Documentation and Redaction for:

Pilgrim's Reserve Strong Ale

Based on the recipe made known to us in The Description of England

By

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Of

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Introduction:

The following beer is loosely based on a historical recipe contained in The Description of England by William Harrison. I have done some extensive research into this recipe in an effort to reproduce a beer that is as close to an exact copy of the original as possible. However the beer that is presented below is not an exact copy, but rather a derivation from the original based on some of my experience during the research and a desire to produce a different, but still historically plausible beer. To avoid redundancy and creating documentation that is overly cumbersome, I do not go through my entire research process here. For more in depth information regarding the research into the original recipe, please see my documentation entitled "William Harrison's Beer."

Sources:

The following recipe is an interpretation and modification based on the beer recipe from The Description of England, written in 1577 by William Harrison. At the time,Harrison was serving as the household chaplain to Lord William Brooke, 10th Baron of Corbham, who as Lord Warden of the Cinque Ports was one of the most influential nobles in Kent. Harrison wrote The Description of England as the opening to a longer work, Holinshed's Chronicle, which provides a description of England in itsthen-current state before delving into its history.

I am using the version of The Description of England edited by Georges Edelenand published by Dover Publications Inc. in 1994 (second edition). In editing the manuscript,Edelenstayedfaithful to the original text with a few minor exceptions. Edelenelected to modernize some of the spelling and has glossed archaic words in square brackets [] for the sake of clarity (these will appear in some of the quotations below).

I also have access to Cindy Renfrow's version of the recipe published in A Sip Through Time. Renfrow's version does not modernize the spelling, but otherwise it is identical word for word with Edelen'sversions with two exceptions. Renfrow deletes one sentence which appears underlined below. She also does not change the original spelling of an herb "arras", whichEdeleninterprets as Orris (see the note below for more details on this change). I have elected to use Edelen'sversion because I find it more readable, and to remain consistent with quotations taken from other sections of The Description of England. I do use Renfrow's notes, as they add clarity.

I also refer to modern brewing sources for information on the brewing process, and as basis for decisions I made when interpreting the recipe.

Original Recipe:

"Nevertheless, sith I have taken occasion to speak of brewing, I will exemplify in such a proportion as I am best skilled in, because it is the usual rate for mine ownfamily, and once a month practiced by my wife and her maid servants, who proceed withal after this manner as she hath oft informed me.

{1} Having therefore ground eight bushels of good malt upon our querne, where the toll is saved,[1]she addeth unto it half a bushel of wheat meal, and so much of oats small ground, and so tempereth or mixeth them with the malt, that you cannot easily discern the one from the other, otherwise these later would clunter [clot], fall into lumps, and thereby become unprofitable. The first liquor which is a full eighty gallons according to the proportion of our furnace, she maketh boiling hot, and then poureth it softly into the malt, where it resteth (but without stirring) until her second liquor be ready to boil. This doneshe letteth her mash run till the malt be left without liquor, or at the leastwise the greater part of the moisture, which she percieveth by the stay and soft issue thereof, and by this time her second liquor in the furnace is ready to seethe, which is put also to the malt as the first wort also again into the furnace, whereunto she addeth two pounds of the best English hops, and so letteth them seethe together by the space of two hours in summer, or an hour and a half in winter, whereby it getteth an excellent color and continuance without impeachment, or any superfluous tartness. {2} But before she putteth her first wort into the furnace, or mingleth it with the hops, she taketh out a vesselful, of eight or nine gallons, which she shutteth up close, and suffereth no air to come into it till it become yellow, and this she reseveth by itself unto further use, as shallappear hereafter, calling it Brackwoort or Charwoort, and as she saith it addeth also to the color of the drink, whereby it yieldeth not unto amber or fine gold in hew unto the eye. {1} By this time alsoher second wort is let run; and the first being taken out of the furnace and placed to cool, she returneth the middle wort unto the furnace, where it is striken[laded] over, or from whence it is taken again <u>when it beginneth to boil and mashed the second time, whilst the third liquor is heated (for there are three liquors), and this last put into the furnace when the second is mashed again.</u>When she hath mashed also the last liquor (and set the second to cool by the first) she letteth it run and then seetheth it again with a pound and an half or of new hops or peradventure two pounds as she seeth cause by the goodness or baseness of the hops; and when it hath sodden [boiled] in summer two hours, and in winter an hour and a half, she striketh it also and reserveth it unto mixture with the rest when time doth serve therefor. {2}Finally when she settethher drink together she addeth to herbrackwoort or charwoorthalf an ounce of orris[2] and half a quarter of an ounce of

