The History of Beer

The origins of beer have been traced to 6,000 BC in Mesopotamia, the cradle of early civilization. Quite accidentally, grains intended for use in baking were rain soaked. Germination naturally occurred, and the dried barley was ground into flour. This flour, when combined with water provided the essential nutrients for natural airborne yeasts to achieve fermentation. When this spontaneously fermented dough was sampled, the pleasant side effects of ethanol, or consumable alcohol were experienced. These "accidental brews" were boiled and therefore a sanitary food & water source. These nutritious beverages contained the added benefits of potability and longevity, due to the preservative quality of alcohol. Some of the earliest surviving writings from early man & woman contain references to and recipes for this nutritious beverage. It is commonly held that early man shifted from his nomadic hunter existence to that of agrarian gatherer primarily to grow grain. Most early civilizations settled on or near a water source that provided both drinking water as well as moisture for their crops, including grain.

Through the Medieval Ages, brewing was one of the tasks undertaken in Monasteries. The monks brewed liquid bread to sustain themselves during Lent and fasting times, and shared their beer with travelers and lay persons in surrounding villages. The practice of making beer in the home for personal consumption quickly spread to England. After a time, those home breweries supplied beer to family and friends. The larger home breweries opened their doors to villagers and travelers, and became known as Public Houses, or Pubs as we know them today.

Beer, or Liquid Bread became a necessary and acceptable food source for all civilized people! - A novel and enlightened approach, eh? Through the course of centuries and millennia, brewers discovered that different strains of grain, including the various types of barley influenced the color, body, and flavour of beer. When these barley grains were moistened & dried, their natural starches were converted to fermentable sugars, capable of fermenting with the introduction of yeast.

The Reinheitsgebot of 1516 was the first pure food law from Bavaria. This document clearly states that all Bavarian beer must legally be comprised of three elements only; Water, Barley, and Hops. The obvious omission of Yeast is due to the fact that it would not be identified by Pasteur for some four centuries. In modern times, Wheat has been added as an acceptable adjunct grain in brewing.

Until the middle of the last century, all beers were top- fermented ales. These ale yeasts (saccharomyces cerevisiae) are the types most commonly found in the atmosphere. Beers through this time were darker with somewhat complex attributes. Lager yeasts (saccharomyces uvarum or carlsbergenesis) were discovered and isolated in the mid- 1800's, giving rise to generally lighter colored, cleaner, crisper flavoured beers. Louis Pasteur was among the first to identify yeast with the aid of a microscope. Previously, yeast was the mysterious and magical substance that transformed liquid bread into beer. For centuries, the phenomenon of yeast was simply known as "God is Good". Shortly after Pasteur discovered yeast, quality glassware production became mass produced. The advent of this abundance of clear glass drinking vessels coupled with continuously improving clarification standards in brewing led to the availability of non-turbid and pale colored beers showcased in crystal clear glassware. Prior to this time, cloudy, amber-dark beer was typically served in pewter & porcelain mugs, or wood tankards.

Prior to Prohibition in the United States, European immigrants, notably Germans were brewing quality stylistic beers, including Pilsners, Porters, Pale Ales, etc. according to their high European standards. Once beer was outlawed, bootleg brewers made beer with any starches available, i.e., inexpensive grain, rice, and corn. The style that was produced was faintly reminiscent of a classic European Pilsner, however, the low grain standards combined with lesser brewing methods produced the forerunner of today's mass- marketed industrial beers.

Beer Ingredients

Water (Brewer's Liquor)

One of the most important factors in early traditional brewing, water constitutes 85 - 90 % of beer. In order to make use of this plentiful natural resource, brewers discovered that pH and mineral qualities in water greatly influenced the effect of barley and hops. The greatest historical brewing capitals of Europe are:

Pilsen (Czech Pilsner - Pilsner Urquell).
Dortmund (Export - DAB Export).
Munich (Munich Helles - Ayinger Jahrhundert).
Munich (Munich Dunkel - Ayinger Altbairisch Dunkel).
Vienna (Märzen / Oktoberfest - Ayinger Oktober Fest Märzen).
Burton - on - Trent (British Pale Ale - Bass Ale).
Dublin (Dry Stout - Guinness Extra Stout).
Edinburgh (Scottish Ale - Belhaven).
London (Bitter - Boddington).

Each of these traditional styles originated near the sources of water with unique properties. Today, an experienced brewer may adjust any water source to meet the style requirements for mineral content and pH.

Barley (Hordeum Vulgare)

Barley is the body of a beer, and is the equivalent of grapes to wine. This seed kernel contributes color, body, mouthfeel, and most importantly, the starches that are converted to fermentable sugars. Craft brewers use two-row barley, while domestic macrobrewers use six-row barley. Two-row is more expensive due to lower yields per acre, and offers the widest range of varieties. Six-row contains a higher concentration of enzymes that are economically useful when using lesser adjunct or filler grains like rice and corn. Some frequently used barley varieties include: Pilsner 2 Row, Chocolate, British & American Pale 2 Row, Crystal, Caramel, Vienna, Czech, Munich, Dortmunder, Black Patent, & Roasted Barley. Maltsters are able to control modification of the kernel through germination. The germination process involves placing the harvested barley in a warm, moist environment. The seed kernel begins to convert the stored complex starches into smaller chains that will be used to feed the young barley plant. The percentage of starches converted is referred to as modification. Once the desired modification percentages are attained, the barley kernels are kiln dried, halting germination. The degree of kilning to roasting in the case of extremely dark malts then determines the color level of the individual grains. Adjuncts considered both acceptable and necessary for certain styles of craft beer are: Wheat, Oats, Rye, Sorghum, inverted sugar, and glucose.

