

Baron Mind

A Monthly Publication for the Beer Barons of Milwaukee
Dedicated to the Education and Enjoyment of Fermented Malt Beverages

February 1995

February Meeting

The February monthly meeting is at 7:30 PM on February 22nd, at Clifford's (10418 W. Forest Home Avenue, Hales Corners). As usual, the meeting is \$5.00 per person for members.



Meeting Programs

February 22nd	Brewing High Gravity Beers Dennis Davison and Brian North
March 22nd	Irish and Irish Style Stouts and Ales
April 26th	To Be Determined
May 24th	To Be Determined

Calendar of Events

March 27th	Bock is Best Club-Only Competition. Entries due March 20th. Contact James Spence at (303) 447-0816, Ext 121
April 22nd	Bidal Society of Kenosha Competition, Kenosha, Wisconsin. Entries due April 15th. Contact Carol DeBell at (414) 654-2211
April 23rd/26th	Institute for Brewing Studies' Microbrewers and Pubbrewers Conference and Trade Show, Austin Texas. Contact Nancy Johnson at (303) 447-0816
May 11th/14th	HWBTA Conference, Atlanta Georgia. Contact Dee Roberson at (813) 685-4261
May 29th	Rauchbier Roundup Club-Only Competition. Entries due May 22nd.
June 14th/17th	AHA National Homebrewers Conference, Planet Beer, Baltimore, Maryland.
August 1st/5th	Great British Beer Festival, London England. Contact CAMRA at 0727 867201
August 26th	Weiss is Nice Club-Only Competition. Entries due August 14th
October 6th/7th	Great American Beer Festival XIV, Denver, Colorado. (303) 447-0816

What's Hopping!

A Monthly Column
by Peter McMullen



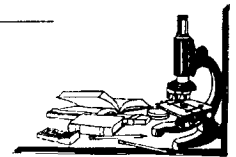
I hope everyone enjoyed all or some of the four star beers we had at the last meeting. The night was also good in that we sold some Beer Baron T-shirts. This coming month we will have a clinic on brewing high gravity beers by our very own Dennis Davison and Brian North. We will be sampling both homebrew and commercial brews of the stronger variety. So buckle your seat belts and bring a friend.

We would like to build the club up into a strong membership. We would like to do this for the benefit of good meetings and the grooming of future officers. So whenever you get the chance, spread the good word about your club. Last meeting I mentioned the idea of entering some of the AHA Club-Only competitions. I will list the rest of the year calendar with their deadlines. Those wishing to do this should bring their brews to the previous month's meeting.

Bock -	March
Rauchbier -	May
Weiss -	August
Vienna/Fest/Marzen -	October
Brown Ale -	December

Yeast Starters

Anonymous from the Internet



My personal preference is to make a starter somewhere stronger than the 1.020 mark. More like 1.030, or 1.040. I think that falls about 1 cup DME per gallon. Off the top of my head. I'm actually usually pretty lazy about measuring, and just put 4 to 8 tbs. into a liter flask.

I've found that weaker starters don't really give the yeast a good enough boost to get them going well. I do like to let them ferment past high kreusen and start to settle out before pitching. You don't want them in exponention, but in stationary phase for pitching so that they have good glycogen reserves to draw from.

As for nutrient - another topic of debate. It will depend somewhat on the quality of your malt used in your starter. And how to determine that is a mystery the suppliers will probably never solve for us! There are also different kinds of nutrients. Ammonium sulfate, or phosphate is basically a supplier of nitrogen. The yeast extract type of nutrient will also add vitamins and amino acids which the yeast are likely to find useful.

For a mead/cider/wine I would definitely add nutrient to the starter. For a brew...there should be plenty of these elements in a good malt, but to be certain that you have a good healthy/strong yeast culture to start that is not deprived of any essentials, you may wish to add nutrient. The amount you quoted seems reasonable. But, hedge on the side of not enough, as opposed to too much. You don't want to over-ammonify your bugs. Too much nutrient can be a bad thing. This has been accused of causing off flavors and long aging times to achieve drinkable meads. That is a different topic of debate in itself. My inclination is to add a little nutrient to the starter, and not add it to the ferment itself.

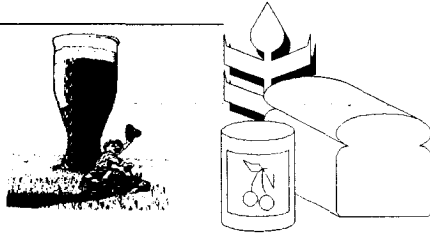
Baron Mind Deadline



Life is full of deadlines, and *Baron Mind* is not an exception. Our deadline is insure that the *camera ready copy* gets to the printer in time for you to receive your copy in the mail before the monthly meeting. *Baron Mind* goes to the printer 10 days before the meeting. To insure your article, or news item, is included in the current month's issue, please submit it by the first Saturday of the month.

