BARON MIND

The Monthly Publication of the Beer Barons of Milwaukee

October 2004 visit us on the web at www.beerbarons.org

Home Brewing Techniques and Equipment

October brings us another homebrewing month where club members discuss brewing related topics. This month brings us a relatively new member who may be doing a talk. He was asking Paul and Me whether we could have more presentations on basic brewing techniques for newer brewers. I suggested he do a "reverse talk". Come with a list of questions and get up in front and ask them to the members at large! I thought this would be a simple way to cover the areas of most interest to beginning brewers. If other club members would like to ask questions, bring your list and join the crowd! Don't be afraid to ask stupid questions because there are no stupid questions, only stupid people who don't know how to ask questions.

Mike Schwartz

Notes on Mead

I have been receiving several articles on mead lately. I thought this might be a good time to pass them along as the honey harvest has just passed. The excerpt below is from "Bee Culture" May 2002 by Malcolm Sanford.

The National Honey Board website links to seven studies that are to be presented at the Institute of Food Technologists annual Meeting, June 15-19, 2002, in Anaheim, CA. According to one, "A variety of antimicrobial activity exists within the floral source of the honeys. Tarweed and Montana Buckwheat samples impeded growth of Listeria monocyiogenes at one-quarter and one-eighth dilutions, respectively, as well as lactobacillus, Bacillus, E. coli and Salmonella at stronger dilutions. However, the Chinese Buckwheat sample was effective against E. coli and Salmonella only at full-strength. Gram negative bacteria seem to be inhibited by honey's high sugar concentration while Gram positive bacteria appear to require a threshold inhibitory level of antibacterial activity in order to prevent growth."

With respect to mead, another study revealed that fermentation of soy musts resulted in meads ranging from 6-8 % alcohol and 15-20 % residual sugars while that of buckwheat resulted in meads of 10-11 % alcohol and 2-3 % residual sugars. "The antioxidant capacity of buckwheat mead, while not as high as red wine, was 131% higher than that of soy mead, which was comparable to white wine and commercial mead. Meads produced from boiled must had 25-34 % higher antioxidant capacity than those from gently heated must. Results of this study suggest that mead may contribute similar health benefits as are contributed by wines, due to dietary consumption of antioxidants. Dramatic heat treatments that are often avoided because of their flavor impact in mead production have been demonstrated to enhance antioxidant capacity of mead."

There is also a report on the antioxidant characteristics of honey: "The inhibitory effect of all honeys on in vitro lipoprotein oxidation was dose-dependent. The concentrations of honey producing 50 % inhibition of oxidation, ranged from 0.62 g/L (buckwheat honey) to 3.3 g/L (acacia honey), and were all significantly lower than the concentration of sugar analogue ($p<0.0001$). There was a significant correlation between ORA values of the honeys and inhibition of lipoprotein oxidation (R2-'=0.665). Data collected from the human study suggest that consumption of black tea with honey results in a slight increase (10%) of water-soluble plasma antioxidants as measured by ORA. Lipoprotein oxidation was not altered dramatically by consumption of the different beverages. This research provides primary evidence of the biological potential of honey as a dietary antioxidant, strongly supporting incorporation of honey into the human food supply as a healthy alternative to sugar."

In This Issue

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Upcoming Events

Meeting Dates and Style-of-the-Month:

October 27th: Homebrewing Night. This is the night we dedicate to talk of homebrewing topics like equipment, techniques, ingredients, etc. If you'd like to talk about or discuss a specific topic let an officer know.

November 17th: Brian Loughrey of Star Brands Importers, importers of Hacker-Pschorr, Paulaner, Murphy's, Fischer, and other well known brands will join us.

December 15th: Christmas Party and Officer Elections, Retirement of Newsletter Editor.

World of Beer Festival

Our first meeting will be after the November Officer's Meeting. See the box below for meeting information. Everybody who volunteered should try to make it! We'll set up teams, get info out, and start planning.

Officer Elections

The elections are coming up in December with nominations in October and November. Think of who you'd like to see run and bring it up at the meeting.

