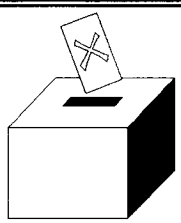
Baron Mind

A Monthly Publication for the Beer Barons of Milwaukee

Dedicated to the Education and Enjoyment of Fermented Malt Beverages

November 1994

Annual Officer Elections



Please remember that the terms of the current officers of THE BEER BARONS will end after the December meeting. Nominations will be taken during the November meeting, and elections held in December. This is your club, and you now have the opportunity to determine the direction it will take in the upcoming year. Only current dues-paying members may vote in the December election.

GETTING THE MOST FROM AMERICAN MALT

Notes from a talk by Dr. Michael Lewis

Pat Anderson

In mashing malt, we need to obtain a wort with sufficient extract and sufficient fermentability. "Extract" means the gravity obtained from a given quantity of malt. "Fermentability" means the proportion of the total extract that yeast can covert to alcohol. British pale malt is produced so that a single temperature infusion mash produces both sufficient extract and fermentability. For American pale malt, optimum fermentability is obtained at temperatures of 55^ - 60^ C. (131^ - 140^ F.). At these temperatures, the beta amylase enzymes produce maltose most efficiently. This happens early in the mash in a fairly short time, approximately 20 minutes. The alpha amylase enzymes, on the other hand, produce the dextrins that give us the total extract we desire at temperatures between 70^ - 75^ C. (158^ - 167^ F.).

It is possible to mash American pale malt with a single temperature infusion. While this can be a reasonable compromise approach, it inevitably results in a loss of either fermentability or extract, since the temperature is not optimum for either. The best plan for mashing American pale malt is a "temperature program, " in order to obtain the optimum balance of extract and fermentability. A sample two temperature program, utilizing the popular "camp cooler" mashing method, would be something like this:

1. Stir in enough hot water at around 70^ C. (approximately 158^ - 160^ F.) to make a thick mash, so the temperature settles in between 55^ - 60^ C. (131^ F. - 140^ F.) Initial mash temperatures as low as 50^ C. (122^ F.) are acceptable. Hold for 20 - 30 minutes at this temperature.

2. After 20 - 30 minutes, add enough hot water just off the boil to raise the temperature to 70^ - 75^ C. (158^ - 167^ F.) for the remainder of the mash period. What many American home brewers don't realize is just how low a temperature American pale malt needs for optimum fermentability and how high a temperature it needs for optimum extract. Dextrins do not, as experiments disclose, contribute "body" as is frequently stated, but rather contribute a desirable aftertaste. The so-called "protein rest" usually advocated for American pale malt does not seem to have any real basis. Everything that needs to happen in the mash will happen with a proper temperature program that addresses fermentability and extract.

November Meeting

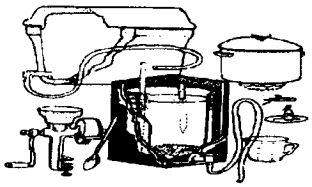
The November monthly meeting is at 7:30 PM on November 16th, at Clifford's (10418 W. Forest Home Avenue, Hales Corners). In addition to regular meeting business, including the nomination of next year's officers, we will have a selection of various cherry and pumpkin beers on hand for discussion and sampling.

Calendar of Events

Meeting	Program
November 16th	Pumpkin and Cherry Beers
December 21st	Beer Barons Annual Xmas Party
January 25th	Not Yet Determined
February 22nd	Not Yet Determined
March 22nd	Not Yet Determined

Chilling Your Extract Brew

by David Atkins

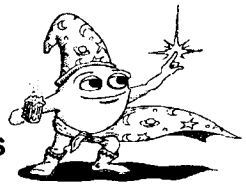


I too do that extract brew. Here's how I chill. My method involves a carboy primary--5, 6.5 or 7 gal size. My primary is a 7 gal carboy...I don't know if I'll ever use a bucket again. I chill the boil pot in a sink of cold water for a few minutes...ice and those refreezable faux-ice packets work well in the bath. Placing about 1.5 gals of cold water into the carboy, I funnel my extract into the container then fill up to 5 gals with a heady stream of cold water. I find that the heady stream 1) aid aeration and 2) cools wort not just by heat exchange with the water but with heat exchange with the air...get's real frothy. Once filled, I bung the carboy shut and for 10 - 20 minutes I prop carboy on edge of sink and gentle wash the carboy with cold water. If you don't have one of those built in sink spray nozzles (like me) use those cheap faucet-shower attachment hoses you can find at a drug or discount store (a 2-3 feet length of rubber hose with an exceedingly simple adapter on one end and a shower head on the other; the shower head is removeable) I use the hose in cleaning as well as wort chilling and carboy filling--remember to sanitize though. While chilling the carboy, rotating it slightly from time to time, I take the opportunity to shake the container, further aerating the wort. From the start of chill to the yeast pitch takes 20-30 minutes.

