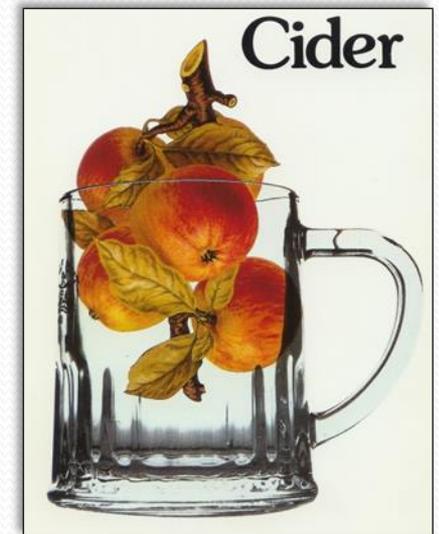


Craft Cidermaking Old and New

Andrew Lea

Oldest evidence for cider?

- Strabo (Greek) may have described cider in Asturias (1st century AD)
- Pliny (Roman) “Natural History” 1st century AD
 - Wine made from apples and pears
- Charlemagne’s decree 9th century AD
 - All royal estates should grow fruit trees and make cider
- In Britain, references appear from 1207 onwards and become increasingly frequent
- No evidence of UK cidermaking prior to the Norman period.



Words for Cider

- **Shekkar** – a biblical Hebrew word generically meaning “strong drink” became adopted as **sicera**, **cider**, **cidre**, **sidra** in medieval Latin. Persists in England, France and Spain
- **Apfelwein** remains the “official” word in the German speaking world
 - *Ebbelwoi*, *Most*, *Stoffsche* are dialect terms
 - **Viez** (Mosel) is from medieval Latin “vice vinum” or “substitute wine”

Cider Instruction

- 1589 “De Vino et Pomaceo” Julien le Paulmier [Normandy] (*Shakespeare “Richard III” 1592*)
- 1657 “Treatise of Fruit Trees” Ralph Austen [Oxford]
- 1664 “Pomona” John Evelyn (5 edns) [Kent]
- 1678 “Vinetum Britannicum – Treatise on Cider” John Worlidge (3 editions) [Sussex]
- 1797 – “Manufacture of Cider and Perry” Thomas Andrew Knight (5 editions) [Herefordshire]
 - Introduced use of the hydrometer to measure SG



Vinetum Britannicum:
OR A
TREATISE
OF
CIDER,

And other Wines and Drinks extracted
from Fruits Growing in this Kingdom.

With the Method of Propagating all
sorts of Vinous FRUIT-TREES.

And a Description of the New-Invented
INGENIO or **MILL,**
For the more expeditious making of *CIDER*.

And also the right way of making
METHEGLIN and **BIRCH-WINE.**

The Third Impression, much Enlarged.

To which is added, A Discourse teach-
ing the best way of Improving **B E E S.**

With Copper Plates.

By *J. Worlidge. Gent.*

L O N D O N,
Printed for *Thomas Dring,* over against the Inner-
Temple-gate in *Fleet-street.* 1691.

19th Century

- Pitt / Le Couteur (Jersey) “Preparation of Cider” 1806
- Coxe “View of Fruit Trees”(US) 1817
- Thacher “The American Orchardist” (US) 1822
- Hauchecorne (France) 1869
- Hogg and Bull “Apple and Pear as Vintage Fruits” 1886
- Radcliffe Cooke “Book on Cider and Perry” 1898
- Allwood “Cidermaking in France ,Germany and England” (US review) 1903
- Lloyd “Butleigh Experiments” 1903
- **“Industrial” cider emerges in 1890s**



Long Ashton Research Stn 1903

- No formal manual ever published – focus was on research and practical instruction
- Charley's "Principles and Practice" 1947
 - Revised translation of Warcollier "La Cidrerie" 1928
- Beech and Pollard "Cider Making" 1957
 - Aimed at farmhouse producers
- Many articles in scientific journals, and annual reports 1903 – 1985 (when Cider Section closed)
- By 1970's, large companies were doing their own work

Later 20th / 21st century

- Proulx and Nichols “Cider” (US) 1984
- Watson “Cider Hard and Sweet” 1999, 2013 (US)
- Jolicoeur “New Cidermaker’s Handbook” (Canada) 2013
- Lea “Craft Cidermaking” 2008, 2015
- And now the internet!