If you are interested in running or would like to nominate somebody your chance is in November. If you'd like to find out more about the positions, talk to the current officers. You can always bring up nominations in October as well. All elected positions are limited to two consecutive terms. This means that the Newsletter Editor MUST be replaced. For more information on the positions and election procedures, take a look at the club constitution posted on the web site under the "About Us" link.

Officer's Meeting and Social Hour
Date: Wednesday, November 3rd, 2004
Time: 7:30pm for Officers
Social hour at 8:30pm
Place: Grady's Tavern
3101 W. Lincoln, Milwaukee
(414) 643-9819

From the Treasury

September is behind us and if fun is measured by how much money we spent it's apparent we had a great time. Total expenses for September were $1316.74. The picnic for 2004 paid for itself. The raffle and fee money covered all the food (The grilled salmon was awesome!), beer (What a selection!!), and prizes with $13.89 left over. To all those that donated prizes for the raffle a BIG THANK YOU on behalf of the club. I hope all had as good a time as I did. I can't remember when I last played frisbee! And then no sooner than I can walk again without pain it was time for OCTOBERFEST BEERS at the monthly meeting. That tab ran us almost $250 for the night, but I tend to think it was worth it. I enjoyed the selection including the Highbrow! And the great news is that our account balance for the end of September is $1948.63 as we go into the holiday seasons! All the best.

Saol fada chugat (Long life to you)
Mac

On the Competition Front

National AHA Club-Only Homebrew Competition (COC)

by Lenny Beck

This month we're submitting the IPA category. A lot of you made some IPA for the picnic so why not bring them in for the competition?

The beer category for December is Irish Red Ales BJCP category 9D, listed below is the BJCP guidlines for this style and a simple recipe give it a try and don't forget to put some away for March 17th.

9D. Irish Red Ale

Aroma: Low to moderate malt aroma, generally caramel-like but occasionally toasty or toffee-like in nature. May have a light buttery character (although this is not required). Hop aroma is low to none (usually not present). Quite clean.

Appearance: Amber to deep reddish copper color (most examples have a deep reddish hue). Clear. Low off-white to tan colored head.

Flavor: Moderate caramel malt flavor and sweetness, occasionally with a buttered toast or toffee-like quality. Finishes with a light taste of roasted grain, which lends a characteristic dryness to the finish. Generally no flavor hops, although some examples may have a light English hop flavor. Medium-low hop bitterness, although light use of roasted grains may increase the perception of bitterness to the medium range. Medium-dry to dry finish. Clean and smooth (lager versions can be very smooth). No esters.

Mouthfeel: Medium-light to medium body, although examples containing low levels of diacetyl may have a slightly slick mouthfeel. Moderate carbonation. Smooth. Moderately attenuated (more so than Scottish ales). May have a slight alcohol warmth in stronger versions.

Overall Impression: An easy-drinking pint. Malt-focused with an initial sweetness and a roasted dryness in the finish.

Comments: Sometimes brewed as a lager (if so, generally will not exhibit a diacetyl character). When served too cold, the roasted character and bitterness may seem more elevated.

Ingredients: May contain some adjuncts (corn, rice, or sugar), although excessive adjunct use will harm the character of the beer. Generally has a bit of roasted barley to provide reddish color and dry roasted finish. UK/Irish malts, hops, yeast.
Vital Statistics:

OG	FG	IBUs	SRM	ABV
1.044 - 1.060	1.010 - 1.014	17 - 28	9 - 18	4.0 - 6.0%

Commercial Examples: Moling's Irish Red Ale, Smithwick's Irish Ale, Kilkenny Irish Beer, Beamish Red Ale, Caffrey's Irish Ale, Goose Island Kilgubbin Red Ale, Murphy's Irish Red (lager), Boulevard Irish Ale, Harpoon Hibernian Ale

