

Introduction to Brewing

Ælfred se leof

People have been brewing alcohol for thousands of years. Some drinks of the SCA period include:

- *Ale* – originally referred to a drink made from malt without the addition of hops, but now used to refer to a variety of beers made with ‘top-fermenting’ yeast.
- *Beer* – made from malt and flavoured with hops.
- *Braggot* or *Bracket* – made from malt and honey, often flavoured with spices.
- *Cider* – made from apples.
- *Hippocras* – wine flavoured with sugar and spices.
- *Mead* – made from honey.
- *Metbeglin* – mead flavoured with spices.
- *Wine* – made from grapes; other kinds of ‘fruit wine’ can be made, but are much less common.

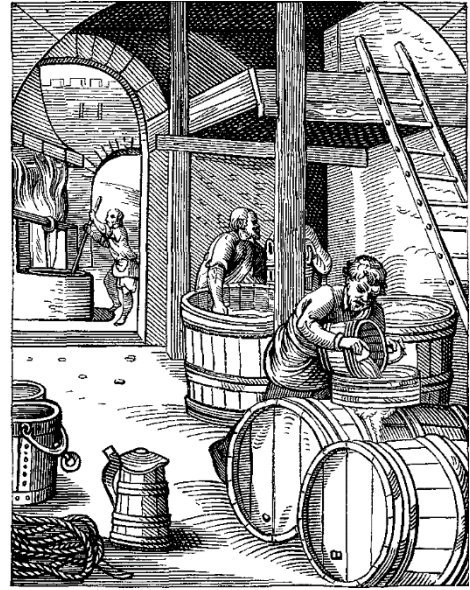


Figure 1. *The Brewer*, from *Das Ständebuch (The Book of Trades)*, 1568.

In all the above drinks, alcohol is produced from sugar by the action of yeast. We now know yeast to be a micro-organism, but in period it was only known as the stuff that caused beer to work and bread to rise. Yeast converts sugars into alcohol and carbon dioxide in a process known as *fermentation*.

The basic process of brewing is:

1. Mix the fruit, honey or malt with water to get a sugary liquid at the right concentration for the yeast to work. This liquid is called *wort* (pronounced ‘wert’) or *must*.
2. If flavouring with spices, boil them in the wort for an hour or so, then cool back to a temperature at which the yeast will work.
3. The yeast takes three or four days to convert the available sugar into alcohol.

The liquid can be drunk as soon as the yeast is finished working, but the drink is more usually ‘aged’ for a period ranging from several weeks to several years. Ageing mellows the flavour and, if done in organic containers such as oak barrels, draws some of the flavour of the container into the drink.

The Lochac Brewers, Vintners and Imbibers Guild is open to anyone with an interest in brewing, wine-making or imbibing the results – <https://brewers.lochac.sca.org/>.

Some Digressions

Sanitation

Modern brewers stress the importance of sanitising anything that comes into contact with the wort, to prevent undesirable organisms infecting the brew. Home brewing shops sell a variety of chemical sanitisers for this purpose.

Period brewers, who didn't know about micro-organisms, are content with cleaning the vessels in which the drink will be fermented. Most drinks require boiling, which will sterilise the liquid and the vessel, and the fermenting liquor should get by fine as long as the yeast is working. Once the yeast has stopped working, however, the liquor must be either drunk straight away or sealed into barrels, to prevent other micro-organisms moving in.

Do not seal the fermentation vessel while the yeast is still working – the carbon dioxide produced by fermentation will build up inside the vessel and may cause an explosion. Fermenters bought from home brew shops are designed so that excess carbon dioxide can escape through an airlock or loose-fitting lid that allows gas to move from inside to out.

Malt and Mashing

Malt is made from cereal grains that have sprouted but then been roasted in an oven. Barley is by far the most common choice, but wheat, rye, oats and other grains can also be used. The length of time in the oven affects the colour and flavour of the malt – shorter periods produce paler malts used in lagers and pale ales, while longer periods produce darker malts used in dark ales and stouts.

Malt contains enzymes (alpha amylase and beta amylase are the main ones) that convert starch into sugar when steeped in hot water (between about 55 and 65 degrees). After about an hour, the now-sugary liquid can be drawn off. This process is called *mashing*.

Hops

Hops are the flower of the hop plant, *Humulus lupulus*. Hops give beer its bitter flavour and some period recipe use hops for making mead as well. Hops also act as a preservative.

