

# THE GRAIN MILL

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## The President's Corner

December 2011  
By Ben Siefker

**H**ello, and Merry Christmas, SODZ. I hope you are all looking forward to a relaxing Christmas vacation and maybe a little brewing stocking stuffer, like a book or a temperature-controlled conical. If you get shut out this year – bad behavior, poor hygiene, no friends – don't worry; SODZ still loves you. We've got a little something for everyone at the January meeting. With the roll out of the new website, we're also working on some new ways to collect and share information, so stay tuned.

As for me, I'm looking forward to some time off to brew. I think I've brewed once in the last three months, and I'm champing at the bit to get going again. I have at least 4 beers to brew, including an all-Citra pale ale and another shot at a double IPA. I know two other club members are brewing a Citra pale ale, so I hope I can compare notes with them at the next meeting. As for the IIPA, I brewed a very nice one a year ago, but the post fermentation processing could have been smoother. I'm going to try to crash in a corny keg as a bright tank with this one, and I may change the dry hopping around as well. The other two beers are destined for the British Beerfest (BBF), and I'm kicking around a few other recipes to make up the rest of my entries. It will depend on keg and tap space as well as what I will want to be drinking then. This is an example of a first world problem.

Speaking of the BBF, it is scheduled for February 25 at the Winking Lizard at Crosswoods. If you're new to the club, this is a homebrew competition limited in scope to British style beers. This is the 9th year for the event, and it gets bigger every year. We'll have the flyer up on our website soon, but you may want to start brewing now. If you've never been to a homebrew competition, this is a good chance to start, as it's right here in town and you'll know everyone there. And also there's donuts. We'll talk about it more at the next meeting.

Thank you to everyone who made the Christmas party a success. There was good food, a lot of good homebrew, and we all had a good time. Christmas taco sounds like some kind of euphemism (?), but that may have to become a tradition. The other highlight for me (food-wise) was the chocolate stout brownies. I don't know what beer was used – Bell's Double Cream Stout? – but I sat by the pan and shoved in 3 or 4 in a row. I will also say that if Andy Richardson offers you some chili beer, just try a small amount. It packed quite a punch for a chili beer, in my opinion, but I heard someone (a lady) say that the heat was the perfect amount whilst downing a pint, so your mileage may vary.

Enjoy the upcoming holidays, and be careful whether you're traveling or staying here in town. Happy New Year, SODZ – see you at the next meeting!

Cheers,

Ben

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# My Big Ass Beer

Richard Sheppard

My uncle calls me up, says "Hey, I can get you a free slightly damaged 20g stainless steel double sided tank do you want it?" Now what kind of homebrewer would I be if I turned him down? My initial thoughts are 20g, double sided, insulated, I can make a nice fermentor out of it. My uncle drops off the tank at my parents and I drive to Marietta to pick it up. It becomes quickly obvious that this is NOT a 20g tank. It turns out to be a 50g tank. Now WTF am I going to do with this?

Giddy with excitement, I stop by Dan and Amanda's house to show off my new toy like a proud papa showing off his first born. They suggest I cut the tank into two vessels and point me to Rick Deshone who did a similar project. Rick and I setup a meeting at his house. Rick's tank was a bit different than mine. His tank was tall and skinny and mine was short and fat. (No jokes Vic!) He was actually able to make four vessels out of the one tank and made nice stands for them. I still had a lot of questions about my tank. As you can see in the pictures, there is a huge block of solid metal sitting in the center. Is that what is holding the tanks together? Will we have to cut around that and weld another piece on? Are both tanks stainless? Will both even be usable? None of these questions will be resolved until the tank is cut apart. So Rick's success gave me the confidence to move forward to the next step.

After looking at some of the options to cut stainless, like renting a plasma cutter, finding a welder who will work for beer, etc. etc. Rick offered up some buddies that own a metal shop and do fun projects at night. They would do the cutting for a reasonable price. I get to the shop and it is a guy's paradise: a cool junkyard dog meets you at the door, it is dirty, greasy, tools and spare parts everywhere, sparks are flying, there is a constant hum from automated machine tools working in the back, one guy is smoking a stogey, another is rolling his own, there is a copy of every Playboy ever published and the drink of choice ...straight whiskey. Rick's son Kyle was apprenticing there so he was the one actually cutting on the tank. I have to admit I was more than a little jealous of his welding skills, especially at such a young age. We cut the outer tank near the upper seam where it starts to taper up, which revealed the lower tank. At this point we find out, the tank is NOT stainless, it is aluminum. Which makes sense, since I could toss the whole tank up in my truck without much problem. I'm a little disappointed but, the tanks will still be usable. I don't buy into the whole aluminum pots causes Alzheimer's argument. The inner tank pulls out and we have a metric ass ton of insulation in between the two tanks. This stuff flies all over the shop and we have a heck of a time getting it out of the tank and into the waste baskets. There is little spacers separating the two tanks which easily get cut out. Also, that huge chunk of steel sitting in the bottom turned out to just be hollow and cut out easily. The rough parts were smoothed out with a grinder and we were done! I want to thank Rick, his son Kyle and the guys at the shop for doing this for me. I had a fun memorable experience.



So how big did it turn out after the cutting? The boil kettle is 23.75" high and 24" diameter. Taking the formula and converting from inches cubed equals about 46.5g. The mash tun is 26" high and 25" diameter = 55.2g. So how much grain can it hold? At 1.25q per pound, 14oz being the displacement of water for 1lb of grain.  $14\text{oz} \times x + 1.25\text{q} \times x = 128\text{oz} \times 55.2\text{g} = 130.8\text{lbs}$  of grain. I want to point out that I have no illusions of making this my every brewday system. I can barely keep up with drinking 5 gallons of beer not alone 50 gallons. My plan is to use this system for special high gravity beers and possibly some group brews.

I went with standard 1/2" fittings. Since this will only be a special occasion brew system I did not want to spend a lot of money on equipment I would only use a couple of times. I plan on using my current pump with 1/2" fittings and borrowing some one's Therminator to chill with also, 1/2" fittings. My 50' immersion chiller just won't cut the mustard on cooling 50g. These would be two bottlenecks in the process if I went with larger fittings. Originally, I bought two stainless couplers to be welded into the tanks. Since the tanks turned out to be aluminum these could not be welded on due to different melting points metals. I cut a 7/8" hole with a metal hole saw. This cut through the aluminum pretty easily. I then bought some compression fittings like what many of you use on your coolers.

