Volume 2, Issue 1

January, 2003

Southern Nevada Ale Fermenters Union

MONTHLY MASH

Next SNAFU Club Dinner Set at J.W.'s Tavern in the Rio

By Bob Barnes

Our last SNAFU club dinner at Gordon Biersch was so well attended (we had around 30) that we've decided to line up another one. The theme for our gatherings is always really good beer, food and excellent company to share it all with. Invariably we also manage to land some pretty decent deals.

Our next dinner will be at a new beer gem that has suddenly become the establishment with the best beer selection in Southern Nevada. J.W.'s Tavern, located in the Masquerade Village at the Rio, has over 100 beers to choose from. Twelve are on tap and the rest are in bottles. If you're a Belgian style fan you'll love the choices here with Duvel, Chimay, Lindemans, Ommegang, and five varieties of Unibroue. Other impressive choices include Celebrator Doppelbock, Arrogant Bastard, Flying Dog ales, Weihenstephaner Korbinian dunkles and seven styles of Samuel Smith. The 12 on draft are all craft beers and are dispensed in 20 oz. pours.

Our SNAFU dinner will be on Wednesday, January 29 at 7:00. Cost is $18 per person which will include all the food you care to eat and also includes tax and tip. Food is excellent here. The chef/owner, Joe Romano, used to be the head chef at the Four Seasons' Charlie Palmer Steak House and Mandalay Bay's Aureole. You'll need to pay $3 (non-refundable) to hold you spot. We'll be limiting space to 30. We'll also get 2 for 1 drafts and 10% off any bottled beers.

If you have any questions or can't make it to the January SNAFU meeting to sign up you can make arrangements with me by calling me at 869-9268 or e-mailing at LVBobB@juno.com.

Winterfest 2003 Is Coming

By John Curtis

Get ready! Winterfest 2003 will be held on **Feb. 14 through 16**, which is Friday through Sunday. If we can get a few categories judged on Friday, we will do so. The main part of the judging will be done on Saturday at the home of Steve MacMillan and Sunday in the Boyd Dining room at UNLV.

Steve Mack is once again the organizer for the competition. All needed information and forms will be on the website for anyone to get as well as sent to those of you who receive the newsletter through the United States Postal mail service. A few copies will be in Beer & Brew Gear, but these are meant for folks that aren't members of the club who want to enter.

Thanks for supporting your club.

Beer that is not drunk had missed its vocation.
— Meyer Breslau, 1880

Mind Sparging

(*or* the Editor's Third Gyle of Philosophical Musings) *By Jon Antonson*

Greetings and a Hoppy 2003! I've been flirting with the idea for months, but I finally got around to driving over to John Curtis' house to take the hand-off for newsletter editor. So now it's official … and ya'll can direct any acclaim or criticism, applause or gripes, suggestions or armchair quarterbacking regarding this publication to yours truly.

Since this newsletter exists to serve the needs of the Las Vegas home brewing community (subculture?) and to help us communicate, I am quite open to any ideas you may have to make this a better, more useful, and entertaining newsletter.

Some of the features, both new and revisited, you will find in this and future editions include a calendar of monthly events, a sidebar highlighting the dates and styles for upcoming AHA Club-only competitions, and frames containing short quotes or anecdotes about beer. The dates of various club events or brewing-related activities have traditionally been listed in this

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SNAFU MEETING & BREW DEMO SCHEDULE

CLUB DATES:

Our club meetings are always held on the second Friday of every month at Beer & Brew Gear. Join us on the following dates at 7:00 P.M. for a night of socializing, sampling homebrew, Marvin's raffle, and a smattering of club business.

2003: Jan. 10th, Feb. 14th, Mar. 14th, Apr. 11th, May 9th, June 13th, July 11th, Aug. 8th, Sept. 12th, Oct. 10th, Nov. 14th, and Dec. 12th.

If you want to join the club, forms are available at Beer & Brew Gear or on our website. Dues are $18.00 per year.

DEMO DATES:

The club holds homebrew demonstrations on the third Saturday of every month at Beer & Brew Gear. This demos are open to anyone. We cover brewing of beer using either extract and steeping grains or partial mash recipes. We also occasionally cover mead brewing. Please join us at noon on any of the following dates:

2003: Jan. 18th, Feb. 15th, Mar. 15th, Apr. 19th, May 17th, June 21st, July 19th, Aug. 16th, Sept. 20th, Oct. 18th, Nov. 15th. and Dec. 20th.