bayberries[3]finely powdered, and then putting the same into her wortwith an handful of wheat flour, she proceedeth in such usual order as common brewing requireth. Some instead of orris and bays add so much long pepperonly, but in her opinion and my liking it is not so good as the first, {1} and hereof we make three hogsheads of good beer, such (I mean) as is meet for poor men as am I to live withal whose small maintenance (for what great thing is forty pounds a year*computiscomputandis*[taking everything into account] able to perform?) may endure no deeper cut, the charges whereof groweth in this manner.I value my malt at ten shillings, my wood at foure shillings which I buy, my hops at twenty pence, the spice at two pence, servants' wages two shillings sixpence, with meat and drink, and the wearing of my vessel at twenty pence, so that for my twenty shillings I have ten score gallons of beer or more, notwithstanding the loss in seething. The continuance of the drink is always determined after the quantity of the hops, so that being well hopped it lasteth longer. For it feedeth upon the hop and holdeth out so long as the force of the same continueth which being extinguished the drink must be spent or else it dieth and becometh of no value."(Harrison137-138).

Notes:

The above text actually contains two recipes, one for beer and one for brackwort or charwort (note that this is distinct from braggot as no honey is used). For purposes of clarity, sections pertaining to the beer recipe are proceeded by {1} and sections pertaining to the brackwort/charwort recipe are proceeded by {2} (Renfrow 4-5)

1. Harrison notes that he is saving money by grinding his own malt rather than paying a miller to do it for him (Renfrow 4)
2. In Cindy Renfrow's version this is spelled "arras." Arras is the name of a city in France, it is unclear if the herb Orache or (as Georges Edelen indicates)Orris is being called for. Note that both are poisonous. (Renfrow5)
3. Renfrow notes that the recipe is calling for berries of bay laurel, not bayberries. (Renfrow5)

My FinalRecipe for William Harrison's Beer without Changes:

(For details as to how I arrived at this recipe see my documentation for "William Harrison's Beer.")

Ingredients:

9 pounds Marris-Otter malt

1/2pound wheat meal

1/2 pound ground oats

2.5 ounces East Kent Golding hops

White Labs English Ale Yeast (WLP002)

5oz Priming Sugar

Water

Procedure:

1. Heat 13quarts of clean water to between 165 and 170 degrees Fahrenheit. Combine water with grains in the mash tun, mix well. Target Mash temperature is between 150 and 155 degrees. Cover and allow to stand for 60 minutes.
2. While mash is steeping, heat 20 quarts of clean water for sparging to between 170 and 180 degrees and place in the lautertun until ready to use. Target sparge water temperature is between 165 and 170 degrees.
3. After mash has rested for 60 minutes, open the valve on the mash tun and, using two vessels recirculate the wort until it runs clear. Once it runs clear allow wort to begin to drain into brew kettle.
4. When wort sits approximately one inch above the grain bed, begin to gently sparge the mash, maintaining a 1 inch layer of liquid above the grain bed while the wort continues to drain into the kettle. Continue to sparge until you have collected 7.5 to 8 gallons of wort.
5. Bring the wort to a rolling boil and add all of the hops. Do not allow the wort to boil over. Boil the wort for 90 minutes.
6. Once the boil has been completed, cool the wort to pitching temperature of between 65 and 70 degrees (I use an immersion wort chiller to speed this process).
7. Transfer to the sanitized primary fermenter and pitch the yeast. Stir vigorously to aerate.
8. Seal fermenter with an airlock and allow to ferment at 65 to 70 degrees for one week.
9. After the first week's fermentation, siphon the beer off of the trub and gently transfer to a sanitizedglass carboy. Seal with an airlock and allow to ferment for an additional week.
10. When fermentation is complete siphon the beer off of the trub into a sanitized bottling bucket.

11. If you wish for carbonated beer, prepare the priming sugar by dissolving it in 2 cups hot water and mix thoroughly into the beer before bottling.
12. Bottle the beer in brown glass bottles with crown caps. If you will be bottle conditioning, allow to stand at 65 to 70 degrees for an additional two weeks to carbonate.
13. Chill and enjoy.

Changes to the Original Recipe:

Overall I made relatively few changes to the overall recipe. The malting and brewing processes were kept the same as were most of the ingredients. The only changes I made were to the grain bill.

