Sergey Konstantinov
BEER: A LECTURE

Sergey Konstantinov. Beer: A Lecture (Tasting Included).

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Beer. The most modest and unassuming beverage, a filler for supermarket shelves. At the same time — a staple of the economies of many nations for millennia. Egyptian pyramid builders were paid with it, polar explorers took it to the North Pole as a life-sustaining product, workers of Brussels once rioted because its price was up by two centimes.

In this book, a centuries-long beer history is told in a comprehensive, interesting, and *practical* manner. You will learn which beer styles were popular in each epoch, from Bronze Age to the 21st century, understand the reasons behind this popularity, and most importantly, explore the history by taste.

Illustrations & inspiration by Maria Konstantinova · art.mari.ka

The source code available at github.com/twirl/Beer-Lecture

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PREFACE

Chapter 1. Author's Note

The history of beer and brewing was always a practical study for me. I was always keen to try something new, not just to try but also to learn from it. How was this beverage produced and why does it taste like this? Gradually, I became interested in studying beer history and soon found that brewing was one of the hottest, even intriguing, topics of historical science.

For many centuries in parts of Northern Europe, beer was if not the primary economic driver then it was at least second — a fact that both Medieval chroniclers and contemporary scholars turn a blind eye to. Up until the 1980s, researchers were largely interested in the history of alcohol only in the context of consumption effects on personal and public health.[1] Yet as we all well know, alcohol, this "social lubricant," plays a much greater role in society. Gradually, this fact reached academic circles. In the case of beer, it happened even later at the beginning of the 21st century. It turns out that beer, an ordinary and democratic beverage, allows us to poke our noses into the most interesting and least documented part of the past; the daily experiences and occupations of common folk.

Making one's way through beer history is incredibly fascinating and equally challenging. Eyewitnesses of the distant past didn't concern themselves about writing down such obvious and mundane things as beer brewing. Focusing on the efforts of our brewing forebears, modern science has clarified many of the mysteries over the last 100+ years. Craft beer brewers have recreated abundant examples of *historical* beer styles for everyone to taste. But our knowledge is arguably still miserably sparse regarding key aspects and events, even quite novel ones.

While writing this book I hadn't considered the goal of compiling some short “History of Beer.” First, it seemed impossible and second, I'm no scholar but a beer enthusiast. My primary goal, dear reader, is to *acquaint* you with good beer and weave an interesting tale along the way. Let us begin!

An Important Remark

This book is written in a format of lecture-tasting. In each chapter, we're proposing to try a specific kind of beer matching the historical period described. The full description of how to read classifications and where to learn about suitable beer styles are found in the Appendix.

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Chapter 2. What is Beer

Before starting our dive into the history of beer, we need to define what “beer” is. Natural alcoholic beverages are a result of the biochemical process of alcoholic fermentation: various microorganisms (primarily yeasts, but not only them) are capable to extract carbohydrates (first of all, sugars) from an aqueous solution and break them down, producing ethyl alcohol and carbon dioxide, as well as some other organic compounds. Carbon dioxide makes the resulting drink sparkling; ethyl alcohol, interesting to humans.

Depending on what raw materials were used and what kind of sugar was fermented, the resulting beverages are called differently:

- if the raw material was grapes (or other fruit), juice of which contains a large amount of glucose, then the result of fermentation is called wine;
- if the raw material was apple (or pear) juice containing glucose and malic acid, then we get cider (or perry);
- if milk sugar lactose was fermented, then we get kumis;
- if we took honey rich in fructose saccharide as raw material, we get mead.

It's interesting

Sugar cane juice, which consists mostly of sucrose dissolved in water, also quite fits for manufacturing of low-alcohol beverages, but humanity started to cultivate it for this purpose quite recently. At that moment the distillation technology was already known, and just strong drinks were produced, rum and cachaça for instance. The product of natural, without the use of distillation, fermentation of sugar cane is known in some countries under the name “guarapo,” being in very limited demand.

Finally, if sugars extracted from cereals were used for fermentation (first of all, we are talking about the disaccharide maltose), then the resulting low-alcohol drink is called “beer.” The grain of many cultivated plants, such as wheat, barley, maize, rice, rye, oats, millet, buckwheat, and others is suitable for beer production. Thus, such drinks made from cereals as Russian kvass, Finnish sahti, and traditional Japanese sake should also be considered “beer.”

Our distant ancestors, presumably, discovered the fermentation process by accident: it was enough to leave the water with grain in the open air for the wind to inoculate it with wild yeast. A few days at the right temperature — and you will get a refreshing low-alcohol drink.

The age of the known remains of fermented sugars is steadily moving further into the past. At the moment, the oldest such finding dates back to about the eleventh millennium BCE.[1] Thus, beer and mammoths were there at the same time for at least nine thousand years! Some researchers believe that beer may be older than bread: brewing is easier than baking. But we would disagree with them, for two reasons.

First, cereals themselves contain little to no low-molecular carbohydrates: the main component of grain is starch. To get maltose or glucose out of it, you need to somehow activate the processes of converting starches into saccharides. For example, you can chew rice: the enzymes in saliva help to start the process of converting starch into glucose. This is how traditional Japanese sake *kuchikamizake* is prepared (not to be confused with modern sake, the production technology of which we will explain in the chapter “At the dawn of civilization”). If you have wondered why the heroine of the “Your Name” movie is chewing rice, that's it: she is producing traditional sake.

It is believed that the *kuchikamizake* technology (which was used not only by the Japanese but also by South American Indians, for example) is about 2.5 thousand years old (although we have not seen credible studies on this topic). Therefore the oldest beer was prepared somehow differently, and some other mechanism was employed to “activate” the cereals. For

example, bread was baked or *malt* was prepared. The latter is a product of controlled sprouting: during the germination of grain, enzymes are produced. These chemical compounds are capable of converting starches into maltose under the right conditions, and such grain becomes suitable for the production of a beverage, which we call "beer."

Another problem of beer production is the necessity to somehow introduce yeast into the solution. You can, of course, rely on sheer luck, but this method is poorly applicable for large-scale production. In order for fermentation to begin, a "starter culture" is needed. It can be fruits (such as grapes or dates), on the surface of which yeast lives in the wild, baked bread, or yeast sediment from a previous cooking.

Based on this, we strongly doubt that ancient beer was produced by accident: "accidental" beer should have been obtained too rarely and being too weak, unlike, for example, fermented milk or fruit juices. Brewing was exactly a *technology*, one of the first mastered by mankind.[2]

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PART I. FROM SUMERIANS TO SADI CARNOT

Chapter 3. At the Dawn of Civilization

Historical period: from the 10th millennium BCE to the 2nd century CE
Scene of action: Mesopotamia, Egypt, China, the Mediterranean

The Sumerians are widely regarded as the first civilization in human history. It was likely Sumerians who invented writing. And — what a coincidence! — they were also huge beer lovers. In the oldest clay tablets, dated 30-32 centuries BCE, beer is already mentioned as a staple product, the manufacturing of which was controlled by the state.[1]

Sumerians loved beer so much that they have a separate beer goddess: Ninkasi. According to scholars, "A Hymn to Ninkasi,"[2] dedicated to the goddess is itself an allegorical beer recipe.[3] The Hymn was written down circa 18th century BCE, but researchers suggest it's much older than that.[4] Apart from the Hymn, beer is also mentioned in one of the oldest Sumerian legends, "Inana and Enki."[5]

There are many surviving images of people drinking beer (supposedly) from mugs or large vessels by the means of tubes.[6] Furthermore, it's the oldest known depiction of cocktail straws,[7] so it's quite probable they were invented specifically to drink beer.

Two sitting figures drinking from vessels by means of straw. 2600-2350 BCE. Image Credit: **The University of Chicago**

Babylonians, Akkadians, and Ancient Egyptians — all these peoples adopted a taste for beer from Sumerians.[8] In the oldest of surviving epics, namely "Epic of Gilgamesh," beer is mentioned in a very peculiar aspect. According to the myth, the goddess Aruru created a "wild man," Enkidu, to confront Gilgamesh. But then Shamhat, a sacred temple prostitute, seduces Enkidu and civilizes him. To do so, she makes him eat bread and drink beer: the symbols of civilization, unknown to wild men.[9]

Then, beer is mentioned in the Epic once more[10]: the goddess Siduri advises Gilgamesh to abolish his quest of seeking the meaning of life and just enjoy small wonders — like beer. This character, Siduri, is considered to be the first written mention of an "alewife," e.g. a female brewer — bartender — tavern keeper.[11]

One of the first codes of law in human history, the Babylonian Code of Hammurabi, refers to beer four times:[12]

- §108: If a tavern keeper pours short of the paid amount of beer (or refuses to take grain as a payment), then she shall be drowned to death.

- §109: If a tavern keeper fails to report the powers about the planned coup which was discussed in her tavern, she shall be put to death (a method of which remains unspecified).
- §110: If a "Sister of God" (e.g. the high priestess) runs a tavern or just enters one to drink beer, then (as you may have guessed) she shall be executed.
- §111: If a tavern keeper donates sixty *ka* of beer in the time of famine, then she shall be awarded fifty *ka* of grain afterward.

Let us point out that the Code refers to tavern keepers as females, and all the corresponding goddesses and legendary characters are also females. From the beginning of civilization up to the industrial revolution, preparation of alcoholic beverages as a whole, and brewing beer in particular, was predominantly a job performed by women,[13] with an exception of Christian male monasteries.[14] It appears that brewing and baking were not decoupled from each other; they were essentially the same occupation.

Model bakery and brewery from the tomb of Meketre, an Egyptian noble, chancellor to Pharaoh Mentuhotep II and several of his successors. Circa 1981–1975 BCE. Image

Credit: The Metropolitan Museum of Art

In Ancient Mesopotamia, beer was used as a currency.[15] Daily workers (builders of the Giza pyramids, in particular) were paid in beer — something like 4-5 liters per person per day.[16]

How to Taste It

The distinguished researcher of ancient civilizations' cuisine, Professor Patrick McGovern, managed to find traces of Egyptian beer and recreate it.[17] In collaboration with Dogfish Head Brewery they created the *Midas Touch* beer, based on the recipe. This was not the only attempt. Another brewer, Fritz Maytag (of whom we will tell much more later) considers the procedure described in "A Hymn to Ninkasi" so obvious that he brewed a *Ninkasi*-inspired beer and presented it at the annual meeting of the American Homebrewers Association in 1991. Maytag hasn't released it commercially, since the technology doesn't preclude using preserving agents. Other brewers are not so picky. Today, beers brewed according to ancient recipes (Sumerian, Egyptian, Celtic, Etruscan, etc.) are available in notable numbers. The most famous examples are:

- The abovementioned Dogfish Head *Midas Touch*
- Williams Bros. *Fraoch*, possibly the most widespread brand based on an ancient Celtic recipe (might be found as a part of the "Historical Ales of Scotland" set)
- *Thornbridge Hall Bracia*, analogous Celtic beer from the neighboring brewery
- Another ale prepared by McGovern & Dogfish Head, *Kvasir* (recreated using the remains of 15th century BCE beer found on the territory of modern Denmark)
- *Posca Rustica* by Brasserie Dupont, based on a 1st century CE Roman recipe
- Birra del Borgo *Etrusca*, after the Etruscans

There is no specific name for such “elder” beer. For more, look into the “Ancient Herbed Beer” and “Traditional” categories.

Nevertheless, we consider these reconstructions as a bit deceiving; in some cases, just wild fantasies on historical themes. Let us name three reasons which make us think so.

Let's start with the Sumerians. The situation there appears paradoxical. We are well aware of many kinds of Sumerian beer (clay tablets mention “Gold,” “Dark,” “Sweet Dark,” “Red,” and other types), and we may surmise all the ingredients of these beverages. Nonetheless, we have totally no idea what these ingredients actually were nor how these beers tasted.[18]

Writing (cuneiforms on clay tablets) was expensive, so were used for *important* things only, like every kind of administrative order: “deliver these amounts of those ingredients from point A to point B to make that amount of beer.”[19] It went without saying that the receiver totally knew how she would brew the requested beverage, so nothing like precise recipes or brewery blueprints survived.[20]

Even basic facts are actually a set of assumptions. There are two main ingredients mentioned in all listings: *bappir* and *munu*. The former probably means barley bread (though it's measured in volume units, like something which might be poured), and the latter should be barley malt.[21] That's actually all we know more or less reliably.

The oldest surviving beer recipe was written down by an Egyptian alchemist, Zosimus, in the 4th century CE (which is several thousand years after the heyday of ancient brewing), and possibly not by Zosimus himself, but by an unknown later scribe. The recipe prescribes soaking then drying barley, preparing a half-baked bread from it, soaking it again and leaving liquids to ferment.[22] No other details like the amounts, types of ingredients, or further actions are provided. It's also vexing that Zosimus's recipe contradicts archeological evidence. Therefore, considering it genuine is a bit of an overstatement.[23] That's the first reason why authentic beer reconstructions are next to impossible.

Of course, we can still brew an approximated *ancient* beer based on this recipe or these archeological findings. But there are also second and third reasons why these efforts may be superfluous.

Modern beer is basically brewed using four components: grain, water, yeast, and hops. As we will explain in the next chapters, none of these ingredients existed before the High Middle Ages. Yeast was strictly airborne, e.g. “wild,” and we don't know the exact species. Cereals that were prevalent in Ancient Mesopotamia and Egypt, namely emmer, spelt, and einkorn, were half-domesticated ancestors of modern wheat. Ancient barley was thus far a distant relative to modern barley. Beer was sweetened and spiced with some flavor additives which we truthfully know nothing of. Finally, water in Mesopotamia was of an *unknown quality* being quite far from crystal clarity. Some reenactors choose similar (as they think) modern ingredients. Some of them try authentic cereals, but as far as we know but no attempt to precisely reconstruct all four components has ever been made.[24]

And there is also a third reason, probably more important than the two previous ones. For industrial beer production, the technical parameters must be controlled with extreme precision, right up to exact degrees and volume per mills. Until the 18th century, when the thermometer and the hydrometer were invented, brewers' control over the processes of mashing, cooling, and fermenting was quite limited. Many factors, like weather or microorganisms, were totally out of their control. So ancient beer hadn't had “a taste” as each batch brewed under some specific daily conditions had its own specific taste. Master brewers were probably able to produce a more or less consistent product and less skilled ones were preparing totally unique beverages each time, but all would have been constantly sour and cloudy. We can only agree that, according to the law of averages, sometimes they must have brewed something close to a liquid we have just filled our glass with.

The Decline of Ancient Beer

During the Bronze Age, beer was the most common beverage for almost every civilization, from the Sumerians to the Chinese. But in the 1st millennium BCE, the situation changed dramatically.

In China, supposedly under the rule of the Shang dynasty, circa 15-16th century BCE, a new method of producing alcoholic beverages from rice was discovered. A complex mixture of molds, yeast, and bacteria, known as "qū" (麴 in traditional Chinese), cultured on a starch-rich substrate, was able to convert cereal starches to alcohol. The result was a rather strong beverage containing 8 to 20 percent alcohol by volume (ABV). Many traditional Eastern alcoholic beverages, such as Chinese "rice wine" *huangjiu*, Korean and Japanese *sake* and *shochu*, are produced using *qū*.[25] This technology superseded beer brewing in the East, but for obvious reasons (the secrecy and lack of rice) was not adopted in the West.

But the West — Ancient Greece and later, Ancient Rome — had their own technological know-how: grape wine. Archeological evidence indicates that it was already produced in the 6th to 7th millennium BCE on the territory of modern Georgia (and probably in China also), but it was the maritime civilization of Phoenicians that spread the taste for wine throughout the Mediterranean.[26]

Some scholars believe that late Bronze Age Greeks (Mycenaeans) inherited brewing traditions from their Minoan predecessors, and therefore drank or at least tolerated beer; maybe Dionysius was a god of beer and mead as well as wine.[27] However, starting from the 10th century BCE, beer completely disappears from the Greeks' diet and is mentioned in written sources as a "foreign beverage" — of Thracians, Phrygians, or Egyptians. To Ancient Greeks beer was a beverage of northern "barbarians" Thracians and Peons.[28] In the 5th century BCE, Aeschylus in his plays counterposes "Dionysius beverage" (e.g. wine) against "Thracian beverage" (e.g. beer). Many other Greek dramatists had started to despise beer after Aeschylus.[29] Greeks believed that beer as a result of "decay" of grain, in turn, causes human decay, and also makes men effiminate. This opinion, voiced by Theophrastus,[30] was to be repeated constantly in Ancient Greek and Roman literature. Beer was associated with excessive alcohol consumption

attributed to Scythians and Thracians, while Greeks themselves were (of course!) considered inherently modest and temperate.

As a result, with the growth of Ancient Greece and then Ancient Rome's influence, beer was universally dislodged.[31] Peoples living on the territories of modern France, Spain, Northern Italy, and Germany had been drinking beer for millennia before wine and viniculture arrived on their soil.[32] However, during the 2nd and 1st centuries BCE, Romans progressively defeated all beer-drinking nations: Celtiberians, Gauls, Carthaginians, Ligurians, Egyptians, etc. Even Celts started to prefer wine over beer under Roman influence.[33] Wine's prominence was also enforced by the swiftly spreading Christianity, which gave it a very special position in its rituals and sacred books. At the beginning of the Common Era, the only keepers of beer tradition in the world were the “barbarians” on the outskirts of the Roman Empire.

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Chapter 4. The Barbarian Booze

Historical period: the 2nd — 10th centuries CE
Scene of action: Europe north of the Apennines and the Pyrenees

Paradoxically, it was Romans who left a lot of material evidence related to beer production. On the outskirts of the Empire, brewing continued on, both for locals and the Roman legions they hosted — and therefore some administrative correspondence was preserved. Particularly, the letter on a wooden tablet found in the remains of Vindolanda (a Roman outpost in England), in which Masculus, a decurion (head of a cavalry platoon), tells Flavius Cerialis, a prefect, that the soldiers have no beer (*ceruesam*) and asks for reprovisioning.[1]

On the territory of modern Germany, Great Britain, and Belgium, a number of Antic breweries were found. One of the oldest is located near Regensburg and dates back to the 1st-2nd centuries CE. It is notable not only for being the first known Roman brewery but also as the earliest evidence of using *kilns* for malting.[2]

Remember that raw barley itself isn't suitable for brewing purposes since its fermentable sugars are inaccessible, so it must undergo a *malting* procedure wherein it is soaked, then allowed to germinate. The result of this operation, known as “green malt,” might be used for immediate brewing, but it perishes very quickly. So green malt is usually dried, and in this form, it might be kept well-preserved for a long time.

In Mesopotamia and Egypt, malt was presumably dried in the sun, since it's quite hot and sunny there. In the Northern European climate, drying malt in the sun was not an option. Alternatively, malt might be wind-dried, but that also requires specific conditions. So in Europe, they started heating germinated grain in large ovens named *kilns*. A kiln was usually a stone

chamber with a hearth in it. The malt was spread on the floor, and then the fire was kept low for several days.

How to Taste It

How this late Antic beer tasted is very hard to say because no written sources survive. Several Roman writers mentioned beer (most notably, Pliny the Elder in his “Natural History”), but they probably didn't know anything about brewing in detail and were likely uninterested. Technically, the Zosimus recipe we mentioned in the previous chapter falls into this specific time period, but it describes Egyptian technology. As for European beer recipes of late Antiquity and the early Middle Ages, we know almost nothing.[3]

However, the mere fact of early kiln use gives us an opportunity to approximate the taste of the past, so to speak. Nowadays the same technology of smoking malt over beech wood is used to produce a special style of German beer called “Rauchbier” (also, “island” whiskeys). That one aspect aside, Rauchbier is totally inauthentic from all other points of view, as modern barley, yeast, and hops are used to produce it. Yet as you instantly understand after the very first sip, it's a hell of a taste, one may hardly manage to get rid of. So from the tasting perspective, *Rauchbier* is the best approximation of late Antic “barbarian” booze. (Conversely, modern reenactors that restored a Celtic kiln of the 4th-5th centuries CE say that it was naturally a Rauchbier clone they've gotten from it.[4])

Widely known beers in this style are produced by the Schlenkerla company (there are several distinct brands, and any of them will fit). Also, a few craft breweries produce “smoked” beer: for example, De Molen (*Bloed, Zweet & Tranen* and *Rook & Vuur* beers).

The Time of the Cathedrals

A significant part in spreading brewing within Europe was played by Christian monks and priests. Beer “promotion” had already started in the time of the Roman Empire in Ireland, which wasn't under Roman rule. According to legends, in the 5th century CE, Saint Brigid of Ireland was already converting water to beer.[5]

Monks' interest in beer was quite understandable in those regions where cultivating grapes wasn't possible. Because of numerous strict fasts, they needed an additional source of calories, unlike the commoners or lay persons.[6] Beer popularity in monasteries was additionally promoted by Louis the Pius who started enforcing the so-called “Rule of St. Benedict” on the territories he controlled, in accordance to the will of his late father, King Charlemagne.[7] The “Rule” is a set of regulations for monks created in the 6th century CE by Benedict of Nursia. It prescribed to monasteries the task of self-sufficiency and therefore producing on-site everything their residents required, thus naturally pushing monks towards brewing on-premises. Furthermore, monks were obliged to provide meals and shelter for travelers.