For the mash tun, I looked into doing a false bottom. I hit a few junk stores and ebay to see if I could find a big stainless platter that I could drill holes through. Nothing really stood out as what I needed. I got a quote from a homebrew store that did custom false bottoms. They were expensive, but reasonable for what you got. Fortunately I took a closer look at the mash tun, there is a dip along outer edge. This would make a false bottom much harder to use and would lose more wort. But, it is perfect for a manifold. I bought 1/2" flexible copper tubing and a compression T fitting from Lowes. I straightened it out cut for my length and proceeded to make the slits with a hacksaw. Several hours of painstakingly hand cutting too many slits to count it is finished! I start to shape it into the circle and the tubing splits apart! A few choice words later I quit for the day and almost abandoned the whole project. I ended up buying more tubing, shaping it before I cut and borrowing my buddy's Dremel tool. I did go through 4 or 5 of those little disks, but it was well worth it. Since there is not a third vessel, I'll use my standard keggles to hold the sparge water.

I had some different ideas about the burner. Initially I was thinking about getting a two burner system and weld a special stand for them to work simultaneously. I eventually found the Kick A Banjo Burner Plus. This has an extra wide 22" stand built and the highest btu burner I found at 210k+ BTU. It comes with a high pressure 30psi valve, normal is 10psi. I did a little finger crossing hoping the burner is powerful enough. Also, I can use this bad boy on my normal brew system.

I ended up doing a dry test run with just water, this accomplished several things.

Test for any leaks.

Cure the aluminum pots with boiling water. This creates a protective oxidation layer between the metal and your brew.

Discover the time to boil.

Burn the paint off of the new burner.

Get accurate water fill levels in the new tank.

I was able to raise 20 gallons of 56F degree water to boiling in an hour and 53 minutes. Broken down this takes 2.17 seconds to raise 1 gallon of water one degree Fahrenheit. The flame kept blowing out so I should be able to adjust and to do better the next time. The fumes put out by the new burner was higher than expected and a concern since I brew in the garage. There were some very minor leaks but, overall the system did good.

Next up: Part 2. The Brew!

# Sixty Cuts the Cheese: Home Cheese Making

Jeff Lewis

You're already accustomed to cleaning, sanitizing, working with large stainless pots, controlling temperatures and using an infection to produce your desired beverage. Why not apply your talents to another hobby that relies on similar skills? I recently did just that and made my first two wheels of cheddar. I am looking forward to gaining a solid understanding of the process and to making delicious cheeses along the way.

As with beer, the procedures for cheese making can vary by style. The process for making cheese, particularly as applicable to Cheddar, is described briefly below. For a more thorough understanding of the process, see Margaret Morris's "The Cheesemaker's Manual" or Ricki Carroll's, "Home Cheese Making". If "The Cheesemaker's Manual" is the "The Complete Joy of Homebrewing" for the beer world, than [www.cheesemaking.com](http://www.cheesemaking.com) (information, equipment, and ingredients) is the MoreBeer, and [WWW.Cheeseforum.org](http://WWW.Cheeseforum.org) is Rec.Crafts.Brewing / Homebrew Talk / AHA Forums. Online suppliers like Northern Brewer, Grape and Granary, and Midwest Brewing also carry most ingredients.

Typically cow, goat or sheep's milk is used to make cheese. Non-homogenized milk is preferred since the homogenizing process breaks up some of the fat molecules resulting in inferior curds. Pasteurized milk can be used as long as it is not Ultra-Pasteurized. This type will bear a small "UP" mark on the label and must be avoided. Generally, the more gentle the pasteurization process, the better the milk will be for cheese making. It is said that the best cheese comes from non-pasteurized raw milk. Knowing the food safety benefits, I'll be playing it safe and will be using pasteurized milk. In the central Ohio area, Cheesemaking.com recommends the milk from Snowville Creamery in nearby Pomeroy as excellent for cheese making. It is available locally at Giant Eagle and others.

## Basic Equipment and Ingredients Needed

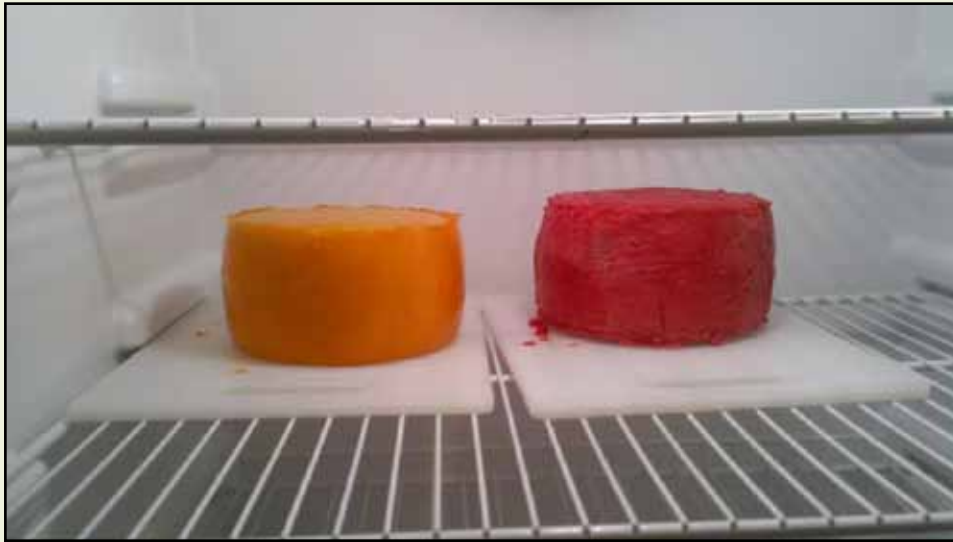
Like brewing, there is more than one way to go when it comes to equipment setups, but here is a list of the equipment I am currently using along with the ingredients for the included recipe:

### Ingredients

- 4 gallons non-homogenized, pasteurized (but not UP) whole milk. I use Snowville. Get it as fresh as you can.
- ½ tsp of Mesophilic powder (a blend of bacterial cultures)
- 12 drops annatto coloring
- ¾ teaspoon calcium chloride
- ½ tablet of rennet
- Flaked cheese salt
- Cream Wax and Cheese Wax

### Equipment

- 5 gallon double boiler for making 4 gallon batches
- Colander
- Curd knife or long bladed knife
- Ladle
- Whisk
- Thermometer (I use one with a cord and an alarm). With the double boiler it isn't feasible to put a coupling for a thermometer on the pot, but it could certainly be added to the pot's lid, and I think this would be a great convenience.
- Cheesecloth, fine weave.
- Cheese press. This can be a Dutch lever press like I am using, a screw press, or you can stack weights on top. Note, however, that you need a lot of force pushing down on the cheese.
- Mold. This is typically 4" or 6" for home cheesemakers. Any larger than this and the weight required to provide the appropriate PSI for the given surface area becomes challenging to achieve.
- Foil pans to melt the wax.
- Temperature Controlled area to store aging cheese.



Waxed 4 lb  
Cheddar Wheels  
in the  
Cheese Cave at  
52 F.