What sorts of cider apple trees?

- Few varieties from 17th century survive by name.
 - Foxwhelp is maybe all
- Major 19th century Pomonas
 - Knight “Pomona Herefordiensis” 1811
 - Hogg and Bull “Herefordshire Pomona” 1885
- Some cider varieties listed by them have almost disappeared eg Hagloe Crab, Hereford Redstreak. Rediscoveries may be doubtful.
- Woolhope Club introduced French cvs eg Michelin
- Many people thought varieties weakened over time



Modern Cider Apple Classification (Barker 1905)

Type	Tannin (mg/L)	Acid (g/L)
Bittersharp	> 2000	> 4.5
Bittersweet	> 2000	< 4.5
Sharp	< 2000	> 4.5
Sweet	< 2000	< 4.5
“Ideal” blend for UK craft cider	1000 - 2000	4 - 6

Additional Concept of “Vintage Quality”

Vintage Quality Cider Apples

Sharps / Bittersharps

- Dymock Red
- Kingston Black
- Stoke Red
- Foxwhelp
- Browns Apple
- Frederick
- Backwell Red

Bittersweets

- Ashton Brown Jersey
- Harry Masters Jersey
- Dabinett
- Major
- White Jersey
- Yarlington Mill
- Medaille d'Or

Pure Sweets

- Northwood
- Sweet Alford
- Sweet Coppin

Vintage and Bulk Cultivars

- This now tends to distinguish craft from industrial producers
 - Vintage list is more difficult to grow, lower yielding, pest prone.
 - But higher quality due to low N₂ uptake, low fermentation speed, maybe more flavour precursors
- Many common varieties are late 19th century seedlings of known provenance
 - Dabinett, Yarlington, Harry Masters etc
- Modern Pomonas eg Bulmers, Copas and Martell

Tree management

- **Traditional** standard trees 30 per acre.
 - Seedling rootstocks from pomace
 - Sheep / cattle grazed hence low nutrient fruit
- **Bush** cider trees trialled at LARS from late 1930's
 - Became the dominant form from 1970s
 - 300 trees per acre on MM106, M111, M26
 - Planned NPK regime hence higher nutrient fruit
 - Grown as 'hedgerow wall' for ease of mechanical harvesting
 - Experimental trellis systems on M9
- 45% of all UK apples are now grown specifically for cider

Standard Grazed Orchard



Intensive Bush Orchard



Mechanical Harvesting



Cultivars available

- **Craft** producers have a large range to choose from
 - Also some local cultivars eg Dorset, Cornwall
 - Span season August to December
 - Biennialism acceptable
 - Must accept lowish yields and difficult to grow.
- **Industrial** producers have more constraints
 - Michelin and Dabinett are the ‘workhorses’
 - Bittersweet juice not obtainable from cull fruit
 - Peak crop comes all at once in October / November
 - Need to spread the season, hence “The Girls”

“The Girls”

- New cider cultivars bred by Ray Williams and Liz Copas at LARS from 1985 before its final closure in 2003
- Aim to extend the cropping season, with a focus on bittersweets / bittersharps maturing September
- Crossed from Michelin, Dabinett, James Grieve, Worcester Pearmain
- Final selections commercially available from 2008
- Probably not so interesting for craft use



“The Girls” Cider Apples

Medium Bittersweet Tannin > 0.2%, Acidity < 0.45%	Mild Bittersweet Tannin 0.14 – 0.17% Acidity < 0.45%	Bittersharp Tannin > 0.2% Acidity > 0.45%	Juicing (sweet /sharp)
Prince William	Vicky	Angela	Fiona
Amelia	Naomi	Gilly	Shamrock
Amanda	Nicky	Willy	Tracey
Jenny		Joanna	Eleni
Hastings		Maggie	Betty
Connie		Hannah	Debbie
Helen’s Apple		Jean	
Three Counties		Sally	
Jane			
Tina			
Early Bird			
Lizzy			