It's frequently stated that monasteries produced the largest share of beer in the Early Middle Ages, but it's highly likely not true. Brewing beer was a regular activity for Middle Age households, something quite similar to baking bread. But common people haven't left any written evidence of their everyday life while monasteries were documenting their operations extensively.[8]

How to Brew Beer

Let us describe the technological process of brewing beer as it was developed in Medieval Europe and has reached through to our time almost unchanged.

1. First, the raw materials (e.g. malt) need to be crushed. The grinding must be rather coarse, not too fine or flour-like.

2. Ground malt is mixed up with water (the process known as “mashing”) and is heated up to approximately 68-70 degrees Celsius. This temperature is maintained for at least one hour. At this temperature, enzymes present in the malt convert starches to sugars. Then the solution is strained and washed out. A pure raw malt liquor called *wort* is prepared. At this stage, it is yet sweet, not intoxicating.

3. If beer is brewed with hops (see the “Word on Hops” chapter) after mashing the wort needs to be boiled down with an addition of hop cones for 1-2 hours. Sometimes wort is boiled longer to achieve a specific taste according to a recipe.

4. Then the wort is cooled and ready for fermentation. Starter — containing yeast — is added to wort (which could be a portion of actively fermenting beer), or it just gathers the microbiota from the air. Fermentation then begins. Depending on the microorganisms' type and external conditions (like temperature or oxygen access) fermentation lasts from as little as 2-3 days up to several weeks or more. During this time yeasts break down sugars and produce lots of chemical compounds — notably, ethyl alcohol and complex esters. Which substances in which proportions left after fermentation define the taste of beer. Other microorganisms compete with the yeast for edible sugars, first of all, *Pediococcus* and *Lactobacillus*. If they outgrow the yeast, the beer will sour.

5. Technically, beer is ready for consumption at any moment, though usually brewers wait until the fermentation ends. High-quality beers are usually left to mature for an extended period of time, up to several months or even years.

6. Some beers continue fermenting in barrels or bottles. To facilitate this process, fresh yeast and/or additional sugar may be added.

At stages 4-6, beer might be additionally spiced with flavor additives, including hops (so-called “dry hopping”).

Up until the 20th century, raw materials could be used several times, e.g. after the first mash was complete and the wort is strained and washed out, the malt remains were mixed with a new portion of water and mashed again and again, up to five times. The first wort was used to produce the best and strongest beer, while secondary worts were used to make cheap and weak “small” or “table” beer.

The most important parameter of wort, directly affecting a beer's strength, is its original gravity. It's usually measured as wort to water density ratio and is denoted with the “OG” abbreviation. The thicker the wort is, the more alcohol the resulting beer contains (approximately 1% ABV per 1% of density, e.g. wort with OG=1.050 might be used to produce 5% ABV beer). Another important parameter is final gravity (FG): not all wort components are fermentable, and fermentation might be incomplete. The higher FG, the more sweet and thick the resulting beer. And vice versa: the closer to 1 the FG is, the fewer non-fermentable compounds remain. The ratio (the share of dissolved organics that were fermented into alcohol) is called *attenuation*. The higher the attenuation, the more effective conversion of sugars (and the lower resulting final gravity).

It's interesting

The final gravity might be less than 1 because alcohol is lighter in weight than water. To produce such “very dry” beer, either yeast and bacteria should be allowed to consume all the organics in the wort, or (more plausibly) the brew should be chemically filtered.

The easiest way to raise the alcohol volume in the beverage is to increase the proportion of sugars. In pre-industrial times, honey or fruits were used. Later, sugar cane syrup, invert sugar, or in the case of cheap beer, molasses or other residues of sugar production.

The alcohol produced by yeast acts as a preservative since competing microorganisms do not tolerate its presence. However, the yeast itself can only endure it up to a certain threshold: brewing beer containing more than 8% ABV requires selecting specific alcohol-tolerant yeast strains.

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Chapter 5. Bog Myrtle

Historical Period: the 10th-14th Centuries CE
Scene of Action: The Low Lands and the Northern Parts of Modern-Day Germany

The fall of the Roman Empire entailed lots of consequences, including its implications to beer history. The pressure that "civilized" Romans put on the brewing industry had ended. The new powers of Ireland and Britain as well as the Frankish Merovingian and Carolingian kingdoms were drinking beer with great pleasure. The Anglo-Saxons were using beer as a "currency" for natural exchange; all kinds of duties and wages were paid with it.[1]

Medieval suzerains soon began their attempts to control the production of this "currency", just like any regular state would do in their place. A taxation mechanism was soon found. Emperor Charlemagne proclaimed brewing a state monopoly and started selling it to lords and bishops, who in their turn, monetized their brewing rights by producing beer ingredients and selling them to local brewers. After Charlmagne's death, the Empire weakened, but the monopoly persisted in German and Lowland States.[2]

Those ingredients, or rather semi-products, were called *fermentum* in Latin, and *gruit* (*grut*, *grout* and other variants) in local languages. *Fermentum* means "starter," e.g. some additive that makes bread and beer "rise" (we now know that starters contained yeasts, but in the Middle Ages no one knew that). *Gruit* means "grind," which seems totally unrelated. Nowadays we use the word *gruit* for a selection of aromatic herbs. This contradiction is resolved easily: medieval gruit could be considered *all of the above.*

Beer spoilage was the brewers' main problem. There were two main ways of avoiding it: increase the alcohol content or add preservatives. Medieval *fermentum*/*gruit* helped with both. The preparation process included grinding the malt, cooking it into a kind of porridge, and evaporating off the liquid. The resulting malt concentrate was either a solid or a paste-like

substance depending on whether cereal residues were filtered out or not. This malt porridge could have been used for making pastries, which explains using the *fermentum* and *gruit* words to denote baked goods.[3] Additionally, some flavor additives, mostly herbal, were mixed in.

This malt concentrate was sold to brewers, and it was indeed quite useful. Adding this gruit to the wort would cause yeast to proliferate quickly and produce a large amount of alcohol, thus suppressing the growth of competing microorganisms, which for an observer would look like the gruit indeed leavened the wort. Modern reenactors managed to achieve quite a considerable shelf life for such gruit beer of more than three weeks.[4]

Flavor additives also played a major role. Firstly, they had some antiseptic effects. Secondly, they helped to conceal an unpleasant taste and smell. Thirdly, because of the additive properties themselves, beer was considered healthy and even curative. Different sources mention more than 40 distinct additives and 14 more were added for medicinal reasons[5]: wild rosemary, yarrow, juniper, sage, ground ivy, anise, caraway, laurel berries, and pine resins were also used. In fact, every town possessed its own unique gruit recipe depending on the local flora. However, there was one particularly vital component: bog myrtle (*Myrica gale*), which was traditionally used as both a sedative and antiseptic compound. In addition, bog myrtle is rather capricious and grows (surprise!) mostly in bogs. As the beer production itself, bog myrtle was a convenient object for the state monopoly.[6]

For medieval suzerains (baronies and bishoprics) and later for city magistrates, gruit was a handy and understandable method of collecting taxes.[7] Towns were buying the privilege (*gruitrecht*) from their segnors and opening the "gruit houses" (*gruithuis*).[8] Often, instead of buying gruit in the gruit house, brewers were paying their duties in money. Such a levy was called *gruitgeld* (literally, "gruit gold").[9]

However, the significance of centralized starter production was gradually declining. Later records indicate that in the 13th century, gruit houses were purchasing much more herbal products in proportion to malt than needed.[10] Some scholars believe that brewers were bringing malt to the

gruit houses to be mashed with gruit there (and therefore the exact recipe was kept a secret).[11] Since nobody cared about writing down such obvious things as gruit usage (just like any other detail regarding brewing), later researchers were convinced that gruit was just a mix of herbs to flavor beer.[12]

Beer in the Middle Ages

Let us stress that beer consumption was viewed in the Middle Ages quite differently than in other epochs. Medieval beer — which was either thick, sweet, and low-alcohol, or thin, refreshing, and almost alcohol-free, depending on which wort was used for its preparation — was a regular staple on tables, just like, let's say, bread or dairy products. Medieval rations were far from being balanced and nutritious, and beer, which was considered healthy and curative, was a valuable addition to everyday meals. Some scholars claim that peasants were brewing beer more often than baking bread.[13] As brewing was rather labor-intensive, there was something like an unspoken schedule as to which household brews beer which week. In England, for example, one-third to one-half of all households were occasionally brewing beer for sale.[14]

Of course, alcoholic intoxication was condemned by moralists. However, they were condemning it using exactly the same wording as they used for condemning gluttony. Medieval beer rarely had a significant ABV. A lot of grain was needed to produce strong beer, which made it a luxury and unavailable to an average person. It appears that common folk weren't consuming beer to become intoxicated. It was rather an ordinary drink by which they got essential carbohydrates.[15]

Beer Myth

Many popular sources claim that Medieval people preferred beer over water, the quality of which was poor. This is kind of an exaggerated generality. Yes, they did prefer beer in the sense that given the choice of whether to drink beer or water, they would likely choose beer — just

like a contemporary person would! In the Middle Ages, people were well aware of water quality-related problems and knew that the best water was from rain or snowmelt. They avoided polluted water if they could. Some social groups like monks, sailors, or grandees, might have actually drunk beer instead of water, but that definitely was not a ubiquitous practice.[16]

How to Taste It

Some breweries continue using gruit nowadays. These beers might be found by using “gruit beer” or “herbed beer” keywords. The most notable examples are:

- Belgian Steenbrugge and Gentse *Gruut*
- Dutch Jopen *Koyt*.

The “historical ales” by Williams Bros. we have mentioned in the “At the Dawn of Civilization” chapter in fact fall into the same category.

It's important to understand that these beers are merely substituting bog myrtle and other herbs instead for hops. They are totally inauthentic in any other sense. It's interesting mostly as a chance to experience the real sweet taste of beer which we in the 21st century are totally unfamiliar with.

However, we might still get a real medieval *gruitbeer*. One of the most popular beer varieties from those days called “mumme” (aka *mum* or *mumm*), which emerged in the 14th century, was so popular that it persisted almost unchanged until the 17th century. The recipe was written down several times, and comprised wheat malt with an addition of oats and beans, fir and birch tree-tops, elderberry, cardamom seeds, bay leaf, a lot of herbs — thistle, dewdrop, burnet, betony, marjoram, gravilat, marsh mint, thyme, — and fresh eggs.[17]

The beer enthusiasts had reconstructed *mumme* based on those recipes, and the style now enjoys some segmented demand. Known examples are:

- *Mumm* by Scratch Brewing Company
- *Alte Hansa Mumme* brewed by the 7 Fjell and Vaat collaboration
- Schiøtz *Mørk Mumme* by Albani Bryggerierne
- Kongens Bryghus *Julemumme* by Husbryggeriet Jacobsen.

But let's not get it mixed up: a real *mumme* must be dark, thick, alcoholic, and possess quite a peculiar taste, closer to coke than beer. Thin light beer proudly produced in Braunschweig under this name (as well as an energy drink and a sweet paste) is directly related to the former glory of the Braunschweig's *Mumme*, but has totally lost any resemblance to the original recipe over the years.

Etymological Considerations

All this confusion with the word *gruit* switching its meaning from “starter” or “pastry” to “a set of herbs for beer-making” is quite typical. Almost every term related to brewing lost its original meaning, sometimes changing to quite the opposite one.

Romans and Greeks have different words for beer depending on the region of its origin: Phracian beer was called *brytos*, Spanish, *cervisia*, Egyptian, *zythos*. *Brytos* was possibly borrowed by the German tribes and became *breuwan* (or both these words derived from proto-Indo-European *bher*, to boil), which later gave birth to English *brew*, German *brauen*, and Dutch *brouwen*, and also *broth*, *bread*, and corresponding words in German, Dutch, and other related European languages.

It's interesting

The words “Brazil” and “bride” derive from the same root as well. The former, through Old French *bresil* (to burn) that became *brasil*, meaning “red wood” in Spanish and Portuguese (probably, because of the wood color resembling smoldering embers); the territory of modern Brazil was called “terra de brasil” (“the land of redwood”) by the Portuguese. As for the latter, brewing beer was one of the many bride's duties,

which is quite obvious in German: *Braut* stands for “bride”; *Brauer*, for “brewer.”

Cervisia became Spanish *cerveza* and Portuguese *cerveja*, beer. It's interesting that Romans borrowed the word *cervisia* from the Celtic tribes that lived in modern-day Spain, and its origin is proto-Indo-European “kerm,” making it of the same root as Slavic “korm,” forage.

Finally, *zythos* is nowadays widely used in modern craft subculture. For example, Martin Cornell, a well-known journalist and book author, writes on the Zythophile blog.

The simplest and clearest situation is with the word “pivo” that stands for “beer” in Russian and other Slavic languages. It derives simply from the verb “piti,” to drink. From proto-Indo-European it came to the Greek language (*pinein*, to drink); from Greek to Latin (*bibere*), from Latin to Spanish (*bebida*) and Old French (*pocion*), from Old French to English (*potion*, *poison*, and *potable*). Interestingly, another English word for something drinkable — “beverage” — is likely derived from the same *bibere*, though the direct connection remains unclear.

Germans enriched our vocabulary with two more roots: *beer* and *ale*. The etymology of both is quite foggy. The former probably meant mead or cider initially (and therefore shares the same root with “bee”) as the Germans made no distinction between various sources of sugar for their beverages; or mundanely derived from the very same *bibere*. As for *ale*, its origin was influenced by Scandinavian and Baltic languages (probably, independently from English) where its derivatives (*øl*, *olut*) are still in use.

Sumerians, as we mentioned, used a lot of different words for different kinds of beer. One of them, *sikaru*, made it into Semitic languages for denoting any alcoholic beverage and was used in the Bible. Later, it entered Old French and became *cidre*.

Finally, the Latin word for a starter, *fermentum*, transformed into the scientific term "ferment" and in this capacity entered dictionaries of most of the world languages.

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Chapter 6. Word on Hops

Historical period: the 14th-16th centuries CE
Scene of action: German, Baltic, and Dutch cities

Starting from the 14th century CE, gruit usage (and therefore gruit monopoly profits) began to decline. The reason was the spread of a cheaper, more effective, and more convenient additive: hops.[1]

First, hop bitterness allowed brewers to overcome or even conquer unpleasant odors. Second, hops were a markedly more effective preservative than herb mixtures: alpha acids (or rather their isomers produced by heating wort) present in hops suppress the growth of bacteria, which prolongs the shelf life of beer up to half a year and even more. Third, and probably most important, brewing with hops allowed for utilizing the raw materials more efficiently. English documents from that time mention that adding hops results in producing twice (!) the amount of beer from the same amount of grain[2]: wort might be left to ferment longer, allowing higher sugar to alcohol conversion without the risk of spoiling.

The monks were probably the first who started brewing with hops, as the monasteries were the only beer producers in the early Middle ages who made enough beer to be concerned with prolonged storage.[3] The first known mention of adding hops to wort comes from 822 CE in the instructions of Adalard, the abbot of Corbie, France, written for his brothers. In the 9th-10th centuries CE, the usage of hops in monasteries was already widespread, being found both within period chronicles and archeological evidence. Furthermore, hops were sometimes an ingredient in gruit.[4] And yet, it took several hundred years (!) for hops to completely supplant gruit.[5] A few reasons were named by scholars as follows.

1. Technological issues: hops impart preservative qualities only if boiled (which allows alpha acids to isomerize, and it's the isomers that possess anti-bacterial properties). Hops added to gruit are useless from that point of view, and they could even spoil the wort. So brewing with hops implies adding an additional step of boiling hops for an hour or two. Hop usage became more widespread when brewers accumulated enough capital to have separate vessels for mashing (e.g. preparing wort from ground grain and water) and boiling.[6]

2. At first, the bitter taste of hopped beer put off consumers.[7] We now think that modern beer has a neutral taste; hop flavor is implicit. For a 15th-century Englishman, the sweet taste of ale was so habitual that bitter beer was drunk only by Dutch ex-pats despite its production being twice as cost-effective.[8]

3. Hops undermined the state or municipal monopoly on beer ingredients, so their usage was frequently opposed by local authorities, especially in Dutch towns.[9]

One way or another, hops started to supersede gruit in the 13th century, in region after region. The important consequence of that (apart from bishops' and barons' whining about their incomes[10]) was the beginning of commercial brewing at scale. Beer became a product for transport to other towns; it became regional not just local.

It's interesting

The true meaning of the word “gruit” was already forgotten sometime in the 15th century. There are surviving examples of using it as a synonym for brewing tax (sometimes even as *hoppengruit*, literally “the hops gruit”) and also as a verb meaning “mixing something as an ingredient”.[11]

With technological advancement, a key division of labor emerged. Brewing beer and selling it became different occupations. First brewers' guilds and beer trade regulations had been known since the 13th century in English and German lands.[12]

Beer, however, was a product poorly fit for transportation because of its considerable volume and weight. Moving beer by roads was problematic: the cost of a barrel increased by 25-70% every 100 kilometers, depending on the terrain and road quality.[13] The beer trade at this period wasn't a lucrative one and its margins were low. However, beer was quite a suitable commodity for maritime transportation, given that it was also a customary product to provide drink and vital calories to sailors. The first mentions of the naval beer trade began during the Viking era, circa the 11th century CE. In the 12th century, Bremen and Brugge were already mercantile centers of beer at scale. But the *real* maritime beer trade started with the development of the Hanseatic League.[14]

One of the two founding cities of Hansa, Hamburg, had literally become the world's brewing capital in the 14th century (partly as it was one of the earliest abolishers of the *gruitgeld*). In 1369, having around 14 thousand inhabitants, Hamburg exported 13.3 million liters of beer and consumed probably the same amount locally.[15] At its peak, the Hanseatic League sold more than 50 million liters per year, and the League's navy drank another 25 million.[16] Beer manufacturing provided jobs to roughly half of Hamburg's craftsmen (475 out of 1075 in 1376). Other cities of the League were not far behind: there were 300 brewers in Bremen, 250 in Erfurt, 200 in Wismar and Leipzig (each), and 180 in Lubeck.[17] Another number is even more revealing: 25-40% of all the grain those Medieval cities were importing was used by brewers.[18]

In the 15th century, however, the Hansa started to lose markets. As a more advanced maritime power and the more efficient beer producer alike, the Dutch put extreme pressure on the Hansa beer industry.[19] During the second half of the 14th century, the Netherlands, figuratively speaking, had converted from an agrarian village to an industrial city. The most

important industrial sector was undoubtedly textiles; but brewing was certainly the second-most important.[20]

The Delft — Gouda — Haarlem triangle became a center of the Low Lands beer industry. Having a combined population of approximately 40 thousand people, these three cities were producing 100 million liters of beer by the second half of the 15th century and at the beginning of the 16th century.[21] During the heyday of beer production in the Netherlands (starting from the end of the 15th century up to the beginning of the 17th century), beer incomes (including excise, sales taxes, and customs duties) of many Dutch towns comprised one to two-thirds of the total income.[22]

How to Taste It

Given the ferocious competition between dozens of cities and hosts of brewers, it is no surprise that new beer trademarks emerged, reached commercial heights, and then disappeared into nothingness *by the hundreds if not thousands*. One expert, Heinrich Klaus, counted 150 types of German beer only. To distinctly denote all of these beers, they employed a plethora of terms with dubious etymology and ever-changing meaning.[23] Nevertheless, some of them gained so much popularity that they are still in use centuries later, and because of this, we may taste them today. (The longer a beer style existed, the higher the probability somebody bothered to write down the recipe!)

The most authentic of such "dinosaurs" is the modern reconstruction of one of the most popular beer styles of the 14th century, the Dutch *koyt* (also spelled *kuyt* or *kuit*). You may judge how influential this beer was by the fact that citizens of Leeuwarden revolted in 1487 because *koyt* imports from Haarlem were banned.[24]

The notable characteristic of *koyt* was its use of a large proportion of oats (more than 50%) which was the most widespread grain in the Netherlands at the time and possibly allowed for brewing better quality beer for the same money.[25] Nowadays many microbreweries in the Netherlands (and

some in the US) produce beer in this style:

- Klavervier *Koyt*, which is said to be the most precise reconstruction; brewers from Klavervier not only produce authentic beers but also contribute to the research of brewing history
- Two Jopen brands, *Padvinderskuiten* and *Frans Hals Bier* (Jopen *Koyt* despite its naming *is not a koyt*)
- Oedipus *Shampoo*
- Elora Windmolen *Dutch Kuyt*
- Noord-Hollander *Kuyt Bier*
- Grutte Pier *Kuit*
- Ramses Bier *Kuiter*
- Leidsch *Kuitbier*
- *High Oats* by the Jabeerwocky-Nepomucen collaboration
- *Koyt* by the Wander-Reuben's collaboration.