Hops are added to the wort after mashing, which is then boiled for about an hour. Modern brewers make a distinction between 'bittering' hops that are put into the wort at the beginning and 'aroma' hops that are added ten or fifteen minutes before the end, but period recipes just put all the hops in at the beginning.

Modern brew shops sell hops in the form of pellets made from dried and ground leaves. Some may sell dried leaves as well. Since the nineteenth century, an enormous number of varieties have been cultivated, with varying levels of bitterness and variations in aroma and flavour. Some older varieties still have names reflecting the areas in which hops were commonly grown in period, such as East Kent Goldings (in England), Hallertau (in Germany) and Saaz (in the Czech Republic).

Distillation

In Australia, distillation requires a licence.

Spirits such as vodka and whisky are made by *distillation* of alcohol already produced by fermentation. Distillation separates liquids by controlling the temperature such that one liquid boils off at a time. Alcohol has a somewhat lower boiling point than water (78 degrees), so holding a solution of water and alcohol at about 80 degrees will boil off the alcohol, leaving the water behind. Re-condensing the alcohol produces the spirit.

While the process of distillation was known in ancient times—the word ‘alcohol’ itself comes from the Arabic term ‘al-kohl’ referring to ‘essences’ made by distillation from the eighth century—drinks made by distillation don’t appear until the fifteenth century.

THE
CLOSET
Of the Eminentely Learned
Sir Kenelme Digbie K^t.
OPENED:
Whereby is DISCOVERED
Several ways for making of
Metheglin, Sider, Cherry-Wine, &c.
TOGETHER WITH
Excellent Directions
FOR
COOKERY:
As also for
Preserving, Conseruing, Candyng, &c.
Published by his Son's Consent.
London, Printed by E. C. for H. Brome, at
the Star in *Little Britain*. 1669.

Some Recipes

My go-to resource for period brewing recipes is Cindy Renfrow's book *A Sip Through Time: A Collection of Old Brewing Recipes* (1994). *A Sip Through Time* collects over 400 recipes from Antiquity until the nineteenth century, along with notes on period ingredients and measurements. The following are a few from the SCA period for which I've worked out modern versions.

My Lady Bellassises Meath

Mead is one of the easiest alcoholic drinks to make – the most basic recipe is to mix one part honey to three or four parts water, then leave it to ferment. The slightly more complicated recipe below comes from *The Closet of the Eminently Learned Sir Kenelme Digbie Kt. Opened*, published in 1669 (Digbie himself died the year earlier).

The way of making is thus. She boileth the honey with Spring-water, as I do, till it be clear scumed; then to every Gallon of Honey, put in a pound or two of good Raisins of the Sun; boil them well, and until the liquor bear an Egg. Then pour it into a Cowl or Tub to cool. In about 24 hours it will be cool enough to put the yest to it, being onely Lukewarm: which do thus: spread yest upon a large hot tost, and lay it upon the top of the Liquor, and cover the Tub well, first with a sheet, then with coverlets, that it may work well. When it is wrought up to it's height, before it being to sink, put it into your barrel, letting it run through a loose open strainer, to sever the Raisins and dregs from it. Stop it up close, and after it hath been thus eight or ten days, draw it into bottles, and in every bottle put a cod of Cardamoms, having first a little bruised them as they lie in the cod; and opening the cod a little, that the Liquor may search into it. Stop your bottles close, and after three or four moneths you may drink, and it will be very pleasant and quick, and look like white wine.

I worked out the redaction below in my early days of brewing. It makes four 750mL bottles of mead from 1 kilogram of honey.

1 kg honey
200g raisins
1 cardamom pod per bottle
water
yeast

1. Mix the honey with four times its volume in water. Bring the mixture to the boil and skim off the foam that rises to the top.
2. When no more foam is rising, add 200 grams of raisins for every kilogram of honey. Simmer for about half an hour. (The 'bear an Egg' instruction in the original recipe is to test that the sugar has reached such a concentration that an egg will float on top.)
3. Leave the wort to cool to the temperature at which the yeast will work, add the yeast, and leave overnight.
4. Strain the raisins out of the wort. Put the wort into a fermentation vessel and leave until the yeast has stopped working (i.e. no bubbles are rising from the liquid).
5. Put the mead into bottles. Add one bruised cardamom pod into each bottle then seal them up.
6. Drink after three or four months.