A summary of the cheese making process including some steps particular to Cheddar is below and is followed by a step-by-step guide to make cheddar. The stacking of the curd slabs during draining is not typical, but is a key to making cheddar. In addition to using different times and temperatures, other kinds of cheese may omit or further modify these steps. For example there are cheeses that do not use rennet at all (cottage cheese, fromage blanc), some that don't add bacterial cultures (Queso Blanco), many that aren't pressed (brie, camembert), as well as other differences..

After cleaning and sanitizing all equipment (keep a bucket of star san handy to keep utensils sanitized), the milk is warmed to the target temperature which varies by type of cheese and type of bacterial culture used. As the bacteria grow, they cause the pH of the milk to begin to drop. This is called ripening.

After ripening is completed (by time or pH), an enzyme, rennet, is added to coagulate the milk into curds. Coagulation also begins the process of separating the whey from the curds. The coagulation step is completed and the curds are set when they pass the "clean break" test. The flat blade of a knife is inserted 3-4" into the curds near the center of the pot at a 45 degree angle. It is then lifted up and if the curds break cleanly in a line, it is judged to have passed the test. If the curds do not break cleanly, then they are allowed to rest for an additional 5 minutes before being rechecked.

After the curds are properly set, they are cut to ½" cubes and cooked at controlled temperatures by gently warming them to the next temperature rest (sound familiar?). This cooking releases additional whey and the curds will shrink in size. The curds are allowed to cook until they pass the texture test. Cheddar curds that are cooked properly will easily form a ball when pressed together in your fingers. The ball should also easily break back apart. If either of these conditions is not met, the curds require additional cooking.

After cooking, the curds are drained and will quickly form into a single mass. The curd mass is cut into slabs that are stacked and periodically rotated in position while draining. This stacking of slabs is the Cheddaring process and contributes to the unique texture and flavor of cheddar.



Cooking the curds

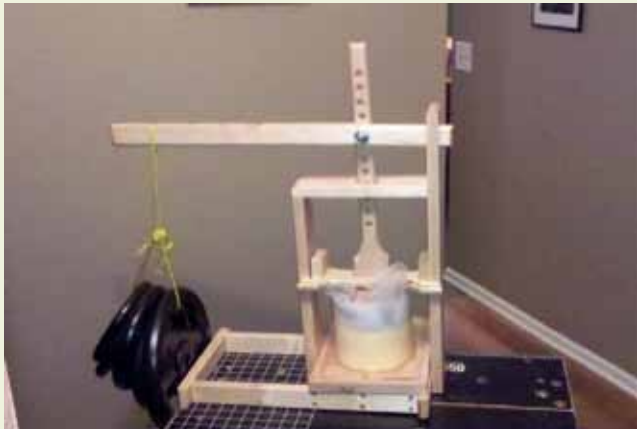
After Cheddaring is completed, the slabs are milled to size, and then flaked salt is mixed into the curds. Salt not only effects taste directly, but also slows bacteria, affecting the sharpness of the aging cheese. Perhaps counter intuitively, increased salt can result in a more mild cheddar.

After salting, the milled curds are pressed. Initially, lower pressure is applied for a short time, followed by a prolonged period at high pressure. In the home, the high pressures of commercial cheese making (around 40 psi) is difficult to achieve. 7-13 psi is more practical, but consequently the pressing time is extended. For my own pressing, I have used 11 psi for 24 hours and the results appear satisfactory.

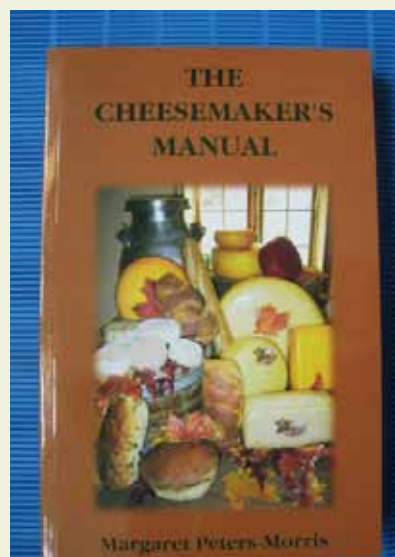
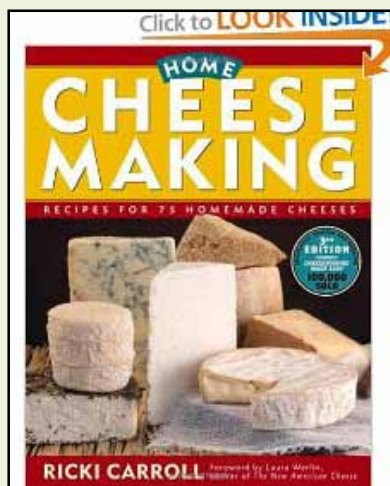
After pressing, the wheel is first air dried, followed a few days later by the application of cream wax to inhibit mold growth. Finally the wheel is waxed for aging in a temperature and humidity controlled environment. In my case, I am using a secondhand refrigerator with a Ranco temperature controller to keep the temperature at 51-54 F. An open bowl of water can be used to maintain the approximately 71% humidity that is desired. As an alternative to waxing, the cheese can also be vacuum sealed. The cream wax is still a good idea as it will inhibit mold from forming on the outside of the cheese.

There are many different styles of cheese ranging from mild mannered to funky just like beer. The cheese maker can produce traditional varieties from standard recipes or can experiment with variations to tailor a cheese to taste. I plan to use hot peppers in an upcoming batch and stout in another. There is a lot of room for creativity in your recipes, but like brewing, it is probably a good idea to get a handle on the basic process first.

Like many home cheesemaking recipes, the one for cheddar below uses timed steps. The “real” process relies on careful monitoring of pH or titratable acidity to track the progress of the bacteria and to determine the endpoints of each stage.



Dutch lever press applying 220 lb to 6" mold.



