

Good afternoon. I'm Scott Russell, I live in Tunbridge, and I am the manager of the Home Brew department at the South Royalton Market. I have been making my own beer, wine, cyder and mead for about 20 years. I used to managed the home brew shop at the Seven Barrel Brewery in West Lebanon, and I have written or co-written three books on brewing. I have been, off and on, a columnist and feature writer for Brew Your Own magazine, and I am a National Beer Judge, certified by the BJCP. In short, I'm a beer geek. When Jennie Martin asked me to speak to you, I must admit I hesitated. What on Earth could I talk about that would interest a group of business people? I'm still not sure, but I am willing to give it a try.

So I would like to thank you for the invite, and for lunch. Thanks to Jennie for insisting and reminding. I would also like to thank and acknowledge my long-time friend and mentor, the late Greg Noonan, Brewmaster of the Vermont Pub & Brewery until his death last summer.

I am grateful to be inside today - the last time I spoke in front of a large group it was outside, a windy day in Southern California, and I lost pages 3 & 4 of my speech, and had to improvise.

This is, in fact, the second time I have addressed a group of Rotarians. The other was in 1978, in Sturbridge, Mass, where I grew up. I was 16, a junior in high school. I received a rousing ovation, partially standing, if I remember correctly. Two things I should tell you about that February evening, in all honesty - first, the majority of the group were fathers of my high school friends... neighbors... friends of my parents. I am still not sure to this day whether the favorable response to my speech was due to the friendly crowd or to what I actually said. I do still have that speech memorized, even now, 30 plus years later...It consisted of five words...

"Gentlemen, the buffet is open."

I guess the second thing I should tell you about that night is that I was working at the restaurant where the Rotary, Lions and Kiwanis all met once a month, and I often helped set up and serve the buffet line. Usually the chef himself liked to announce that it was ready, but that night he had laryngitis... and the rest is history.

Anyway, my background and education are not in brewing. I was a French major in college, and went on to earn graduate degrees in French as well. I lived in France twice for a year, and that's where my interest in beer really began. For the first time, I began to see and taste beers that were not all pale yellow and very fizzy. I discovered dark German beers, rich Belgian ales, Scottish brews, and so on. It was hard to come back home to bland American mega-brews.

A few years later, my brother was working as an interpreter at a historical farm museum. Along with training oxen, coopering, plowing, haying and making pottery, he began to make cyder. He expanded to making beer, and soon got me into it as well. Here I am twenty years later, making that hobby into a career.

I was a high school French teacher for about 20 years. I left teaching 3 years ago to write my novel. Which is for all intents and purposes finished. So if anyone knows a literary agent who is looking for the next great historical swashbuckling political intrigue novel, I'd appreciate it if you would put us in touch...

So, home brewing. Yes, anyone can do it. If you can make canned soup, you can make beer. Obviously, there are levels of skill, levels of work, degrees of expense in equipment, etc. But any of those levels, any of those degrees, can and do produce perfectly drinkable beer.

It helps to know what beer is, I think, in order to brew. When I talk about beer, I like to mention a few historical facts:

-the oldest known recipe ever discovered is in fact a beer recipe, dating back some 5000 years to ancient Sumer. Similar recipes have been found in ancient Egyptian and Babylonian contexts as well. Some anthropologists have suggest that brewing beer was the reason that humans began to settle down in groups and villages. We know that the reason the Pilgrims from the Mayflower decided to land at Plymouth was because they were out of beer on board...

-in Germany, where modern brewing was probably "invented", there are laws about what can go into beer - only four ingredients, and if you add

anything else you can't call it beer. Anheuser-Busch has had legal labeling issues in Germany...

-in the US, known of course for 3 or 4 huge multinational breweries, there are in fact more local, regional, craft and micro-breweries per capita than in any other country in the world. And Vermont is the leading state in that category. Vermont also consistently ranks in the top three in the US as far as number of home brewers per capita.

So, what is beer? By definition, beer is a fermented, alcohol-containing beverage made primarily from grain. According to the German Reinheitsgebot, or Purity Law, it can contain only malted barley, water, hops and yeast. Prior to the work of Louis Pasteur, they didn't know about the yeast, so older versions of that law only allowed three ingredients.

The first beer was surely an accident - some distant ancestor of ours had gathered a bunch of grass seeds and was storing them in a pile somewhere. They got wet, began to sprout, dried out again, got wet again, and the next thing you know there was this puddle of cloudy liquid that smelled a little sweet, a little tangy, maybe. The ancestor tasted the liquid and realized that it was interesting... in fact what had happened was that he had malted some grains, mashed them, and allowed spontaneous fermentation to happen. Voilà, primitive beer.

If you watch television or read magazines, you see ads for beer. A lot of terms get thrown around, so let me break down for you here the categories and styles of beer.