Hops (Humulus Lupulus)

Hops act as both a seasoning and a preservative in beer. Before the common use of hops, brewers used all manner of seasonings, including herbs, spices, tree bark, berries, and fruits. The use of hops in brewing has been documented as early as the late 700's to early 800's. A first cousin of cannabis, only the female cones contain the essential resins and oils necessary for brewing. The hop vine, while reaching heights of 20 feet at maturity, may grow up to 4 inches in a day. The finest commercial hop growing regions are: the Pacific Northwestern United States, The Czech Republic, Southern Germany, and Great Britain, although hops are also grown commercially in Japan, and portions of the former Soviet Union. Hop additions early in the boil kettle strip away all fragrances and aromatics, leaving only bitterness. When hops are utilized with approximately 30 minutes left in the boil, flavors are imparted into the wort. Finishing hops are added from 5 to 0 minutes left in the boil before the wort is chilled, only the subtle aromas become part of the wort. Dry hopping consists of adding hops to the fermenter, with an effect more aromatic than finishing additions. The bittering potential of hops is expressed using the percentage of Alpha Acid contained in the hop. High Alpha hops, 9-14% AA are best suited for bittering purposes. Mid-range Alpha hops, 5-9% AA are used for both bittering and aromatics. Low Alpha hops, 3-5% are ideally suited for use as finishing additions. Hop bitterness is measured in finished beer using the International Bitterness Units (IBU) scale. Examples of traditional hop varieties and their relative Alpha Acid content include:

Yeast (Saccharomyces Cerevisiae & Uvarum)

A single celled microorganism, yeast plays the role of converting sugars into ethanol & carbon dioxide. Top fermenting Ale yeasts (saccharomyces cerevisiae) produce a swift fermentation at warm temperatures, typically from 55-75°. These Ales tend to exhibit complexity of flavour as a result. Bottom fermenting Lager yeasts (saccharomyces uvarum or carlsbergenesis) ferment at cool temperatures, ranging from 45-55° over an extended period of time. Lagers are known for their delicate, clean, crisp flavours. Yeast strains are a closely guarded brewers resource, and are therefore known as the brewer's signature.

It is only in the last 150 years that Pasteur, with the aid of a microscope, began to develop an understanding of yeast strains and the role they play in the fermentation process. Before this time, brewers recognized the existence of something that caused this miracle, transforming liquid malt into beer. Some evidence indicates that selective yeast usage has been carried out for centuries in a primitive fashion. In the decades that have followed Pasteur's discovery, yeast selection and management has become a controllable resource for brewers. Today, this selection of over 500 brewer's yeast strains enhances the ability to replicate traditional styles with greater accuracy. The importance of yeast in the flavor profile is best demonstrated below:

The World's Oldest Beer Recipe?

A, 4500-year-old tablet covered with hieroglyphics that was discovered recently in Egypt contains a beer recipe in the form of a love poem to the Sumerian beer goddess, Ninkasi.

Beer As History Maker

Rather than continue on to their destination in Virginia, the pilgrims on the Mayflower made their landing at Plymouth Rock for lack of beer. A December 19, 1620, entry in the diary of a Mayflower passenger tells the story: " We could not now take time for further search or consideration, our victuals being much spent, especially our beere."

The first real brewery in the New World was founded in New Amsterdam (New York) in 1633. Boston's first brewery debuted in 1637 and was a favorite among colonial leaders, who believed that beer was a moderate alternative to distilled spirits. The city of Philadelphia got its first Brewery in 1685 (but made up for lost time, as Philadelphia has had more breweries in its history than any other U.S. city). This date is confirmed by an entry in the diary of William Penn, who was a brewer himself. Historians have studied Penn's ledgers and concluded that he ran malt and brew houses at his Pennsbury mansion in Pennsylvania's Bucks Country.

Other early politicos liked to brew, too:

-George Washington had his own brewhouse on the grounds of Mount Vernon. His handwritten recipe for beer, dated 1757 in a diary he kept during his days as a Virginia colonel, is still preserved.

-Thomas Jefferson was another homebrewer, at Monticello. He collected all the books he could find on the subject and added them to his extensive library.

-Benjamin Franklin proposed the idea of a national brewery (talk about bloated government!).

-James Madison expressed hope that the brewing industry would "strike deep root in every state in the union."

Early colonists stayed true to the belief that beer was of great importance and an integral part of everyday life. This influence is witnessed in some of the colonial laws:

-Beer, beer bottles, brewers, and beer properties were exempt from taxation.

-Only voters and church members could brew and dispense beer.

-No tapping of beer was allowed during divine services.

-No person without skill and mastery of brewing was allowed to brew beer.

-Beer debts were excluded from court.