Amylase

Everything You've Always Wanted to Know About Enzymes

by John Wyllie



Amylase is a combination of alpha and beta amylase. Two starch-degrading enzymes - also called diastatic enzymes. Most commercial "amylase" is actually diastase - which is a mix of alpha and beta amylase. The alpha cuts the middle of the starch chain, (endo-) while beta chops off the ends (exo-). Alpha Amylase is most active at 149 to 153 degrees F. Beta Amylase works at 126-144 degrees F. Alpha deactivates at 153 degrees F, while beta ceases at 149 degrees F. These temps are not exact cutoffs because inactivation takes a period of time (40 minutes to 2 hours) to completely eliminate activity. Both enzymes will be active simultaneously. A higher temperature mash will result in more unfermentables (more complex sugars with more body in the final beer) by favoring the alpha activity, whereas a lower temperature will favor the beta and smaller more "digestable" sugars for the yeast (which results in greater attenuation and lower bodied beers).

Amylases and other enzymes are present in pale malts (grains) and some other grains (munich, vienna...etc). If you are mashing they are there and they are required for the process. If you are using extracts and most specialty grains (like roasted barley, crystal malt, black patent malt, etc.) you don't need to worry about them. If you do a partial mash, or add something like flaked corn (NOT Kellogs!) or rice you need to have enzymes convert the starches to fermentable sugars. For this you can use pale malt, or some purified amylase. You can add amylase to a mash if you are not getting good yields - but it is probably better to work out a system that works more effectively!

Cask Conditioned Ales (part 1 of 4)

by Jim Busch

England has numerous distinctions to contribute to the brewing world, but none is as unique and important as the tradition of cask conditioned ales. Cask, or Real Ale as it is often called, is a special brew, served in a special manner, by hand pump from the cellar. Despite what you may have been told in the US, cask ale is not warm and it is not flat. It is dispensed at cellar temperatures, 54 - 59F, and is naturally, albeit lightly carbonated. As a result, the mouthfeel of the product is extremely distinct from that of a "gassy" keg beer. Temperature and carbonation have a great impact on the perception of the beer on the palate, and the combination of the cellar temperature, low CO2 volumes, and often a snappy hoppy aroma & flavor, all are blended in the mouth to reveal a distinctly different and satisfying ale. While the spectrum of cask ales can be difficult to generalize, the carbonation, temperature, hoppiness and fermentation products are usually dominant factors in the flavor perceptions of all cask ales. Many cask ales have numerous fruity notes that are created in the fermenter and gradually reduced and blended during the maturation and conditioning periods. The important point is that they are supposed to be there, and that they manifest themselves in varying degrees of complexity throughout the life of the cask. This is one of the wonderful aspects of cask ale, it is living, breathing beer that will change over the week or so between bunging of the cask and the final pull of the hand pump.

Production of Cask Ales:

Cask ales produced in England are top fermented beers, often produced in open fermenters. Open fermenters are just what they sound like, a vessal without a top. Often the fermenters are a large cylander with a hinged lid. Many are attemperated (chilled) by piping that is submersed in the fermenting wort. Either chilled water or chilled glycol is pumped through the piping, allowing the brewer to control the rise of temperature during the fermentation.

While closed tanks are used in some of the bigger breweries, open fermenters are the traditional technique, and some noted breweries rely on the old Burton Union and Yorkshire Squares systems of open fermentation. Both of these subsets of open fermenters are designed so that the fermentation effluent or krausen is allowed to flow out of the fermenter, into a collection area, and either removed or allowed to return into the main fermenter. This technique tends to introduce added oxygen to the fermenter that will often result in slightly elevated diacetyl levels in the beer. This is generally not a negative aspect of these beers. The use of open fermentation may seem strange to brewers who go to great lengths to keep out airborne contaminants, but this is not a worry in English brewing. Like all brewers, English ale brewers are very careful to sanitize everything that comes in contact with the cast out wort, especially as the wort drops below 170F. A clean and sanitized fermenter, in conjunction with clean healthy yeast pitched with a cell content of between 6-12 million cells per ml will ensure a rapid start to fermentation, and the subsequent production of vast amounts of CO2 which will blanket the fermenting wort, and protect the beer from airborne contaminants. Once the fermentation active, the pH of the beer will be dropping rapidly from an initial level of 5.4 down to the mid 4 range, and with some strains as low as 4.1. This acidulation of the wort, in conjunction with the large production of CO2 results in an environment quite unhospitable to most airborne bacteria. The key, as with all brewing, is to pitch an adequate amount of healthy clean, cultured yeast slurry. .