## Traditional Cheddar Recipe Step-by-Step (yields ~4 lb wheel)

- 1.) Warm 4 gallons milk slowly to 86 F. Stir periodically (20 strokes top to bottom motion). A double boiler works great for this.
- 2.) Add ½ tsp of Mesophilic powder (this is a mix of cheese making bacteria). Let it dissolve on surface for a few minutes. Stir by 20 top/bottom strokes. Do not use thermophilic powder which is the bacteria used at higher temperatures.
- 3.) Ripen 45 minutes holding temp at 86.
- 4.) Add 3 drops per gallon annatto coloring diluted in ¼ cup boiled and cooled water. Mix in via top/bottom stirring. Combine with #5.
- 5.) Add ¾ tsp CaCl in ¼ cup boiled and cooled water. Mix in. 20 top/bottom strokes.
- 6.) Add 1/2 of a rennet tab to ¼ cup boiled and cooled water. Mix in. 20 top/bottom strokes.
- 7.) Allow to set 30-45 minutes. Test for clean break. Insert the flat side of a knife 3-4" into the curds near the center of the pot at a 45 degree angle. It is then lifted up and if the curds break cleanly in a line, it is judged to have passed. If the curds do not tear cleanly, then they are allowed to rest for an additional 5 minutes before being rechecked.
- 8.) Cut curd to 1/2" cubes. Use a long knife to cut every ½". Rotate 90 degrees and make a cut every ½" again. Now take the knife and insert it into your previous cuts at a 45 degree angle to cut out the curd cubes. I do the best I can with this and then use a large whisk which I drag through the curds to cut further. Use your ladle to check sizing and cut any larger pieces to ½" size.
- 9.) Rest 5 minutes.
- 10.) Cook curds to 102 F over 40 minutes or 2 degrees every 5 minutes. Stir gently during heating to reduce size to pea size by the time temp is reached.
- 11.) Rest for 30 minutes at 102 F occasionally stirring to prevent matting which is the curds reattaching to each other and forming larger masses. It is important to prevent this as it will reduce the expulsion of whey from the curds.
- 12.) Texture Test. Take a handful of curds and press them gently together to form a ball in your palm. Curds should mat together and be easily separated back into curds when gently rubbed with the thumb. If the curds do not mat or the ball does not separate easily into well-shaped curds, it requires further cooking (5-10 minutes more).
- 13.) Cheddaring. If it passes Texture Test, allow curds to settle to the bottom of the pot and drain curds into a colander pre-warmed with very hot water. Reserve 1/3 of the whey and pour it back into the cheese pot. Set colander of curds on the top of the cheese pot. Cover with sanitized cheese cloth and Lid. Allow to drain for 45-60 minutes. Maintain 102 F temp as needed with low heat.  
  
As soon as the curds mat together, cut the slab in 2 or 3 slabs and stack them. Every 20 minutes, invert the cheese slabs and rotate position.
- 14.) Cut the slabs into slender ribbons - 2" x 1/4 french fry size pieces.
- 15.) Add 1 tbsp of flaked salt. Mix in to the curds.
- 16.) Line mold with sanitized and pre-warmed muslin cheesecloth
- 17.) Press with 20 lb pressure for 30 minutes.
- 18.) Flip, redress and press for 24 hours with 11 psi (~220 lb if using a 6" mold)
- 19.) Aging – Air dry at room temperature for 2-3 days or until a rind develops and the outside is mostly dry. Flip the cheese several times per day for the first week.
- 20.) Apply cream wax to the cheese. Store at 50-55 degrees and approximately 71% humidity. A bowl of water placed in the temperature controlled refrigerator will approximate the correct humidity.
- 21.) After about 7 days, melt cheese wax in the foil pan and give the wheel 2 or 3 coats. Alternately, vacuum seal the wheel. If waxing, place the solid wax in one foil pan and float this in a larger foil pan filled with water. Heat the water gently till the wax begins to melt, about 170-190. Reduce heat if wax starts to smoke. Ventilate well as wax vapors can be explosive.
- 22.) Store at 50-55 F / 71% humidity. Age the cheese 2 months for mild flavor, 3-6 months for medium flavor, and 6-12 months for sharp cheddar. The cheese should be turned once or twice per week. Tapered plug samples can be taken with a "trier" to sample flavor development. The inner most part of the plug is consumed. The wider outer part of the plug is re-inserted into the hole and waxed to reseal it. The cooler end of the range (or even lower down to 45) will develop better flavors but will take longer as bacterial activity will be slowed. Open the refrigerator once per day to allow some outside air circulation.



# meet the BREWER

Scotty Elliott

**How many years have you been brewing? Do you brew extract, all grain, partial mash or all of the above?**

My humble brewing started with a cidery Mr. Beer concoction in the mid-90's. Undeterred, I got the proper equipment and did extract on and off until I committed in the mid-2000' with all-grain, temperature control, kegging, and frequency. Oh, and then SODZ!

**How many years have you been a member of SODZ** I have been a proud SODZ member since September '09.

**What is your favorite beer to brew/drink?** For brewing, I mostly enjoy making the Dorts and Pils; but I am impatient, so I make more Blondes, APAs and IPAs than anything.

**Do you have a short story about a time you brewed?** I recall a brewday from hell that actually became comical by the end: Ran out of propane, broke the hydrometer, got a massively stuck mash, lost over a half gallon of first runnings, and got a chiller leak that dripped into the kettle. Yes, all in one session.

The good news was that that Dortmund got gold in Cinci back in like '09. Listen to Charlie P about not worrying – the man is right.

**Something that went really well, or a mistake you made?** Seems like every batch has mistakes and successes, there is just a balance of how much of each, and that is what that matters. The key is learning from both.

**What is your favorite hop? Why do you like it? Do you prefer pellet or whole hops? Do you grow your own?** I have really become a fan of Columbus and Saaz hops recently. For years it was Amarillo and Hallertau. I use all pellets except for the whole cone yields from my four Cascade plants during the harvest.

**Do you have a favorite piece of equipment that you couldn't live without?** As anyone present at a CBC brewday can attest, I have a seriously hillbilly setup. It is all kind of endearing, but I really couldn't live without my kegging equipment now.

**What is your dream brewing set-up?** I have more grain and thirst than time. A dream setup would be one where I could quickly heat up, brew, and chill a full barrel (31 gal) batch.

**What is the most important thing you have learned that improved your beer?**

Only two things are crucial:

1. Learn to learn. That means books/mags, online forums, SODZ meetings, and competitions.
2. I put this here to stress that this is #1: HAVE FUN. Don't bellyache about your preboil gravity or worry about your mash/fermentation temperature being off by 2°F. You are making beer – it really doesn't get much better than that!



# Building Bjorn Jansson's Kegerator

Jeff Lewis



Some of my favorite articles in Brew Your Own and Zymurgy are the homebrewer DIY projects. Inside the March/April 2011 issue of Brew Your Own, I read about Bjorn Jansson's freezer kegerator which features a black chest freezer and a built in digital temperature controller. I really liked the color, style, and clean look of his kegerator and decided to give it a shot.

Prior to this build, I had a two tap kegerator and also used picnic taps on a couple more kegs in a spare refrigerator. With BYO in hand, I set out to create a serving area that would let me dispense up to 5 beers including a nitro setup. My wife and I decided to convert an unused living room into a taproom featuring the freezer kegerator and a pub table.

While this project is very doable, please note that it involves working with electrical wiring and amperage sufficient to severely injure or kill if done improperly. I am not an electrician and my non-expert description of the wiring setup in my kegerator is not meant to be used as a guide by anyone. Be safe and use an electrician if you are not 100% certain of proper wiring and safety procedures.