Another beer style originating within the 14th-16th centuries is called *bock*. It is told that its name derived from the city of Einbeck; also the famed Martin Luther particularly loved that beer which reportedly strengthened his will at the Diet of Worms of 1521.[26] However, we may be very skeptical regarding this story as the sources that tell it are far from reliable. Nevertheless, technically speaking *bock* is quite close to the alleged pinnacle of the brewers' art of the 16th century: strong (means “expensive”) dark (of course) aged (therefore lacking smoky flavors) hopped beer. Einbeck, being a Hanseatic League member, was famous for its rigid control over beer quality.[27]

The “bock” of modern Germany is a totally different beer style, being a dark strong lager (see the next chapter). Dutch brewers (La Trappe, Hertog Jan, Jopen) and Belgian ones (Leute) more closely approximate the canonical recipe. Still, German *bockbier* (such as Ayinger *Celebrator*, Paulaner *Salvator*, Spaten *Optimator*, and other *-or*'s) are quite good, though representing a later brewing tradition.

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Chapter 7. The Cold of Alpine Caves

Historical period: the 15th century CE
Scene of action: Bavaria

Let's now discuss another vital beer ingredient: yeasts. Without them, you couldn't brew beer, make wine, nor bake bread. They were in some sense "domesticated" several thousand years ago. The fact that we actually know very little about yeast domestication makes this even more surprising.

We are now aware of more than 1500 yeast species. When humanity began its practices of brewing, wine-making, and baking, many different "wild" yeast strains were used for leavening or fermentation.

However, at the end of the 19th century when microbiologists began to study yeasts, it turned out that winemakers and bakers were using one very specific species: *Saccharomyces cerevisiae*, or simply "baker's yeast." How exactly did humans isolate this specific yeast from the broad spectrum of wild species is presently unclear. We don't know exactly when our ancestors found S. cerevisiae in the wild, how they propagated it, nor when this actually occurred. The latest research demonstrates that quite probably *S. cerevisiae* was first isolated during the industrial revolution in brewing, e.g. relatively recently.[1]

By contrast, we know rather well the origins of another yeast species used by brewers, *Saccharomyces pastorianus*. It was actually bred by humans as a result of the hybridization of the above-mentioned S. cerevisiae and "wild" *Saccharomyces eubayanus*[2] presumably in the 15th century CE in Bavaria. During this period, brewers struggled with beer spoilage and unpleasant odors, and low temperatures helped with both. In their determination to produce better beer, Bavarian brewers (probably, monks of the secluded monasteries[3]) began to store their beer in cold Alpine caves, just several degrees above zero Celsius — and thus bred and cultivated a new yeast species. Traditionally, beer was left to ferment at room temperature

(around 20 Celsius) for several days; a new Bavarian technique implied a prolonged fermentation period (roughly 3 weeks) and then storing beer at 5-10° Celsius for an even longer period of time. This new type of beer was called “lager,” meaning “to store” in German. “Lagering” as a specific brewers' activity was first mentioned in 1420 CE. However, it was not widespread until the sixth decade of the 19th century; because for obvious reasons the cold brewing technology required a huge amount of ice.[4]

How to Taste It

The first lagers were still dark beer (and remained as such up until the 20th century), so the most authentic ones are contemporary German dark lagers (so-called *dunkelbier*) or German *bockbier*, which is still produced utilizing lagering techniques. You may try any *dunkel* and in fact, it's quite a common modern dark beer. The most praised examples of the style are Ayinger and Andechser, though for a full submersion, you might try to find Weltenburger (the brewery at the Weltenburg Abbey was founded in 1050, considered one of the oldest in the world) or Spaten *Dunkel* (produced since the 14th century).

The Taste and the Temperature

Yeast strains define not only the rapidity and the temperature of the fermentation but also how the process *unfolds*. Baker's yeast ferments intensively, forming a thick foam on the beer's surface, *krausen*, which brewers often scoop off and use as a starter for the next brew. By contrast, lager yeast ferments calmly, does not produce a lot of foam, and sinks, working from the bottom of the vessel. That's why corresponding beverages are colloquially called “top-fermented” and “bottom-fermented” beers respectively — though brewers had long ago developed baker's yeast strains that sank to the bottom as well. The “high-temperature fermentation” (or “warm”) and “low-temperature fermentation” terms in actuality describe the situation more precisely but regretfully see rare use.

For high-temperature fermented beers, the word “ale” is now used almost universally (which has exactly zero historical justification), and *S. cerevisiae* yeast is likewise dubbed “ale yeast.” In this book, we use the word “ale” only for beverages that were called ales at the time they originated, and not for denoting yeast species. If such an indication is needed, in this book it will always be explicit. Other yeast species used by brewers (of *Brettanomyces* genus, for instance) are also considered “top-fermenting.”

The difference between high and low-temperature fermentation is that chemical reactions happen more turbulently at higher temperatures and enrich beer with complex esters that produce and are responsible for fruit flavors: bananas, raisins, berries, etc. Low-temperature beer has a more accentuated “bread-like” profile and contains fewer “fruity” subtleties in its taste and aroma. Interestingly, lager yeast might be forced to ferment at higher temperatures; the resulting beverage is called *steam beer*.

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Chapter 8. The Beer Purity

Historical period: the 16th-17th centuries CE
Scene of action: Bavaria

Right after the beer trade had begun, early laws emerged for its regulation. Two main issues had vexxed authorities of all the brewing regions: ensuring the quality of the product and taxation. It's quite possible to track these specific aspects and to observe how the development of the brewing industry led to increasingly rigid and complex local legislation.[1]

The first laws prescribing mandatory employment of *specific* brewing techniques have been known since the 12th century CE,[2] and generally speaking, were quite ordinary for any brewing region. Still, one of them is stands above all others: the Bavarian beer purity law of 1516, also known as *Reinheitsgebot* in German.

It's interesting

"The Beer Purity Law of 1516" was not in truth about the beer purity, and was not adopted in 1516. However, it is widely known under that name. Such laws had been in effect independently in Munich since 1487 and throughout greater Bavaria since 1493. After Bavaria was united under Munich those two laws were merged into one, and this version from Apr 23, 1516 is called "Reinheitsgebot."

Contrary to other cities where magistrates were haphazardly adopting and then soon canceling their beer laws, the Bavarians demonstrated a truly German obstinacy and love for order. Can you believe that adopting the *Reinheitsgebot* country-wide was a condition of Bavaria joining the united German state in 1871?[3]

Beer Myth

On the Internet, you might find statements such as “the *Reinheitsgebot* was the first law regulating the quality of beer” (which is not true), or even food in general (which is *absolutely* not true as those laws already existed in Ancient Rome). It is also incorrect to say that the *Reinheitsgebot* is the oldest *acting* food industry law, because it was abolished by the European Court of Justice in 1987[4]: so the Bavarian adherence to principle have been rather diminished in the 100 plus years since the Bismarck's times.

The law consists of several clauses that might be grouped into two categories:

- Price regulation (the law sets both the maximum retail price and the maximum allowed grist for resellers)
- Beer quality assurance.

It's interesting

Many beer regulations prescribed the maximum price just like the *Reinheitsgebot* did. So in case of poor harvests or monetary inflation, brewers were not able to raise prices. Instead, they might lower the quality bar by using less grain. That's one reason why popular beer brands degraded quickly, and new ones were constantly emerging.[5]

Within this law, the famous formula is stated: beer must be brewed with only three ingredients, namely water, barley, and hops. So nowadays in popular opinion, the *Reinheitsgebot* is something like a “Silver Bullet” for ensuring beer quality. Brewers often mention it in their commercials, and craft bars are frequently named “1516.”

In reality, the importance of the formula was not about the ingredients it allowed, but rather the ingredients it prohibited. First, the *Reinheitsgebot* abolishes *gruit* and requires using hops only. Second, it was meant to ensure food security for the Bavarian burghers by prohibiting using non-forage crops for beer making, most importantly wheat.

Bavarian White

In the 15th-century Bavaria, a fashionable beer style emerged: white (*weisse*) beer that was lighter than Bavarian lagers because of some brewer manipulations. One of the means of "whitewashing" beer is using wheat (*Weizen*): wheat beer gets a high white foamy head, and wheat itself may be used fully or partly unmalted. By approximately the end of the 15th century, these two words — *Weissbier* (e.g. "white beer") and *Hefeweizen* (literally, "yeast wheat") — started to mean exactly the same thing, wheat beer.

There is no consensus among scholars whether using wheat for brewing was a real food security problem, but one fact is indisputable: by introducing the "Beer Purity Law," Wilhelm IV had legally outlawed using any grain but barley. However, Wilhelm's son, Albrecht V, made an exception to this rule in a form of a state monopoly — presumably under consumer pressure of those unwilling to comply. Initially, the right to brew wheat beer had been granted to Count Degenburg, but after his death, this brewing *charter* reverted back to the Crown. The reigning Duke, Maximilian I, had quickly learned that this monopoly might bring considerable profits as Bavarians liked wheat bear immensely and were eager to pay for the "forbidden fruit," especially as it was the only kind of beer allowed to be brewed in summer. Maximilian founded an entire network of state breweries, one of which — the former Weisses Bräuhaus — has survived until today.[6]

Finally let us mention that beer made of wheat had been produced for millennia, starting with Sumerians and Egyptians. 14th-century Hamburg was particularly praised for its wheat beer.[7] The Bavarians borrowed the technology from Bohemian brewers who had produced wheat beers since the 12th-13th centuries CE.[8]

How to Taste It

Out of the ten oldest breweries in the world, several are located in Bavaria.

- Weihenstephaner: the brewery at the Weihenstephan Abbey was first mentioned in 1040 (though some scholars believe that the corresponding document is a later forgery, we know for sure about cultivating hops in the monastery garden since at least 768 CE) and is generally believed to be the oldest continuously operating brewery in the world.
- Weltenburger: mentioned in the previous chapter, this abbey brewery is ten years younger than Weihenstephaner.
- Augustiner-Bräu: the brewery at the monastery of the Augustine order, it was first mentioned in 1328, and was supplying beer to Bavarian dukes' households until the end of the 16th century.
- Two breweries later formed the Spaten-Franziskaner Group: that of Spaten (existed since 1397) and Franziskaner (since 1363); the former, however, does not produce wheat beers and is much better known for its lagers.

There are also two slightly younger breweries:

- Staatliches Hofbräuhaus (the “Hofbräu” trademark) — the “state court brewery” was founded by Wilhelm V himself in 1589.
- G. Schneider & Sohn (the “Schneider Weisse” trademark) — the venture of Georg Schneider's that had eventually bought several former ducal breweries in 1924; one of them, *the* Weisses Bräuhaus in Kelheim, was established by Maximilian I at the beginning of the 17th century to implement the duke's monopoly on wheat beer.

The Weisses Bräuhaus in Kelheim, Bavaria. Constructed in 1607. Image Credit: **Richard Huber**

There are reasonable doubts regarding the continuity of all these beer producers' traditions. For example, the Weltenburg abbey was disbanded in 1803 and reinstated only 40 years later. Still, the benchmark Bavarian wheat beers are produced by those companies, and the Weihenstephaner is considered to be the best.

As with *bock*, it's hard to tell if today's Bavarian *Hefeweizen* really resembles the historical *Weissbier* of the 16th century. Out of general consideration, the dukes' beer of that period would have been closer to what we now call a "weizenbock," e.g. relatively strong dark wheat. The reference *weizenbock*s are *Mein Aventinus* (AKA *Tap 6*) by Schneider Weisse and *Vitus* by the Weihenstephan brewery.

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Chapter 9. Barrels and Bretts

Historical period: the 16th-17th centuries CE
Scene of action: England

After the Netherlands had switched to hopped beer, Britain remained the only bastion of the sweet malt beverage (which they called “ale”). At the beginning of the 15th century CE, England was consuming an enormous quantity: a gallon of ale per day (approx. 4.5 liters) was the golden standard for provisioning soldiers, servants, monks, and even hospital inmates.[1]

Quite detailed descriptions of British ale brewing techniques survived: importantly, they prescribe no boiling of the wort, so ale was doomed to spoil very quickly. Furthermore, sometimes even gruit was not included in the recipe, which made the resulting product even less stable. A 1542 recipe specifically points out that ale should not be kept for more than five days.[2] Under those conditions, wort was not allowed to ferment fully: attenuation (e.g. the share of soluble compounds that yeasts consume and convert) was low. Ale was much thicker and more viscous than we are accustomed to nowadays. If required to make a beer for keeping, brewers had to increase alcohol content and use a ridiculously wasteful amount of grain.

It's interesting

One of the most prized kinds of ales in the 16th-century England was a replica of German *mumme* (see the “Word on Hops” chapter) — with a British accent, as some *mumme* ingredients were not grown in the British Isles.

Probably, the lack of major producers due to the instability of ale was one of the reasons why England resisted hops for more than 200 years. Archeologists have found traces of hops in fossils dating all the way back to the 10th century CE, and the first documents mentioning hopped beer

originate from the 14th century CE.[3] However, despite technological advancements, hops belatedly played a significant role in English brewing only by the 16th century CE.

Initially, it was immigrants (German, Dutch, and Flemish) who started to brew hopped beer for their own consumption, and ironically, to be sold to the Netherlands.[4] Englishmen even borrowed the word to denote the "foreign" beverage, *bier*, which later became "beer." That led to a paradoxical situation of two independent guilds — beer makers and ale makers — existing simultaneously and quite actively fighting one other.[5]

Beer Myth

Using different words for beer and ale resulted in a common misconception shared by many scholars, "hops were prohibited in 16th century England." It started with period witnesses and ends with the authors of comprehensive monographs written in the 21st century. Yet it is not true: it was prohibited to brew *ale* with hops but it was never prohibited to make *beer* with them. This myth was first proclaimed by Thomas Fuller in 1662, and since then it continued to travel from one book to another. It is also stated that Henry VI banished hops as a "pernicious and wicked weed": this false quote originates in the same book of Fuller's.[6]

Foreigners were seemingly losing this war, however, the sheer historical inevitability of change forced English monarchs into supporting "alien" producers. England was struggling to become a naval power, which would be impossible without beer (and not just any beer, but one of a certain quality: it must have had enough shelf life to survive several months in a voyage, and ideally be cheap). In the 15th-16th century CE, beer was a daily norm for European sailors being literally consumed in place of water. Ships were universally supplied with beer at the rate of 3 to 5 liters per crewman per day throughout all the northern parts of Europe,[7] from the Netherlands and Hansa to the Russian Empire under Peter the Great.[8] English monarchs had been shipping beer to their overseas garrisons since the 15th century,[9]

and at the end of the 16th century, Samuel Pepys, the Secretary of the Admiralty, secured a one-gallon daily ration of beer for sailors.[10]

The other reason why hopped beer was slowly but steadily advancing was the ability to brew stronger beverages. Because of low attenuation, English ale likely contained not more than 2.5% ABV. The elite "double" (e.g. brewed with a double measure of grain) kinds of ale reached maybe 5%. Hopped "double" beer might be 8-10%, and even stronger versions (so-called "doble-doble," e.g. the "double-double"), up to 15%. In the 16th century, the English gentry was literally hunting for stronger beers, as they were a substitute for expensive imported wine and brandy. Edward VI, Mary I, and Elizabeth I were in turns fighting against the "doble-doble" but apparently had not succeeded.[11]

It's interesting

The final victory of beer over ale happened in 1710 when the Parliament banned hop substitutes (of course, for taxation reasons).[12] The language changed as well: starting from the 17th century, the words "ale" and "beer" began meaning slightly and strongly hopped beer, respectively. Paradoxically, the legal distinction between beer and ale persisted: for example, beer was prescribed to be sold in 36-gallon barrels, while ale was to be sold in the 32-gallon ones.[13]

Beer production had been constantly increasing throughout the 17th century, reaching its peak in 1691: London had brewed more than 2 million barrels, e.g. approximately 300 million liters, having a population of 600 thousand — that's five liters of beer per day per inhabitant, including children.

The technological advancement impacted English beer bars (*alehouses*, taverns, or since the 17th century "pubs" — short for a "public house"): if ale was to be sold shortly after it was brewed, beer might be kept for a prolonged time, so new terms emerged: "mild ale" or "running ale" for fresh beer, and "keeping ale" or "stale ale" for aged beer. For the first time, aged

beer actually came into being as a mass-produced product. (Unhopped ales could be kept for a prolonged time as well, but only the strongest and most expensive ones.[14])

While producing those keeping ales, English brewers had created and developed a new methodology (initially by accident, presumably). Beer stored in a barrel for a long time continued to slowly ferment: barrel staves gave shelter to yeasts, initially being inoculated by accident, and later simply absorbing remains of the previous brew. "Wild" yeasts, unlike the baker's and the lager ones, are much more resilient (it was impossible to purge them from barrels) and are capable of fermenting *anaerobically* (oxygen-free), breaking down complex sugars (maltodextrins) that were present in abundance in thick wort and normally not consumed by regular baker's yeasts — but they did it very slowly over a period of many months.

So, finally, after a year or two, the beverage in the barrel will be quite different compared to the initial one. First, beer loses its carbonation. Second, it becomes stronger in alcohol content and extremely dry: during the prolonged keeping time yeasts will break down all fermentable sugars. Third, the look and the taste change: beer becomes more clean and clear, the hop bitterness diminishes, and the characteristic acidity (or even tartness) is added up alongside the taste of the barrel itself. As a result, tavern keepers had new work to do: mixing up a high-quality but stale aged ale with a fresh one to provide a better-tasting beer to sell.

These aged beers were called "stale" (from "stall"[15]), "keeping," "old," and starting from the 17th century — "stock." Typically, they had 6% alcohol by volume, though stronger beers having 10% or even more were also produced to please the respected gentlemen's tastes (such strong beers since the 19th century are known as "barleywines").

British stock ales were sometimes aged for 5, 10, or more years (and *much more*! there is a batch of Bass No. 1 strong ale brewed in 1869, *and it's still drinkable*[16]).

How to Taste It

“Real” English ale can't be bought because of its short shelf life, but you might try brewing it yourself[17].

Stock barrel-aged ales have not been produced for a long time now, but there are several craft reproductions, most notably — Greene King *Strong Suffolk / Olde Suffolk*, which is prepared as a mixture of fresh ale and a stale one, aged for two years.

Apart from authentic stock ales, there are a lot of “old ales” being produced nowadays. However, “old ale” is an umbrella term for several different beer styles of different ages. The closest to the 17th-century ales are dark barrel-aged beers. The classics are English Robinson *Old Tom*, Theakston *Old Peculier*, Adnams *Tally Ho!*, and Scottish Harviestoun *Ola Dubh*. Stock ales were quite popular in the US, so many American brewers produce them as well — for example, Alesmith *Olde Ale* or Founders *Curmudgeon Old Ale*.

As for beers that are called “mild ales” today, it is a much more contemporary invention, having nothing in common with the 17th-century ones.

It's All about the Yeast

In the beginning of the 20th century, Niels Claussen, a Carlsberg Labs employee, found a new species of yeast in British stock ale that was responsible for adding the famous “British taste” to beer. Claussen named the new kind of microorganism “Brittanomyces,” e.g. “The British fungus,” literally[18] (which is totally correct in Latin; however, somehow a variant with a typo became normative: *Brettanomyces*, with “e”). *Brettanomyces* (or “bretts” in the brewers' slang) today are the third choice of yeasts for a brewer (after the lager and the bakers' ones). Some breweries specialize in “bretts,” and also some wineries employ them as well.

Almost every style of the 17th-18th century aged beers — stock ales, porters, and pale ales as well, as we will discuss in the next chapters — were passing a phase of secondary fermentation driven by “bretts,” simply because it was impossible to get rid of them. These days, “wild” yeasts are

considered to be brewers' worst enemies, and all the equipment is sterilized against inoculating wort with unwanted microorganisms. That's why contemporary “old ales” have nothing to do with the original production, except for craft restorations. Only Belgian *saisons* and brown ales (which we will describe in detail in the second section of this book) preserved the original taste of those beers.

It's interesting

Also, *Brettanomyces* is notable because of being the first patented microorganism in human history, as Claussen was granted patent No. GB190328184 for his discovery.

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Chapter 10. The Beer of the Industrial Revolution

Historical period: the 18th century CE
Scene of action: London

At the end of the 17th century CE, all the prerequisites for the industrialization of brewing in England were in place. Small-scale and semi-professional ale producers were superseded by organized, commercially-minded beer brewers. There were more than 17 thousand licensed drinking premises in the country (one per 183 inhabitants),[1] and the beer business comprised 28% of GDP.[2] However, no real *industry* existed as beer was consumed on-premise in those thousands of alehouses.

The impetus that catalyzed this industrialization emerged per usual due to an excise tax conflict. England entered the Nine Years' War of 1688-1697 and in its search of war revenue, the government in an exquisitely hellish manner created a dishevelment within its taxation, raising beer levies dramatically.[3] Seeking remedy, brewers were forced to "optimize" their tax obligations and did find a loophole. From a legal standpoint, there were "strong" and "weak" beers, but the exact alcohol content had not been prescribed. So to ease the tax burden, one could brew a batch of very strong beer, pay the levies, and then dilute it with weak beer. This beverage prepared for future blending was called "double," "three-threads," or "stout" (meaning "hard") beer. As a result, clandestine mixing of the unblended liquors to achieve a ready-made consumer product became a widespread practice among tavern keepers.[4]

Beer Myth

It's often said that the “three-thread” beer was a blend of three kinds of beer: stale, fresh, and pale. This is probably just an urban myth: “three-threads” was just a mix of keeping and running ales.[5] Still, mixing up just two threads was nevertheless a hard (and risky) job for tavern keepers.