In open fermenters, the brewer must skim the yeast head off the beer between days 2 and 3 of normal ferments. Often, the trub that rises to the top after day one is removed to reduce particulate matter that can lead to astringency problems. The use of open fermenters provides an easy method for the observation and skimming requirements of top fermented ales. With typical top fermenting strains, healthy white yeast is cropped off during day 3 or 4 of fermentation and stored for reuse. Yeasts collected from healthy ferments can be repitched for hundreds of generations provided the brewery is clean and the brewer is acutely noting fermentation performance. Any degredation in yeast performance should be corrected by replacement of the strain with fresh stock. Fermentation is usually complete within 5-7 days at 60-70F. At this time, the beer is racked into maturation tanks where it can sit for a brief conditioning period. Alternatively, the still beer may be racked directly into the cask. The important point is that the transfer is done with approximately one degree Plato (1.004) of residual extract left in the still beer, and between .25 -2 million yeast cells per ml of still beer [1]. The residual extract may also be supplied in the form of priming sugars. This is accomplished by preparing a solution of brewers sugar (glucose) at a specific gravity of 1.150 (34P) and adding to the cask at a rate of .35 to 1.75 l/hl. Cast out wort as well as krausen beer can be used, but in the latter case, excessive yeast cells may interfere with the clarification in the cask. As the casks are filled, a fining

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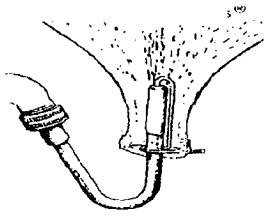
agent is added to the vessal, usually in the form of isinglass in quantities of 1-5 litres per UK BBL [2]. Isinglass is composed of collagen molecules which carry an overall positive charge. Since yeast will exhibit an overall negative charge, an electrostatic attraction will result, leading to clumping of yeast & isinglass particles and then sedimentation. The process of clarification requires about a day to result in a "star brilliance" to the beer [3]. Beers with residual yeast levels of 2 million cells per ml or above will be more difficult to clarify. Many brewers also add whole hops at a rate of 1/2 to 3 oz/BBl at cask filling time. With the advent of modern packaging in vessals like polypins some brewers are using hop oil extracts to mimic some of the character found in cask hopped ales. At this point, the cask ale is ready for transport to the publicans cellar.



Caustic Washing

by Dr. George Fix

First, let me say that a 2% sodium hydroxide (NaOH) solution is the most effective detergent known to me for removing heavy organic soils. This, however, is not play stuff. Protective gloves and glasses are definitely required to prevent severe burns.

Pure reaction quality NaOH can be obtained in grocery stores under various product names. Look through the various brands at your local store, and look for 100% NaOH, and contains no impurities. If you just can't find any, you can get the same stuff from Fisher Scientific, but at an outrageous price.

Caustics are strong surfactants, and will definitely leave an inorganic film. Vigorous hot water rinsing may or may not completely remove this film. Thus in commercial practice a caustic wash is followed by a rinse with a sequestering agent to remove inorganic residuals. The most popular such agent by far is phosphoric acid. The main reason for this is that it is a weak acid that is natural to beer. A widely used sequence goes as follows:

a. Hot water pre-rinse
b. Caustic wash
c. Hot water rinse
d. Phosphoric acid wash
e. Hot water rinse

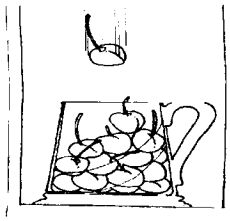
This is generally all that is required of brewing equipment. Cooling apparatus, fermenters, et al need an additional sanitation sequence.

Miscellaneous Notes about Caustic Cleaning

1. Large industrial brewers apply the caustic solution at 180-195F. I have personally found that a solution at 120-140F is almost as effective, and a good deal more practical for hand operations. We are now recommending that even small micros and brewpubs use the lower temperatures. This has proved to be adequate. See e.g. Dave Miller's column in Brewing Techniques.
2. If you have any doubt about inorganic residuals, apply a standard iodophor solution. The former will turn the latter as white as snow.
3. The most widely used iodophor in commercial practice is the version which has iodine and phosphoric acid as the only active ingredients. This provides some sequestering action to counteract surfactants, however the sequestering step (step d above) is still used in the wash cycle.
4. Industrial brewers typically use a 5% phosphoric solution for sequestering. I have personally found that a 1% solution is adequate for all but extreme cases. While this solution is only weakly acidic, gloves are still recommended. The sequesting solution can be added at ambient temperature.

