



Claude R. Scicluna

Beer

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# Beer Quotes

*"He was a wise man who invented beer"*

**Plato**

*"Beer is proof that God loves us and wants us to be happy"*

**Benjamin Franklin**

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# History of Beer

- ✓ The word “beer” most probably originates from the Anglo-Saxon “baere” which means barley
- ✓ The drink has its origins at least as far back as 5,000 years ago
- ✓ Stone carvings show that the Egyptians made and drank a grain brew known as “hek”
- ✓ It is not clear how beer was made until the middle ages except that it was generally a sweet drink

# Production & Consumption

- ✓ Beer is brewed all over the world and in most countries it is consumed more than wine – except in France, Italy, Portugal and Greece
- ✓ The USA is the world's largest brewing nation
- ✓ Top beer consumer European countries are Austria, Belgium, Britain, Czech Republic, Denmark, Germany, Irish republic, and Luxembourg
- ✓ Belgium is particularly famous for its large range of beers, including strong and flavoured brews – often flavoured with fruit

# Main Ingredients

- ✓ Barley
- ✓ Yeast
- ✓ Sugar
- ✓ Water
- ✓ Hops

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A still life composition featuring a wooden barrel, several glasses of beer with foam, and stalks of barley on a wooden surface. The scene is set against a dark wood background. A large, semi-transparent red watermark reading 'Claude R. Scicluna' is overlaid diagonally across the image.

# Barley

Barley is important to beer for three reasons:

- ✓ It is composed of 80% starch which once converted is the primary source of fermentable sugar
- ✓ It contains substantial amounts of an enzyme called diastase which converts starch which is unfermentable to sugar which is fermentable
- ✓ In its malted form, it provides a rich flavour



# Sugar

- ✓ Sometimes added before fermentation to increase potential alcohol
- ✓ In some cases used to sweeten beer after fermentation

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# Hops

- ✓ Produced from the plant "Humulus Lupulus"
- ✓ Grown throughout the world especially in Germany, Czech Republic, Slovakia, southern England, and North America

Used to flavour beer and provides:

- ✓ Aroma
- ✓ Bitterness
- ✓ Tannin

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# Water

- ✓ Hard water which is rich in minerals is excellent for bitters
- ✓ Soft water found in mountainous regions is ideal for lager style of beers
- ✓ However in most cases the mineral content found in water is adjusted – a process called **Burtonisation**
- ✓ The water which is used in the brew is referred to as **liquor**

# Yeast

Converts sugar into alcohol and carbon dioxide

There are two main types of yeast used in the production of beer:

- ✓ **Saccharomyces Cerevisiae**
- ✓ **Saccharomyces Carlsbergensis**

# Saccharomyces Cerevisiae

- ✓ Similar to bakers yeast
- ✓ Operates at room temperature
- ✓ Floats to the surface during fermentation (known as yeast crop) and forms a barrier which prevents invasion of airborne bacteria
- ✓ Mainly for Ale

# Saccharomyces Carlsbergensis

- ✓ Does not form a yeast crop but sinks (bottom fermentation) thus it takes place in a closed fermenter as there is no protection against bacteria
- ✓ Slower process with low temperatures
- ✓ Mainly for lager

# Brewing Process

There are five processes involved in the brewing of beer:

## ***Conversion***

unfermentable starch in the grain is converted into fermentable sugar

## ***Extraction***

malt is soaked in order to bring the sugars into solution

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# Brewing Process

## ***Flavouring***

the sweet solution is flavoured with hops

## ***Fermentation***

the sugar is converted into alcohol by the action of yeast

## ***Conditioning***

the beer is made ready for drinking

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# Main Types of Beer

## Lager

- ✓ bottom fermented brew
- ✓ light golden in colour
- ✓ light flavoured





# Main Types of Beer

## Bitter

- ✓ Classic British draught beer
- ✓ Full in flavour and usually amber in colour
- ✓ varies between 3% and 5% alcohol
- ✓ known as pale ale or light ale



# Main Types of Beer

## Stout

- ✓ Beers which are richly flavoured and black in colour
- ✓ Bitter stout is dry and high hopped
- ✓ Sweet stout is sweetened by the addition of lactose



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# Other Types of Beer

## *Mild*

light in alcohol and lightly hopped

## *Brown Ale*

medium sweet and well coloured

## *Strong Ale*

bitter but with extra flavour and alcohol

## *Barely wine*

strong sweet beer with an alcohol level of up to 10% vol.



# Cider and Perry

- ✓ Alcoholic strength 4 – 8 %
- ✓ Above 8% is apple wine
- ✓ Cider is an alcoholic beverage obtained through fermentation of apple juice, or a mixture of 75% apple juice and 25% pear juice
- ✓ Perry is obtained from 75% pear juice and 25% apple juice

# OIML Measurement

- ✓ Organisation Internationale Metrologie legale (OIML) Scale, previously called Gay Lussac Scale
- ✓ It is the universally accepted scale for measurement of alcohol
- ✓ The by volume measurement indicates the amount of pure alcohol in a liquid
- ✓ The alcohol content of drinks, by volume (ABV) , is now almost always shown on the label

# OIML Measurement

- ✓ 0% non-alcoholic
- ✓ <0.05% alcohol free
- ✓ 0.05- 0.5% de-alcoholised
- ✓ 0.5 – 1.2% low alcohol
- ✓ 1.2 – 5.5% reduced alcohol
- ✓ 3 -6% beer, cider, FABs up to 10%
- ✓ 8 – 15% wines, usually 10-13%
- ✓ 14 – 22% fortified wines. Sake beer made from rice
- ✓ 37.5 – 45% spirits, usually at 40%
- ✓ 17 – 55% liqueurs, very wide range