In the end, beer production dropped, and tax revenues diminished to lower than before (partially, that was because of “shady” avoidance schemes of course, but the overall beer consumption still decreased significantly). In order to overcome the illicit stout blending, lawmakers introduced an additional levy on malt itself, which led to a further degradation and hobbling of the industry.[6]

These hide-and-seek games with the government were finally resolved at the beginning of the 18th century in a most progressive manner: some unnamed or forgotten innovators started to brew a beverage called “entire-butt” (or rather “intire-butt” as they spelled it those days), e.g. “the full barrel.” To make this beer, all four or five worts prepared from one batch of grain (in this case, the cheapest “brown” malt) were mixed back together again, intensely hopped, and then aged for some time in a large barrel (which was called “butt”).

Paul Sandby, "The encampment in Hyde Park," 1781. The sign states: "Pooles / Intire Butt Beer / Fine Ale & Amber". Public Domain

There were other innovations: the inventors of that new beer were the first who approached beer production with an engineer's exactitude to control *precisely* how the product was prepared. In particular, they started drying malt by adhering to a specific temperature profile instead of just leaving it in a kiln for several days. The heat was gradually increased, then spiked sharply at the very end of the process. The malt "popped" like popcorn (this type of malt was conversely called "blown"[7]). Wort made from this malt could ferment at a higher temperature meaning it was less likely to turn sour and was fit to be brewed in summer. As this beer spoiled less frequently and generally became less capricious, the sizes of "butt"-barrels began to increase thus allowing for scaling production. This product was ready-to-use, had removed the mixing stage, and most importantly, it cost half-penny less than analogous blended beers![8]

Interestingly, for the first 80 or so years this beer was simply called "entire-butt," but finally another name took hold: *porter*. This beverage was so enormously popular among port workers that *porter* (initially just a euphemism) supplanted other names. One scholar claims that porter consumption provided 2000 calories per day for an average London port worker in the 18th century![9]

Basically, the earliest porters were pseudo-"keeping ales" made from the cheapest malts with a lower ABV content (typical "old ale" was stronger). They would compensate for this lower alcohol by adding abundant hops. The scheme worked because lawmakers somehow overlooked the possibility of putting excises on hops as well.[10] Brown malt was cheap because it was dried in a wood kiln (thus absorbing smoky flavors) while quality malts were dried over more expensive straw. Even in the 1890s, some porters were advertised as having "the flavor of the wood,"[11] so by this time the consumers had presumably developed something akin to a Stockholm syndrome towards that conspicuous smell and taste.

It's interesting

Later, in the middle 18th century, brewers started to keep porter for maturing, giving birth to the terms “mild porter” and “stale porter,” so tavern keepers did not long relish beer blending. The word “stout” had not been peacefully laid to rest: it soon became a designation for the thickest and heaviest porters. Also, porter itself was always a “beer,” not “ale.” Up until the middle 20th century you would have gotten a pint of porter if you had asked for a “beer” in a British pub.

London brewers took a pedantic approach not only towards brewing procedures but to the beer business as a whole, being very fastidious toward record keeping: when the beer was prepared, whom it was sold to, what was the price, etc. It was probably the first time in history when accountants became more important than master brewers themselves.[12] Later, in the 1770s, the Londoners were the first to start using specific measuring tools for brewing (namely, thermometers and hydrometers). Additionally, they were the first to install steam engines in breweries.[13]

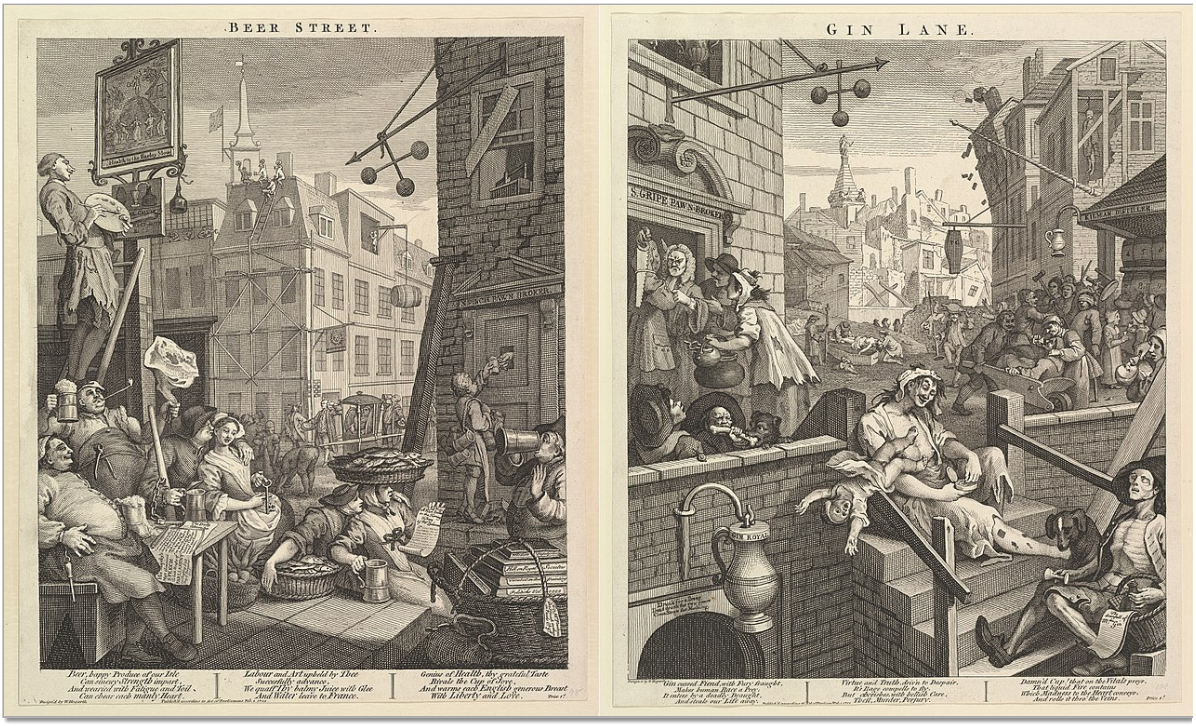
The combination of these three factors — effectiveness, cheapness, and readiness for immediate use — fomented a revolution in the brewing industry, or rather *had created* the industry. “Entire-butt” took over London alehouses at lightning speed, and soon thereafter, the entire world. This beer style quickly became truly global, being shipped to the New World, Australia, the Russian Empire, India, and every other corner of the globe.

The vat sizes were growing even faster. In 1736, Humphrey Parsons installed new fermentation vessels of a record 200 thousand liters each in his brewery; six decades later, the largest vat could hold close to three million liters of beer[14] with its iron staples alone weighing 80 tons. In 1814, a relatively small 600 thousand liter barrel exploded and caused a real beer flood that killed eight people.[15]

Gustave Doré, Blanchard Jerrold, “London, a pilgrimage. Chapter XVI, The town of malt. The great vats,” 1873. Public Domain

The production scale and the level of monopolization were increasing as well. Legislation favored large-scale brewers and in the middle 18th century just two of them — Calvert and Thrale — were controlling more than 40% of beer production in the city.[16]

In 1751, painter William Hogarth created a pair of prints named “Beer Street” and “Gin Lane.” The former depicts urban porter connoisseurs — cheerful, buoyant, and healthy. (The latter, as you might have guessed, portrays exhausted and insane lovers of that god-awful gin.)



William Hogarth, “Beer Street and Gin Lane,” 1751. Public Domain

How to Taste It

It sounds unlikely, weird even, but the first truly global beer style (e.g., porter) had eventually all but vanished and was not produced at all in the United Kingdom from the beginning of the 1950s until 1978. Stouts were luckier, as they were (and are) brewed by plenty of companies, starting with an international giant, Guinness. Nevertheless, one should take into account that contemporary porters and stouts are brewed using more modern technology, including those of the second half of the 19th century (see the “Age of Empires” chapter), and were wholly distinct from the original “entire-butt” porters. Several reconstructions exist, most notably *Entire Butt English Porter* by Salopian Brewery, but it's rather hard to find them. The best approximation of the early English porter is actually the brown ale of Flanders, the story of which we will tell in Part II of this book.

If we talk about modern porters, the most hailed ones are English Fuller's *London Porter* and Samuel Smith *Taddy Porter* and Scottish Harviestoun *Old Engine Oil*.

The Trust that Went Bust

Hogarth's diptych graphically outlines the brewing processes in 18th-century England. Being one of the first potent locomotives of the Industrial Revolution and the accumulation of capital, beer production was ultimately pushed aside by more advanced technologies. The tea, coffee, soft drinks, and strong alcohol industries were blooming and had soon become competitive powers (partly because of the re-investment of the capital originally made on brewing). Wealthy social stratum still preferred prestigious continental wine over beer; less prosperous common folk had switched to cheap gin.[17]

As the world population has been growing, the absolute beer industry numbers have also grown manifold since the 18th century. But the importance of brewing for the economy as well as average consumption has never reached those mind-numbing figures of the early-industrial period.

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Chapter 11. It's All About Water

Historical period: the 18th century CE
Scene of Action: Burton upon Trent

At the beginning of the 18th century, London was the world's brewing capital by a vast margin. Hansa hadn't recovered after the Thirty Years' War of 1618-1648 and the Netherlands was severed by the wars of religion even more so than the League. By the end of the 17th century, it had rebuilt its economy, but not the brewing industry for a host of reasons: high taxes as well as grape wine and strong alcohol expansion throughout Northern Europe. The growing popularity of porter strengthened London's superiority even further.

However, closer to the end of the 18th century, Londoners got an unexpected (and initially barely visible) competitor: the small town of Burton located on the banks of the Trent river. Its population in 1710 was a mere 1800 citizens. Burton had been well-known for its beer since the Middle Ages but was situated quite far from trade routes. Therefore, its popularity never exceeded its direct vicinity. The situation changed in 1712 when the Parliament extended the navigation on Trent from the Port of Hull up to Burton.

The first commercial (e.g. not related to some local pub) brewery was opened in Burton by Benjamin Printon in 1708. With the possibility of trade expansion, other establishments emerged, including those by Benjamin Wilson (later passed to Wilson's great-nephew, Samuel Allsopp), William Worthington, and William Bass.[1]

The expansion of river trade coincided with another important factor: the growing interest in English beer from the Baltic states, namely Poland and the Russian Empire. Peter the Great of Russia had visited England and it is said that he brought with him a love for English beer. No reliable source on the matter has survived, and Peter in his own inimitable way had in fact

established the beer industry in Russia itself.[2] However, maritime trade was growing, accelerating further towards the end of the century. Imports to Russia, the majority of which were controlled by Burton, comprised 100 thousand liters in 1750 and more than 1.5 million liters by 1775.[3]

Burtoners owed this expansion to water. First, the River Trent gave access to British ports. Second, Burton held truly unique local water sources. Burton's water was hard and rich in calcium and magnesium sulfates. It turned out that this water suited brewing exceptionally well, stimulating the growth of yeasts and allowing for intensive hopping. Burton beer was more carbonated and much clearer than London beer (and it also contained the unique “Burton snatch” — the fleeting “aroma” of sulfur that occurred shortly after pouring).

It's interesting

London brewers were struggling to solve the puzzle of Burton water, and finally developed the “burtonisation” process of enriching water with sulfates.

Yet another factor that contributed to the development of the brewing industry as a whole (and the Burton one in particular) was the spread of pale malts. England had been struggling with the wood shortage for decades and had converted to using coal quite early. A major problem with coal was that it might be used for heating wort, but not for kilning as the sulfur smell of burning coal was considered unacceptable.[4] As a result, malt was dried over expensive wood, even more expensive straw, or the best Wales anthracite, the supply of which was limited.

In 1603, Hugh Plat got a patent for his innovation of producing coke from coal, analogous to the production of charcoal from wood. For some time, this invention remained unnoticed until the malt makers employed it in the 1640s. Coke demonstrated extraordinary qualities. First, it produces no fumes. Second, it burns in a much more controllable manner in terms of temperature. Due to these features, brewers were finally able to mass-

produce malt that was not “smoked.”[5] This malt was called “pale,” and the resulting beer, “pale ale.”

Pale malt has a huge advantage over darker malts: it contains more sugars, which allows for more efficient beer production (and the taste of the resulting beverage is much clearer as yeasts might break down a higher proportion of chemical compounds dissolved in wort). This fact was likely not explicitly known to brewers until the saccharometer (e.g. the sugar concentration measuring device) was invented. If it had been implicitly discovered, it would have still made a small impact as coke was too expensive for commercial brewing. Pale ales were mostly produced in the households of the wealthy gentry in Northern England.

Let us stress that malt will be “dark” or “pale” depending on the temperature in which it was kilned. Technically, it's possible to produce “pale” malt in a wooden kiln (though it would still be “smoked,” e.g. dark in color). Making pale (and even non-smoked) malt was quite possible before the invention of coke, but required much more effort. Let's just say that making brown malt took thrice less time.[6]

It's interesting

The Netherlands started suffering from a lack of wood even earlier than England. However, without the innovation of coke, the Dutch switched to using peat. You might imagine the taste of Dutch beer in the 16th century.

Those two factors, namely hard water and pale malt, led to the birth of the “Burton Ale,” which was a thick, strong, intensively hopped sweet beer. However, it was not literally pale. Malt was additionally roasted or caramelized. Today, we would call this beer “amber.”

The history of Burton Ale consists of rises and falls, half a century passing between each. The period of prosperity based on the Baltic trade did not last long. In 1783, Russian authorities imposed a 300 percent tax on beer imports. They were then obliged to follow the *Continental Blockade* of British goods during the Napoleonic era. The annexation of Poland by Russia had also closed the Polish market for English brewers. Finally, in 1822, a new Russian customs tariff was introduced that effectively banned various and sundry imports (including beer) from Britain. As a result, at the beginning of the 19th century, the Burton brewing industry deteriorated (four out of 15 breweries were closed, several others sold[7]) — just to make the rebirth from the ashes (the story of which shall be told in the next chapter) even more spectacular.

After sales were rerouted to other markets, Burton Ale of the middle-to-late 19th century became exquisitely pale (it would have been hard to tell the difference between "Burton Ale," "old ale," and "barleywine" of that period), but in the early 20th century the pendulum swung in the opposite direction. The public adored dark caramel beers once again, and Burton Ale (in its original dark sweet form) gained its popularity anew. It was so popular that in the British Air Force, there was a euphemism for those who had not returned from the mission — "gone for Burton."[8]

The 1960s proved to be disastrous for Burton Ale; it disappeared almost overnight.

How to Taste It

The only Burton Ale that survived the 20th century is *Winter Warmer* by Young. Other renowned examples of the style are *1845* by Fuller's and Ballantine *Burton Ale*, the production of which was restored based on the surviving recipes, and also Marston's *Owd Rodger* and Theakston's *Old Peculier*. And of course, there are craft versions.

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Chapter 12. The Red Triangle

Historical period: the 19th century CE
Scene of action: Burton upon Trent

While the beer trade in the Baltics was stagnating, another prospective market was growing at a rapid pace: “The Jewel in the Crown,” e.g. India. The first beer shipments to Madras and other colonies were already mentioned by the beginning of the 18th century. Closer to the end of the century, however, all the trade had been monopolized by a single London brewer named Hodgson. His brewery, called “Bow Brewery,” was not even one of London's top-ten beer producers. Better yet, Bow Brewery was quite fortunately located next to the East India Trading Company headquarters. Hodgson pulled some strings, offered Company captains an 18-month credit line — and became the exclusive beer supplier for India.[1] The trade volume grew five-fold from 1775 to 1800 — from 240 thousand liters to 1.3 million.

Meanwhile, the Burton brewing industry was stagnating by the beginning of the 19th century. Just one brewery was opened between 1803 and 1827.[2] However, in 1821, the wind of change and good fortune once again reversed its direction, to Burtoners' greater glory. The East India Company got tired of Hodgson and his dubious business practices and his beer alike. They approached Burton's leading brewer, Samuel Allsopp, offering the opportunity to enter the Indian trade. Soon, another two Burton brewers joined Allsopp, namely Bass and Salt. Hodgson, being edged out, tried to counter this move but his ale was of no quality to compete. Soon the market fell into Burtoners' hands almost entirely.[3] In 1830, William Worthington also entered the market.

Initially, in the 18th century, the most common types of beer were shipped to India: pale ale, porter, Burton ale, and even “table beer.” Hodgson was a porter producer (and porter was actually a standard drink for soldiers and petty officers, and was supplied in great quantities to military garrisons,

including those based in India[4]). However, dark beers were considered to be too heavy for a tropical climate while low-alcohol and slightly-hopped beers did not commonly survive the long voyage. So first of all, Hodgson was shipping his strongly hopped pale ale, and it was this same beer style brewed by Allsopp (according to the legend, in a teapot) when the Chairman Marjoribanks of the East India Company asked him to replicate the best Hodgson recipe. Let us remind you of Burton's water qualities that allowed for even paler and sparkling pale ales.

It's interesting

Marjoribanks did not approach London porter brewers, but Allsopp because Burtoners had a reputation for expertise in long-distance ale shipping. As for Burton pale ales being so good, that may be deemed a bit of pure luck for them and us.

During the first five decades of the India trade, nobody bothered to create a special designation for this product. Up until the end of the 1830s, there was *no specific name* for India-oriented beers. It was just "beer."[5] However, denoting its export qualities, this style was slowly gaining such descriptions as "pale ale prepared for the East and West India climate," "pale ale brewed for the Indian market," and so on. Starting from the 1850s, in lieu of these bulky constructs, the phrase "India Pale Ale" prevailed. It looks like it was directly related to the extended railroad network to Burton in 1839. Bass and Allsopp shifted their focus to domestic sales and started to advertise their product extensively. Hodgson was not lagging behind nor sitting idly by. In 1844, his IPA was marketed as "having an excellent reputation in India for more than a century" (sic). Shortly after, the IPA sales within Britain exceeded Indian exports and IPA gradually became a beer for domestic consumption, becoming a status drink for the middle and upper classes.[6]

Beer Myth

There is a beautiful legend, first recounted in 1869 by Walter Molyneaux, a contemporary of these events, about a ship that wrecked near the British coast with its cargo of IPA later sold in Liverpool by the insurers. It was told that the commoners got a taste for the ale, and started seeking to buy it in large quantities. Though the part about the shipwreck turned out to be true (though Molyneaux was mistaken about the dates), the connection of IPA's growth in popularity to the actual shipwreck is rather doubtful.[7]

The most prominent Burton brewer, William Bass, had created the first truly global beer brand. In 1887, at the peak of its fame, the Bass Brewery produced 150 million liters of beer in a year.

Édouard Manet. A Bar at the Folies-Bergère, 1882. Public Domain

One might judge how popular Bass Pale Ale was by the fact it was depicted by several leading painters of the time, most notably in “A Bar at the Folies-Bergère” by Édouard Manet. In this picture, there are two easily noticeable bottles with the red triangle; the famous logo of the Bass Brewery. Also, it was the first registered trademark in Britain: it is said that William Bass

sent a clerk to wait overnight so as to be the first in the queue the day the bureau opened, as Bass's company was suffering from treacherous competitors selling low-quality beer stamped with the red triangle.[8]

The Bitter Confusion

Let us be clear: no difference between “India Pale Ale” and “Pale Ale” existed up until the second half of the 19th century. In particular, Bass Pale Ale was the canonical IPA that actually gave the style its fame. Many beer producers, noticing the growing popularity of “Ale for India,” were rebranding their most expensive pale stock ales as “IPA.”[9] Beer marked as “Pale Ale” even in the second half of the century still had an impressive bitterness of 60-80 IBU[10] (see below).

All those (I)PAs were stock ales meaning they were aged for 4-12 months or even more and secondarily fermented with *Brettanomyces*. However, with the growing popularity of the style and further technical progress, British brewers started to produce “mild” (e.g. unaged) versions by adding invert sugar (also, flaked maize and other additives) to wort and additionally refining it. This ale was denoted with the abbreviation “AK” (sometimes, “KK”) and was sold in casks as fresh as possible[11] — in fact, it's exactly the thing that we now call a “real ale” (see the “Revitalisation” chapter).

It's interesting

Martin Cornell suggests that the letters “AK” might mean “Ankel Koyt” (“single koyt”), therefore being an artifact of that epoch when the Dutch ex-pats were brewing hopped beer in Britain[12] (see the “Word on Hops” and “Barrels and Bretts” chapters).

Consumers, however, had adopted neither of the terms; pub patrons called these beers just “bitters.” As a result, four different designations of the same style emerged:

- India pale ale (British style)
- pale ale (British style)
- bitter
- extra-special bitter, or ESB.

Most classifications currently identify them as four different beer styles, though, in fact, they are just subtypes of the “AK” beer, slightly varying in bitterness and alcohol content.