Using Real Fruit In Beer

by Jeff Benjamin



You'll find there are almost as many ways to make fruit beers as there are brewers who have made them, but here are some guidelines that have worked very successfully for me.

* Use a light beer for a base. I often use a wheat beer base (50/50 barley/wheat), since I think the slight fruitiness of the wheat complements the fruit well. This is not a must -- I made a very tasty blueberry brown ale once -- but the lighter beer helps to really show off the fruit.

* If you use fresh fruit, use LOTS, typically around 1 lb/gallon or even more. My last batch of cherry ale was 9 lbs cherries for 6 gallons of beer. I can't say much about using juice or extracts.

* Add fruit to the secondary, after a week or so of primary fermentation, to avoid losing precious aromatics due to CO2 scrubbing.

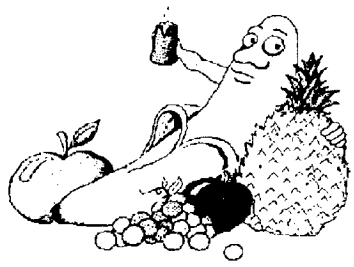
* My general technique is as follows:

1. Brew your base beer as usual, let primary ferment complete (a week or so).
2. Remove any visibly damaged fruit (moldy, broken skin, etc) and puree. Add fruit to your secondary vessel, then rack the beer on top of it. The only sanitizing I do of the fruit is a quick sulfite rinse before pureeing.
3. Allow to ferment again to completion. If the fruit contains a lot of sugar, this can result in some of the most spectacular fermentation you've ever seen!
4. Rack off of fruit again, using a copper scrubber and/or hop bag over the end of your racking tube to keep things from clogging. It will probably clog anyway. It's a pain. Anyone have a better method? Anyway, the second racking is to
   a) Allow any remaining fruit bits to settle out, and,
   b) to ensure any residual fruit sugar is completely fermented.
5. After 2-3 days in the tertiary, bottle as usual.

Happy Brewing!

Using Natural Fruit Extracts

by Guy McConnell



Regarding the making of a cherry stout and using fruit syrup to flavor it, I think there's a better way. All natural "fruit flavorings" are now available from at least one supplier I am aware of - St. Patrick's of Texas.

She sells it in 4 oz. containers and specifies that about 3 oz. per 5 gallons is "what breweries use".

I brewed a raspberry ale using the raspberry flavoring from her and it turned out great. No fruit to worry with and you can add it at bottling to taste. A side benefit is that I still had an ounce left after brewing this batch which I occasionally use to put in beers that I buy.

If I were going to use it in a dark beer I'd use the whole 4 oz. myself. In fact, I have a porter in the fermenter that I originally intended to be a blueberry porter but I have since decided to bottle half of it as a regular porter and then add ~2 oz. of the blueberry flavoring to the remainder and do a half and half batch. Try doing that with fruit at bottling time! I'm sure other suppliers carry it as well. Just another suggestion

Braggot

by Dave Lame

When grain is used with honey to produce a non-sparkling drink, the resulting beverage is known as braggot. There are references to it in northern Europe as old as the first century A.D., and there is a reference to it in Chaucer's "The Miller's Tale." I've made four batches of the stuff, with some considerable success. While not everyone really likes it, some people who drink it have said it is the best stuff I make.

My basic recipe calls for one pound of honey and one pound of malt extract per gallon of braggot, but I have seen variations on the theme with more and with less of either ingredient. So, for twenty five liters, I would use about 6 1/2 pounds of each ingredient

If you have a recipe for barley wine available, you could just substitute honey for sugar, and that would almost certainly work perfectly well.

I prefer amber ale extract, unhopped, for use in braggot, but that is personal preference. I'm experimenting with different styles. I've seen historical references to both hopped and unhopped beverages, and varying quantities of fermentables.

The one complaint about braggot that I hear frequently, and with which I concur, is that it tastes "thin". It doesn't have the character of a good beer or ale, but it doesn't have the clean taste of a pure mead. In an attempt to correct this, on the advice of an acquaintance who also makes braggot, I used buckwheat honey instead of clover honey once. The resulting product was certainly not "thin". In fact, the first person who tasted it suggested it would taste good on pancakes.

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, PO. 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!!

1st Class Mail

Membership Expires: Dec-94

Brian & Laura McManus
8916A W. Howard Ave.
Milwaukee WI 53228

Milwaukee Beer Barons
P.O. Box 27012
Milwaukee, WI 53227