Irish Red Ale Recipe

4 oz Briess Roast Barley
8 oz Briess 80L Crystal
8 oz Briess Victory
8 oz Briess Cara-Pils
8 lbs Briess 2-Row (your 6-7 lbs of pale extract is equiv.)
1 oz Cascade (6%), boiling
1 oz Fuggle, finish
Wyeast European Ale

2004 - 2005 Schedule

Competition Style and Date	Club Member Entry Due Dates (to the Beer Baron's Meeting)
August 2004 – Wheat Beer (BJCP Category 17)	July 28th, 2004
September/October 2004 – Smoked Beer (BJCP Category 23)	August 25th, 2004
November/December 2004 – IPA (BJCP Category 7)	October 27th, 2004

Brewery Reviews

Field Trip To Bosco's

I found myself in Memphis this week with some time on my hands, and naturally, I located a local brew pub. Destiny. Bosco's advertises itself as "The Restaurant for Beer Lovers." How true! I got a tour of the brewery from Jimmy, the brewmeister. After a few years as bartender, and a year or so as the brewery gopher, the owner got busy enough to put him to work full time brewing. That was a few months ago, and he gave me a tour and discussion of brewing.

They have a seven-barrel system, and some nice shiny equipment. They normally have six beers on tap, with three seasonal beers. In Memphis, they brew just over two batches a week, and use half barrels, modified five gallon corny kegs, as well as five gallon aluminum casks. They mostly naturally carbonate in the keg.

I had a sampler pack, and settled on an Isle of Skye Scottish Ale for the afternoon's leisure. All of their beers is very tasty, and this place is highly recommended by me. The bartender was very friendly, and I ended up talking to a couple of patrons at the bar, who home-brew also. They have a local home brew club meeting at the pub, as well as a beekeepers group that meet there. Go figure.

Bosco's has a list of awards a mile long from the Great American Beer Festival and the Real Ale Festival, and were the winner of the 1999 Brewie Award from BrewPub Magazine. There are a bunch of other honors and stuff. You can even register to become a member of the Bosco's Beer Police, which gives you a lot of real privileges including mailings and deals.

As well as Memphis, there are other locations in Little Rock, Arkansas, and Nashville, Tennessee. You can find Bosco's on line at www.boscosbeer.com. E-mail at Memphis is at squared@boscosbeer.com. All in all a very nice way to spend an afternoon.

Andy Hemken - The Honey Guy

Traveling North on the Mead and Beer Trail

By Nikki Passentino

Hey folks, I know we are a beer club, but believe it or not there are other tasty fermented beverages available. Who has tasted mead? A little over a year ago I was introduced to this magnificent honey fermented beverage and since then I've been hooked. Unlike beer which is made from grains, mead is made with honey. Mead making predates beer and wine making and is said to be the oldest fermented beverage known to man.

A couple of Beer Barons and I were so intrigued about this drink that we decided to go to the source. We headed north to Iron River, Wisconsin and visited the White Winter Winery where mead is made. Jon and Kim Hamilton started the White Winter Winery in the summer of 1996. Recently it has moved to a bigger location, but still remains in the same town.

When we arrived at White Winter Winery we were given some samples by a wonderful woman named Donna who was very helpful and fun. The mead available was limited due to the recent relocation, but I found the ones which were offered to be very yummy. Unfortunately there were no tours that day, which was disappointing. We were there on a Saturday and usually there are tours on Saturdays, however, not on that particular day. So my recommendation to everyone is call ahead prior to visiting. However, the brewing equipment was still visible and we were quite pleased with the samples and the information Donna offered us.

White Winter Winery is a fine place to visit, but it is a bit of a distance from Milwaukee. Since it
is about a six hour drive, we decided to include other fun activities in our weekend vacation - beer and camping. South Shore Brewery is located in Ashland, Wisconsin and is very close to Iron River, so we stopped there for some afternoon drinks after visiting White Winter Winery.

Sadly, I was not impressed with South Shore Brewery. We got a sampler of beers which was reasonably priced, but the beer was pretty average.