How to Taste It

Finding an “AK” is not a problem, as it's just a classical British ale. Out of breweries that had made it throughout the 20th century we might note American Ballantine *India Pale Ale* and British Worthington's *White Shield* (the latter still brewed in Burton). In general, British bitters have gotten quite a characteristic taste and are now produced in numbers by fine breweries — let us mention Fuller's, Adnams, Thornbridge, Greene King, Samuel Smith, Harviestoun, and Marston's.

Tasting a “real” IPA, the one that Hodgson and Allsopp shipped to India, is unfortunately not possible. To begin with, we have no idea what they were actually shipping. Out of four original East India Company suppliers (namely, Hodgson, Allsopp, Bass, and Salt), none have survived. The Bass trademark was bought by AB InBev, and Bass Pale Ale continues to be produced (under the pretentious “Bass Trademark No. 1 Ale” name) with the red triangle being redesigned beyond any recognition. However, it has nothing to do with the original Bass, and furthermore, the beer itself is quite mediocre.

Today's craft brewers make some extensively hopped stock ales that should be very much like the real IPAs. For example, there are *Brett IPA* by Allagash and *Enjoy After Brett IPA* by Stone.

Bitterness Units

Bitterness of beer can be definitively measured. There are two main scales: international (IBU, International Bitterness Units) and European (EBU, European Bitterness Units). Beer with less than 30 IBUs is usually considered not bitter at all (though an Englishman of the 15th century wouldn't agree with that). Beer with 60 or more IBUs is definitely bitter, and many people will not like it (pale ale at this level of bitterness should be called an IPA). In the 30 to 60 range, every producer is free to decide whether to mark the beer as a pale ale, a bitter, an ESB, or maybe an IPA as well.

Thicker and stronger beers might conceal bitterness. Imperial stouts (see the next chapter) might easily have 100 IBUs, but it's hard to perceive the bitterness depth. Double-digit ABV and dark malts may dominate the flavor. Additionally, reaching more than 100 IBUs is possible but human taste buds don't register that level of bitterness.

The European bitterness scale theoretically should coincide with the international one. However, because of some technicalities, it's usually slightly lower.

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Chapter 13. The Age of Empires

Historical period: the 19th century CE
Scene of action: London, Burton upon Trent, Saint Petersburg

The Russian customs tariff of 1822 that finally buried Burton's Baltic trade (see the “It's all about Water” chapter) contained one important exception: porter. It likely occurred as porter was not produced within the Russian Empire itself but demand remained strong. Hence, Burtoners lost a market for their ale, and Londoners in turn captured a market for their porter. In 1815, Saint Petersburg imported 150 thousand liters of porter. In 1840, British traders shipped 300 thousand liters in barrels and more than 35 thousand bottles. A period story illustrates this point: in 1865, Russian officers invited their British counterparts to a dinner celebrating the end of the Crimean War. One of the attending English officers later recounted of how startled he was by the fact that the A. Le Coq porter was served, as British officers themselves hadn't had *any* porter in Crimea![1]

As a result of this London-Burton reshuffling, the “Russian Imperial Stout” was born. London beer makers, trying to reproduce the thick and strong Burton ale of which Russian customers were so fond, started to brew analogous porters. (Let us remind you that the word “stout” initially denoted strong varieties of any beer, but later became exclusively associated with porters.)

Beer Myth

It is sometimes said that the Russian Imperial Stouts were made so thick and strong because regular stouts would freeze on their way to Saint Petersburg. This statement is nonsense, not just in the historical sense, but according to grade-school physics as well. If the sea or

waterway that the ship traveled was unfrozen, then the beer barrels in the bilges would not freeze either.

The word “Imperial” in the “Russian Imperial Stout” is not derived from the Russian Imperial court as one might think. It was a convenient name for “premium” (which implies “strong”) beers in general (and it's actually being used in this sense nowadays — this time, for a change, correctly from a historical point of view). As for the word “Russian,” it first popped up at the end of the 19th century; in advertisements, of course.[2] (Before that, it would be rather not *comme il faut* to designate anything “Russian,” as London-Moscow relations remained tense.)

It's interesting

As a peculiar result of the cessation of trade between Britain and Russia, local porter production emerged in Polish territories. Today, this style is called “Baltic porter” and constitutes a strong dark lager. However, in the 19th century, Polish brewers had originally reconstructed the authentic British porter, and later they changed their production methods in favor of cold fermentation under German influence.[3]

In the 19th century, porter wasn't a cheap murky booze as it was a century before. The spread of pale malt (many thanks to Burtoners) had allowed for more effective usage of raw materials. It affected porter production as well as its cost efficiency was its main advantage. First, the porter grain bill changed to two parts brown malt plus three parts pale malt. Later, in 1817, Daniel Wheeler patented a revolutionary method of roasting malt at 400 degrees Fahrenheit that allowed for porters to be brewed from pale malt only; one part roasted and seven parts pale.[4]

It's interesting

Contemporary brewers now employ this technique universally. Almost all varieties of dark beer are made from pale malt, with additions of varied roasted or caramelized malt as needed.

By the mid-19th century, Burton brewers also had to change their recipes as Burton Ale was much less popular in the country than it was abroad a century before. Englishmen considered it too heavy; thick ales and porters gained a reputation as beverages for high latitudes. (In 1852, Burton brewers prepared a special "Arctic Ale" for Sir Edward Belcher's polar expedition — an extremely strong dark beer that demonstrated exceptional resilience. According to Belcher himself, it would not freeze even at -50 Celsius — as incredible as it may seem, explorers may be prone to exaggeration. Arctic ale was brewed for polar expeditions for the next one hundred years![5])

How to Taste It

Russian Imperial Stout (sometimes abbreviated as "RIS") is nowadays one of the most popular styles of beer, solidly occupying the top-ten lists of many rankings. However, one should take into account the fact that the British tradition of brewing RIS had died in the 1980s, and was later restored by American craft brewers (Goose Island, Stone, Bell's, Founders, Cigar City, Oskar Blues, and others). Some craft brewers are producing Arctic Ale as well, most notably, Harpoon Brewery.

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Chapter 14. A Series of Unfortunate Events

Historical period: 1842 — ?
Scene of Action: Plzeň

The middle-19th century was a triumph of brewing as an engineering discipline. Equipped with fine measuring devices (the thermometer, hydrometer, and areometer) and the newest microbiological discoveries (in 1837, Theodor Schwann proved that yeasts were living organisms), modern tech made brewing a precise science.

One of the vivid examples of such transformations happened in the town of Plzeň, Bohemia (then a part of the Habsburg Empire). Local burghers, the owners of the brewing rights (given to them by no one else than King Václav II himself in 1295), utterly disappointed and exasperated by the quality Plzeň's beer, dumped 36 barrels of sour brew into the sewers and decided to build a new state-of-the-art brewery. To do so, they invited a brewmaster named Josef Groll from nearby Bavaria. In addition, they bought Bavarian lager yeasts, and built an English-style kiln.[1]

Beer Myth

According to legend, the lager yeasts were smuggled by an errant Bavarian monk. This is unlikely true simply because Bavarian monastic breweries were secularized by Napoleon. Burghers of Plzeň had in fact officially bought the yeasts from Bavaria.[2]

The first *new* beer was presented on November 11, 1842, and it was *nothing* like local ales or Bavarian lagers up to this point in time. Groll took the best Moravian barley and kilned the malt at extremely low temperatures. The new techniques resulted in a light and crystal-clear beer — to which anyone could attest after pouring it into a goblet of Bohemian glass.

The taste of this new beer was quite unusual as well. It was light and crisp, like the beverage's appearance itself. Also, Groll used rather bitter hops (initially, some less-known local strains but some time later Saaz AKA Žatec became a conventional hop for the beer). As a result, a new golden standard of beer was born: Pilsner (from "Pilsen," a German name for Plzeň).

Surprisingly, the burghers of Plzeň were not eager to export this beer,[3] but it soon became irrelevant as all nearby brewers began brewing their own pilsners.

However, technical issues impeded the pilsner triumph. Making lagers still required a huge amount of ice. Fortunately, scientists helped with this problem as well:

- In 1824, "the father of thermodynamics" Sadi Carnot enunciated his heat engines theory (the so-called "Carnot cycle").
- In 1834, Jacob Perkins received the first patent on refrigeration systems.
- In 1856, James Harrison built the first ice-making machine.
- Finally, in 1862, Ferdinand Carré exhibited the ice machine based on the Harrison invention that used ammonia as a refrigeration agent. From this point on cooling systems became commercially attainable.

The effect of refrigeration technology on the brewing industry was overwhelmingly transformative. In 1860, 32% of breweries in Bohemia were making lager. By 1870, it was 98%,[4] and in 1884 the last brewery that was still resisting progress and making warm-fermented beer was closed.[5] After Bohemia, pilsner conquered the rest of Austro-Hungary (with refrigerated vans having been invented, the morning "beer train" from Plzeň to Vienna was launched[6]), then Germany, Netherlands, France, USA, and the entire world. So-called "eurolager" is the most popular beer style to this day.

How to Taste It

The original pilsner is still being made: in 1898, the Plzeň breweries union officially registered the "genuine Plzeň" trademark — *Plzeňský Prazdroj* in Czech, *Pilsner Urquell* in German — and to the present day continues to make lager beer under this brand.

"Regards from Plzeň" postcard, 1896. Public Domain

In general, trying pilsner is one of the easiest things in the world. Just ask for a light beer in any bar or liquor store.

Tread of the Triumphants

It's rather hard to pinpoint one reason why pilsner became a dominant beer style in such a relatively brief time, and then with such longevity. Several factors converged:

- an aura of the most fashionable and technologically advanced beer
- an exceptionally light clear appearance and taste
- the predictability of manufacturing — with refrigerators in hand, brewers no longer needed years of trial and error to brew quality beer

- the advance of moderation societies in Europe and the US demanding lighter beers
- the world wars and alcohol prohibitions in the first half of the 20th century that disrupted the traditional brewing business practices.

The light lager offensive was uneven. Central Europe gave up almost instantly, while in the 1960s England lager was still under the radar.[7] Nevertheless, lager domination became absolutely total by the end of the 20th century. Many countries were not producing beer of any other style at all. An entire generation of people had come of age, who thought beer might be either light, dark, or *cold-filtered* (as opposed to pasteurized) — e.g. a light, dark, or cold-filtered *lager*.

It's interesting

The prolonged British resistance against lager by coincidence killed the business of Allsopp — *that* Samuel Allsopp who brewed the first Burton IPA. In 1897, his heir, Samuel Allsopp Jr., had invested the brewery's future in lager production, which turned out to be a fiasco and led "Samuel Allsopp & Sons" into eventual bankruptcy in 1911.[8]

Under the lager pressure, many other beer styles were forced to the lowest common denominator — light, thin, 4.5% ABV beer. The classic example is the evolution of the Braunschweig's *mumme*, which we mentioned in the "Bog Myrtle" chapter.

The decades from the 1960s to the 1980s were probably the worst time for a beer lover, as it was virtually impossible to get anything but lager anywhere on the Earth, except for Britain where stouts and bitters were strong, Germany with its *Weissbier*, and little Belgium, to which the next section of this book is dedicated.

Hops Geography

Until the 19th century, brewers didn't care about hop varieties. The main factor was geographic only: beer producers were buying hops grown in specific regions. We here outline the three most important ones:

- Hallertau: it is an area in Bavaria that had cultivated hops as early as the 8th century CE. Hallertau hops were a default choice for German lagers and many Belgian beers as well.
- Saaz (AKA Žatec): the Bohemian region produced hops known since the 15th century CE, later included in the canonical pilsner recipe.[9]
- Kent: it is the county in England with hop cultivation also dating from the 15th century.

Two main Kent hop varieties became known in the 19th century as "Golding" and "Fuggle." To make life a bit more unclear, *Fuggle* was considered a variant of *Golding* and was often marked as "Fuggle's Golding," so many of its derivatives do not contain the word "Fuggle" at all — the famous Slovenian *Styrian Golding*, for instance.

Fuggle and *Golding* were the progenitors of many contemporary hops varieties used by craft brewers. Both designations are derived from surnames (most likely, of farmers that once grew them). However, as it often happens with the beer industry, nobody bothered to keep clear records on the matter, so we basically know almost nothing about who Mr. Golding and Mr. Fuggle actually were, except that they lived in 18th-19th century England[10].

It's interesting

At the beginning of the 20th century, Belgium was a major hop supplier, with Aalst, Asse, and Poperinge being the main production regions. Over the following 100 years, designated crop area had diminished 10 times, and Belgian hops were superseded by German ones.[11]

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PART II. THE GLOBE OF BELGIUM

Chapter 15. Orange Zest, Coriander, and the Hoegaarden Milkman

Belgium is a small country with a profound beer tradition that spans many centuries. Let's take, for example, Belgian white beer — *witbier* or *bière blanche*. The history of this unique beer style begins in the XV century. Modern-day Belgium was a part of the Netherlands then, which was a mercantile empire that imported lots of exotic goods from overseas territories, including spices.

Most beers were sour in those days, and in order to get rid of this sourness Belgian monastic brewers from the village of Hoegaarden started experimenting with these spices. In particular, they utilized coriander and oranges from the island of Curaçao. This explains in part the origin of how the famous witbier recipe of 1445 was born. As time passed and the tradition grew, by the 18th century Hoegaarden became one vast brewery.

Despite *witbier* production having all but stopped in the mid-20th century (in 1957, the last remaining manufacturer — the Tomsin brewery — was closed), the villagers did not allow the recipe to vanish. A local milkman, Pierre Celis, restored the tradition in 1965.[1]

How to Taste It

Of course, the beer lover's first choice is *Hoegaarden* itself. Apart from this, many other breweries (Belgian and American) produce *witbier*: St. Bernardus *Wit*, Allagash *White*, Blue Moon *Belgian White*, Kronenbourg *1664 Blanc*, *Blanche De Bruxelles*, and *Blanche De Namur* just to name a few.

The Witbier Myth

We hope that the reader exclaimed “what nonsense!” at least 10 times while reading the previous two paragraphs.

Let's start with the fact the state of the Netherlands that had controlled Belgium did not exist in 1445, nor could it yet have New World colonies, as the Columbian expeditions happened half a century later. Furthermore, the Netherlands acquired colonies exactly because it had parted ways with Belgium in 1588 — or rather with the Habsburg empire that continued ruling Belgium until 1790. Oranges could not be known in Belgium earlier than in the 16th century as only Spanish Moors were growing citrus during this period.

Coriander, on the contrary, could have easily been an ingredient in Belgian beer as it wasn't an exotic spice at all. It had been being cultivated in Europe since at least the second millennium BCE and was a part of *gruit*.

Dutch beer of the 14th-16th centuries would have been half or more oats, which was then the main cereal grain. Additionally, it would have been dark or in the best case, amber, but definitely not pale. However, there are neither oats nor dark malt in *witbier* — at least in the “classic” *Hoegaarden*.

As for the sour taste of beer, late Medieval brewers were able to control the souring of beer without the use of coriander, as both chronicles and reconstructions demonstrate.[2] Furthermore, orange zest might only increase acidity.

Finally, what monks or experimentalists are we talking about? Monasteries by their social organization were obliged to be self-sustainable. This implies growing oranges locally which would be quite unrealistic in a Belgian climate. This does not even consider that it would have been city merchants and guilds, not monks, who would have been the main drivers of innovation in brewing within the 15th-century Netherlands.

The answer to all these questions is quite simple. Though Pierre Celis actually procured a recipe of authentic Hoegaarden beer from Loius Tomsin himself, the newly made *witbier* had nothing to do with the original conception. The Tomsin recipe (nor the earlier ones as well) contains no

oranges or coriander, but does contain oats (though let's be honest, Celis's White beer did include a small proportion of oats until the 1980s).[3]

In 1985, Celis sold the Hoegaarden brand to the Artois company (now AB InBev) and moved to the US, where he opened a new brewery under his own name — the Celis Brewery. American consumers began developing a taste for *witbier*, and soon other brewers started to make it — the above-mentioned Allagash, also Ommegang, Samuel Adams, Bell's, Canadian Unibroue, the mainstream giant MillerCoors (under the "Blue Moon" brand), as well as a host of smaller community brewers.

We are certainly not trying to diminish Celis's achievements. He was a foundational force during the beer Renaissance of the late 20th century. His *witbier* is an elegant and balanced beer style. Still, it had nothing to do with previous generations of Hoegaarden beers. As for the tale about monks adding orange zest to pale beer in 1445, this whimsical story was likely just invented out of thin air.

How to Taste the Authentic Hoegaarden

There is no way, unfortunately. Several authentic recipes of "Belgian white beer" survived (not from the 15th century, but from the 19th). The variant described by George Lacambre in 1851 comprised wind-dried pale barley malt combined with unmalted wheat and oats.[4] Hoegaarden recipes also prescribed inoculating the wort with airborne yeasts (which indicates *Brettanomyces* strains with an implicit sour taste). Gravity and attenuation of this beer would have been quite modest, giving maybe 2.5% ABV. And to follow, the shelf life of this beer was several days, maybe two weeks at the outside.[5] It is no surprise nothing like that is being manufactured nowadays. So your best option is to enjoy Pierre Celis's variant.

Through the Ages

If Hoegaarden is not an authentic Belgian beer, then which one is? Which beer was not solely conceived within the 20th century?

- Pilsners first occurred in Belgium at the very end of the 19th century and gained their market share during the interwar period[6] — a striking contrast to the nearby Netherlands where almost nothing except lager was brewed, not to mention Czechia — historical Bohemia — where the pilsner revolution had ended two decades earlier.

- The main Belgian specialty — strong pale ale — was first brewed in the 1960s. Before that, all strong commercial beers were English-style barleywines.

- The famous monastery (AKA "Trappist") beers were first produced during the interwar period. Of course, many Belgian monasteries had been brewing beer for centuries. However, if we take specific beer recipes, their history will turn out to be much more recent, barely more than a century. (The oldest one is probably *Westvleteren 8*, which was first mentioned during World War I.)

- What is now called "Abbey Beer" (in fact, commercial versions of monastery beers) started as an imitation of the Trappist beers, and therefore is even younger than them.

Almost every kind of beer that now makes Belgium famous was first created in the 1960s or the interwar period, except for a few cases that we will describe in the next chapters. Furthermore, Belgian beer exports gained international market traction even later in the 1990s.[7]

It might appear that we're pushing the readers to a conclusion that Belgian beer culture is but a marketing ruse or grand deceit, but that's not true at all. If we take a look at the nearby Netherlands, we will learn that *not a single historical beer style* has survived post-1960. Only German and Czech-style lager makers can boast of more than a century-long history.[8]

The 1990s success of Belgian beer happened for two primary reasons. Firstly, Belgium was the only country that had preserved its originality. Secondly, it possessed not only a narrative of tradition but also a cultural zeal to maintain and perpetuate it. Unfortunately, at least in part this market emergence and processes were accompanied by active myth-making or sometimes sheer marketing fabrication. As a result, we exist within a paradox: Belgium with its beer diversity had become a Mecca for beer lovers, but it's almost impossible to find any verifiable information regarding those *traditional* beers and their history, even as we consider the recent past.

The Real Story of Brewing in Belgium

The question of why it was Belgium (and not, let's say, the Netherlands) that preserved and improved traditional brewing is definitely awaiting its researcher-champion. What we can say with assurance is that within the history of Belgium itself lie the keys to solving this riddle.

Meanwhile, narrating the history of Belgium until its independence in 1830 is an unrewarding business. One risks drowning in the endless multitude of names and dates. Let us instead state the following: during the preceding ten centuries, Belgium was a territory of conflict between close and not-so-close neighbors, from the dukes of Burgundy to the emperors of Austria. We may speculate that underlying these constant political struggles resulted in a certain Belgian stubbornness and rejection of imposed *alien* traditions.

Another important factor was that as Belgium finally gained independence it was a markedly underdeveloped region of Western Europe. 19th-century Belgium was an eclectic patchwork of rapidly industrializing pockets co-existing with the primitive rural agricultural sector (which included brewing). For example, the above-mentioned “white” (e.g., wind-dried) malt for white beer was made by spreading a thin layer of grain on the rooftops of barns; a method, hardly suitable for large-scale production (because of the necessity to build a myriad of such rooftops, pest control

issues, the dependency on weather, etc.) and thus it was almost not used outside of Belgium.[9]

Of course, the nuances of taxation played their role as well. Belgian brewers paid their levies based on the mash tun sizes.[10] Additionally, not only was beer production taxed but beer transportation as well. Both factors naturally favored small artisanal producers. Opening modern pilsner breweries was a disadvantageous prospect in 19th-century Belgium as they were technologically advanced installations that generated a profit at a large production scale only. As a result, not only was the number of independent breweries stable (unlike England, Bohemia, Germany, or the Netherlands — universally everywhere as beer production became monopolized by large companies), but it was even growing. In 1900, Belgium counted 3223 breweries, 15 thousand beer varieties, 185 thousand pubs (one for every 32 citizens) — and drank close to 200 liters of beer per person per year![11]

It's interesting

As brewing was a major source of income for Belgian cities, town (or village) mayors were often brewers, and their election rivals, competing brewers.[12]

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Chapter 16. White, Yellow, Brown

And still: what did 19th-century Belgians drink exactly? Certainly, it's very hard to categorize fifteen thousand beers, but we may try to highlight some trends and summarize common knowledge. From the parliamentary documents of the time (which mostly discuss the nuances of taxation), one might compile the following table with the prices for the most common beer types:[1]

Beer style	Price, centimes per glass
Bavière	18,00 / 18,57
White (of Leuven)	8,83 / 9,50
Brown	10,34 / 10,72
Brown (of Diest)	9,00
Faro	12,00 / 12,00
Hoegaarden	8,50 / 9,00
Yellow	7,53 / 7,51
Lambic	15,67 / 16,00
Mars	7,50 / 9,00
Peeterman	10,00 / 10,00
Uitzet	10,40 / 11,50

The first number stands for a price of a mug of beer in regions where no local taxes on beer imports (“octrois”) existed, while the second is for regions that levied taxes.

