Brettanomyces (aka. Dekkera)

What is brett?

It is the combined result of a number of compounds by the yeast **brettanomyces bruxellensis** and it close relative **dekkera bruxulensis**.

3 most important aroma compounds are – (noticeable above 420 mg/litre)

1) 4 ethyl-phenol (4-EP) band aid, medicinal, horsebox aromas (unpleasant)
2) 4 ethyl-guaiacol (4-EG) bacon, spice, cloves, smoky, tobacco, truffle, leather (pleasant)
3) Isovaleric acid - rancidity, cheese, sweaty animals

Other aromas include wet dog, plastic, burnt beans, creosote, vinegar, mouse cage, rotting vegetation.

Formation of Brett Characters in Wine.

Is from winery equipment and found naturally occurring in grape skins. Its favoured haunt is in oak barrels (in new toasted barrels it feeds on the sugar CELLOBIOSE found on the inside of caramelised freshly charred barrels)

Forms easily if low free sulphur dioxide levels are coupled with high pH values (ie. low acidity) and temperatures are warm during barrel fermentation, if the wine is in an old barrel and has high dissolved oxygen (or the barrel is not totally filled) then brett is very likely to form.

It can multiply after bottling if the wine is minimally filtered and contains some residual sugars.

Why does Oak maturation particularly favour Brett growth?

Brett is a slow growing yeast that does not compete with other micro organisms, during ferment the wine yeast saccromyces cerevisiae easily out-competes it (as it grows slower and prefers aerobic conditions). During fermentation, in a CO_2 high environment, it does not grow.

But as the barrels are warmed before malolactic fermentation, and as the wine will also be low in SO_2 so it is though that brett can reach levels to make sensory perception noticeable, especially when later it is racked and comes into contact with oxygen.

Brettanomyces character is found primarily in red wine, why?

Whites usually have a low pH (higher acidity) and are less susceptible. Due to the polyphenols found in red wine (which contain coumaric and ferulic acid). These acid are degraded over time by sacchromyces and lactic bacteria such as lactobacillus (MLF bacteria) into 4-VP and 4-VG (4 vinyl-phenol/guaiacol) and these are eventually degraded in to 4-EP and 4-EG by the brettanomyces yeast. Studies show that deeper coloured red wines such as shiraz, cabernet and (especially) mourvedre are more prone than pinot or grenache due to high colouring material in the wine.

Is it more common now than before?

The modern trend to produce richer riper wines, high in pH (the low acidmaking SO_2 less effective), using minimal filtering and sulphuring, plus leaving small amounts of residual sugar to add rounder fruitier tastes all can lead to brett developing.

Is it desirable?

If 4-ethyl guaiacol is more present than the unpleasant 4-ethyl phenol the interesting aromas and complexity is given to the wine. Unfortunately often 4-ep can be between 3 to 40 times more than 4-eg. Research into brettanomyces that produces little 4-ep continues. Many might claim that bretty character is a house style or a complexity brought about by terroir, but it is simply a micro-biological spoilage. Skilled winemakers may be able to control brett to add a touch of complexity but it is more often by mistake than not.

It can be removed if wines are dosed with dimethyl dicarbonate (DMDC) sold under the name **Velcorin** which is costly and still somewhat experimental.

Summary

- Brett usually begins to develops in barrel after primary fermentation, before MLF (when wine is warmer) or during racking.
- More common in thick skinned (high polyphenols) grape varieties.
- Does not like SO2 (many modern winemakers use minimal amounts).
- Develops easily in very ripe (with some residual sugar), high alcohol, soft acid (high pH) wines that are exposed to oxygen.
- Can be removed with heavy filtering (not always desirable).
- It feasts on sugar found in caramelised oak.

Peter Gago "We consider that if its detectable, then it's a flaw"

Denis Dubourdieu "Controlling it is the key, to have no brett in Bordeaux we would have to radically change the way Bordeaux is made"

Pascal Chatonnet – French researcher into wine faults.

Tim Atkin – Wine Fault Article

While I can spot a corked wine at 50 paces I for one was unaware that there was more to TCA than, well, just TCA. And did you know that TCA in sparkling wine is easier to identify because the carbon dioxide helps to volatise the compound?

For those not that well versed in the technical side of wine TCA (2,4,6-trichloroanisole) is what produces a 'corked' wine giving musty and other off odours which, generally, make a wine undrinkable. Chatonnet claimed that TCA is sometimes present in the winery and may taint a wine long before it comes into contact with a cork but he did concede that 'most TCA is still cork-derived'.

Atkins tasting continued with wines doctored with TBA (2,4,6-tribromoanisole) and TeCA (2,3,4,6-tetrachloroanisol) both of which come from 'environmental contamination' from such things as wood preservatives, fire retardants or pesticide residues rather than corks. 'And both smelt distinctly mouldy. That's why it is possible to find something that smells like TCA in a bottle under screwcap'

The other faults included methoxyprazines (green pepper smell), acetic acid (vinegar), ethyl acetate (solvent) and pelargonium (that nasty geranium odour that occurs when sorbic acid is broken down by lactic acid bacteria). Brett (brettanomyces) provides aromas ranging from barnyards and horsehair to sticking plaster and mousiness. Chatonnet reckons that the Brett problem, (often confused with terroir), is on the rise 'with the growing fashion for high alcohol, low acid, unfiltered, low sulphur reds in the New World' becoming a huge problem there.

Atkins concludes 'if things continue as they are, Brett could take over from TCA as the taint du jour. If it does, I can't see the cork industry complaining'.