

And Now a Few Words From Yosemite Sam AKA Greg Hackenburg

Water

Water, water, everywhere,
Nor any drop to drink.
- The Rime of the Ancient Mariner

I'm back from Hopline Hiatus... which kind of sounds like a cartoon character, maybe one of Yosemite Sam's incarnations? Tarnation! Anyway, after teaching the unit on water in Carol Rice's Beer School I figured I could pull all my notes into something coherent, or at least fake it. So here starts a series on everyone's favorite and most pressing topic: Brewing Liquor aka water. If you like, you can imagine all this in Yosemite Sam's voice as you read.

As you probably have figured out, I was being facetious there. Not the Yosemite Sam part, the "everyone's favorite" part. Because, let's face it, while water is the most plentiful ingredient in Beer, typically 95% or so, to most it is an afterthought, if even that. To others it can be a point of obsession. You can visit any online forum for examples. But generally, if you mention it you get a lot of the following:

It is essential to duplicate the classic water profile to get the water "correct" for the style
I don't do anything and my beer is just fine
It's far too complicated and involves way too much calculation and chemistry
For soft water an addition of gypsum will improve your beer.
Who are you and how did you get in here?

And, okay, you got me; just about any potable, decent tasting water can be used to make beer. But water is the medium and provides a portion of the chemicals necessary for most of the key reactions in the brewing process, from the mash, to the boil, during fermentation and in the finished beer. Ignore it, and you are ignoring a lot that goes into making a good beer. And you do want to make good beer, right? Well, at least drink it...

So let's take that first concept of matching a 'classic' water profile. The first thing you need to know is that they hardly are, 'classic'. There are often several profiles published for the same region all with differing amounts, most lacking any source for where this data came from. Many are probably averages from contemporary domestic drinking water sources, probably not those used by breweries either today or in the past.

And this all assumes the brewer would use the water straight from the tap. But Brewers are a clever lot, and we know they have been treating their water in multiple ways for centuries (and I'll be getting into exactly what they did in later installments). So the whole matching a water misguided effort that an awful lot of unnecessary complexity around water has been pushed over the years.

As for the second and third claims, it is true that there are far more important techniques and procedures to master. But once you have, there are a few basic steps you can take that can greatly improve your beer. If you'd like to, there are a few slightly more complicated steps that can improve it a good bit more. If you really enjoy this sort of thing or you are looking for that little extra something for competition you can go all in, but even that is not as difficult as it might sound.

The forth is a bit of past brewing advice I included as an example of some of the gross oversimplifications out there, one you will hopefully understand by the time I've wrapped this up. The long and the short of it is that a particular style of beer made with a particular water source *may* benefit from such an addition; however in some cases it can be disastrous.

So to start out, we are going to be looking at three roles water plays in brewing that you should pay attention to. Once you understand how these work and why, things should start to make sense. Don't worry! There'll be no math involved, chemical equations, or overly complicated concepts. There will be

a few numbers, those chemical symbols with the little subscript numbers, and nothing beyond the basic concepts.

The first, and probably most important, is in determining the pH of the mash.

The second is in providing mineral for the mash and by the yeast for growth and fermentation.

The third is in the contributions to flavor and character in the finished beer.

Now there are a lot of other things affected by the chemistry of the water: extraction of tannins, protein coagulation, hop utilization, Maillard reactions, nutrient uptake by yeast, inhibition of beer spoilage organisms, clarification in kettle and fermenter, and so on. Some of these will be addressed along the way, but I'm generally going to stick to the big three.