“Bavière” means “Bavaria” in French, e.g. German lagers. As you can see, it was a very expensive beer and common folk couldn't afford it.

Other beers might be rather unappetizingly split into three large categories:

- “White” beers (e.g. brewed from wind-dried malt and unmalted wheat) that we described in the previous chapter; two main “white” varieties were ones of Leuven and Hoegaarden beers, with *Peeterman* being closely related.
- “Yellow” beers (e.g. a bit darker than “white,” usually with a large proportion of wheat in the grist); the most widespread (and cheapest) category of beer, plainly speaking, just regular pale beers (Belgium was one of the most prominent coal suppliers in Europe those times, so making pale malts was not a problem) brewed by small local manufacturers; “Faro,” “Lambic,” and “Mars” were considered “yellow” as well.
- “Brown” (e.g. dark) beers, represented here as simply “brown” with two of its local varieties: one from Ghent (“uitzet”) and one from Diest.

The Full Treatise

In 1851, Georges Lacambre, a French engineer and a Belgian brewer, penned a rather large (more than 500 pages) book named “The Full Treatise on Brewing Beer and the Distillation of Grains,” which we might without any doubt call *the* primary source for any researcher of the Belgian brewing tradition. Among many other things, it features detailed recipes for Belgian beers of that period.

It's not that easy to acquire the text (it exists in a scanned form[2], but the French script is not digitized). However, the book is totally worth it as it provides full and complete articles on period brewing techniques, and also wondrous descriptions of bizarre Belgian eclectics.

Lacambre (who, let us remind you, was a French engineer, and furthermore an apt assimilator of German and English technological advancements) described several important features of Belgian brewing including:

- There was a huge amount of different regional beer styles and their varieties.
- Wheat and other cereals were extensively used (he estimated that three-quarters of the Belgian beer industry output was brewed with wheat):
    - Beer from 100% barley was rather novel. For example, in the chapter dedicated to Leuven, Lacambre points out (with a certain degree of boasting) that the only Leuven brewery capable of producing beer from pure barley was Lacambre's own installation built “several years ago” as other brewers didn't possess the technical means of doing so.
    - Disregarding the fact that the author clearly considers all-barley beer to be more technologically advanced, he still admits that wheat beer sometimes has a “more palatable taste than the barley one, especially served fresh or young.” It even “reaches the subtlety of wine.”
- Belgian artisanal brewing was *quite rational but rather unproductive*.

It's interesting

According to Lacambre, many Belgian beers, including, let's say, *lambic* and Leuven “white” beer had been degraded more than 30 years before the book was written, and in Lacambre's times (the book was issued in 1851) they were already brewed negligently. The final section of the book is dedicated mainly to criticizing Belgian laws that led to the deterioration of the industry ¯_(ツ)_/¯.

How to Taste It

Out of all these beers, three kinds survived the 20th century (being almost intact): *lambic* ("Faro" and "Lambic" itself), *saison* (a subtype of "Mars"), and Flemish brown. We will dedicate a separate chapter to each of them.

Alas, all of the other thousands of unique beer styles were lost. It may come as no surprise that the process of creating traditional Belgian beer involved several dozens of manual artisanal procedures: germinate the malt to three quarters, dry until it reaches an amber hue, get rid of the rootlets, leave it in the open air for three-four days to absorb some moisture, lay a 2-3 inch layer of wheat husks on the floor of the mash tun, strain the wort through the false bottom, and so on, and on, and on. Of course, only the geek-reenactors are following those precise instructions nowadays, and fortunately for us in the 21st century, we've got some authentic brews! News regarding re-creating historical beers is not a daily occurrence but still appears quite regularly. We know about five reconstructions claiming to reproduce old recipes more or less precisely.

1. *Peeterman*: a thicker and darker "honey" variety of Leuven "white" beer ("Peeterman," meaning "men of Peter," was a nickname of the citizens of Leuven, the main square of which hosts St. Peter's Church), being traditionally brewed with wind-dried barley malt and unmalted wheat.[3] Today, *Peeterman* is produced by the Breda brewery from Leuven.

   (A sad story: Leuven is the birthplace of the Artois company that eventually evolved into the world's largest beer producer, AB InBev, the headquarters of which is still located in Leuven. *Peeterman* was a signature Artois beer for many decades. However, the world's flagship brewer discontinued the *Peeterman* production without a second thought.)

2. *Uitzet*: a "brown" beer from Eastern Flanders; in 1798, a Ghent doctor named Wauters wrote a whole treatise on this beer claiming that *uitzet* was invented in Wetteren in 1730. It had a very clear yellow-brown color and in 1791 it saved people of the town from the dysentery epidemic, being an extremely simple and healthy drink.[4]

Today, *uitzet* is produced by the Paeleman brewery in once-saved Wetteren.

3. *Seef*, a "white" beer from Anwerp, which was once so popular that one of the city districts is its namesake.[5]

   Production was reinstated by Johan Van Dyck, a beer enthusiast and coincidentally then a marketing specialist at the Duvel Moortgat brewery, and is now being sold under the "Seefbier by Antwerpse Brouw Compagnie" brand. Oats and buckwheat are included in the recipe, as they should be.

4. *Jack-Op*: a blended beer that was produced by mixing "brown" beer with *lambic*. It enjoyed huge success at the end of the 19th century, and at the beginning of the 21st, manufacturing was resumed under Frank Boon and is being produced by the brewery of the same name.[6]

5. *Zoeg*: a pale sweet beer that *almost* survived the 20th century (it was produced in Tienen until 1955). Three of the five brewery founders were medics, so the beer was known as "the doctors' beer"; according to a local legend, the doctors were rather excessive drinkers so the logo featured a pig[7]. In 2010, the beer's production was resumed by a Tienen entrepreneur, Miel Mattheus, and is now being sold as *Zoeg Tienen* by Brouwerij De Vlier.

(It is probable that there are many more historically-precise reconstructions than these five: at least a dozen other beers are said to have been recreated after authentic recipes. The author of this book leans toward considering them all fantastical interpretations on historical themes — and might well be wrong as it's usually not that simple to check such claims.)

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Chapter 17. Biology and Chemistry

Of all the traditional beer styles of Belgium, *lambic* definitely holds the top spot as the beer possessing the greatest popularity and most longevity. We assume that almost every beer-drinking human in the world has at least vaguely heard about this famous beer fermented with unique yeasts that reside only in the Brussels area (or maybe in the Belgian region of Pajottenland). At the very least they've tried its cherry *cerise* — *kriek* variety.

Surprisingly, despite its universal acclaim, we know very little about the actual history of this beer or its origin. Today we use three different words to denote lambic variants:

- “lambic” itself for the base version
- “faro” to mark young sweetened lambic
- “gueuze” (or “geuze”) meaning the blend of unfruited, young and aged lambics.

Historically speaking, all of these terms still denote subtypes of the very same beer as today, but their meaning has changed over centuries. The oldest one is “faro”: it was first mentioned in 1721 as the strongest Brussels beer. In 1794, the word “lambic” occurred as a designation of the strongest and the most expensive *faro*, and in 1829, the even stronger *gueuze* emerged. All those beers were “yellow,” and were brewed using a significant amount of unmalted wheat. (The proportion of which had been steadily declining throughout the 19th century; we might suppose that with the spread of pale malts the necessity of using expensive wheat to clarify the beer had diminished.)

The word “lambic” was initially spelled as *allembique*. So it couldn't have derived from the town of Lembeek (which sometimes refers to a non-existent “province of Lambic” in popular myth). It seems to be borrowed from Arabic (e.g., “al lembic”), being a variation of the word “alembic,” meaning the distillation device. How exactly lambic was connected to alembic is not yet understood fully. Some scholars suppose that strong and

clear lambic was thought to be a product of distillation by contemporaries; others say it was some slang word. Both hypotheses, however, are just guesswork as we lack any facts one could possibly rely upon.[1]

Still, why were faro/lambic/gueuze unusually clear and strong beers? As we have learned from the "Barrels and Bretts" chapter, the main practical method of achieving both characteristics was aging of the beer in barrels where it underwent secondary fermentation caused by "wild" yeasts. The technology was well-known in 17th-century England, and it had probably reached Belgium in the 18th century.

Beer Myth

It is often said that lambic has been known since at least the 15th century, despite the fact the word first occurred in 1794. Also, it is often quoted that peasants in the Peter Breughel the Elder paintings were drinking lambic — though no actual fact supports this claim.

The Belgians, however, went much further in embracing wild yeast-driven beer ageing than the English brewers. If "bretts" were rather unavoidable in stock beer manufacturing, the lambic brewers were deliberately adjusting recipes to adopt fully spontaneous fermentation — at least as the 1829 and 1834 articles fully describe. To achieve this goal, the wort was poured into wide shallow vessels ("coolships") and left in the open air exposed to the atmosphere. After that, future lambic was placed in a controlled environment — plainly speaking, into a barrel with a fixed oxygen exposure — and left in fermentation for at least a year. In fact, the production of lambic may be viewed as the process of controlled spoilage of wort.[2]

Scientists tried to study in detail the microbiology of lambic at least twice. The first attempt was made by researchers from the University of Leuven in 1977.[3] It turned out there were at least four different stages of fermenting, each dominated by different types of microorganisms.

1. *Enterobacteria* are first to start consuming dissolved sugars breaking them down into lactic acid, acetic acid, and ethyl alcohol; amino acids — into amines, peptides, myristic and linoleic acids. *Enterobacteria* dominate the first days of future lambic's life, and then *Kloekera apiculata* yeasts join them, which consume glucose and produce the protease enzyme that helps to break down complex proteins.

2. In two weeks' time, both bacteria and *Kloekera* are superseded by regular baker's yeasts. At this stage, normal alcohol fermentation happens: glucose, maltose and maltotriose are converted into ethyl alcohol and different saturated fatty acids such as caprylic and capric ones.

3. Over the next four months, lactic acid bacteria (mainly of *Pediococcus* genus) dominate. They significantly increase acidity by producing lactic acid, acetoin, and diacetyl.

4. Finally, starting from the ninth month, “bretts” suppress the growth of the remaining microbiota and start slowly but steadily reprocessing everything generated at the previous stages — including lactic, acetic, and other acids — emitting complex esters that are responsible for the unique taste and the aroma of lambic.

And that's not all: apart from the above-mentioned, the additional yeasts of *Pichia*, *Candida*, *Hansenula*, and *Cryptococcus* genera as well as other microorganisms are making some contribution. To brew a proper lambic, you can't rely on just one particular kind of yeast but a package of specific lambic biota.

In 2014, another group of researchers repeated the experiment. The results were controversial: though the stages remained the same, the specific types of microorganisms dominating each stage were totally different,[4] which inevitably leads us to the next question.

Mixing, Mixing...

Taken from the above, it should be obvious that lambic is an extremely complex product to conceive. It is definitely not a Medieval beer but rather an outcome of the stock ale technology evolution, which unlikely might have emerged before the 18th century. (Usage of just wheat and barley, without oats, spelt, or buckwheat that were a characteristic of earlier Belgian and Dutch beers, actually tells us the same story: lambic was quite a new and advanced beer style.) We should rather ask ourselves: how was it possible to produce such an elaborate product in those primitive conditions without precise measuring tools? How could one determine if the fermentation stages in young lambic developed properly?

Certainly, brewers might regulate oxygen exposure thus suppressing or buffering the growth of specific microorganisms. Weather provided some control as well; in particular, the increase of lactic acid's presence corresponds with warm summer months. Of course, the brewers' books from those times contain lots of tips and tricks on how to mitigate undesirable changes; for example, to counter the over-increased acidity, adding eggshells was prescribed, though we might guess its benefits as dubious. Still, one extremely effective tool was available: blending, or plainly speaking just mixing up different batches of the beverage. Lacambre wrote that the brewer's job was a very difficult one as every barrel of lambic possessed its own unique taste.[5] To achieve consistent quality, vast experience (and luck) was required, and few brewers were able to do it well.

The blending of lambics apparently led to changing the meaning of the words. Let us remind you that “faro,” “lambic,” and “gueuze” up until the second half of the 19th century referred to the grades of lambic “elitism”: faro was less strong and aged less, while gueuze was the high-end quality beer matured for 5 years. But why make several versions of the same beer if you can just mix it up? That's how the late-19th century faro was born, as a blend of lambic with young “March” beer with an addition of sugar for continued fermentation.

With gueuze, the story is even more curious. At some moment, the unknown experimenters had applied the *champagnization* technology to lambic — as one might guess, the same one used for making sparkling wines. Namely, young lambic (containing residual sugars) was blended with an aged one and the blend was left maturing in bottles, so carbon dioxide couldn't escape the vessel as it happens with barrels. The result exceeded expectations: the “beer champagne” was not only sparkling, strong, and clear, but also cost a third less than five-year-old lambic. So at the turn of the century the word “gueuze” became associated with the new champagne-like blend, and barrel-aged queuze quickly disappeared.

How to Taste It

Lambic is probably the only beer that is nowadays produced exactly as it was made in the 19th century, maybe even the 18th. The Holy Grail for lambic beer acolytes are the lambics made by Brasserie Cantillon. Though founded not so long ago, in 1900, Cantillon (the only operational lambic brewery in Brussels) continues to make beer in accordance with the original artisanal technology, including the proverbial pumping of the wort into coolship to capture the airborne microbiota. It's rather hard to find Cantillon, but that is perhaps the most authentic lambic beer in the world. They don't even use refrigeration and only make beer in proper weather conditions.

Apart from Cantillon, there are several lambic breweries that have equally honorable histories:

- their main rival 3 Fonteinen, founded in 1883
- Girardin and Oud Beersel, known from 1882
- even older, Lindemans *Faro* and De Troch *Lambic* (the latter being sold under the brand name “Chapeau”), first mentioned in the 1820s.

Exclusive of the historical enterprises, today's lambic is made by many contemporary Belgian manufacturers and craft breweries alike.

Pure unblended lambic is rarely sold (though it might be found if one really wants it: Cantillon, 3 Fonteinen, and Boon are selling unmixed lambics), and it's primarily blends that you might find for sale: faro, gueuze, and fruited varieties.

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Chapter 18. March

“Lambic,” “faro,” and “gueuze” were evolving terms and somewhat interchangeable in their meaning, but still referred to the same production methods. With “March” beer it's more complicated. The word “March” was used to denote different beverages that had one common feature — the timing. The first month of spring was traditionally considered to be the best time for brewing, as stable low temperatures allowed for making the finest beer. In Belgium, they used the “March” designations (“Mars,” “Meert,” “bière de Mars”) for keeping beers — aged for four to six months: weak lambics and so-called “saisons” (or “bière de garde”).[1] The main difference between lambic and saison was that the former was fully fermented spontaneously, absorbing the “wild” airborne microorganisms, while the latter first received standard yeasts, then surrendering to the “bretts” after primary fermentation.

(There is also a German “March” beer — *Märzen* — but it's a lager.)

The first saisons were brewed in Liège at least from the beginning of the 19th century. Liège saison was dry, relatively strong, and, as a typical product of the period, contained a large proportion of spelt malt and unmalted wheat. At the end of the century, saisons became popular in Charleroi and other towns of the Hainaut province, though the word did not strictly refer to a specific style, but rather just keeping beer in general: darker beer could be marked as “bruin saison” as well.[2]

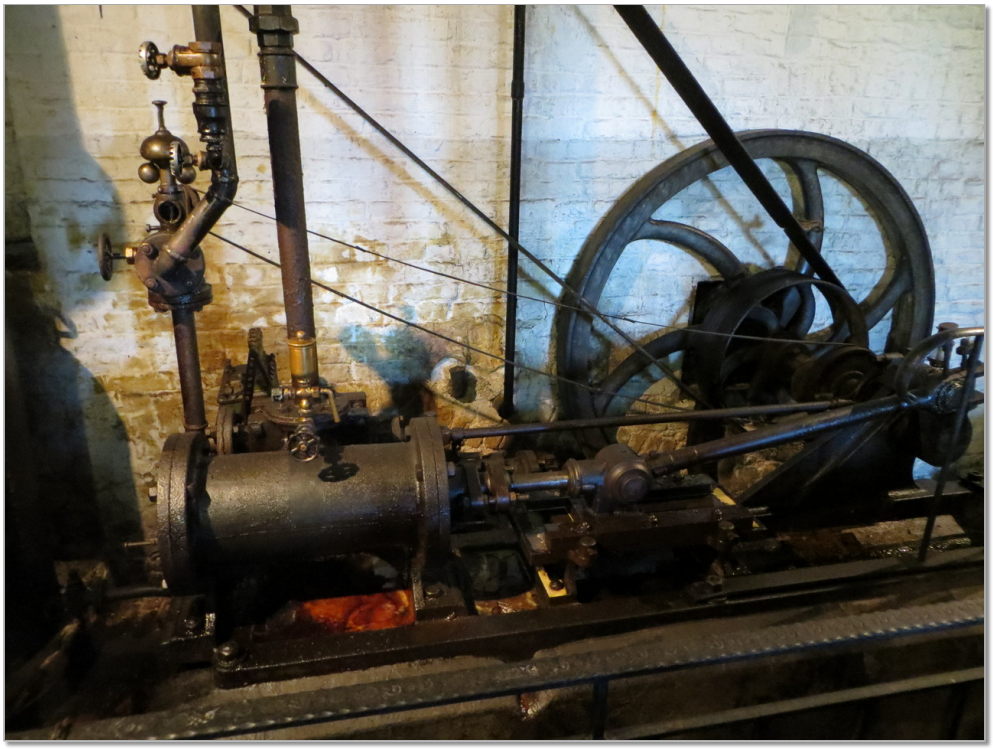
However, it later had a more specific meaning: pale beer for keeping (implying mixed fermentation, partially fermented with “bretts”), dry, and made from barley and wheat. Closer to the end of the century it became almost indistinguishable from “grisette” — initially, cheap dark beer for miners.

How to Taste It

Three companies have continuously brewed saison for more than a hundred years. They are:

- Brasserie à Vapeur with their *Saison de Pipaix*
- Brasserie de Silly with *Silly Saison*
- Martens from Limburg that produces a bunch of *Sezoens* beers.

The Brasserie à Vapeur is also notable for the 19th-century Watt steam engine that still powers all the mechanisms in the brewery. (The words "à Vapeur" literally mean "steam-powered.")



The 19th-century steam-powered engine installed in the Brasserie à Vapeur. Image Credit: **Bernt Rostad**

The 19th-century mash tun installed in the Brasserie à Vapeur. Machinery operates on steam power.. Image Credit: **Bernt Rostad**

Many other Belgian breweries are making saisons nowadays, most notably *Fantôme Saison* and *Saison Dupont*. Among craft brewers, Hill Farmstead and Two Side Project have made saisons their specialties. French versions of the style known as "bière de garde" are being produced by Brasserie 3 MONTS and Brasserie Duyck, to name a few.

Grisette also enjoys some demand, though it's rather hard to observe any major differences between modern saison and grisette.

Seasonal Confusion

And one more thing: saison turned out to be the primary victim of dilettante historians. Nearly everything written about it (both online and offline) is untrue. If you research information on this beer style, you will learn that it was made by farmers during winter and spring using their own grain to be consumed by seasonal workers in the summer and autumn

months, and that it was a typical beer from the Hainaut province. In fact, it was quite the opposite[3]:

- First, the beer was made by professional brewers from commerical grain; saisons were actively sold to other regions and countries, and even participated in international expos and competitions.
- Second, its origins in Hainaut began much later than in other regions; "saison" beer was known in Liège from at least 1832, while the oldest mention of making it in Hainaut comes from 1858.

Lastly, the Lacambre treatise doesn't mention any farmhouse production of saisons. In 1851, "saison" meant Liège beer made from spelt and wheat in winter or early spring, aged 4-6 months (if the beer was brewed in March itself, it was aged until the end of the year).[4]

Despite the fact that literally no evidence suggests that saisons were brewed by farmers (why would they bother making such a complex and capricious beer?), the entire category of these mixed-fermented beers is now known as "farmhouse ales." And *grisette* is told to be "a saison for miners," whatever this might mean.

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Chapter 19. Turning Red

Our knowledge of the third authentic Belgian beer style, the Flanders brown, is even more sparse than the data on lambic and saison, given that the latter has been pieced together, bit by bit. The first known mention of the Flanders brown comes from the recipe omnibus of 1829. It reveals only that the beer was all barley malt beer and that it was boiled for a long time (from 15 to 30 hours) to achieve a characteristic brown color.[1] Lacambre's treatise additionally specifies that the beer was ready to consume after two or three months' conditioning,[2] which makes the Flanders brown another kind of keeping beer (which implies additional fermentation with “bretts”).