USA / Canada

- Connecticut cider recorded by Evelyn in 1664
- Pre-colonial US 'Heritage' cider varieties like Harrison, Roxbury Russet, Hewes Crab (mild bittersharps)
 - Taliferro (Jefferson) is lost
- A very few craft growers and makers have planted US heritage or European cider fruit.
- British or French cider apples grow best in similar climates eg Pacific North West coastal strip
- Most US craft cider is made from table fruit taken from CA store in batches throughout the year
 - Sugar or juice sweetened and carbonated. Very little still.

Australia / NZ

- Too short a history for 'heritage' varieties to develop
 - Apart from Granny Smith!
- Good collection of UK and French cider apples imported for trial by Bulmers in mid 20th century
 - Collection at Grove, Tasmania
- Some pioneer growers / cider makers are using these, but
 - High alcohol levels (too much summer sun) ~ 11⁰% ABV
 - Poor fruit set (inadequate winter chill) ~ low yields
- Most craft cider is made from CA store table fruit but often with arrested fermentation to conserve sweetness.
 - Winemaker's technology – 'cold crashing' and 'cross-flow'

Craft Cider making Technology

- How might we define 'craft' in the 21st century?
 - Full juice or close to it (no fermentation syrups)
 - [minimum for industrial ciders in UK 35%]
 - Fresh juice, not from concentrate
- Other technologies overlap e.g.
 - ± Sulphite
 - ± Wild / cultured yeasts
 - ± (Sugar or juice) sweetening
 - ± Carbonation
 - ± Pasteurisation



Development of Craft Technology

- **Mills**
 - from horse to scatter to knife mill
- **Presses**
 - from straw to cloths to belts to hydraulic bladders
- **Fermentation vessels**
 - from wood to fibreglass to LDPE to stainless
- **Clarification**
 - from 'drop bright' to fining to sheet filtration to cartridges
- **Storage containers**
 - from cask to bottle to bag-in-box
- **Intelligent use of SO₂, yeasts and bacterial cultures**