Beer or Bread

by Thomas Kavanagh



Which came First: Beer or Bread? The recent experiments in brewing Babylonian beer (Soloman Katz and Fritz Maytag, *Brewing an Ancient Beer, Archaeology*, July 1991) have rekindled several threads in the popular media about the role of beer in the origins of agriculture, often with reference to a brief discussion in the 1953 *American Anthropologist*. As an anthropologist, often teaching Intro Anthro, and as a home brewer, I have a dual interest in the question.

What I want to do here is present a brief summary of that original 1953 discussion and its implications as presented in the Katz/Maytag popular article and in Maytag's advertisements for *Ninkasi Beer*. In October of 1952, Robert Braidwood (U Chicago), published a brief article in *Scientific American* in which he discussed the "food producing" revolution of the Neolithic period, beginning about 10,000 years ago. He did not directly suggest a causal relationship between bread making and the domestication of grains. In a personal letter,

Jonathan D. Sauer (Botany, U Wisc.) responded to Braidwood, asking "whether the earliest utilization of domesticated cereals may have been for beer rather than bread." Braidwood apparently liked the suggestion, and took the opportunity to make use of the symposium-by-mail format of the *Am. Anth.* to pose this question to his colleagues: "Could the discovery that a mash of fermented grain yielded a palatable and nutritious beverage have acted as a greater stimulant toward the experimental selection and breeding of the cereals than the discovery of flour and bread making? Was the subsequent impetus to this domestication bread or beer?"

Braidwood began with a brief discussion of the Neolithic technology associated with grains, sickles, grinding stones, pottery, noting that none of the technological artifacts necessarily implied either beer or bread. But Braidwood noted that when recovered archaeologically, cereal grains were almost invariably charred. Thus he asked, "whether these charred kernels may have been overfired accidentally in the parching process by which the malt was prepared, although I have seen grain parched for other purposes." Sauer added that since the heads of wild cereal grains shatter when mature, scattering the seed, the collection of wild grain "would seem to me a game scarcely worth the candle except for a more rewarding stake than mere food."

But none of the seven scholars who responded accepted Braidwood's suggestion at face value. Hans Halbaek, curator of prehistorical agriculture at the Danish National Museum, rejected the suggestion that charred grain reflected a brewing/malting operation, noting that in malting only enough heat is

applied to kill the germ, not enough to carbonizing the grain. Thus any such carbonized grains must resulted from some other operation. Furthermore, all of the carbonized grain obtained from the early sites was ungerminated: it was not malt.

Paul Mangelsdorf of Harvard noted that in the various strains of wild wheat and barley, the glume (husks and chaff) adhere to the grain. Thus, without additional processing, the early grains might have been more suited to beer than to bread. However, he also noted that other than the cereals, no other carbohydrate food source was available to the ancient NearEasterners. But since beer would not serve as the major source of carbohydrates, he argued that "man cannot live on beer alone, and not too satisfactorily on beer and meat." Mangelsdorf then expanded the discussion, noting two other grain food products besides beer and bread: gruel and unleavened bread. As had Halbaek, Mangelsdorf noted that parching was not part of the malting process, but it would have been an effective way of removing the glume. The grain could then be soaked in water to make gruel for the toothless young and old, which might spontaneously ferment.

At the same time, he noted that all too often, when we in the West think of bread, we think of yeastbased leavened loaves. But technologically, unleavened bread and gruel is a precursor to both leavened bread and to beer, indeed in at least one method of brewing, the partial baking of yeast bread is prior to the steeping of the loaves and fermenting into beer.

Similarly, A. Leo Oppenheim (philologist, U Chicago)--who had already published a fifth or sixth century BC copy of an earlier text in his booklet "On Beer and Brewing Techniques in Ancient Mesopotamia", and in whose honor the Ninkasi Hymn was translated and published--noted several other ancient food products: "the preparation of vegetable food stuffs (not only cereals), without the application of fire, developed into the manufacture of pulpy dishes (gruel) -- made palatable by seasoning or by sour fermentation--ar-*ar*'preserves' (such as malted barley, etc.)."

These techniques led them to the making of barley-cakes as well as brewing of several types of beer-like beverages. In summarizing the discussion, Braidwood made two comments. The first was that "if the earliest Near Eastern beer was brewed from germinated grain malt as Mangelsdorf thinks probable," then the ungerminated grain from Jarmo offers "no evidence of the process." The second was that the earliest uses of grain was probably as gruel not bread.