Even the 1879 recipe book merely reiterates Lacambre's words; apparently, the Flanders brown was but a local variety of “brown” beer of little interest to the wider public. However, in the 1880s the situation changed dramatically. The style became immensely popular thanks to the efforts of Eugène Rodenbach from Roeselare. After completing his training in England, the young Rodenbach became a partner in the family brewery (which belonged to his father, Edward) and refurbished it in accordance with the latest British production trends. Specifically, he started to leave the beer for additional maturation in large wooden barrels called “foeders” (often those that previously housed wine, cherry brandy, cognac, or other grape-based alcoholic drinks)[3]. Some sources claim the idea was borrowed from the Greene King brewers that are still producing similar-looking beer.[4]

The foeders in the Rodenbach brewery cellar. Image Credit: **Dirk Van Esbroeck**

Interestingly, until the 1880s, Rodenbach beer was considered an *uitzet*, and it likely became acknowledged as a separate beer style largely due to Eugène's improvements. Consumers developed a taste for the new recipe, and at the beginning of the 20th century, local producers started to replicate it. The most successful were the brewers from Oudenaarde: their beers were hailed as equal to wine[5] (an unprecedented compliment to beer!). The beer-makers took this designation as a compliment, using it extensively in their advertisements, even adopting the motto "It's wine!"

From the 1880s until now, Rodenbach beers are made utilizing the following process[6]:

- During the first seven days, primary fermentation is carried out with regular baker's yeasts (though the microorganisms package used in the brewery comprises several quite specific *S. cerevisiae* strains as well as several other species of the *Saccharomyces* class and some *Lactobacillus*);

    - Unlike lambics, the Flanders brown at this stage contains no traces of *Enterobacteria* and acetic acid bacteria, which results in lower acidity.

- Then the working beer is transferred into the vessels for secondary fermentation to age for 4 to 5 weeks, wherein it is exposed to *Lactobacillus* (in particular, *Lactobacillus delbrueckii* subsp. *bulgaricus* which is used to make yogurts).

- Then it's *foeder* time, where the beer undergoes the classical tertiary fermentation with *Brettanomyces*.

- The final product is a blend of young and matured beers (other breweries might mix strong beer with a weak one, or with lambic).

Though the process of making it closely resembles the making of porter (which actually makes Rodenbach a better approximation of historical porter than modern beverages carrying this name), there are several important differences:

- Porter-making requires a lot of hops, both for speeding up the maturation of the beer and for beating off unpleasant odors due to cheap raw materials while the Flemish brewers often use a minimal amount of hops so the resulting bitterness is below the threshold of human perception.
- Malt gets the proper taste, aroma, and dark color with additional boiling for many hours (the tradition dating from the 18th century at least); the Rodenbachs, in particular, for a long time had been producing quality malt in their own malting kiln installed on the brewery grounds.

The old malting kiln (nowadays a museum) at the Rodenbach brewery, constructed in 1872. Image Credit: **Zeisterre**

The resulting beverage is rather well-balanced, with its acidity parameters indeed comparable to wine.

How to Taste It

The legacy of the founding fathers of Flanders brown is still thriving today. We're talking primarily about two breweries:

- Rodenbach of Roeselare
- Liefmans of Oudenaarde, with their Liefmans *Oud Bruin*.

Apart from Rodenbach and Liefmans, some other brewers have been making Flanders brown since the 19th century:

- Brouwerij Roman with their *Adriaen Brouwer Audenaerds Bruyn* (a truly legendary brewery founded in 1545, and still run by the Roman family)

- Brouwerij Omer Vander Ghinste with their *Oud Bruin*; they also produce another popular (though relatively novel) variety of the style named *Cuvée Des Jacobins*.

Alongside the historical brewers, there are several modern interpretations of this Flemish classic:

- *Bourgogne des Flandres* (made under Timmermans brand owned by John Martin Brewery)
- *Duchesse De Bourgogne* by Brouwerij Verhaeghe.

Both names point to Burgundy, thus reminding us firstly of the times when Belgium was a part of the Duchy of Burgundy in the 14-16th centuries, and secondly of Burgundian red wines.

And of course, many craft brewers produce this beer as well; the most popular ones are American: The Lost Abbey and Bruery Terreux.

What's in My Name

If one closely peruses the beer labels, they will surely notice that it's usually “Flanders red” (“rood”) and not “brown” (“bruin”). However, in the 19th century, it was just “brown,” with no other naming. It looks like the beer became “red” simply because the famous writer, beer enthusiast, and author of “The Great Beers of Belgium,” Michael Jackson (not to be confused with the famous singer) decided so. The brewers had no other choice than to follow his lead.[7] The division into “red” and “brown” varieties is now stated in the dictionaries and classifications, though no one can tell for sure if a difference in fact exists.

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Chapter 20. Spéciale Belge

Apart from its rich history and peculiar legislation, one more factor contributed heavily to the Belgian beer heritage: the Belgians are persistent, stubborn even, in preserving their national tradition.

During the last decade of the 19th century, with the intimidating advance of foreign beers and German lagers in particular — beer imports more than tripled from 1891 to 1903, — Belgian citizens hadn't sat on their hands. In 1901, the Union of Belgian Brewers put forth the idea of creating a national beer style that would compete with Munich, Pilsen, and Dortmund lagers (and also British ales). Cooperating with the Belgian brewery schools association, they agreed to a national competition in 1904 and announce the winners at the 1905 World Expo to be held in Liège.

Official poster of the 1905 World Expo in Liege. Public Domain

Accounting for the capabilities of the local brewing industry as well as the realities of the time, the organizers determined the guidelines thus: the new beer was to have an original gravity between 1.045 and 1.050 (which implies around 5% ABV) and cost 15 to 25 centimes per glass. Initially, these requirements met widespread criticism as they were uncharacteristic for the period (the typical gravity of the end-19th century Belgian beers was much less than that). However, the organizers stuck by their decision: the new beer must comply with modern lager and bitter parameters. History has proven they were absolutely right![1]

All in all, 73 breweries participated in the contest. The winner was *Belge du Faleau* by Brasserie Binard from Châtelineau, and the style became known as "the Belgian special" (*Spéciale Belge*). It was a light warm-fermented amber beer, made from slightly roasted pale malt. Soon, many other breweries started to imitate the style.[2] However, it became truly popular after the World War I, once the large manufacturers started to produce it: Affligem Brewery in 1925 and Palm Breweries in 1928.

How to Taste It

Today, *Spéciale Belge* is a protected "regional product" designation given to just five beers.[3] Four of them have been in production for a century or more:

- *Spécial* De Ryck and Contreras *Tonneke*, both made since 1920.
- The Belgian special by the Palm Breweries, which is simply marked *Palm* — probably, the most canonical one.
- The famous *Bolleke* by Brouwerij De Koninck — the iconic beer from Antwerp; produced since 1925, it was known as simply *De Koninck* until the 2019 rebranding (originally, *bolleke* was a brand-name of De Koninck glassware).
- The last one is *Spéciale De Poes* made by the modern brewery Brouwerij De Poes.

References

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[2] Persyn, D., Swinnen, J.F.M., Vanormelingen, S. (2010), p. 5

[3] https://www.streekproduct.be/weetjes/amberkleurige-speciale-belge-ale-bieren-behoren-tot-onze-rijke-biertraditie

Chapter 21. The Rose of Brussels

One more universally acclaimed beer style (a set of styles, to be precise) also tracks its history from the beginning of the 20th century: *fruit lambic*. We would likely not be far off base if we say that it's the most popular Belgian beverage in the world. Even those who hold scant interest in beer have heard something about fruited lambics.

Some sources claim that brewers used cherries in brewing during the 18th century.[1] However, those cherry beverages would have had limited popularity. Overall, there is no traceable continuous tradition. The oldest known recipe of *kriek lambic* was published in the "Petit Journal du Brasseur" in 1907 and required blending lambic in wooden barrels with macerated cherries for 4 to 5 months and then additionally maturing in bottles for at least half a year.[2] Though the style should have enjoyed some popularity at this point in time, it unlikely exceeds the turn of the 19th and 20th centuries.

Two years later, raspberry beer came into play: the *framboise*. Paul Cantillon wrote that he had had more barrels of raspberry lambic than of cherry. Looks like the public's tastes were changing rapidly and unpredictably. This fashionable impetuousness continued so that *framboise* was already forgotten by the 1930s, and was restored only in 1973.[3]

Fruit lambic of the 1970s was much paler than the modern one and was often used as a cocktail base (for example, the mix with the strawberry liquor was known as "Kir Brussels"). Jean-Pierre Cantillon started experimenting with visuals, finally choosing a gentle pink hue. In turn, it inspired Belgian watercolorist Raymon Coumans to draw a famous frivolous label for the beer, depicting a naked woman with skin the color of roses sitting on the lap of mythical king Gambrinus. Coumans made the artwork after taking Cantillon's word the beer would be renamed to *Rosé De Gambrinus*.[4]

It's interesting

For the US market, the label was considered “indecent and obscene,” and Coumans had to cover the woman with a long light-blue dress — remarking “but most importantly, and the Americans need to know this, underneath the dress she's in the buff.” Playboy Magazine even published an article, comparing the two variants of the label.

In the 1980s, with the Cantillon beer's popularity growing, fruit lambic had entered a Renaissance. Brewers started to make it using every kind of fruit available: peaches, black currants, grapes, strawberries, apples, bananas, pineapples, apricots, plums, blueberries, lemons, and even kiwifruits and cloudberries.

How to Taste It

It looks like the only *kriek* that existed before the 1980s is Cantillon *Kriek*. It's rather hard to find it, and it's a brave man's beverage as Cantillon doesn't sweeten their beers. Conversely, the only authentic *framboise* is Cantillon *Rosé De Gambrinus*.

Interestingly, the 1907 recipe recommends using not just any cherry but a very specific variety — that of Schaerbeek. Some brewers are nowadays producing *kriek* made specifically with the Schaerbeekse cherry:

- 3 Fonteinen *Schaerbeekse Kriek*
- De Troch *Oude Kriek*
- Hanssens *Scarenbecca Kriek*
- Oud Beersel *Schaarbeekse Oude Kriek*

The notable exclusion to the rule is none but Cantillon *Kriek* itself, which utilizes Turkish cherries. However, they still use the Schaerbeekse variety in their line-up under the *Lou Pepe* brand.

Fruited lambic is nowadays produced by many other breweries, both in Belgium and abroad. But be warned: the terms “kriek” and “framboise” are not protected designations, and the base beer could be anything. Many cheap “krieks” are actually sweetened lagers. Choose carefully and search for beers explicitly marked as “lambic.”

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[3] Lambic.Info. *Cantillon Rosé de Gambrinus*
https://www.lambic.info/Cantillon_Ros%C3%A9_de_Gambrinus

[4] ibid

Chapter 22. Not Brewers

Before we continue on to the next Belgian beer style, we must make a journey into the distant past. Let us remind the reader that in the early Middle Ages King Charlemagne (through the efforts of his heir, King Louis the Pious) promoted the Rule of St. Benedict in his kingdom. The monks of this order were known as "the Benedictines."

However, several centuries later, some theologians began to express their dissatisfaction with the liberties the Benedictines allowed themselves. In 1098, the Cistercians emerged — those who strictly and obediently adhered to *what they perceived* Benedict of Nursia's mandate to be.

However, several centuries later, some theologians began to express their dissatisfaction with the liberties the Cistercians allowed themselves. In 1664, the founder of the La Trappe monastery in France, Armand-Jean de Rancé, further reformed the cloister's way of life. He introduced the strictest rules: mandatory hard physical labor, the vow of silence, a spartan diet, and isolation from the outside world. Rancé's followers started to call themselves the Cistercians of the *Strict Observance*, or the Trappists (after the La Trappe monastery).

In 1790, during the course of the French Revolution, monastery property was secularized, and the French-led abbeys, including the Trappist ones, were disbanded. Monks initially moved to Switzerland, but, during the Napoleonic Wars, almost all Swiss, Dutch, Belgian, and German abbeys were disbanded, if not destroyed. Friars were able to return to their customary lifestyle only after Bonaparte's fall, when they rebuilt their monasteries — both in France and abroad. La Trappe itself came under the Brotherhood's control in 1815 and was reconsecrated in 1832.

Throughout their history, the Trappists have brewed their own beer (and made their own cheese) as they were very strict about fasting. So it may not be surprising that they started to build breweries in all the newly created or restored monasteries. In 1836, the brewery at the **Abbey of Our Lady of the**

Sacred Heart in Westmalle opened, and another in 1839, at the **St. Sixtus' Abbey in Westvleteren**. Both abbeys were located in the territories that became parts of the newly created Kingdom of Belgium. During the 19th century, the Trappists built or restored many other monasteries, and several of them started to brew beer. Some percentage of the output was sold in the local vicinity (for example, in 1870, the physicians praised the strong beer from the **Scourmont Abbey in Chimay** for its curative properties).[1] Historically speaking, however, the influence of Trappist brewing (and monastic brewing as a whole) in Belgium was negligible. For example, Lacambre didn't mention any abbey beers.

Despite being an isolated community, the monks nevertheless kept pace with technical progress. Particularly, Father Dominic from the **Abbey of Notre-Dame de Saint-Rémy in Rochefort** studied in Leuven, and at the beginning of the 20th century even won several medals in brewing competitions.[2]

The Specificities of the Belgian Prohibition

Soon, however, Belgian beer diversity suffered two crushingly hard blows in a row. First, during the First World War, many breweries were closed, their equipment confiscated, and production banned. Second, after the war, Belgium adopted its prohibition law.

The regulation of 1919 was primarily aimed at *jenever* and other strong alcoholic beverages. It was prohibited to sell them in bars and other public places. Still, the consumption of beer, which was heavily taxed, dropped dramatically as well. The law was strict, however *imperfect*. It did not take into account how strong a beer was (probably because a typical Belgian beer from that time had quite modest alcohol content, around 3% ABV). As a consequence, the demand increased for strong beers (including monastic ones).

In 1922, the monks from Westmalle literally invented a new type of beer which they called “dubbel.” It's rather hard to explain this phenomenon — of all Belgian and world brewers, why was it monks who defined the new fashion? What they created is considerably more “craft” beer than many contemporary *products*.

Technologically speaking, *dubbel* is a dark beer with an addition of caramel syrup (“candi sugar” — not to be confused with raw sugar chunks that are called “rock candy” by Americans) to the wort, and fermented twice. After the primary fermentation is finished, fresh yeasts and more syrup are added, and the future beer is bottled for the secondary fermentation. Undisputedly, all the elements taken individually were already known — dark beer, syrup, yeasts, bottle conditioning, etc. — but, as a whole, the process is a unique invention having no direct predecessors.

The result of this double fermentation is a rather strong (initially the strength was around 5% ABV, then it gradually reached 7%), soft, full-bodied, and surprisingly smooth beer — a signature product of Belgian monastic brewing.

How to Taste It

The Abbey of Our Lady of the Sacred Heart continues producing this beer under the *Westmalle Dubbel* brand. Apart from it, five other Trappist monasteries brew *dubbel*:

- the Scourmont Abbey with *Chimay Rouge* beer
- the Abbey of Notre-Dame de Saint-Rémy with *Rochefort 6*
- the St. Sixtus' Abbey with *Westvleteren 8*
- the **Koningshoeven Abbey**, under the brand name *La Trappe Dubbel*
- the **Engelszell Abbey** (*Stift Engelszell Benno*).

Of course, many secular brewers are making *dubbel* as well. First of all, we should mention *Pater 6* by St. Bernardus. Westvleteren monks outsourced the beer production to this brewery that prepared it for the monasteries from 1946 to 1992 (and physically located on the street called

“Trappistenweg”). Another one, *Achel 8° Bruin*, was produced by the **Saint Benedictus-Abbey in Achel**, but the brewery had lost the Trappist logo as the monastery itself closed (though, the Abbot of Westmalle comes to Achel once a week to oversee the production).

Apart from those, we might mention Belgian *dubbel* by Corsendonk (*Pater*), Duvel Moortgat (*Maredsous 8 Brune*), Grimbergen, Bornem (*Double*), Affligem, Petrus, Val-Dieu (*Brune*), St. Feuillien (*Brune*). Of course, American craft brewers that specialize in Belgian beers are making it as well: Unibroue (*Maudite*), Ommegang (*Abbey Ale*), Allagash, and others.

Strict Observance

There is a big difference between real Trappist beers and those who imitate them. To have a right to the “Authentic Trappist Logo” sign, three conditions must be fulfilled:

- The beer is to be brewed within the Trappist monastery walls by the monks themselves or under their supervision.
- Brewing must be a secondary occupation and must not affect the monastic way of living.
- The venture must not make any profit as any income above the monastery's needs shall go to charity.

The Saint Sixtus Abbey in Westvleteren even forbids re-selling their beers. They must be bought in the monastery for a fixed price. The bottles have no labels (which of course does not stop profiteers from smuggling them; today, the bottles with the recognizable caps might be bought in many large cities). The Westvleteren monks even had a motto: “We are not brewers. We are monks. We brew beer to be able to afford being monks.” As time passed, it became more laconic: “We brew to live, not live to brew.”

Today, Trappist monks are usually indirectly involved in brewing, taking a supervisory role in the process. In most monasteries, the head brewer position is occupied by a civilian manager (though it was monks who established the basics — let's say that Father Theodor from Chimay had

selected the yeast strains suitable for making monastic beers with his own hand). Still, running a Trappist brewery *implies restrictions*. Jacques Petre, the former head of the Orval brewery, described the contradictions: “Before anything happens, you have to explain it to the monks, you have to explain it to the board, you have to explain it to the workers, you have to explain it to everybody. It takes time, and for a monk time doesn't exist in the way it does for most people.”

When Trappist beers gained popularity, many brewers, both conscientious and not-so-conscientious, started marking their beers as “Trappist” to exploit the monasteries' reluctance to increase the output. The monks, who were always very zealous regarding the quality of the product sold in their name, organized the International Trappist Association in 1997 and codified the aforementioned rules for obtaining the “Authentic Trappist Product” logo.

Initially, the Association comprised eight abbeys:

- Orval, Chimay, Westvleteren, Rochefort, Westmalle, and Achel in Belgium
- Koningshoeven in the Netherlands (sells beer under the “La Trappe” trademark)
- Mariawald in Germany (though it has already ceased production at that time).

Today, there are 20 abbeys in the Association, of which 11 brew Authentic Trappist beers. Apart from the above-mentioned, they are:

- The monasteries of **Zundert** in the Netherlands and Engelszell in Austria
- The **Abbey of Saints Vincent and Anastasius** in Italy (makes the *Tre Fontane* beers)
- The **Mount St Bernard Abbey in England** (the *Tynt Meadow* brand).

Three more breweries sell beer but have no rights to the logo:

- The above-mentioned Achel

- Mont des Cats in France (beers under this brand are actually brewed by Chimay)
- Cardeña in Spain (the production site is located outside of the monastery, which is disallowed by the rules).

One more brewery — once run by the **St. Joseph Abbey in Spencer**, USA — had been making Trappist beers for eight years and was closed in May 2022.

11 Trappist beers. The orange-capped bottle with no label is Westvleteren XII. Image Credit: **Philip Rowlands**

By the way, the Association members also produce many other Trappist products: bread, yeasts, soap, chocolate, cookies, honey, jam, liquors, mushrooms, olive oil, wine, cheese, and many other things, from ceramic jugs to canned quinces from monastery gardens.

References

[1] Hieronymus, S. (2005), p. 33

[2] ibid, p. 36

Chapter 23. The White Cap

After *dubbel* was established, Westmalle carried on. In the 1920s and 1930s, the Trappists closely cooperated with civilian brewer specialists, most notably with Hendrik Verlinden. He was a writer and beer expert who promoted the scientific approach to brewing beer in general and yeast selection in particular. After the First World War ended, yet another wave of pale lager offensives on Belgian soil began, and Verlinden was one of those who sought an alternative. In collaboration with the Westmalle monks, he created a beer style that was later called "tripel" (sometimes spelled as "triple" or "trippel"). This style elaborated on light abbey ale with an increased alcohol content (typically, around 8%) with the *dubbel* technique of adding *candi sugar* and conducting secondary fermentation in bottles. Like *dubbel*, *tripel* is highly drinkable as it isn't as thick as comparable strong beers like barleywine or imperial stout.

Verlinden released his own *tripel* under the *Witcap Pater* brand in 1932, and that was the single case wherein monks allowed a civilian to borrow the "Trappist beer" designation. Westmalle released their version of *tripel*, named *Superbier*, one year later in 1933. In 1956, *Superbier* was renamed simply *Tripel*. At this exact time, the first and only correction of the recipe occurred: brother Thomas decided to add more hops to *tripel*. Since then, the *Westmalle Tripel* recipe has never changed.[1]

How to Taste It

Both original versions of *tripel* are still produced. *Witcap Pater* is now made as *Witcap Tripel* by the Slaghmuylder family brewery, and *Westmalle Tripel* is still being prepared under the Abbey of Our Lady of the Sacred Heart monks' control. Other Trappist breweries are making *tripel* as well: Chimay, La Trappe, and Tre Fontane, though the last one is rather far from the "golden standard" of Brother Thomas.' St. Bernardus, Achel (as *Achel 8° Blond*), and Cardeña also make it.