The Pumpkin and Pale Ale were good, but I cannot say the same about the rest. We ordered some appetizers and pitchers, but the food wasn't great either and the service was poor. Maybe others may have a better experience or enjoy the beer a little more than we did, but I must say I did not have good experience at South Shore Brewery. (The sidekick did get a free Birthday shot!)

As far as camping, there are many great places in this Northern Wisconsin area. We camped at Copper Falls, which has gorgeous waterfalls and trails. Copper Falls is a state park and is located a little south of Ashland. We also camped at Big Bay state park which is located on one of the Apostle Islands. Both of these camping places are very beautiful and reasonable. I would definitely return to these state parks again.

After a long weekend of fun we eventually needed to head home, but we got thirsty on the way. A stop at Hereford and Hops in Wausau, Wisconsin was necessary to complete our journey. Once again we got a sampler of beer. The beer here was much better than South Shore Brewery. Plus we arrived at a perfect time-Happy Hour! Out of many samples, I liked the Oktoberfest and Schwarzbier the best.

All an all our trip was great. I recommend vacationing in Northern Wisconsin and checking out the Apostle Islands, White Winter Winery, and other state parks. Plus Hereford and Hops is a great resting place either on the way there or back or both.

Brewing Techniques and Equipment

Meads and Their Lactones
A Cautionary Tale for Mead Makers

by Dan McFeely
From "Bee Culture", September 2002

The operative question for the Meadmaker is "how can this help me make better mead"?

Among the many factors winemakers take into account in making a well balanced and flavorful wine, acidity ranks among the highest. A wine with insufficient acidity is said to lack zip and zing, causing medium bodied or sweet wines to become cloyish. Acid, measured as TA (total acidity) and pH (active acidity), is carefully assessed and care given to the type of acid(s) present in the wine when considering acid additives. Tartaric acid is the primary acid found in wine grapes and imparts a strong and sour taste. Malic acid is more frequently associated with apples and ciders. Citric acid is found in citric products, giving a sour and lemony flavor to a fruit or country wine. Gluconic acid is the primary acid found in honey and, of course, in mead but stands apart from the other organic acids due to its unique properties. Although these properties are well known to honey analysts and the honey industry, oddly enough the literature on meadmaking is silent on the subject. This is all the more striking given the highly complex reactions of gluconic acid in the chemical makeup and flavor profile
of mead.

The easiest route to outlining acidic properties in honey is to briefly look at how honey bees make honey. The process by which honey bees convert flower nectar to honey is truly amazing and only understood within recent decades, after much painstaking research.

A simplified outline of the chemical reactions are as follows:

Glucose Oxidase

$C_6H_{12}O_6 + O_2 \longrightarrow C_6H_{10}O_6 + H_2O_2$

Glucose + Oxygen ⟶ Gluconolactone + Hydrogen Peroxide

Hydrolizes to:

$C_6H_{12}O_6 + H_2O \longrightarrow C_6H_{12}O_7$

Gluconolactone + water ⟶ Gluconic acid

Invertase and glucose oxidase, enzymes secreted from the hypopharyngeal glands of the bee, work on the sucrose sugars in flower nectar, "inverting" the sugar to glucose and fructose, and then oxidizing glucose to hydrogen peroxide and gluconolactone, the lactone product of gluconic acid. In the next step of honey production, gluconolactone partially hydrolyses to September 2002 gluconic acid, leaving both the acid and the remaining gluconolactone co-existing in a pH dependent relationship that helps to buffer against changes in acid content. If the pH of the honey is stable, gluconic acid and gluconolactone remain unchanged. If the acid is neutralized, raising the pH, more of the gluconolactone in the honey hydrolyses into gluconic acid, thus lowering the pH again. The rate of the lactone reaction is also dependent on the pH of the honey. The higher the pH, the faster the reaction takes place.

The lactone reaction causes persistent problems in honey analysis by interfering with analytic procedures using any form of acid base titration method. Long recognized as the "fading endpoint problem," honey researchers were aware that it was difficult to measure or analyze certain components of honey up through the 1940's but it wasn't until a 1958 publication by John W. White Jr. that the lactones in honey were identified as the source of the unstable pH in acid base titrations. White ran a series of experiments demonstrating the presence of the lactone reaction and devised a special method for measuring total acid content that could be used in honey analysis. This article was a critical step in identifying the complex acid properties in honey.