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January 2003

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10 7 pm MONTHLY MEETING	11
12	13	14	15	16	17	18 Noon BREWING DEMO @ Beer & Brew Gear
19	20	21	22	23	24	25
26	27	28	29 7 pm SNAFU Dinner @ J.W.'s Tavern in the Rio	30	31	

February 2003

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8 Deadline for mailed *WINTERFEST* entries
9	10 Deadline for hand-carried *WINTERFEST* entries	11	12	13	14 7 pm MONTHLY MEETING	15 Noon BREWING DEMO @ Beer & Brew Gear
16 *WINTERFEST* @ UNLV	17	18	19	20	21	22
23	24	25	26	27	28	

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newsletter, but I hope that summarizing these on a calendar will provide a more useful, visual format. At the November club meeting, the membership agreed participating in AHA Club-only competitions was a good idea. However, if you're like me, you don't have any beer brewed for the style competitions coming up. More lead time is needed for many of us, so I have listed the next year's-worth of scheduled competitions so you can plan your brewing accordingly, if so inclined. When Chuck Mull was the editor, he started adding humorous beer-related quotes, etc. I really enjoyed these and plan to continue this entertaining practice.

Of course the normal columns, notices of events, articles, and financial accountings will continue. But I believe another important function of this newsletter is to be a vehicle for educating us all in the arts and sciences of brewing. Several club members have authored articles in the past that have done just that, and John Curtis has fulfilled the need in this edition with another excellent article — this month covering enzymes in the mash.

Other recurring themes I'd like to see addressed in coming months are biographical summaries of club members, descriptions of brewing experiences, shared recipes, and plans/results of brewing experiments. But (and this is where I beg), I need some of you all to break out the pen / paper / computer / quill / papyrus scroll and share your thoughts with the rest of us. You don't have to be eloquent, be an expert, or be able to spell. Just tell us what you're thinking and I'll do the rest.

We already have one of the best homebrew newsletters around. With your inputs, the quality and diversity of inputs will continue — heck, it might even get better!

Note: Many thanks to Jeff and Pam Crisman for opening their home for the December meeting and supper!

New BJCP Judges Obtain Certification

By John Curtis

Please join me in offering congratulations to four new judges in our club. These folks join the ranks of judges within SNAFU who have already completed certification in the past.

These were:

Jay Carr, who has obtained the rank of Recognized;

John Garbett, who has obtained the rank of Recognized;

Jon Antonson, who has obtained the rank of Certified; and

Diane Kirby, who has obtained the rank of Certified.

Those of us that are presently judges know how hard it is to prepare and take the certification test. But the outcome, obtaining a ranking of any level is well worth the time and effort. For those of you wanting to take this program or even somewhat curious about it, I say do it!

In this same class were three current BJCP judges attempting to improve their ranking. **Jim Wilson** and **James Sutherland** took the written portion of the test and scored at the Certified level. **Steve MacMillan** took the written portion as well and tested at the National level.

Thanks for your efforts, judges.

Fermentation and civilization are inseparable.

- John Ciardi (1916–1986)

Official 2003 Southern California Homebrewers Festival Artwork Contest

Attention: All Artistic Homebrewers!

Make history by creating the artwork for the 2003 Southern California Homebrewers Festival (SCHF) that will be displayed proudly on all festival shirts and glassware! The California Homebrewers Association is accepting artwork for the 2003 Southern California Homebrewers Festival, to be held on Saturday May 3, 2003. If your artwork is chosen you will receive a prize package of $200.00 cash and free membership in the CHA!

All artwork must be submitted no later than January 24, 2003 to qualify. Artwork will be judged on elements of artistic style, subject matter pertaining to the brewing process, history and geographic location of the festival. Artwork must be camera ready. The winning artwork becomes property of the CHA, for use in CHA events only. Due to time constraints, no submitted artwork will be returned to the contestants without an accompanying self-addressed postage paid envelope. However, only the prize-winning artwork becomes property of the CHA. All others can be resubmitted for future events and cannot be used by the CHA without the artists' permission. To insure safe delivery, artwork should be sent "registered mail", with a "return receipt" or hand delivered. The mailing address is:

California Home Brewers Association
c\o Robert Quint
9200 Colima Rd. #305
Whittier, Ca 90605

If you have any further inquiries please call
On evenings and weekends:
626-912-5909
During daytime:
562-693-9392

Official Log Of The Secretary & Treasurer's Office

By Marvin Edgeworth

SNAFU December Meeting 13 December 2002

The December meeting was held at Jeff Crisman's house in conjunction with a dinner and social hour. Ed Pierce called the meeting to order.