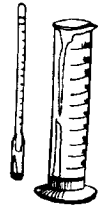
Comment -- All in all, the "symposium" was inconclusive. At best, it pointed out that stating the question "beer or bread" as prime mover in domestication was far too simplistic to be answered; perhaps it is now better to say gruel _and_ beer _and_ (unleavened) bread were important product points in the process of the domestication of grain.

This leads to another point: the Katz/Maytag discussion of the Beer/Bread symposium is generally irrelevant to their otherwise excellent discussion of the process of brewing the Babylonian beer. That is, their recipe refers only to brewing techniques and products ca. 1800 BC, it says nothing about the products and processes 8000 years before that, nor of the causes and processes of domestication of grains.

Although they give the disclaimer that their efforts are merely a "time platform" with which to consider earlier techniques, on the bottled product, the Anchor Brewery's ad man's hyperbole gets in the way of history: the label calls Ninkasi an "attempt to emulate man's first beer brewed 5000+ years ago." This, of course, is doubly incorrect, it is not only not the "first beer," the Babylonian recipe is only 3800 (not 5000) years old.

Other references on early brewing: A. L. Oppenheim, *On Beer and Brewing Techniques in Ancient Mesopotamia*. H. P. Lutz, *Viniculture and Brewing in the Ancient Orient*. A. Lucas, *Ancient Egyptian Materials and Industries*. E. Huber, *Bier und Bierbereitung bei den Volkern der Urzeit I, Babylonien und Aegypten*.

Baron Mind is published by the Beer Barons of Milwaukee, a nonprofit organization. Club officers are President - Brian McManus, 545-2838, Vice President - Peter McMullen, 962-6834, Treasurer - Bill Myers, 769-0732, and Newsletter Editor - Jeff Brown, 961-2084. The *Baron Mind* is published monthly for members of the Beer Barons of Milwaukee thanks to the efforts of Jeff Brown, Rich Grzelak, and other club members who contribute articles. The permanent mailing address is Beer Barons of Milwaukee, PO Box 27012, Milwaukee, WI 53227.



Balling's Formula for Alcohol Content

by George Fix

Spencer Thomas and I were recently discussing justifications of the various formulas used to compute alcohol levels in homebrew, and he suggested I post the following.

The Guy-Lussac theory of fermentation suggests that the % alcohol produced (expressed in grams/100 grams) is proportional to the amount of sugar fermented (also expressed in g/100g, or what is the same degrees Plato). Thus if OE is the original extract (in deg. P) and if RE is the residual extract at the end of fermentation (better known as the real extract), then (1) the percentage of alcohol by weight = $F*(OE - RE)$

Moreover, the Guy-Lussac theory suggests that the numerical factor F should be 1/2; i.e., half of the sugar metabolized goes into alcohol production. It was quickly learned that this was not quite right, and that corrections were needed to get accurate results. In commercial brewing the most widely accepted expression is due in large part to Balling. He worked in a time when German mathematicians like Runge were making rational approximations popular, and that is how Balling approximated the empirical data available to him. His expression goes as follows: $(2) F = 1./ (2.0665 - .010665*OE)$.

The combination of (1) and (2) gives the classic Balling formula. Note that F, the fraction of sugars fermented that go into alcohol production, increases with increasing OE. This effect is well documented in the literature.

Most homebrewers prefer to work directly with hydrometer readings, which give the apparent extract AE instead of RE. The two can be approximately related by

$$RE = .8192*AE + .1808*AE.$$

In addition, most prefer to express alcohol levels in % vol. This can approximately be done by multiplying (1) by 1.25. Finally, most prefer specific gravities OG, FG to extracts OE, AE. Here the "factor of 4" rule can be used; i.e.,

$$OE = 1000*(OG - 1.)/4 \quad AE = 1000*(FG - 1.)/4.$$

Putting these together gives

$$\text{alcohol by vol.} = 1.25*F1*(OG - FG),$$

where

$$F1 = 99/(1. - 1.3*(OG - 1.))$$

Note that this and the rule $1.25*105*(OG-FG)$ give the same results for $OG = 1.048$ and $FG = 1.010$, namely 5%. However as $OG - FG$ increases the factor 105 becomes less accurate.

Aging Ales

by Jim Busch



Many brewers have aged ales after the completion of primary fermentation. Altbiers and Kolsch, immediately come to mind. In these examples, the beers are actually given a period of cold conditioning, or lagering, over a period of 2-3 weeks. Usually, these beers are filtered prior to serving, but after the aging period is complete.

English, real ales, are aged, albeit for a brief period of time. When referring to real ales, it is considered "conditioning" the ale. This is a period of between 2 and 7 days, occurring after primary fermentation has completed, and of course, in the presence of yeast. During this period finings are added, and the beer is conditioned until carbonation develops, and the expected "star brilliance" is achieved.