Of Brewing Ordinary Beere

This is one of two recipes I referred to in developing a competition entry for Spring War 2024. The competition called for what modern brewers call a "SMaSH" brew, meaning "single malt

and single hop”, as distinct from the elaborate combinations of malts and hops that modern home brewers and micro-breweries like to play with. In period recipes, “malt” was “malt” and “hops” were “hops”, as in the following recipe from *The English Hus-wife, Contayning the inward and outward vertues which ought to be in a compleat woman*, by Gervase Markham, published in 1615.

Now for the brewing of ordinary Beere, you mault being well ground and put in your Mash-fat, and your liquor in your leade ready to boile, you shall then by little and little with scopes or pailles put the boiling liquor to the mault, and then stirre it euen to the bottome exceedingly well together (which is called the mashing of the mault) then the liquor swimming in the top couer all with more mault, and so let it stand an howre & more in the mash-fat, during which space you may if you please beate more liquor in your leade for your second or small drinke; this done, pluck vp your mashing stroame, and let the first liquor runne gently from the mault, either in a cleane trough or other vessels prepared for the purpose, and then stopping the mash-fat againe put the second liquor to the mault and stirre it well together; then your leade being emptied put your first liquour or wort therein and then to euery quarter of mault put a pound and half of the best hops you can get, and boile them an hower together, till taking vp a dishfull thereof you see the hops shrinke into the bottom of the dish; this done put the wort through a straight liue which may draine the hopes from it into your cooler, which standing ouer the Guil-fat you shall in the bottom therof set a great bowle with your barme and some of the first wort (before the hops come into it mixt together, that it may rise therein, and then let your wort drop or run gently into the dish with the barme which stands in the Guil-fat, and this you shal do the first day of your brewing letting your cooler drop all the night following, and some part of the next morning, and as it droppeth if you finde that a blacke skumme or mother riseth vpon the barme, you shall with your hand take it off and cast it away, then nothing being left in the cooler, and the beere well risen, with your hand stirre it about and so let it stand an hower after, and then beating it and the barme exceeding well together, tunne it vp in the Hogsheads being cleane wasbt and scaulded, and so let it purge, and herein you shall obserue not to tun your vessels too full for feare thereby it purge too much of the barm away, when it hath purged a day and a night you shall close vp the bung-holes with clay, and only for a day or two after keepe a vent-hole in it, and after close it vp as close as may be.

This recipe, like many others from this period, is intended to make two batches of beer, called *strong* and *small*. The first ‘liquor’ put to the malt makes the strong beer, then a second quantity of liquor put to the same malt to makes the small beer. Modern brewers use a technique called *sparging* to extract all of the sugar from the malt into a single quantity of wort. Sparging makes far more efficient use of the malt than the period method, but it wasn’t developed until the seventeenth century.

Here's the redaction I used for my Spring War entry. I used two-row pale malt and East Kent Goldings hops, which were my best guesses at the kind of malt and hops available in England.

3L malt
9.3L water for the strong beer
3.1L water for the small beer
11g hop pellets for the strong beer
4g hop pellets for the small beer

1. Place the malt in a vat. In another container, bring the first batch of water almost to the boil, then scoop it little by little into the vat. Stir together and let stand an hour or more.
2. While the mashing takes place, heat the second batch of water, to make small beer.
3. At the end of the hour, drain the first liquid from the malt into another container.
4. Put the second batch of water to the malt as before.
5. Add hops to the first batch of water and boil for an hour.

6. Sieve the hops out of the liquid and leave it to cool overnight.
7. Add yeast and leave to ferment. After another day, seal the beer in a barrel.
8. Repeat steps 5-8 for the second batch to make small beer.

The reason for scooping the water into the mashing-vat a little at a time is that the temperature required for mashing is somewhat less than boiling. Scooping the water a little at a time allows to cool from boiling to the ‘strike’ temperature, which is the water temperature (usually around 75 degrees) that produces the correct mashing temperature when mixed with the room-temperature malt.

The Making of Braggot, Which is Many Times Mistaken for a Muskadel by the Simple Sort of People

This is my favourite period recipe, of which I almost always have some in my SCA drinks cabinet. It comes from *The Jewel House of Art and Nature*, by Hugh Plat, published in 1594.