Beer comes down to basically two kinds: ale and lager. The difference between the two is simply the yeast that is used. Ale is brewed with a yeast that prefers warmer temperatures, lager is brewed with a cold-loving yeast. Up until the dawn of the industrial age, almost all beer brewed in the world was ale, simply because lagers require refrigeration. You could only brew lagers seasonally, if you had a deep cold cave or cellar to store it in - this explains the importance of monasteries in the brewing traditions of Europe.

Within the categories of ale and lager, there are a nearly infinite variety of variations. Both classes can be light or dark, moderate or strong, sweet or

bitter. Ales include pale ales, India pale ales, stouts, porters, brown ales, Trappist ales, wheat beers... Lagers include pilsners, bocks, Munich lagers, Oktoberfests, and American Light Lagers...

Other than the yeast, however, they are all made from the same ingredients. In order of their use in the process, they are:

Water - different degrees of hardness or softness, different mineral contents, etc. do influence the flavor and so on of the beer.

Malt - barley, generally, is allowed to begin to sprout, thus converting starch to sugar. It is then dried out, sometimes roasted, sometimes smoked, to bring out color, sweetness, or other characteristics. You can malt wheat, rye and other grains.

Hops - the flower of a perennial vine that gives bitterness and aroma to the beer. Hop flowers are generally dried, and are often processed into pellets for use in brewing, although they can be used in their whole flower form, especially for aroma.

Yeast - the biggest change over the last century has been the development of unique and specialized strains of yeast. Many breweries have copyrighted proprietary yeast strains, making it nearly impossible to duplicate their beer.

The brewing process generally follows a few standard steps:

Mashing: this is the step where the grains give up their fermentable sugars. This involves soaking malted grains at specific temperatures, in measured quantities of water, for a specified time. Each style and each recipe will call for variations in all three.

Sparging: after the liquid is drawn off from the mash, the grains are rinsed with more hot water to capture as much of the remaining sugars as possible. The liquid from the mash and from the sparge, taken together, are called the "wort".

Boiling: the wort must be boiled to break down proteins, but also to allow the addition of hops. The flavor and bitterness derived from hops comes from a resin on the flower, known as “lupulin” - this resin breaks down in the boil and flavors the beer. Hops can be and usually are added at multiple stages during the boil. The longer the hops are in the kettle, the more bitterness they add. The hops added late in the boil, or even after the boil is done, add more aroma than flavor.

Primary fermentation: when yeast is added to the chilled wort, it begins to consume the sugars from the malt. This produces two by-products of note: alcohol and carbon dioxide. If you’ve ever seen beer (or wine, for that matter) being made, you’ve seen some kind of an airlock bubbling away on top. This is releasing the CO₂.

Secondary fermentation: after the first stage of fermentation is over, most brewers will move the beer into a second vessel where it will age for a time. This allows the beer to clarify, smooth out, etc. If this second stage is done at cold temperatures and for a long period, it is known as lagering.

Packaging: finished beer is put into the container in which it will be sold - bottles, cans, kegs, etc. It may be filtered, in which case CO₂ needs to be added “artificially”. Beer in which the yeast is still active will be “primed”, meaning a little bit more fermentable material (sugar, wort, etc.) is added back to give the yeast something to feed on producing CO₂ “naturally” in the bottle.

Homebrewers do these same steps, to a certain degree. Where commercial brewers generally make anywhere from 120 to 10000 gallons at a time, homebrewers generally brew 5 gallons. Some of us brew from grains, just as the big guys do, but many homebrewers, especially as they start out, use extracts. What is extract? Simply, the mashing/sparging step has already been done for you by a commercial malting company, and the wort has been condensed into either a syrup or a dry powder. Just add water and you are ready to begin the boiling step.

A home brewer can get set up to brew for around \$80 - 100, depending on how complicated he or she wants to be. Some of the basic equipment is standard kitchen stuff anyway, so you may be able to go even cheaper if

you want. Like any hobby, you can expand your equipment, your gadgets, your complications almost without limit. At a beginning level, using extracts, each batch will cost anywhere from \$22 - \$40. At an advanced level, ingredients cost around \$12 - 15 per batch. 5 gallons is about two cases of 12-ounce bottles, so you can make beer for about 30 cents a bottle. The best thing about home brewing is that you can make your beer exactly the way you want it - you can control the color, the bitterness, the alcohol content, the body, etc. etc. etc.

At the South Royalton Market, we have in stock just about everything you need to get started and to continue. I can special-order almost anything else. Half of the staff are homebrewers, so there is generally someone in the store all the time with some knowledge. I recently started up a website where I blog about what I am brewing, what I have tasted recently, pubs I have visited, etc. If you're interested I have cards...

I can be available for guided tastings, lessons, etc...

QUESTIONS?