Home winemakers are usually interested in the more practical aspects of oenology and chemical analysis. The operative question for the meadmaker is, how can this help me make better mead? Measurements of total acidity and pH are the important parameters for acidity in home wine making, giving the winemaker a good idea of the needed counterbalance to residual sugar as well as ensuring quality of flavor profile. Meadmaking calls for use of these acid measurements, however, the lactone reaction in honey has not been examined or even considered in honey fermentations.

first series of experiments. The need for a show mead was to minimize factors that could potentially skew the experimental results, such as various acids and salts from yeast nutrients. The second series was conducted with a strawberry melomel (i.e., a mead made with fruit), made with nutrient additives and yeast. The purpose of the second series was to show that the lactone reaction, once identified in the show mead, continues to persist even in the presence of other chemical factors. Both the show mead and the strawberry melomel used different honeys, orange blossom and wildflower honeys respectively. As White showed in his 1962 analysis of 490 honeys, the ratio of lactone to acid varies according to the type of honey. For this reason, it should be expected that the lactone reaction will vary somewhat according to the type of honey used in the mead.

The experimental series were quite simple and can be duplicated in any home with ease. All that is required is a standard wine making acid titration kit, an electronic pH meter, mead of course, and a watch with a second hand. A solution of 0.1 N sodium hydroxide was used to raise the pH of the meads to the desired levels, then monitored with the pH meter. Three different starting pH levels were used for each mead and the results recorded. It is important to add a measured amount of sodium hydroxide all at once, stirring it into the mead quickly in order to reach the desired pH level. The lactone reaction occurs very rapidly and may not be observed if the sodium hydroxide is added slowly.

For the show mead, the pH was raised for each of the three series to 7.8, 8.8, and over 9.0 The strawberry melomel was raised to pH 5.2, 7.0 and 8.8. The results are presented in tables 1 and 2.

The trial results clearly show that for each time the pH of the mead was brought close to neutral or above, the pH dropped again to acid levels, duplicating White's 1958 observations of the action of honey lactone. In this Instance, it is the lactone present in the mead changing to gluconic acid that accounts for the drop in pH following the addition of sodium hydroxide. The rate of the lactone reaction at high pH levels made observation difficult, so difficult, in fact, that the attempt to raise the show mead to pH 9.0 was impossible to accurately record until the pH dropped to 6.4.

TABLE 1: FIRST TRIAL: SHOW MEAD

Starting pH 3.1

pH	Time (sec)		pH	Time (sec)		pH	Time (sec)
7.8	0		8.8	0		9.0	0
7.1	15		7.8	15		6.4	30
7.0	30		6.6	30		6.3	60
6.9	60		6.3	45		6.2	2 min
6.9	90		6.1	60		6.2	30 min
			5.9	2 min			
			5.8	30 min			

TABLE 2: SECOND TRIAL: STRAWBERRY MELOMEL

Starting pH 3.3

pH	Time (sec)		pH	Time (sec)		pH	Time (sec)
5.2	0		7.0	0		8.8	0
4.8	10		5.1	5		7.8	5
4.7	60		5.1	30		7.2	15
			5.1	60		6.9	30
			5.1	30 min		6.8	60
						6.8	30 min

The observed results of the lactone reaction in honey are simple and dramatic, in spite of the complexity of the chemical processes that are involved. Essentially what happens is that whenever the acids in a honey solution are chemically neutralized, the lactone content reacts and the solution once again becomes acidic. The reaction is well known in honey and requires altered procedures in order to perform standard chemical analytical techniques such as measuring total acidity (TA) or free amino nitrogen(FAN). The persistence of the lactone reaction in a finished mead calls for similar considerations.