Put one part of smal Alewort that is bloud warm with one part of clarified hony according to the manner set down, num. 75., but put no Cloves therein in the clarifying. For the making of one Hogshead of this Braggot which is about 63 gallons, you must take nine gallons of this clarified honey, and 54 gallons of strong new ale: when your clarified honey hath stood one day, then mingle the same with your new ale in a Hogshead, first filling your Hogshead half full before you put in your honey, and then hang this aromatical composition in a long slender bag in the midst of the vessel, viz. of Cinnamon 3 ounces, Ginger 3 ounces, Greins 3 ounces, Colianders one ounce, Cloves 1 ounce, Nutmegs 1 ounce, long Pepper half an ounce, Cardamomum one ounce and a half, Liquorice 1 ounce, then fill up the vessel almost full with the best of the new ale (yet some commend rather the putting in of the spices confusedly then in a bag) be sure to have 4 or 5 gallons or more of the same new ale to fill up the hogshead as it purges over continually. There is a lesser hole near the bung hole in beer Hogsheads, which must stand open whilest it purgeth, you must also be carefull in the beginning to give some little vent to the hogshead whilest it worketh: in three or four months it will be ready to drink.

The recipe continues with some tips on mixing the honey and ale, and thinning it with water if it turns out too thick, but the above section is enough to get the idea. Here’s my redaction, to make about eight litres of braggot:

- 1 kg liquid malt extract
- 1.5 kg honey
- 15g hop pellets
- 1 stick cinnamon
- 6 cloves
- 1/3 of a nutmeg, grated
- 1/2 tsp pepper
- 2.5g ginger root, sliced
- 11 cardamom pods [called ‘greins’ by Plat]
- 1 tsp cardamom, ground
- 1g liquorice root [I usually omit this]
- water
- yeast

1. Mix the honey with an equal volume of water. Boil it and remove the scum that rises until the mixture has been reduced to half its original volume (this is the ‘clarifying’, which Plat describes in a separate recipe).

2. In a separate container, bring 8.5 litres of water to the boil for every kilogram of malt extract. Boil the hops for an hour, then mix in the clarified honey, the malt extract and the spices.
3. Cool the liquid to the temperature recommended by the yeast manufacturer. Add the yeast and leave to ferment.
4. Once fermentation is complete, put the braggot into bottles. To make it fizzy, add one teaspoon of sugar per 750 mL bottle or half a teaspoon per 375 mL bottle.
5. Wait at least two weeks before drinking. During this time, the extra sugar ferments some more, which carbonates the drink. Plat seems to drink his after two or three months.

To Make White Ipcras

Hippocras doesn't require brewing as such, but is made from wine already on hand. The following recipe comes from *The Good Huswifes Handmaide for the Kitchin*, by John Partridge, published in 1594.

Take a gallon of wine, an ounce of Synamon, two ounces of Ginger, one pound of Sugar, twentie Cloves bruised, and twentie cornes of pepper big beaten, let all these soake together one night, and let it run through a bag, and it will be good Ipcras.

- 1 L wine (the recipe title suggests white, but red also works)
- 1/2 c sugar
- 5 cloves
- 2-3 cinnamon sticks, crushed
- 15g ginger root, sliced
- 5 peppercorns, crushed

1. Dissolve the sugar in the wine, then add all of the spices.
2. Leave the mixture to soak overnight, then strain out the spices and bottle.
3. The hippocras can be drunk immediately but will keep for several months.



Figure 2. Bacchus, from the *Cosmographia* (1552).

Resources

Lochac Brewers, Vintners and Imbibers Guild, <https://brewers.lochac.sca.org/>.

Medieval English Brews, <https://brewminate.com/medieval-english-brews-recipes-for-13th-and-14th-century-unhopped-english-ales/>.

Brewing Suppliers

The following are some brewing suppliers that I know of within the borders of Adora. Others may exist. Some hardware and grocery stores also stock a restricted range of brewing ingredients and equipment. Online suppliers also operate by mail order.

Campbelltown

Macarthur Homebrew Supplies, 2/55 Queen Street, Campbelltown NSW 2560.

Nowra

The Brew Shop Nowra, 1/32 Jellicoe St, South Nowra NSW 2541,
<https://www.facebook.com/BrewShopNowra/>.

Shellharbour

All Things Brewing, Shop 6/146 Tongarra Road, Albion Park NSW 2527,
<https://www.allthingsbrewing.com.au/>.

Ulladulla

All Things Brewing, 10/44 Deering St, Ulladulla NSW 2539.

Wollongong

Mars Brewing Supplies (formerly Northern Brew), 341 Princes Hwy, Woonona NSW 2517,
<https://www.facebook.com/MarsBrewingSupplies/>.