crystals can be seen to form in the neck (about 10 minutes). Wipe the bottle before proceeding.

2. While seated in front of a good size corrugated box, laid on its side, open-end towards you; point the bottle so that it will discharge the plug against the inside of the box. In a quick movement, remove the cap with a

bottle opener, and the plug, consisting of sediment, yeast, etc. will fly out into the box.

3. **QUICKLY** — wipe the inside of the bottle with your finger to remove any sediment adhering to the lip of the bottle. Cover the mouth of the bottle with your thumb or finger, and **QUICKLY** cap the bottle again. About one-atmosphere of CO<sup>2</sup> pressure will be lost in the process. Believe it or not you have plenty of time to do the above operations.

4. Allow the beer a couple more weeks to settle down before consuming. This is a beer you can take camping, or wherever, and it won't cloud on you (except chill or protein haze, of course). This beer may be drunk directly from the bottle, and good to the last drop! This is the way you should finish any lager beer if you plan to enter it in competition.

There you have it, good **Dortmunder** Lager in the traditional fashion. PROSIT!





### MUNSTER HEFEN ALTBIER

This is an easier, simpler, top-fermented, bottle conditioned beer to make than the Dortmunder Victoria.

#### MUNSTER HEFEN ALT GRAIN RECIPE (TABLE IV)

5-USgallons	Finished Beer	20-Liters
6-gals	Total beer to make	24-liters
about 51/2-6 lb	2-row pale malt (based on 1030 yield)	2.75-3 kg
3.5-lbs	Munich Malt	1.6-kg
10-oz	Caramel malt	280-gm
1.5-oz	Black malt	45gm
Hops — see Dortr	nund Victoria recipe: 26 HBU	
1051 (12.6°B)	estimate Original Gravity	1051
1016 (4.1°B)	est Beer Gravity (terminal)	1016
3.6% (wt)	est alcohol content, beer	4.5% (vol)

**ALL-GRAIN PROCEDURE** 

Use the same method as described in the Dortmunder Victoria recipe. Use all of the malts (ground) including the black malt (¼ cup). You will not need to boil this lower gravity beer as long to reach final volume. Hop rates and procedure is the same in both beers, but the alt will taste hoppier due to its lower gravity.

#### MUNSTER HEFEN ALT EXTRACT - GRAIN RECIPE (TABLE V)

5-USgallons	Finished Beer	20-liters
6-gals	Total beer to make	24-liters
1 × 3.3-lb	Hansberg Malt extract	3.0-kg
2.5-lb	Dry malt extract (use the best you can find)	1.25-kg
1-lb	Caramel malt	0.5-kg
1-lb	Munich Malt	0.5-kg
1.5-oz	Black malt (¼ cup)	45-gm
4-oz	Malto-dextrin	115-gm
Hops — see Dort	mund Victoria recipe: 26 HBU	
1048 (11.9°B)	estimte Original Gravity	1048
1013 (3.3°B)	estimate Beer Gravity (terminal)	1013
3.6% (wt)	est alcohol content, beer	4.5% (vol)

#### MALT EXTRACT — GRAIN PROCEDURE

Grind the caramel and Munich malts together along with the black malt (¼ cup). Place them in a cheesecloth bag, and steep at about 155-158°F(68-70°C) for about an hour and a half. Rinse the grains with hotter water, press the liquid from the bag and discard the grains. Add the malt extracts, the malto-dextrin, and water to volume. Follow the wort boil instructions in the Dortmunder Victoria recipe.

#### FERMENT

When the wort boil has been completed separate the krausen wort (64-oz – 2 liter). Store refrigerated until bottling time.

Use a good dry ale yeast such as Red Star. Pitch at  $80^{\circ}F$  (26.6°C), use 2 packets. Start the yeast in a cup of water or wort heated to  $105-110^{\circ}F$  (40-45°C). Follow the single stage ferment directions from the **Treatise**, **7th Ed.**, or **Talk to Your Beer 9-1**.