Jeff Crisman made the following announcements:

First, the California Homebrewers Association event in Temecula is still on. They have a web site with all the details for those who are interested.

Second, he distributed envelopes to everyone attending the meeting that contained two coupons. One coupon is for a discount on 12-ounce beet bottles. The other is for a free pub glass with the logo on it and the words, "Home of SNAFU" printed below.

Lastly, he said that the Beer & Brew Gear store will be up for sale as of January 1, 2003 as Jeff is up for a change in lifestyle (law school?). As a condition of sale he said he will stipulate that little will change—the store will stay open, brewing supplies will still be available.

Steve Mack discussed the plans for Winterfest 2003. There will be first, second, and third place prizes for all categories, plus those prizes for best of show—the stainless steel brewing system for beer categories and the stainless steel brewing pot and burner for mead. This year there will be no bulk grain awarded as they want to provide some bigger prizes. Ed Pierce is handling the prizes. A flyer has been printed with all the Winterfest details. John Curtis has built a mailing list of both club members and BJCP judges in the Far West region. The flyers will be mailed out to get maximum participation from experienced judges. Organization of entries and initial judging will be accomplished on Fri, Feb 14 at Steve Mack's house and on Saturday, Feb 15 at Steve MacMillan's house (yes, there is a difference). The main competition will be at UNLV on Sunday, Feb 16. The deadline for entries hand carried to Beer & Brew Gear is Feb 10, 2003.

> I will make it **felony** to drink small beer.
>
> — William Shakespeare, King Henry VI
> *(also Marvin's goal in life)*

John Curtis acknowledged the individuals who just received their scores from the BJCP exam (see article on page 4).

Ed Pierce placed a motion to the membership proposing we hold over any unused prizes from Winterfest and hold a separate auction or raffle to earn money for our "war chest" that will be needed for hosting the AHA convention next year. No one was opposed and the motion passed.

Nominations for next year's officers was discussed. No change from last month.

The January meeting will be held at Beer & Brew Gear again.

No raffle was conducted.

SNAFU Finances as of 13 Dec 2002:

Beginning Balance	**$1633.78**
Recent expenses:	
BJCP Winterfest registration	35.00
Newsletter costs	115.00
Checking acc't fee	5.00
Incorp. continuation fee	15.00
Expense subtotal:	$170.00
Ending Balance	**$1463.78**

Future AHA and Other Brewing Events

AHA Club-Only Competitions

Jan/Feb	Bitter & English Pale Ale, Cat.4 (entries due by Jan 20, 2003)
Mar/Apr	Brown Ale, Cat. 10
May	English & Scottish Strong Ale, Cat. 11
August	European Pale Lager, Cat. 2
Sept/Oct	Specialty/Experimental/ Historical Beers, Cat. 24
Nov/Dec	Koelsch & Altbier, Cat. 8

Other Dates to Remember:

April 9–18: National Homebrew Competition First Round entries due

May 3: National Homebrew Day

June 9–13: National Homebrew Competition Second Round entries due for first round advancers

June 18–21: AHA National Homebrewers Conference, Chicago, Ill.

August 2: Mead Day

September 25–27: Great American Beer Festival

November 1: Teach a Friend to Homebrew Day

Enzymes In Our Mash *By John Curtis*

Enzymes are a special class of proteins that promote chemical reactions without changing their structures. They are also called catalysts because of this. Each type of enzyme targets just one particular chemical reaction. They have a temperature and pH range that they operate over, but they are most efficient and active at certain values of pH and temperatures. This is due to the fact that time and dilution of the mash also figure in on the effectiveness of enzymes. The more dilute a mash, the slower the enzymes react, hence time to perform increases. They also are less prone to damage from temperature in this same mixture. And naturally, the thicker the mash...the faster the enzymes react, the shorter their life, and the more prone to heat damage they become.

So, let's look at some of these enzymes, review how they operate, and talk about why they are used in different mash schedules or profiles.

Diastatic or Amylolytic—The class of enzymes that occurs in all mash processes are the diastatic class or diastase enzymes. These are also known as the amylolytic enzymes. These are two enzymes, alpha amylase and beta amylase. Each of these breaks down or acts on the insoluble (in cold water) starch, amylose, and the soluble starch, amylopectin. But they do it differently. They act in the mash at what we call the "sugar" rest or "saccharification" rest."