As can be seen in the trial series charts, the lactone reaction in mead interferes with the titration method used in standard wine making acid kits, skewing the results and making them unreliable for measuring total acidity (TA) in mead. This is of serious practical consequence for meadmakers. Many home meadmakers will add acid to a finished mead in order to improve the flavor profile, measuring total acidity(TA) and calculating the amount of acid to add to the mead based on the results of the TA measurement. Given the unreliability of measuring TA in mead because of the lactone reaction, and especially with the wide variations in lactone content among varietal honeys, this can be a very uncertain undertaking. This is probably part of the reason why the advice given in meadmaking circles for adding acid has shifted from adding set amounts, to adding acid only to taste, if a tall. The palate was proving to be more reliable than TA measurements, even though the cause of the difficulties was unknown.

Honey has long been considered to be poorly buffered against pH changes, however, this question needs to be reconsidered in light of the lactone reaction. It seems that many of the observations regarding the poor buffering of honey fermentations were made prior to White's 1958 publication, with the assumption maintained for long afterwards in meadmaking circles. The late Roger Morse's Masters thesis, titled "The Fermentation of Diluted Honey" submitted to Cornell University in 1953 is an example of this. On page 45 he noted "Honey is a weakly buffered sugar solution which is unable to maintain a fixed pH within a few tenths of a pH unit when a small amount of acid or base is added to it." This statement was made five years prior to White's 1958 article and consequently does not take into account the lactone reaction's effects on the pH of a honey solution. Honey may or may not be poorly buffered, but this cannot be accurately affirmed without using analytical procedures that take the lactone reaction into account, and without keeping in mind the wide variations in composition among varietal honeys, including lactone content.

One of the most far reaching consequences of recognizing the lactone reaction in mead is the realization of how unique mead is in comparison with other fermented beverages. Honey as a biochemical food product stands apart from others due to a number of unusual properties. The more we learn about how bees make honey, the more we understand how amazingly fine tuned the process is. Honey is far more than an exotic sweetener to be used from time to time in place of sugar, and its use in meadmaking likewise makes mead a beverage as unique as honey.

RESOURCES

Eva Crane. A Book of Honey. NY: Oxford Univ. Press. 1980.

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Roger Morse. The Fermentation of Diluted Honey. Masters Thesis. Cornell University. 1953. |

John W. White Jr.. et. al.. Composition of American Honeys. Tech. Bull. 1261, U.S. Dept. of Agriculture. 1962.

John W. White Jr. Composition of Honey: II. Lactone Content, Journal of the Assn. of Official Agricultural Chemists, vol. 41, #1 1958. pp. 194 - 197.

John W. White Jr. Honey. Advances in Food Research, vol. 24. 1975. pp. 287 - 374.

Please welcome our NEW MEMBERS:

Mark Steimle - Wauwatosa
Wayne Miller - Wauwatosa
Drew Brooks - New Berlin
John Hoefert - West Allis

This Month's Meeting

The **Wednesday October 27th** meeting will be held at Clifford's Supper Club, 10448 W. Forest Home Ave., Hales Corners. The meeting will start promptly at 7:30pm. Admission to this meeting is $5.00. Meetings are almost always the **4th Wednesday** of the month except November and December which are he third Wednesday.

This month will be **Homebrew night**. We'll be discussing homebrewing topics. Bring some homebrew to pass around!

Bring at least a six pack and get in free.

Membership Information

The Beer Barons of Milwaukee is open to anyone 21 years of age or older. Annual dues, which cover the cost of producing this newsletter, are $15.00. In addition, we normally charge a $5.00 fee for each meeting attended to cover the cost of the featured beer style we taste that evening. However, additional fees may be required to cover the cost of special events such as the annual party in December. Annual dues may be paid at the monthly meeting, or a check may be sent to:

Treasurer, Beer Barons of Milwaukee
P.O. Box 270012
Milwaukee, WI 53227

This newsletter will be sent free of charge to prospective members for 3 months. The date that appears on the address label of your newsletter is the date that your membership expires. We do not send out reminders, so be sure to check the date on the label to see when it is time to renew.

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BARON MIND

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