Traditional Milling and Pressing



Craft Scale Milling



Craft Scale Pressing



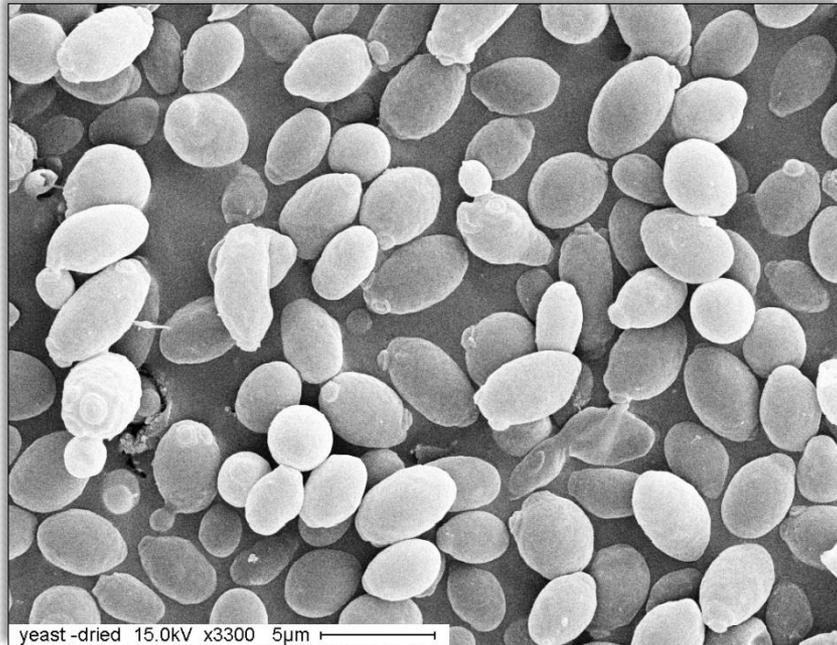
The Hydropress



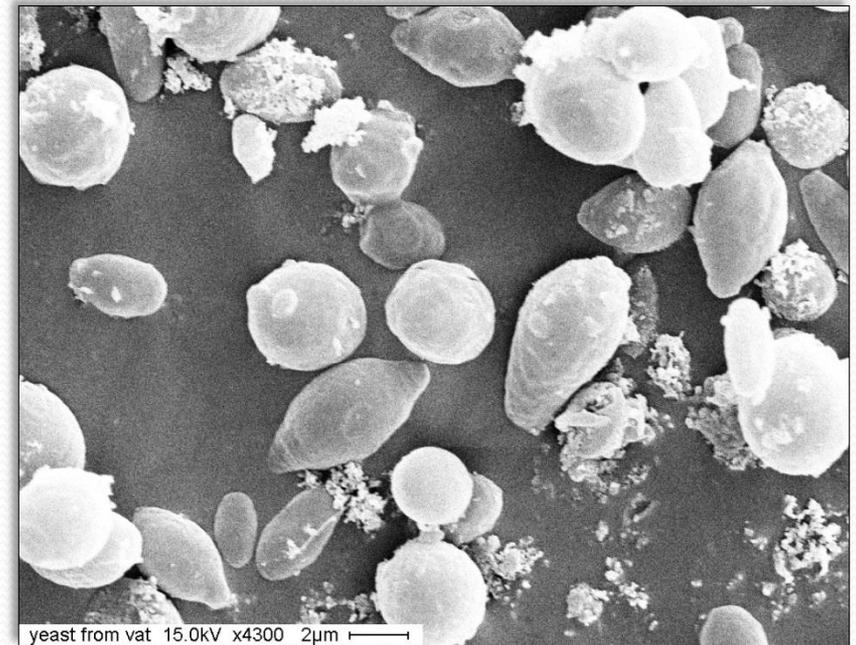
Modern Craft Cider Vessels



Yeast Choice



Cultured



Wild

Bag in Box dispense

The flexible liner collapses around the cider, preventing any air from getting in.

This maintains quality for 3 – 6 months



Where next for UK Craft Cider?

- **Fruit growing and selection**

- Maintain close grower / cidemaker link
- Plenty of vintage varieties to choose from
 - Helps with marketing (blend can be a USP)
 - Effect of climate change uncertain? NACM review
 - Probably little use for early croppers ['girls']
- Likely to remain as bush or standard trees

- **Yeast and bacterial selection**

- Maybe an emphasis away from 'champagne' yeast?
- Increasing use of malo-lactic cultures for dessert juice?



Where next? Technology

- Mills and presses likely to remain a mixture
 - Pack press, belt presses, hydraulic presses
 - Choice depends largely on financial considerations
- Fermentation and storage vessels a mixture too
 - LDPE (often secondhand), stainless. Wood only for maturation? Fibreglass is gone. Variable capacity stainless may become more popular (oxidation control)
- Clarification
 - Cross flow filtration will make greater impact on the craft sector as the price drops



Where next? Dispense Format

- Continued acceptance of bag-in-box for still ciders
- 'Sub-keg' format required for carbonated dispense?
 - Possible adoption of Key Keg or similar pressurised system?
- Possible adoption of cheap static tank carbonation instead of expensive forced carbonation?
- But microbiological issues will always need to be controlled in sugar sweetened product.
 - This is a limiting factor
- Glass bottles are still convenient and appropriate for high quality ciders
 - Unlikely to change?

Where next? Product Design

- “Flavoured” ciders are currently very popular
 - We have been here before with alcopops
 - The market is fickle and moves to the next fad
 - They attract much higher ‘made wine’ duty.
- UK craft ciders are likely to remain as
 - High end bottled with provenance as ‘back story’
 - Low end bag-in-box, maybe keg
- We are limited by historical pricing structures in UK
 - This is unlikely to change, unlike the New World