These enzymes are the conversion enzymes working upon starch to form various sugars.

Amylose is a simple long chain of starch (1000 to 4000 units) that comprises only 20 to 30 % of malt starch. This long chain is made up of glucose, a single sugar or monosaccharide, connected end to end by their carbon molecules. These connections are called links and it is the number 1 link of one glucose sugar that connects to the number 4 link of another sugar. It is these links that the diastatic enzymes react with to convert this starch to various sugars. This starch produces a **blue-black** reaction with iodine when testing for starch conversion.

Amylopectin can be thought of as a branched chain of starch or bush (100,000 plus units) that comprises 70 to 80% of malt starch. This form of starch is made up of glucose sugars using the same 1-4 carbon links, but also has 1-6 carbon links at the branching points. This starch produces a **reddish** reaction with iodine when testing for starch conversion.

Alpha Amylase "attacks anywhere" on the starch molecules breaking it up into glucose, maltose, and alpha-limit dextrins. It liquefies starch for further enzyme actions. The effective temperature range for this enzyme is 130°F to the mid 160's, although it is destroyed at 175°F over a short timeframe. The optimum (most effective) temperature is 158°F. Effective pH range is 5 to 7 with an optimum pH range of 5.3 to 5.7–5.8.

Beta amylase "breaks or bites ends" of the starch molecules breaking it up into maltose and beta-limit dextrins. The effective temperature range is 113°F to 149°F, although it is destroyed at temperatures over 160°F in a short timeframe. The optimum temperature range of beta amylase is 140°F to 149°F with an effective pH range of 4 to 6 and an optimum pH of 5.3.

Limit dextrins are those that contain a branch point (carbon 1-6 link) from amylopectin. Alpha-limit dextrins are those larger dextrins that are left over after alpha amylase is no longer effective. These can be noted in a starch test with iodine as a **faint red to violet** color reaction. Beta-limit dextrins are those smaller dextrins left over after beta amylase is no longer effective. These can be noted in a starch test with iodine as a **mahogany or reddish-brown** reaction.

Debranching—Only certain enzymes can break down limit dextrins and these are most active in the malting stage. The kilning process of malting destroys most of them, so very little will occur during the mash process. These are called 'debranching enzymes.' Glucoamylase, from fungus or molds is one of these. Dextrinase, also called limit-dextrinase, pullulanase, and a-glucosidase from native barley are debranching enzymes.

Proteolytic or Proteases—This class of enzymes is active in malting and mashing. Two enzyme types make up this class. Peptidase, which works on small proteins, is active in malting but is destroyed by the kilning process. Proteinase, which works on large proteins, is active in malting and mashing. In mash processes that invoke a protein rest, proteinase breaks complex, insoluble proteins into medium-sized proteins (the peptones, proteoses, and polypeptides). These protein hunks are the main source of body or palate fullness in beer and they also are responsible for head retention. They do this by reducing surface tension, which means that the bubbles formed end up being more stable when the CO_2 comes out of its liquid state. Protease breaks whole proteins randomly into fragments that are more soluble and needed for yeast nutrition. The effective temperature range of these enzymes is 100–140°F, but they are unstable over 140°F and destroyed at 150°F. Optimum temperature is 122–140°F for proteases and 113–122°F for peptidases. Optimum pH range in the mash is 4.6 to 5.2 for both

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Enzymes In Our Mash

(Continued from page 6)
proteinase and peptidase.

Acid Rest Enzyme—An enzyme and a mash rest once used for light lagers or pilseners where very soft water was prevalent is phytase. Soft waters are typically very deficient in calcium, which is important to help acidify mash waters. Phytase breaks down phytin, an organic phosphate into calcium and magnesium phosphates and phytic acid. The end result is lower mash pH due to the release of hydrogen ions and calcium and magnesium phosphates into the mash wort. The hydrogen ions are much needed by yeast in fermentation where the fermentation cycle reduces acetaldehyde to ethyl alcohol by the addition of these hydrogen ions. Phytase is active from the low 80's to 128°F.

Phytin is abundant in pale lager malt, but not in pale ale malt, since the phytin was destroyed in the kilning process. Phytic acid will acidify mashes using soft water, but **cannot** do so when alkaline brewing water is used since the weak phytic acid is overwhelmed by the bicarbonates.