## Features of my kegerator

- Built in digital temperature controller
- All wiring is hidden.
- Space for 5 kegs, one CO2 tank, and one beer gas tank (Nitrogen / CO2 mix)
- 1 Nitrogen regulator + 4 CO2 regulators + 1 manifold for up to 5 CO2 lines.
- 1 Beergas pressure and 4 independent CO2 pressures.
- 4 creamer faucets and one stout faucet (all hardware is stainless)
- Circulating fan with switch to stabilize temperatures and keep the beverage lines cold.
- Eva-Dry 500 rechargeable dehumidifier (absorbs 8-10 oz liquid before recharging needed)

For step by step instructions of the build, refer to the BYO article or the more comprehensive version that the author posted to Homebrew Talk: <http://www.homebrewtalk.com/f51/converting-frigidaire-7-2-cu-ft-chest-freezer-162225>

I recommend Homebrew Talk because of the extra detail and photos provided by Bjorn. Below I will comment on a few key parts of the build.

### Costs and Partial Parts List

I wanted to maximize the lifespan of the unit, so I purchased a new freezer which set me back \$279. There were a lot more costs to building this kegerator than just the freezer, which represented only about 25% of the total costs. For those that want to budget accurately, be sure to take into account all of the hardware as it can add up quickly. Total costs were about \$1,175 excluding the stout faucet (\$79 about 3 years ago) which I already had. I hope to get about 10 years out of the unit, and regardless of the initial life, all but the freezer and collar will be transferable to its future replacement.

- Freezer - Kenmore 8.8 cu ft black chest freezer model 1694 from Sears \$279
- 5 Regulators (4 CO2 + 1 Nitrogen) plus manifold from [www.draughttech.com](http://www.draughttech.com) \$220
- 4 x Perlick model 575SS stainless creamer faucets from [www.beveragefactory.com](http://www.beveragefactory.com) \$112
- 5 x stainless shanks, tailpieces, etc. from [www.beveragefactory.com](http://www.beveragefactory.com) \$71
- 10 lb Nitro tank – Geer Gas \$70
- Wood- 16' of Poplar 8" x 1.25" S4S (surfaced four sides) from Jones Lumber, Columbus OH \$72
- Love TS2-010 temperature controller + probe from [www.dwyer-inst.com](http://www.dwyer-inst.com) Controller + probe \$68
- Hose \$40
- 19" x 5" Drip tray Beverage Factory via Amazon \$39
- Quick disconnects \$35
- Eva-Dry 500 from [www.amazon.com](http://www.amazon.com) \$30
- Bottle opener and cap catcher [www.bottleopener.com](http://www.bottleopener.com) (Brown Manufacturing / "Starr") \$20
- Misc \$100

Everything was purchased new, although I spent a fair amount of time searching for the lowest prices. You could certainly save by purchasing or scavenging used parts.

### Freezer

I built my kegerator with an 8.8 cu ft freezer rather than the 7.2 cu ft in the original plans. This allowed me inside storage for 5 kegs, a beer gas tank and CO2 tank. I recommend taking cardboard cutouts representing the footprints of your kegs and tanks when you are shopping for freezers to insure that your selected equipment will fit. Although I wanted to fit 5 kegs and 2 tanks, the listed dimensions of my freezer seemed to preclude this. Using the cutouts, it was apparent that all could easily fit if the two rows of kegs were staggered, and this is my current configuration.

A wooden collar increases the inside height and provides the mounting surface for the faucets and shanks. Keg fittings will add a couple inches to the height of the keg. Be sure that your inside height including the collar can accommodate this although its likely that it will only be an issue for a keg located on top of the compressor hump. Also note any protrusions on the bottom side of the freezer's lid that might reduce your clearance (or allow for it with a taller collar).

As for other considerations, a powder coated inside can help prevent rust. If your freezer has a high temperature alarm, make sure that there is a way to shut it off. Operating noise and location of the access panel should also be noted.

As this project requires that you remove the lid, be sure to insert nails into the hinges to prevent them from springing open. They are under significant pressure and can injure if they snap open. There are two main options for the lid. One is to attach the collar to the freezer body and attach the lid to the collar with the hinges. The other option is to attach the lid to the collar and attach the collar to the freezer body with the hinges. The latter option gives you more clearance when removing kegs, at the expense of the now heavy lid being prevented from staying open. I went with the first option, as most others have as well, and find clearance with regards to the lid to not be an issue.

## Collar

I chose poplar for the collar material. I purchased 10" x 1.5" thick boards. Since I do not own a planer, I had the supplier, Jones Lumber, mill it to my specified size of 1.25" thickness and rip the boards to 8". At home, I planned out the cuts on the boards to position the most interesting grain patterns in the most prominent locations. The corners were mitered and fastened with glue, finishing nails and steel braces on the inside. A second pair of hands would have been extremely helpful during the gluing, however I did manage it by myself.

7/8" mounting holes, rather than 1", were made for the shanks with a spade bit in a drill press. This provided a snug fit for the shanks. At the author's suggestion I used shanks that were 3 1/8" long x 1/4" bore to limit their protrusion into the limited interior space. The shank holes are spaced 4 inches center to center and the row of faucets is centered over the drip tray. For the faucet that is closest to the side, be sure to locate it far enough inside so that the foam board will not interfere with its installation. An extra deep socket to fit the nut that attaches the shank on the inside is helpful. You won't be able to use a wrench once the foam board is attached. The same goes for the tailpiece. The regulators are mounted using the authors suggested hanger bolts. See the Homebrew Talk for detailed pictures and parts needed. I liked the way this worked and can recommend it.

The cutout for the TS2 controller was made with a jigsaw, and I purposefully left the opening too small by 1/16". I then used a file to slowly enlarge the cutout, testing the fit often. When completed, the TS2 fit snugly in the cutout. Near the end of the project and after wiring was completed, the TS2 was siliconed in place in the opening.

I sanded with 80 grit, then 100, 120 and finally 150, the highest grit recommended for the stain I was using. I did not have much experience finishing wood, but I received a lot of help from the people at Woodcraft. I highly recommend you give them a try if you have a wood based project. Poplar, like pine, will be blotchy when stained, so I addressed this by using an oil based wood conditioner to partially fill the pores. I also tested an alternate method using a "sizing" made from a mixture of 10% wood glue and water. This worked as well as the more expensive store-bought conditioner, but I chose the oil based conditioner because of the faster drying time and its ease of application. For the stain, I used an oil based gel stain which does not penetrate deeply to further limit blotching.