On my first attempt to brew the original recipe, I neglected the fact that grain has continued to improve since Harrison's day and used the amount of grain prescribed in the original recipe. I later learned that due to modern grains higher starch content I had inadvertently made a double version of the beer. While this was technically a mistake, it was a delicious one, so I elected for this recipe to keep the doubled grain bill of 17.75 pounds of malt and one pound each of wheat and oats.

During my original research into this recipe, I found that Harrison was very particular about the malt that he used for his beer, favoring what for his day was a very light malt roasted over a fire of straw resulting in a pale beer (Harrison 136). I, unlike Harrison, like darker beers and could not help but wonder what the result would have been had Harrison not been so particular in his malt selection. Since modern dark malts are not diastatic, I can only attempt to simulate a darker malt by adding a small amount of specialty malt. I elected to reduce the amount of Marris Otter by half a pound and replace it with half a pound of chocolate malt.

I was also hoping to produce a somewhat more chewy beer. To that end I increased the amount of oats from one pound to two, and therefore removed an additional pound of Marris Otter malt.

The adjusted recipe incorporating the above changes is as follows:

Pilgrim's Reserve Strong Ale:

Ingredients:

16 pounds Marris-Otter malt

1/2 pound Chocolate Malt

1 pound wheat meal

2 pounds ground oats

2.5 ounces East Kent Golding hops

White Labs English Ale Yeast (WLP002)

5oz Priming Sugar

Water

Procedure:

1. Heat 22 quarts of clean water to between 165 and 170 degrees Fahrenheit. Combine water with grains in the mash tun, mix well. Target Mash temperature is between 150 and 155 degrees. Cover and allow to stand for 60 minutes.
2. While mash is steeping, heat 36 quarts of clean water for sparging to between 170 and 180 degrees and place in the lautertun until ready to use. Target sparge water temperature is between 165 and 170 degrees.
3. After mash has rested for 60 minutes, open the valve on the mash tun and, using two vessels recirculate the wort until it runs clear. Once it runs clear allow wort to begin to drain into brew kettle.
4. When wort sits approximately one inch above the grain bed, begin to gently sparge the mash, maintaining a 1 inch layer of liquid above the grain bed while the wort continues to drain into the kettle. Continue to sparge until you have collected 7.5 to 8 gallons of wort.
5. Bring the wort to a rolling boil and add all of the hops. Do not allow the wort to boil over. Boil the wort for 90 minutes.
6. Once the boil has been completed, cool the wort to pitching temperature of between 65 and 70 degrees (I use an immersion wort chiller to speed this process).
7. Transfer to the sanitized primary fermenter and pitch the yeast. Stir vigorously to aerate.
8. Seal fermenter with an airlock and allow to ferment at 65 to 70 degrees for one week.
9. After the first week's fermentation, siphon the beer off of the trub and gently transfer to a sanitized glass carboy. Seal with an airlock and allow to ferment for an additional week.

10. When fermentation is complete siphon the beer off of the trub into a sanitized bottling bucket.
11. If you wish for carbonated beer, prepare the priming sugar by dissolving it in 2 cups hot water and mix thoroughly into the beer before bottling.
12. Bottle the beer in brown glass bottles with crown caps. If you will be bottle conditioning, allow to stand at 65 to 70 degrees for an additional two weeks to carbonate.
13. Chill and enjoy.

Results:

Overall I am very pleased with the results of this particular recipe.

At the end of the boil the Original Gravity for the wort was 1.092. After fermentation was completed the Final Gravity was 1.030, yielding an ABV of 8.14%.

Based on the gravity, ABV, and general body of the beer, I would classify this particular recipe as a strong ale.

Appearance:

The beer has a rich red copper color with an abundant off white head. Based on a visual estimate I would place it between 16 and 18 SRM. The beer itself is quite clear with a minimal of cloudiness. The head retention is good.

Aroma:

The aroma is largely malty, however there is a slight off note that I have difficulty identifying. There is no hop arom, however this is not surprising given the length of the boil time.

Balance and Body:

The mouth feel of the beer is full and heavy, not surprising given the large grain bill. The alcohol, though relatively high is barely noticeable underneath the maltyness. There is a lack of the "chewy" mouth feel I was attempting to achieve with the oat content and as a result the body is almost too syrup like.