Modern American ales (and most micros fall under this), are usually fermented out, and filtered. The filtering is often performed as soon as one day after primary is complete. Once the "bright beer" is in the bright beer tank,

aging is complete, and the beer will only decline, or hold steady with time. No further development of taste, or "mellowing" will occur after the yeast is removed. Oxidation/reduction reactions do alter the beer at this point.

Some brewers (Sierra Nevada) filter the beer, carbonate to about 90% of the final CO2 volumes, then add just enough yeast and "sugar" to achieve a bottle conditioned, finished beer. This has the advantage of scrubbing the beer of any residual oxygen, and giving some homebrewers a source of clean yeast. It is because of this process that relatively clean yeast can be scavenged from the SNPA bottles, it is fresh yeast at bottling time. Other brewers rely on keeping oxygen out of the bottle by using modern, sophisticated bottling equipment. Good bottlers spray a jet of water into the top of the just filled bottle, which causes a good deal of foam to be generated, and the bottle is capped quickly as the CO2 froth is foaming out.

The last form of aging is what most of us employ, a period of warm conditioning where the beer is carbonated naturally, and then chilled, or a period of cold storage, followed by forced carbonation. During this period, residual yeasts, can reabsorb fermentation byproducts such as diacetyl, and if the yeasts are not treated roughly (shock excretion), the fermentation byproducts remain in the yeast cell when the cell dies, and flocculates. If the normal fermenter never produces a high degree of byproducts, then there is no problem with skipping the reduction step. It is of interest to note that different yeast strains produce vastly different amounts of fermentation byproducts, and as such, selection of yeast strains greatly influence the required aging periods.

In my brewery, I practice some of each method. Some of each batch is put directly into Cornelius kegs, a period of cold conditioning is followed by coarse filtration. Sometimes these beers are served within 2 weeks of brew day. The other half of each batch is primed with sugar, warm conditioned and then cold conditioned.

Beer Traveler's Vocabulary List



A Beer by Any Other Name.....

Afrikaans:	oke
Albanian:	birre" (e" = e-umlaut, pronounced approx. schwa)
Arabic:	bira (birra)
Armenian:	garejure (transliteration)
Basque:	garagarnoa
Bulgarian:	bira
Burmese:	biya (transliteration)
Croatian:	pivo
Czech:	pivo
Dutch:	bier
Finnish:	olut
Flemish:	het bier
French:	la bie`re
German:	das Bier
Greenlandic:	immiaarag
Hausa:	fita
Hawaiian:	pia or bia
Hebrew:	birah (bira)
Hindi:	biar (transliteration)
Icelandic:	bjor
Indonesian:	bir
Irish:	beoir
Italian:	la birra
Japanese:	biiru/bieru (r is sort of between USA 'r' and Eng. 'l')
Korean:	maekju
Latin:	cervisia
Latvian:	alu
Lithuanian:	alus



Luxemburgois: be'ier (e' = e-acute accent)
 Madagassian: labiera
 Malay: bir
 Maltese: birra
 Nepali: chang
 Papiamentu: serbes
 Persian: ab-e-jow (a = slightly rounded; j = as in 'juice')
 Pidgin (Papua): bia
 Polish: piwo ('w' is pronounced 'v')
 Portuguese: a cerveja
 Rumanian: bere
 Russian: pivo
 Samoan: pia
 Scots Gaelic: beo`ir (o' = o-grave accent)

Serbian: pivo
 Singalese: bire
 Slovakian: pivo
 Slovenian: pivo
 Spanish: la cerveza, la birra (Central America)
 Swahili: pombe
 Swedish: o'l (o" = o with two dots ["med tva prickor"])
 Tagalog: beer
 Thai: bia
 Tibetan: chang
 Turkish: bira
 Ukrainian: pivo
 Welsh: cwrw ("w" is pronounced approx. as "u" in "put")



Membership Information

Annual membership dues are ten dollars. This just barely covers the cost of producing and mailing this newsletter. In addition, we charge a \$5.00 fee for each meeting attended. This pays for the cost of the beer we taste that night. Membership dues can be paid at the monthly meetings or you can send a check for \$10 to the Treasurer, Milwaukee Beer Barons, P.O. Box 27012, Milwaukee, WI 53227.

We mail the newsletter free of charge to prospective members for three months. The date that appears on your newsletter address label is the end of the three month period. For current club members, it is up to you to remember to renew -- we do not send out reminders, so check the date on your address label to see if it's time to ante up.

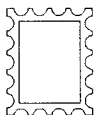
Support

Clifford's Supper Club with your patronage.

Clifford's allows us to use their banquet room at no charge to the Milwaukee Beer Barons. Our support will help show our appreciation. PLUS - The food is VERY GOOD!!

Membership expires: Nov-96
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1st Class Mail



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