If you want to know what the stain will look like you need to stain some test pieces of the same wood. I found the right blend of two gel stains (General Finishes Candlelight and Georgian Cherry) that gave me the color tone for which I was looking. I wiped on the stain with rags in two coats followed by two coats of poly. Applying and wiping the stain takes some practice and is a bit of an art, but I am far from artistic and managed to do ok although I stripped and re-stained several times to get a finish I liked. After each coat of poly, I lightly sanded. Be very careful not to go through the poly while sanding or you'll remove color, especially if you've taken the steps above to keep the stain from penetrating deeply. I found that the polyurethane ran when applied to the collar in its normal upright position, resulting in visible streaks after drying. To address this, I oriented each face horizontally and applied the poly to one face at a time. Inside surfaces were also stained and poly coated to help with moisture resistance.

After cleaning the freezer surface with alcohol, the collar was attached to the freezer using construction adhesive and weighed down to cure overnight. Interior gaps were sealed with caulking. Insulating foam board was cut to size and attached using spray adhesive, after wiring was completed. The foam board was caulked at the corners to limit moisture and heat incursion.





## Temperature Controller and Probe

The brain of my kegerator is a Love TS2-010 temperature controller and a TS-61 10' polyamide resin coated brass probe that was calibrated with my lab thermometer. The TS2 has ample functions, is easy to use and read, and was not difficult to wire up. The selected probe was recommended by Dwyer and is suitable for submerging in liquid.

There are many opinions about probe placement and the differential settings to use to avoid the cycling that will wear out your compressor prematurely. For my setup, I filled a 12 oz coke bottle with about 4" of water and sealed the submerged probe inside with waterproof silicone sealant. The bottle is positioned on the floor of the kegerator directly in the airstream from the fan. The water in the bottle slows the response of the probe to changing air temperatures, and in combination with the 2 degree differential setting, cycling issues are prevented. I am happy with this setup as the probe temperature approximates the keg temperature fairly well and the freezer does not cycle frequently. I currently set the temperature to 37 with a 2 degree differential. This means that when the probe in the water bottles reaches 39 degrees the compressor is kicked on until the temperature at the probe is lowered to 37. It can overshoot by a degree, but this is only the water in the bottle which responds faster than the beer in the kegs. The average temperature is approximately 38 in the kegs.

The newly installed TS2 replaces the freezer's thermostat. When the programmed temperature conditions are met, the TS2 switches power on to the controlled hot wire which powers the compressor. I could have used a Ranco style to turn the compressor on and off, but I liked the built in look and the extra features that the TS2 gave me. For example, in addition to being able to easily see the temperature on the front face of my kegerator, I programmed a defrost cycle that can be activated from the control panel so that I can switch off the compressor for a timed period if it happens to be on when I want to open up the kegerator. I don't have to remember to turn it back on, because it will automatically return to its normal function after 10 minutes.

## Wiring

All of the 120 VAC wiring connections in my kegerator are made inside of a metal handy box which I attached and grounded to the frame near the compressor inside the cabinet underneath the freezer compartment. I used quick connectors on all of the wires which made all of the connections much easier, particularly since I needed to disassemble everything more than once trying to make everything fit. Wires enter and leave the handy box through the built in knockouts and each knockout has a strain relief fitting to secure the wires. Fitting all of the many wires inside the handy box was tight as was fitting the handy box itself into the available space inside the freezer.

I cut the ends off of a 12 gauge 3 wire extension cord (black, white, green) and used this as the wire to connect power to the TS2. While the black and white wire were used in their normal applications of hot and common, the green wire was used atypically and was marked to indicate this. I marked both ends of the green wire with yellow stripes to indicate that it was not ground in this application, and this green/yellow wire was used as the temperature controlled hot wire to power the compressor. The wires run from the handy box up the back of the freezer into a hole in the collar (sealed with expanding foam). On the inside, the wire is secured to the wooden collar with plastic cable tacks. The wire is concealed behind the foam board insulation in a hollowed out channel made with a box cutter, knife and a melon baller. A Sharpie was used to mark the blue foam with the location of the wires, so that I'll always remember where the wires run. Since a can of expanding foam is meant to be used all in one shot (the draw tube and nozzle quickly get clogged with the incredibly expansive foam), it is best to not seal your holes until you are ready to seal them all.

The main handy box for power has two outlets mounted on its face which are always hot as long as the freezer's power cord is plugged in. An AC to 6 VDC adaptor is plugged into one outlet, and in the other outlet is a digital timer with a second AC to 6 VDC adaptor plugged into it. Both 6 VDC lines are wired into the Radio Shack 3-way toggle switch mounted in a second handy box attached in a convenient position on the back side of the collar. The toggle switch and box can't be seen from the front, but are easily reachable so that I can select always on, off, or timer for the fan. Standard lamp cord runs out of the toggle switch box through the collar, behind the foam board and then along the inside lid to the location of the fan.

## **Achieving Temperature Stability**

Insulating the wood collar helps reduce the amount of heat entering the unit. The 1.25" collar is insulated with 1.5" blue foam board and all gaps were caulked. The enclosure for the TS2 is sealed off with a foam board cap that was siliconed in place. The probe wire was fed out a small hole in the back of this cap and was siliconed in place.

With no air circulation, I initially observed an 8 degree temperature differential from the bottom of the kegerator to the top of the collar where the shanks and beverage lines are. A small computer fan mounted to the lid was all that was needed to even out the temperature differences. With the fan running, the beverage lines near the top of the collar are kept within a couple degrees of the set temp, and I don't have temperature related foaming issues even on the first pour. The fan is a 12 VDC case fan scavenged from a 10 year old computer. I run it on 6 volts which generates adequate circulation, but is quiet enough that it can't be heard with the lid closed. A toggle switch selects between on, off, and timer on. The timer circuit uses a digital timer that allows me to schedule 20 separate on and off periods daily. In practice, the unit functions better with the circulating fan always on, and if I were doing it again, I wouldn't use the digital timer functionality. However, having an on / off switch for the fan is convenient for when the lid is opened. To mount the fan, I super glued a bracket to the inside freezer lid. I fabricated a triangular shaped mounting bracket and glued it to the fan. A screw attaches the triangle mounting bracket to the stainless bracket so that I can adjust the angle of the fan and the direction of the air current.

## **Condensation Control**

Because this is a chest freezer, not a refrigerator, condensation will occur. Many people do not consider it a problem, as it is easily solved by wiping up any excess moisture once in a while. I tackle this issue with an Eva-Dry 500 rechargeable dehumidifier. This small (about 8" x 6" x 1.5") unit is filled with a silica desiccant that changes color when it has reached its capacity (said to be 8-10 oz). The Eva-Dry is then plugged into an outlet which heats it up and drives off the moisture making it ready for use again. In my kegerator, it lasted 3 months before needing to be recharged.