Beta Glucanase—This enzyme breaks down beta glucans, which are long chains of glucose molecules linked in a certain manner called 1-3 and 1-4 links. In malting, malts are that modified or converted to a high degree have had the beta glucans broken down so no highly gummy substances should be present in the wort unless grains high in beta glucans have been added to the mash such as wheat malts or raw barley, Munich, etc. Beta glucans look like amylose, i.e., straight-chained.

In mashes with high amounts of beta glucans, a dough in (or mash in) at 90°F will allow Beta Glucanase, from the base malts, to break down the beta glucans into simpler sugars. This enzyme is active from the high 80's to the higher regions of the protein rest, but are destroyed at 140°F. Different optimum ranges will be quoted in various publications, such as 104°F to 122°F, 95°F to 113°F, etc. What is key to remember is proteolytic activity can start at 100°F, so **if** we don't want any or very little protein reduction activity…then we should restrict our dough-in rest to temperatures from the high 80's to 100°F!

So now that we have covered the enzymes and given you some data about their effective temperature ranges, it might be time to relate them to their use in different mashes.

Infusion Mash—This mash profile is the mash historically used for English and Scottish ales. It is also the mash used in a lot of the microbrewery operations since it is very cost effective equipment-wise for these businesses. This mash employs a single step or rest at a temperature that is selected as the best-fit for the beer style being made. This will be from 140°F to 162°F, all within the "sugar" rest range. In this case, the main objective is to effect conversion of starch to sugars and dextrins. We simply infuse our grains with water to set the mash at the desired temperature and pH needed for best conversion.

This mash profile is good for 2-row malts that are well modified that don't have high protein and nitrogen levels and not a lot of highly glutinous materials such as when wheat and rye are used. This mash is not the mash of choice for 6-row malts due to their high protein and nitrogen levels.

Step Mash—This mash profile is the one historically used for Belgian ales. The steps or rests are chosen according to the design of the beer and its ingredients. It is also called a "modified infusion mash" or a "temperature-programmed mash." Typically, a dough-in or mash-in is employed to start making the starches soluble and is done at the temperatures from 58°F up to 100°F. The grains will uptake water to allow the starch to become more soluble at lower temperatures. This also prevents 'balling' of starch, which could make it hard for a protein rest to break down the protein chains. Typically, it is done at the 58-70°F range with a thick mixture and allowed to sit and soak up the water prior to more water being added at a higher temperature to raise the mash to 95°F (if using water infusion to step the mash) or water as needed to thin out the mash prior to adding heat to step the mash to the acid rest. This is allowed to sit for 30 minutes and the pH should be around 5.5. If not, adjustment can be made prior to the mash being raised to 122°F for 15 minutes. Here, we are still allowing beta-glucanase activity to break down gums which will improve the clarity of our beer and also aid the lautering process by making it easier to run off the wort. At this time, we are also allowing the break down of proteins to insure that we get rid of the long chain proteins that can kill our head retention. The pH at this point should be 5.3-5.4 and can be chemically adjusted if it is not. If a beer that requires a lot of body is being produced, the mash is heated quickly to the saccharification rest temperature so that the wort is rich in dextrins. If the beer style demands a very fermentable wort, the rise to sugar rest should be from 15 to 30 minutes. Conversion is tested with iodine and if done, the brewer will proceed to a mash-out temperature of 167-170°F for 10 minutes while the mash is gently stirred to insure even heating and shutdown of the enzymes throughout the mash.

Next month I will relate enzymes to the decoction mash as well as the American adjunct mash.

S.N.A.F.U.
Attn: Database Mgr.
8345 Coyado Street
Las Vegas, NV 89123

Southern Nevada Ale Fermenters Union Club Officers and Members In Service:

PRESIDENT:
Ed Pierce **395-0276** **metro6869@yahoo.com**

VICE-PRESIDENTS:
C.J. Monson **365-5628** **monsoon111@juno.com**

SECRETARY/TREASURER:
Marvin Edgeworth **451-3390** **edgew@lvcm.com**

ADDITIONAL BOARD MEMBERS:
Steven Mack, John Curtis, Tyce Heldenbrand

NEWSLETTER EDITOR:
Jon Antonson **655-4595** **antonson@lvcm.com**

WEBMASTER:
Brian Riordan **434-6629** **webmaster@snafu.amhosting.com**

MEMBERSHIP DATABASES: John Curtis **BREW DEMO DAYS ORGANIZER: Marvin Edgeworth**

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