#### FINISHING

Final gravity should be 1010 to 1016 or so. Set the krausen in a warm bottle and warm it to room tempeature. Add a new packet of *lager* (bottom fermenting) yeast, allow it to set under a cotton plug for four to eight hours. Warm the finished beer to room temperature, add the yeasted krausen and bottle in your usual fashion.

#### **BOOK REVIEWS**

Making Beer, William Mares, 1984, Alfred A. Knopf, Inc., New York, ISBN 0-394-72328, paperback, \$7.95

The ultimate home brew book may never be written, but *Making Beer*, by William Mares, comes pretty close. Bill chronicles his career from exploding bottles and vinegar to a wardrobe of home brewed beers as good as any lifted anywhere in the world. With a warm and readable writing style, he covers both the technical details of how good beer is made at home, and the reasons why people brew. The monetary savings and the pleasure of having different styles of good beer are there at first glance, but behind it all is the satisfaction from the creativity of home brewing. The master brewer is an artist with malt and hops, and the home brewer can experience the same pleasure in his own special creation. Mares covers the history of the real beer movement in America, and has talked with practically everyone who has been involved. He examines the lure of operating a microbrewery, but is not timid about explaining the many pitfalls. *Making Beer* is an important book for not only

those who brew, or would like to brew, but for anyone who is interested in the experience of artistic expression.

- Patrick Baker

The Great Beer Trek, (A guide to the Highlights and Lowlites of American Beer Drinking), Stephen Morris, with illustrations by Vance Smith, 1984, The Stephen Green Press, Brattleboro, Vermont, ISBN 0-8289-0525, paperback, \$10.95.

Stephen Morris, his wife Laura, and Guinness, the dog, climbed into their well-used Chevy van in Massachusetts, and drove 18,220 miles trying to learn what beer in America is all about. Their odyssey took them through the east, to New Orleans and Texas, back through the mid-west, through the Rockies to California, and finally the Pacific Northwest. Morris describes interviews with brewers large and small, drinking sessions with sundry kindred spirits, and visits to beer-related establishments across the country. He includes an array of beer facts that will intrigue anyone who is interested in what is in his glass of beer. He never finds the answer to his riddle of the attraction of beer, but shares the experience of his quest, which all will enjoy.

Patrick Baker

Pat Baker is a Western CT writer, and a partner in Winemaker Ltd. and the Village Store of Westport, MA. Pat's monthly column in All-About Beer is one of that magazine's outstanding features. He is the author of the New Brewer's Handbook.

The Complete Joy of Home Brewing, Charlie Papazian, 1984, New York: Avon Books, 332pp, illus., paper, ISBN: 0-380-88369-4, \$8.95.

The request to review one more book on homebrewing was met with something less than blatant enthusiasm. In a field already crowded with "how to do it" books, (all too many of which have shown how not to do it), this book would have to be good to earn its shelf space.

The Complete Joy of Homebrewing, by Charlie Papazian is his second book on homebrewing. His first, The Joy of Homebrewing, had an almost adolescent, "party up" attitude. But just as homebrewing has grown up, so has Charlie's writing and editing, as reflected both by Zymurgy and his new book.

Charlie has accomplished what no one else has been able to do; namely, to present a complete, thorough, and serious yet relaxed work for the begininning through intermediate/advanced homebrewer. Within the 332 pages, there is enough for everyone.

Charlie's background in educating children has served him well in preparing a detailed, yet simple homebrewing text. After a short introduction to beer styles and history, Charlie starts us brewing with a clearly explained uncomplicated beer. In three short paragraphs, he teaches the beginning brewer proper sterilization, a theme which will be continued throughout the book. In fact, it is probably mentioned as many times as his famous, "Relax! Don't worry, have a homebrew!"

Throughout the book, Charlie sets out proper brewing techniques. And with each one, he not only gives thorough, simple explanations, but also gives alternative methods with their pros and cons. Again, as with sterilization, Charlie returns to what he feels are the best techniques with subtle hints and urgings throughout the book. For example, while discussing both one and two stage methods of fermenting, including the old open fermenter, he comes back to the use of the one-step carboy method in various recipes.