## **Drip Tray, Supports, and Bottle Opener**

The drip tray is 20" by 5". It rests on 4 5" stainless brackets that are super glued to the freezer. The glue has worked excellent so far, and I have very sturdy, level support for the drip tray. I can recommend the glue method with the caveat that you need to have everything measured as you want it and must be able to accurately set the brackets in place very quickly. I carefully measured and marked guidelines for the placement of the brackets. With the Gorilla brand superglue I was using, I had about 2-3 seconds to make any needed adjustments before the bond was permanent. This is not much time to properly position the bracket in the right location and perfectly level with any previously installed brackets. In my case, three of the four brackets were well placed. The fourth had to be bent very slightly so that the drip tray could rest equally on all four brackets. If I were to do it again, I think a better approach would be to tape all of the brackets to the bottom of the drip tray at the proper spacing. Then I would apply glue to all of the brackets and mount them while simultaneously checking for level of the entire piece.

The lower half of the brackets are painted black to match the freezer wall and the upper half of the brackets are left with their original stainless finish which matches the drip tray. This camouflages the brackets making them nearly invisible when the drip tray is in place. The drip tray is not physically attached to the brackets to make it easy to remove for cleaning. Although I had intended to use Velcro, magnets, or some other method to mount the drip tray to the brackets, this proved unnecessary. Due to the weight of the drip tray and the four 1" wide equally spaced brackets, the drip tray is very stable and is not easy to move unintentionally.

I have also mounted a Starr bottle opener and cap catcher. I like the way it looks and it is convenient when needed. The opener is attached to the collar with screws, and the black cap catcher is mounted with magnets making it easy to detach and empty out.

# Get off you're A\$\$cotish

Frank Barickman

It's that time of the year again when the "Pretentious MASTER" challenges club members to take him on, head to head, for the Lucci Cup Challenge at the annual British Beer Festival Homebrew competition. Not sure of the BBF dates but who cares? That's no excuse not to get brewing. Many have tried to take me out, but only two have succeeded. Looking back on the past, maybe I should quit doing this, its just too easy to win!

## Stepping up to the plate? Here are the rules:

1. You must brew a Scottish 80/- (and tell me that you are brewing it before Feb 13th, 2012).
2. Judging will be part of the SODZ BBF competition (i.e. your beer must be entered to win!)
3. Winner will be determined as follows:
  - a. Winner of the Scottish 80/- Flight
  - b. If the flight is mixed and none of the 80/- Lucci Cup beers are awarded first place, the entry that places highest in the category will be the winner.
  - c. If all of these beers suck and do not place in the category, then the crappy beer that scores the highest wins, provided its scores 30 points or better.
  - d. In the event that all Scottish 80/- Lucci Cup beers suck and do not score 30 or better, SODZ should be disbanded. All members will automatically become part of the newly formed synchronized swimming club with me as team captain,

I have supplied a recipe for what I will be brewing (both all grain and extract versions). The recipe is inspired by Jay Wince and Weasel Boy Brewing. You do not have to follow the recipe. I will be brewing the all grain version as it is posted. I may even brew the extract version just to embarrass some of you lazy a\$\$ all grain brewers. At the next meeting I will share my scores and score sheets for each Lucci Cup entry(s) I submit. I have nothing to hide. Do you?

If you have questions, email me at fbarickm at gmail.com. Again, do not forget to let me know you are competing in the Lucci Cup. You must let me know by 2/13/2012.

BTW, if you are new to the club, do not let this intimidate you. My bark is louder than my bite. This is really just a shameless attempt to get more SODZ members to brew and enter the BBF.

**Get Off Your A\$\$cottich**  
(Extract – but if you can't figure that out, you should be swimming)

**Batch: 5.5 gallon**

**Efficiency: 75%**

**OG: 1.049**

**FG: 1.014**

**SRM 15**

**IBU 15**

5.5 Lbs.    Extra Light Dry Malt Extract  
0.5 Lbs    Flaked Barley  
0.25 Lbs   Crystal 120L  
2 oz        Roasted Barley  
2 oz        British Chocolate  
0.5 oz      Peat Smoked Malt (not traditional, but adds complexity)  
  
0.75 oz     East Kent Goldings (5% AA) (Editor note: Time was not stated, but I would guess 60 min)  
  
Yeast       WY1728 Scottish Ale or WLP028 Endinburgh

Procedure – steep the specialty grains in a pot at 155F for 1 hour. Fill a pot with just enough water to cover the grain. Shoot for about 160F, to hit 155F. Do not freak if you miss it, as long as you are around 150 – 155 then you are in. I like to put all the grains in a muslin bag. To hold temperature, you may try placing the pot in your oven set a “warm”. I have had good luck maintaining temperature this way. After an hour pull the grains out and pour the wort into your main boil kettle. If you want, you can sparge (rinse) the grains with 150 – 160 deg water. Some just dunk the muslin bag full of grain into the boil water when it is rising to temp. It is up to you. Follow your normal procedures adding the DME.

**All Grain**

For the **all grain version**, replace the 5.5 lbs Extra Light DME with approximately 8.5 lbs of Maris Otter 2 Row malt. Adjust this weight up or down based on your system efficiency. I will be importing 20 gallons of water directly from Dunbar Scotland. If you can't get water from there, I would recommend brewing with water that tastes good. I plan to mash this at 154F, single infusion, for 60 minutes. I will collect about 7.5 gallons and boil for 90 minutes. I should have about 5.5 gallons to the fermenter.

# One of our own

Don Henderson



Last month we had some "yahoo" chat about a new brewery opening in Buckeye Lake, how they were working on opening sometime in December, and that they needed to hire an assistant brewer. I said at our November meeting that the owner Rich was looking for some assistance with his Glycol system and asked if we can possibly get a few members with experience to help. I want to thank all of you who showed interest in helping and wanting to get involved, but a special thanks and congratulations goes to Mike Byrne.

Mike, as many of you know, was a school teacher, who because of the tough economic times had been looking for work. He has now taken a position with Buckeye Lake Brewery as their new Brewer. Many of us have had the pleasure of tasting Mike's homebrew at gatherings and events. This new position at Buckeye Lake Brewery will now allow many others to enjoy many of Mike's concoctions.

I recently stopped by the brewery to see the progress and sure enough, there was Mike along with Rich Hennosy and Elliott Bell working away on the connections of their brewing system. Rich Hennosy is the owner of Buckeye Lake Brewery; he started out as many in this industry have done by first becoming a home brewer. Elliott Bell is a Master Brewer in Colorado; he is Rich's mentor and came down to make sure everything ran smoothly for opening day. Elliott also helped Rich design his "Frankinbrew" system, a converted 3 barrel milk containment unit that will add to the nuance of the brewery. "So when are you opening?" I asked Rich. "As soon as we start brewing some beer" he said with a smile.

For many, homebrewing starts as a hobby then becomes a passion; after about a year, if you're still interested, it becomes an obsession. Mike has moved to the next stage in that he now gets paid to do what we all love doing; therefore, it is now his profession. Congratulations again to Mike Byrne, one of our own, on your new profession as Assistant Brewer for Buckeye Lake Brewery. Can't wait 'til opening day!