Flavor:

The flavor is one of heavy, sweet malt. The hops are barely noticeable at all. I find the flavor almost cloyingly sweet. While not a bad flavor, it is not the balance that I was looking for in this recipe.

Overall Impression:

While certainly a drinkable recipe, I feel that more work is needed to reach the desired outcome. I would like to increase the body somewhat, but decrease the sweetness. I would also increase the hops so that their flavor is more prevalent in the beer.

Sources:

Harrison, William. *The Description of England: The Classical Contemporary Account of Tudor Social Life.* New York, NY: Dover Publications Inc, 1994. Print.

Renfrow, Cindy. *A sip Through Time: A Collection of Old Brewing Recipes.* Self Published, 1994. Print.

AppendixA: Calculations for Ingredients

Converting Harrison's Gallons to Modern Gallons:

240 Harrison gal. x 8 troy pounds per gallon = 1920 troy pounds

1920 troy pounds = 1579.9 pounds

(online converter used, available at http://www.metric-conversions.org/weight/troy-pounds-to-pounds.htm)

1579.9 pounds / 8.34 pounds per gallon = 189.43

Rounded to 190 gallons for convenience

Converting Harrison's Grain Bill to Modern Pounds:

8 bushels malt x 64 troy pounds per bushel = 512 troy pounds malt

512 troy pounds malt = 421.3lbs malt

½ bushel wheat x 64 troy pounds per bushel = 32 troy pounds wheat

32 troy pounds wheat = 26.33lbs wheat

½ bushel oats x 64 troy pounds per bushel = 32 troy pounds oats

32 troy pounds oats = 26.33lbs oats

Total Grain bill = 421.3lbs malt, 26.33lbs wheat, 26.33lbs oats

Appendix A continued:

Scaling Harrison's Grain Bill to Five Gallon Batch:

8 gallons starting water / 190 gallons starting water = X / 421.3lbs malt

0.042 = X / 421.3lbs malt

X = 17.73lbs malt

Rounded to 17.75 lbs. malt for convenience

8 gallons starting water / 190 gallons starting water = X / 26.33lbs wheat

0.042 = X / 26.33lbs wheat

X = 1.1lbs wheat

Rounded to 1lb wheat for convenience

8 gallons starting water / 190 gallons starting water = X / 26.33lbs oats

0.042 = X / 26.33lbs oats

X = 1.1lbs oats

Rounded to 1lb oats for convenience

Total Grain bill = 17.75lbs malt, 1lb wheat, 1lb oats

Appendix A continued:

Scaling Harrison's Hop Bill to Five Gallon Batch:

8 gallons starting water / 190 gallons starting water = X / 3.5lbs hops

0.042 = X / 3.5lbs hops

X = 0.147lbs hops = 2.352 oz. hops

8 gallons starting water / 190 gallons starting water = X / 4lbs hops

0.042 = X / 4lbs hops

X = 0.168lbs hops = 2.688 oz hops

(2.352oz hops + 2.688 oz hops)/2 = 2.52 oz hops

Rounded to 2.5 oz hops for convenience.

Appendix B: Mash Temperature Calculations

The simplified formula for calculating mash temperature given by John Palmer in How to Brew is:

$T_w = (.2 / r)(T_2 - T_1) + T_2$

T_w is actual temperature of the infusion water

r is the ratio of water to grain in quarts per pound

T_1 is the initial temperature of the grain (in both cases I assume a temperature of 65 degrees)

T_2 is the target temperature of the mash

For my mashing I use a ratio of 1.25 quarts per pound as I find this works best. Harrisons ratio when converted to modern units is 0.53 quarts per pound.

So for calculating the Tw for my 5 gallon batch the math is as follows:

$T_w = (.2/1.25)(155-65)+155$

$T_w = (.16)(90)+155$

$T_w = 14.4+155$

$T_w = 169.4$ (rounded to 170 for convenience)

Appendix B continued:

In calculating what the final temperature with an infusion water temperature of approx. 212 degrees I had to work backwards through some trial and error to reach the temperatures of 190 degrees for my mash and 172 degrees for Harrisons. Those Calculations are listed below.

My Mash temp with 212 degree infusion water:

$T_w = (.2/1.25)(190-65)+190$

$T_w = (.16)(125)+190$

$T_w = 20+190$

$T_w = 210$

Harrison's Mash temp with 212 degree infusion water:

$T_w = (.2/0.53)(172-65)+172$

$T_w = (.38)(107)+172$

$T_w = 40.66+172$

$T_w = 212.66$