And speaking of recipes, one could hardly ask for more! After a very basic recipe for the neophyte, Charlie presents the brewer with two options. The first is a four page chart covering the ingredients for twenty-four different beer styles. The alternative course, for those who prefer something a little more definite, consists of thirty-nine malt extract recipes. And if that weren't enough, the book continues on into six more recipes, introducing the brewer to simple mashing techniques coupled with extracts. From there, the brewer is encourged to leap from the precipice into the world of all-grain mashing. As usual, the leap is cushioned by Charlie's simple, but thorough explanations of equipment, procedures and theory. Nine recipes follow; thus giving the reader a selection sufficient for one brew a week for the entire year, with a couple left over for that week of vacation.

As if this weren't enough, the book continues on with eleven appendices, including kegging, kraeusening, mead making, hop growing, an excellent commentary on perceiving flavor, and a whimsical treatise on siphoning.

My only criticism of the book is that its length and price, (\$8.95 list), may seem overpowering to someone who has never brewed before. However, for clarity, thoroughness, and the most recent and correct information on brewing, it can't be beat. To paraphrase J.A. "Espo" Esposito, "A book with balls!"

— Tim Moore

Tim Moore is newsletter editor for the Oregon Brew Crew, Portland, OR.

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#### **CALENDAR OF EVENTS**

Is there a home brew event coming soon near you? Perhaps one sponsored by your club or organization? Let us know, send all the details in time for us to publish them. There is no charge for this service.

May 28-31, 1985 National Homebrewers/Microbrewers Conference, Denver, CO, AHA, Box 287, Boulder, CO, (303) 447-0816.

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#### **AMATEUR BREWER**

P.O. Box 546 Portland, OR 97207 (continued from page 13) origins of his bulk product, and a Canadian supplier is equally closed mouth. I've no doubt the products are genuine, but why all the secrecy?

A good example of this is a new company called German Beer Specialties in Barton VT professing to have German Bavarian Malt Extract and Hallertauer hops, yet when I wrote them, the letter was forwarded to a Canadian address in Nova Scotia, and when I called the telephone number on the flyer, the phone company said the number had been disconnected at their request. They have a full page ad in Zymurgy, but you can't contact them. I'm sure everything is on the up and up, but it makes you wonder doesn't it? Only <u>Hansberg</u> has authenticated their product's origins at this point.

#### NEW PRODUCT

Mike Pickering, President of <u>Brewmaster Systems</u>, ltd., of Vancouver BC is offering several items to homebrewers. A 6-gallon (USgal) hard plastic fermentor to use as a single stage fermentor. The new fermentor is bottle shaped (see advertisement to the right) with a spigot at the bottom. What the ad doesn't show is the punt (indentation at the bottom) which would settle the yeast in the trough around the bottom of the fermentor. This would make racking or bottling much more likely to exclude the sediment. They also offer a sphere for putting the beer on draught, and an electric warming belt to keep fermentors, such as carboys, warm on those long winter nights in the basement or garage. The product line is being offered by <u>F.H.</u> <u>Steinbart</u> in Portland (see ad for address).

If you are one of those who think all-grain beer is the <u>only</u> way, then you haven't tried <u>Thousand Oaks Lager</u> (Berkeley CA) or <u>London Real Ale</u> (Palo Alto CA) both commercial brews from malt extract, and both very fine beers.

Dave Wills tells me he has a good supply of <u>FRESHOPS</u> on hand in the 1984 varietals including Washington <u>Cascades</u>, <u>Bullions</u>, and <u>Tettnangers</u>, Oregon <u>Fuggles</u> and <u>Willamettes</u> (<u>Fuggle</u> replacement), and new <u>imported</u> German <u>Hersbrucker</u> (aromatic) and English <u>Kent</u> <u>Goldings</u>, (see ad p22).

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