Don Henderson



## PHOTOS FROM BFB AND HOLIDAY PARTY



## MEETING AGENDA

INFO WILL BE IN THE  
JANUARY NEWSLETTER

## MEETING LOCATION

OLD BAG OF NAILS  
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## UPCOMING CLUB ONLY COMPETITIONS

January/February 2012  
Dark Lagers

March/April 2012  
Stout it Out Loud!

May 2012    **\*BOTTLE A FEW FROM BBF!!!!!!!!!!!!!!**  
Scottish and Irish Ale

**\*You must be an AHA and current SODZ member to enter\***

## UPCOMING LOCAL COMPETITIONS

SOURCE: [HTTP://WWW.HOMEBREWERSASSOCIATION.ORG](http://www.homebrewersassociation.org)

Wizard of SAAZ V  
Entry Fee: \$7.50 first beer, \$5.00 each after  
Entry Deadline: 12/28/2011  
Phone Number: (440) 327-3171  
Location: Akron, OH, US  
Contact Email: [kujo61@gmail.com](mailto:kujo61@gmail.com)  
Organizer: Michael Krajewski

**SODZ British Beer Fest**  
**More info Coming very soon, but start your brew kettles and fill your fermenters**

Upper Mississippi Mash-Out (Not local, but a great competition)  
Entry Fee: \$7  
Entry Deadline: 01/14/2012  
[www.mashout.org](http://www.mashout.org)

**SODZ**  
**MEMBERSHIP REPORT**  
VIC GONZALEZ: MEMBERSHIP DIRECTOR

**New Members/Renewals**

Ben Siefker  
Richard Sheppard  
Tom Thacker  
Cliff Primmer  
Janelle Hallett  
Mathew Bentley  
Keith Scherer  
Conor O'Leary  
Chris Garton

**Number of current members #7**

**Number of members about to expire #7**

**Number of renewals sent #127**

**SODZ**  
**TREASURER REPORT**  
DAN FRANCE TREASURER

\$6,120.27 Fifth Third balance  
\$150.00 USD PayPal balance  
----- Recent changes -----  
\$573.00 to Yabo's Taco's for the Christmas party  
\$1,881.00 monies from Beer for Boobs

# SODZ INFO

The Scioto, Olentangy and Darby Zymurgists, Inc. (SODZ) meets on the third Monday of the month at various locations in Central Ohio.

Meetings begin at 7:00 p.m. Membership dues are \$15 per year and are renewable during the member's anniversary month of joining SODZ. Members receive The Grain Mill, the club's monthly newsletter. Articles submitted for the newsletter should be received no later than 10 days prior to the next meeting date.

Articles should be submitted by email, preferably in MS Word, MAC PAGES or Google DOCS, with graphics in jpg format to **mgbyrne80@gmail.com**



## MEMBERSHIP APPLICATION

### SODZ Membership Application

Name \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_ Age \_\_\_\_\_

Email \_\_\_\_\_

Homebrewer yes/no \_\_\_\_\_ How Long \_\_\_\_\_



**Make Checks payable to: SODZ**

**Bring this application to the meeting or send it to: checks payable to: SODZ**

**Bring this application to the meeting.**



## SODZ PAYPALL INFO

The paypal account is **\*\*sodz.treasurer@gmail.com\*\***

To pay, please follow these instructions carefully to avoid paypal fees.

- Log into paypal.
- Click the “Send Money” tab at the top.
- Put in [sodz.treasurer@gmail.com](mailto:sodz.treasurer@gmail.com)
- Put in the amount to send (\$15 is the cost of yearly dues).

### **Here’s the important part...**

- Under the amount box, click the “Personal” tab.
- Select “Gift”.
- If you are paying from an existing paypal balance, or from your bank account, no fees will be charged. BUT... Paypal charges transaction fees for CREDIT CARDS. If you are paying with a credit card, you will have the option of selecting who is required to pay the fee. Do not push fees to SODZ, or a request will be sent to you for the fee amount charged to the SODZ account.

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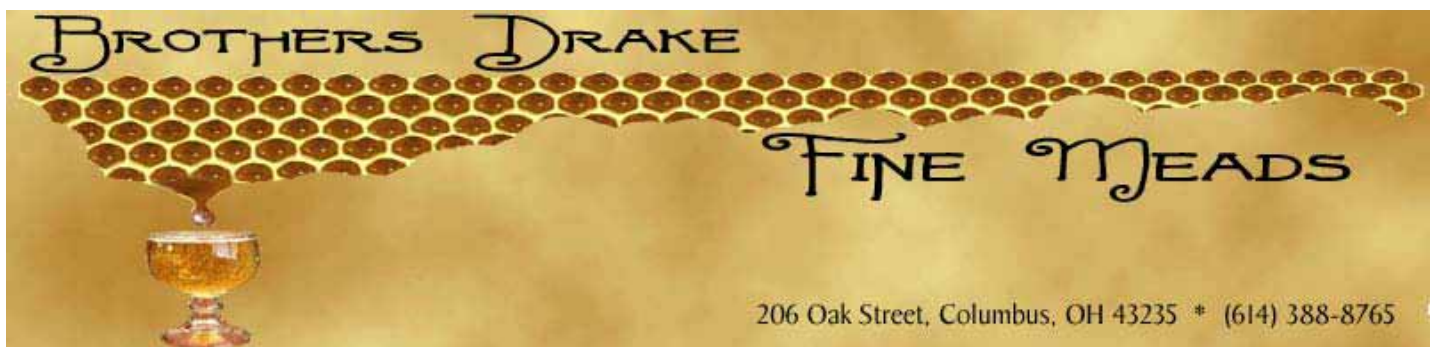
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<input type="checkbox"/> MAR - Imperial Witbier	201
<input type="checkbox"/> APR - BBL-Aged Barleywine	220
<input type="checkbox"/> MAY - Verano Mexicano Cerveza	300
<input type="checkbox"/> JUN - Blackberry Wheat	321
<input type="checkbox"/> JUL - Icebox Eisbock	401
<input type="checkbox"/> AUG - Over & Back Double IPA	420
<input type="checkbox"/> SEP - Oktoberfest	500
<input type="checkbox"/> OCT - Pumpkinweizen	550
<input type="checkbox"/> NOV - Winter Warmer	601
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<input type="checkbox"/> MAR Irish Red	725
<input type="checkbox"/> APR Milk Stout	800
<input type="checkbox"/> MAY Poor Richard II Ale	850
<input type="checkbox"/> JUN Mark's Hard Cranberry	900
<input type="checkbox"/> JUL Homebrew Winner	925
<input type="checkbox"/> AUG Froch w/Honey Ale	975
<input type="checkbox"/> SEP Smoked Porter	1000
<input type="checkbox"/> OCT Abbey Dubbel	1150
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