Of course, many civilian brewers, both Belgian (Duvel Moortgat *Maredsous 10*, Gouden Carolus *Tripel*, etc.) and American (Unibroue *La Fin Du Monde*, Allagash *Curieux*, New Belgium Brewing Company *Trippel*, Samuel Adams *New World Tripel*, etc.), produce *tripel* as well.

Also, an interesting variation of *tripel* under the brand name *Tripel Karmeliet* was introduced in 1996 by the Belgian Bosteels brewery (owned by AB InBev). They claim that the recipe, dated back to 1679, was found in the Carmelite monastery, and is solely unique from the Trappist *tripel*. It is perhaps a bit of *market deception*: though the historical recipe does exist, and includes the same proportion of barley, wheat, and oats as used in *Tripel Karmeliet* production, no mass-produced pale ales or bottle conditioning could have been known in 17th century Belgium. Nonetheless, it is still a very interesting (and tasty!) beer.

References

[1] Hieronymus, S. (2005), pp. 71-73

Chapter 24. The Valley of Gold

Alongside Westmalle and Westvleteren, monks were creating beers in another truly legendary monastery: the Notre-Dame d'Orval Abbey in the Belgian province of Luxembourg. According to a legend, the name “Orval” and the land's coat of arms descend from Queen Mathilda of Tuscany who accidentally dropped her wedding ring in a local spring. As the queen was recently widowed, she grieved the ring's loss greatly and kept praying to God. Suddenly, a trout appeared bearing the ring in its mouth. “It's truly *the valley of gold*,” the gladdened queen exclaimed (“Val d'Or” in French), and decided to found a monastery there. In commemoration of this legend, both the monastery's coat of arms and the beer label feature a trout bearing a ring in its mouth.

Throughout almost a thousand years of history, Orval has been a home for the Benedictines (who came from Calabria in 1070), the Cistercians (that settled there in 1132), and the Trappists as well. The monastery has burned down thrice (in 1252, 1637, and 1793) and remained in seemingly endless ruins until finally the land was given to the Trappists in 1926. Soon, the new building was erected — with a brewery, as one might have guessed. The first chief brewer, Martin Pappenheimer, came from Germany, and his assistant, John Vanhuele, from East Flanders (he had also worked a lot in England). Together in 1932, they created a truly miraculous beer. Today we would call it a “fusion” of German, Flemish, and English traditions, enhanced with the latest Westmalle friars' developments. Unlike other beers, *Orval* claimed neither a legendary origin nor derivation from some ancient recipe, as such recipes simply do not exist.

The ingredients needed to make *Orval* comprise five types of malt, *candi sugar*, and classical Styrian Goldings and Hallertau hops. The beer is to be fermented thrice. First, a regular warm fermentation for five days, then, a package of fresh yeasts (a mix of baker's yeasts and *Brettanomyces*) and more hops are added to ferment for another three weeks. Finally, before bottling, more sugar syrup and yeast are added to work for yet another month —

which is a clear homage to saison (see the “March” chapter), probably introduced by Vanhuele.

What is even more remarkable, it's not the ingredients that define the spirit of *Orval* — it's the *Orval* spirit that defines the ingredients. Jean-Marie Rock, a brewmaster at Orval for 28 years, told that each year, similar to what Michelin chefs do, he tasted the new harvest's grain samples to select those suited best to recreate *that* taste.

“Bretts” (which are, by the way, “local,” e.g. gathered in the Orval valley) comprise a small share of the yeast package that is added during secondary and tertiary fermentations, but their effect is long-term. *Orval* is considered to be fully ready to drink in nine months after bottling, once the *Brettanomyces* have finished their job[1] (out of the author of this book's experience, that's not enough: it requires several years to fully develop *the Orval taste*).

How to Taste It

The obvious choice is of course *Orval* itself. However, in recent years it has become notoriously hard to find it. And as for the substitutes… well, it's complicated.

For a long time, *Orval* was considered just a Belgian strong pale ale despite having little in common with other beers of that kind. The only attempt to replicate the recipe was made by the craft brewers from Mikkeler who released the mockingly-named *Årh Hvad?!* beer (later renamed *Hva Såå?!*); the author of this book testifies that the copy was easily distinguished from the original by look alone, to say nothing of the taste.

Recently, however, a notable amount of “*Orval*-like” beers emerged, and louder became the voices of those who propose to name *Orval* a beer style in its own right[2] — which we hope will soon happen. There is a special “orval-clone” tag on Ratebeer for these beers.

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[2] Boak & Bailey's Beer Blog. *Hoover, Google, Orval?*
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Chapter 25. Gradus ad Parnassum

The incremental development of Trappist beer, interrupted by the Second World War, resolutely continued where it left off. The new milestone is attributed to two other monasteries: the Scourmont Abbey in Chimay and the Abbey of Notre-Dame de Saint-Rémy in Rochefort. While Chimay was founded by Westvleteren monks in 1854, the grandeur of Rochefort's history is comparable to Orval's only. Started in 1230, Gilles de Walcourt, Count of Rochefort, established a Cistercian nunnery in his lands. Like Orval, the Rochefort Abbey was plundered several times over subsequent epochs and dismantled during the Napoleonic era. Monks of Achel reconstructed the monastery in 1887.

Both abbeys recommenced brewing beer shortly after their restoration, and their products enjoyed some limited popularity (see the “Not Brewers” chapter). However, quantifiable success came after the War.

At that time, monks from Chimay, whose brewery was destroyed by the Germans, decided to rebuild a state-of-the-art facility. To do so, Father Theodor went to Leuven to study with a famous professor Jean De Clerck (their cooperation lasted for more than four decades). After returning to the cloister in 1948, the Father enthusiastically proceeded in enhancing the monastic brews. With De Clerck's help, he isolated pure yeast strains and employed the *dubbel*-like bottle-conditioning technique. The red-label beer from Chimay (*Chimay Rouge*) had quickly won customers' appreciation, and at the end of 1948 Father Theodor prepared an even stronger winter brew — with a blue label, *Chimay Bleue*.

Simultaneously, Rochefort also increased production, starting to sell their special strong beer, initially created for the sick and wounded during wartime. In 1949, the monks even procured a truck for delivery to nearby villages.

At this point, our story's heroes knocked their heads together. The growing popularity of high-quality (and stronger) Chimay beer caused Rochefort's sales to slump. However, let us remind you that both of them were monks first, not brewers, and as the Abbey of Notre-Dame de Saint-Rémy's representatives had arrived in Chimay to ask for the cessation of sales in Rochefort's vicinity, the Scourmont brothers proposed another solution; they would help to enhance Rochefort's beer quality. With the help of the Scourmont monks and again De Clerck's, the brewery was modernized and in 1952 a new beer was prepared in Rochefort, named *Merveille* ("The Miracle"). Later, the product range broadened as the *Rochefort 6* and *Rochefort 8* beers were added, and *Merveille* was renamed *Rochefort 10* (the number stood for the product's weeks of bottle-conditioning). At this point, *Chimay Bleue* ceased to be a "winter special" and became a regular part of the line-up from 1954 on. A bit later, *St. Bernardus 12* joined the roster (and *Westvleteren XII* as well, after the St. Sixtus' Abbey reverted to brewing on-premises).[1]

That is how at the beginning of the 1950s, a new type of Trappist beer was conceived: the extra-strong dark. *Chimay Bleue* had 9% ABV, while *Rochefort 10* reached an imposing 11.3%. Unlike the less thick *dubbel*, this strength required numerous technological advancements: selecting suitable yeasts, increasing gravities, and adding more syrup. The resulting beer is extraordinarily drinkable for such gravity, featuring a rich and well-balanced taste.

The La Trappe brewers (who had always been much more market-oriented — to the extent they were once temporarily expelled from the Trappist association) started to make similarly styled beer in 1991. They named it *Quadrupel* (sometimes shortened to *quad*), analogous to the *dubbel* and *tripel* styles. It created some confusion as it's not exactly clear at which point an "extra-strong dark ale" becomes a "quadrupel." *Chimay Bleue* is usually considered the former, while *Rochefort 10* is the latter.

More importantly, these beers have a firmly established reputation as among the best beers in the world. When Ratebeer started to bestow its "Best Beer" award back in 2001, Westvleteren, Rochefort, and Chimay were ranked 1st, 2nd, and 4th respectively.[2] Though the focus has shifted to craft beers since then, *Westvleteren XII* and *Rochefort 10* still solidly occupy their top place in almost every rating.

How to Taste It

Of course, the original Trappists are the most authentic extra-strong darks/*quads*:

- *Westvleteren XII* (which, let us remind you, is supposed to be sold on-premise only, and it's rather hard to find)
- *Rochefort 10*
- *Chimay Bleue*
- *St. Bernardus 12*, though it's now a secular brew.

A bit less famous are the beers made by the Association members who joined it a bit later:

- *La Trappe Quadrupel*
- *Stift Engelszell Gregorius*
- *Achel Extra Bruin*
- *Zundert 10*.

And, of course, a throng of commercial brewers are making *quadrupel*. To name a few: Belgians Gouden Carolus, Straffe Hendrik, and De Struise; and the craft ones including *Three Philosophers* by Ommegang and *Terrible* by Unibroue.

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Chapter 26. The Devil for Sale

With the monks working hard for themselves and implicitly for all other beer-makers in the world, commercial brewing in Belgium steadily moved forward as well. The Prohibition law and import competition gave it impetus.

At the beginning of the 20th century, Belgian beers typically had 2.5% to 4.5% ABV (only lambic was stronger, around 6%). Though German and Dutch lagers were also around 3% to 5%, British brews were much stronger, and even more so were their export versions. So it was not surprising that early strong Belgian beers were… British.[1]

In 1923 (or 1918, as some sources claim) the Moortgat brewery released its special strong *Victory Ale* to celebrate the end of the First World War. To do so, one of the Moortgat brothers, Albert, went to Scotland searching for proper yeasts (and had found them either at William McEwan's or William Younger's brewery — the sources are again inconclusive).[2] More importantly, he returned with not only the yeasts but a recipe as well. In fact, *Victory Ale* was a Belgian interpretation of the classical Scottish Ale (which was in turn, the Scottish interpretation of the classical English barleywine) and had an impressive 8.5% ABV. So impressive that the local shoemaker named Van De Wouwer reportedly called it “the real devil” (“nen echten Duvel” in the local dialect). With no hesitation, the Moortgats renamed *Victory Ale — Duvel*.

It's interesting

One brewer named Alfred Dubuisson went even further than this. After inheriting the family brewery in the Hainaut province, he decided to compete with British beers. In 1933, he prepared a special version of barleywine which weighed in at 12% ABV. He named the brew *Bush* to stress the connection — in fact, he translated his very last name into English!

Both of these new alcoholic exertions were dark (amber in the case of *Bush*) thick barleywines, quite uncharacteristic for Belgium of that period. Likely due to this, they subsequently held no particular popularity. As the 1960s arrived, changes were brewing. Emile Moortgat, who represented the third generation of the Moortgat family brewers, enlisted Jean De Clerck to assist in the reinvention of *Duvel*. De Clerck succeeded: he bred pure yeast strains and altered the technological processes of malting and brewing to create a new beer style. Its strength and aroma are comparable to *tripel* and its lightness and clarity akin to lager. Today this beer style is usually denoted as "Belgian strong pale ale" or "Belgian strong golden ale."

Making such a strong beer, at the same time so pale and clear, requires intricate knowledge and application of techniques:

- Exposure to high temperatures is avoided at all stages, as it results in darker beers.
- Sugar syrup is replaced with dextrose-based sugar.
- Higher attenuation is achieved; *Duvel* is an extraordinarily dry beer.

How to Taste It

Of course, the number one choice is *Duvel* itself, which may even be found in corner shops. Apart from the original *Duvel*, one of its first competitors in this style deserves an honorable mention: *Delirium Tremens* by Brouwerij Huyghe (they are also producing one more magnificent strong golden ale under the *La Guillotine* brand).

As the style became popular, many brewers, both traditional and craft ones, have begun to produce it. Those most critically acclaimed are:

- *Blonde* by La Chouffe (which was, by the way, bought by the Moortgats at some point)
- *Gnommegang* by Ommegang (which was — guess what? — also bought by the Moortgats)
- Gouden Carolus *Cuvée Van De Keizer Imperial Blond*

- *Piraat* by Van Steenberge
- *Stille Nacht* by De Dolle.

The above-mentioned Dubuisson brewery also makes a strong golden ale named *De Charmes*.

The Wind of Change

As Belgian brewing history demonstrates, just making a quality product is not enough — the art of selling it is also essential. At the beginning of the 80s, Belgium was producing a mind-blowing range of beers to suit any taste:

- *faro*, *lambic*, and *gueuze*, with their cherry and raspberry varieties
- *dubbel*, *tripel*, and (what they will later call) *quadrupel*
- *Orval* and *saison*
- the Flanders brown
- strong golden ales, after the Moortgats
- *witbier*, after Pierre Celis
- …and regular pilsners and pale ales as well.

The changes were brewing not only in Belgium but across the seas as well, in Britain and the United States. Only a spark was needed to start the fire of the craft revolution — the story of which will unfold within the next chapters.

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PART III. THE NEW HOPE

Chapter 27. The Chronicles of the Catastrophe

The first half of the 20th century with all the wars, depressions, and prohibition laws was a long-lasting shock for beer-makers. The result of the shock was an unprecedented consolidation and even a monopolization of the brewing industry. The number of independent beer producers started its free fall at the beginning of the 20th century and eventually decreased several dozen times, in some cases exponentially, by the 1980s.[1] [2]

Year	Number of breweries in the UK	Belgium	USA	The Netherlands
1900	6447	3223	1816	~500
1920	2914	2013	—	~200
1950	567	663	407	~100
1980	142	123	101	13

Those countries that hadn't had extensive beer traditions of their own might still have the two-producer duopoly as of today, and some markets (like South Africa, Turkey, or Colombia) are dominated by a single company controlling more than 70% of the entire beer production[3].

The natural result of the consolidation was that not only the producers' numbers collapsed but also the number of available beer styles as well — e.g. the entire assortment was reduced to pale and dark lagers only (plus occasional unfiltered varieties). Even in Belgium, the market share of lagers was 55% as early as 1928, and since then it increased to 70%.[4] In the United States, 101 breweries were producing in 1970 just two porters[5] and one IPA.[6]

One of the notable exceptions was the United Kingdom, where lagers were losing to bitters and stouts up until the 1990s — although, it didn't prevent the industry from being monopolized. In the 1980s, the UK's six largest brewers produced 75% of all beer in the country and controlled almost every pub.[7]

The unification of the product led to the consolidation of the market. The incessant process of mergers and acquisitions had finally culminated in creating the global beer conglomerate AB InBev, which consumed American Annheuser-Busch, Brazilian Ambev (which was, in turn, the joint venture of Brazilian brewers Antarctica and Brahma), and Belgian Interbrew (which was the result of the Artois-Pidboef merger), joined by SABMiller (which in turn was created after the SAB and Miller deal) in 2016. In some countries, the AB InBev market share exceeds 90% (for example, in Brazil and Uruguay) and even 99% (in the Dominican Republic).[8]

This company — as well as the smaller conglomerates: Heineken N.V., Carlsberg Group, MillerCoors, and China Resources Snow Breweries Ltd. — owns literally hundreds of beer brands. Does it even bear mentioning that almost all of these brands are totally identical pale lagers that the average consumers aren't able to *truly* distinguish from one another?[9] In 2012, the four largest brewing companies in the world controlled 70% of the market revenue[10] — the unprecedented centralization had surpassed even that from the London porter oligopoly times.

First They Ignore You

This story, of the rebirth of the brewing from the ashes, in defiance of the industry giants, valued in the hundreds of billions of dollars is spectacular in its own right. But the fact that it was started *by one single person* makes it truly extraordinary.

Of course, events of such a magnitude never happen because of someone's individual efforts only. The changes built up for decades thanks to many people and are finally realized with the help of thousands, even millions of enthusiasts. Still, the fact remains: for eleven years, from 1965 to 1976, there was exactly one man in the world's craft beer scene.

Frederick Louis "Fritz" Maytag III was born in Newton, Iowa, in 1937 to a family of hereditary entrepreneurs. His great-grandfather, Frederick Louis Maytag, was the founder of the Maytag Corporation that was making household appliances (washing machines among others). His father, Frederick Louis Maytag II, founded the Maytag Dairy Farm company that produced dairy products. The hero of this story founded the craft revolution, though he himself never envisioned the role he was invariably about to play.

In August, 1965, the smallest of the 50 US breweries, Anchor Brewing Company of San Francisco, California, was scheduled to be closed. (As we remember, there were 101 breweries in the US, but there were just 50 independent companies that owned them.) Anchor was producing a specialty beer named "American Steam Beer," which is made by allowing lager yeasts to ferment at higher temperatures. This style was considered to be a traditional American one (locally referred to as *California common* beer) and was enjoying some limited popularity among the frequenters (one of whom was Maytag) of the "Old Spaghetti Factory" bar in San Francisco. As Fritz would later tell, he wasn't actually very fond of *steam beer*, it was rather the concept of a traditional local beverage that attracted him.[11]

After learning from the bar owner that the *steam beer* production was to shut down, Maytag bought 51% of the shares (eventually increasing up to 100% in 1965) — which cost him "little more than a used car might," as Fritz later admitted. This decision was, if not exactly spontaneous, at the very least optimistic. Firstly, Maytag had no idea of how to run the brewery. Secondly, the business health of Anchor Brewing Company was somewhere in-between intensive care and the morgue. Thousands of decisions like that in the 20th-century world had ended ingloriously — with bankruptcy and a fresh grave in the cemetery of history.

The Anchor brewery was doomed, as it had no chance to compete against the giants that were producing predictable lagers at a colossal scale. Anchor beer wasn't even bottled, the quality left a lot to be desired, and the entirety of their sales network comprised only several local bars. While an average American brewery in 1965 was producing more than 5 million liters of beer per month,[12] for the same period Anchor could brew… 100 kegs.

So, how was Maytag able not only to save the brewery but to make it a rival to giants?

First, he took the task of organizing beer production seriously and created a "laboratory" on Eighth Street. Cheap substitutes, like corn syrup, were dropped and the beer taste was improved (surprisingly, by returning to the original 19th-century recipe). Most importantly, Maytag's team managed to achieve a sustainable shelf life without employing preservatives.

Second, Anchor started working for its consumer, selling bottles not only in local bars but across the entire country, as Maytag had found distributors for the product. The company employed myriad marketing opportunities to promote the beer.

And third, with his relentless advocacy and passion for the beer "alchemy", Fritz Maytag encouraged many people to rebel against the world of identical pale lagers. California gradually became the center of what was later named "the craft revolution." Many other beer enthusiasts started to open their microbreweries inspired by Maytag and Anchor Brewing Company example.[13]

How to Taste It

Though Maytag sold Anchor Brewing Company in 2010, his work lives on. The American Steam Beer aka the California Common is being made by many small independent breweries (just like Fritz was dreaming of): American Toppling Goliath, Widmer Brothers, Smuttynose, Port City Brewing, and European Mikkeler and To Øl. Of course, *Anchor Steam* should be considered the canonical one.

On “Craft” and “The Craft Revolution”

In the previous chapters, we have used the phrase “craft breweries” quite a handful of times, and this part of the book will be exclusively dedicated to them, so it would be nice to actually define “craft” before telling its history.

Alas, it's not that simple. Early craft brewers defined themselves through quality: they made better beer and did not use cheap ingredients. However, as we all understand, it's not entirely true. A brewery is a commercial venture which must economize. The question is just where the borderline is: e.g. which cost-saving practices are acceptable and which are not.

Later, the “microbrewery” term emerged, and beers made by these small independent producers became the “craft” ones. Yet, this designation becomes outdated as well, as many craft brewers have built real factories since then and their output is now pretty impressive: in the tens of millions of liters if not hundreds. Also, many of them are not independent. Some have in fact been sold to giant corporations (like Anchor Brewing Company that Maytag ceded to Sapporo Holdings) or were from the beginning special “craft” branches of such enterprises (like the Blue Moon Brewing Co. that was launched by MillerCoors).

Today, the best definition of “craft” is a “subculture”: a subculture of people who value and appreciate diverse beers.

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Chapter 28. The Revitalisation

Though Maytag had borne the banner of the craft revolution all alone, many others worried as well about the problem of protecting local brewers from extinction. If the United States had nearly nothing to lose but Anchor Brewing Company, the Europeans still had plenty.

Is anyone surprised by the fact that the European wing of the revolution was led by the Brits? On March 16, 1971, four young admirers of good ale — Michael Hardman, Graham Lees, Jim Makin, and Bill Mellor — gathered together in Kruger's Bar, Dunquin, Ireland, and founded one of the most influential consumer organizations in history: the Campaign for the Revitalisation of Ale aka CAMRA. (Fortunately, they soon decided to replace the cumbersome "revitalisation of ale" with just "real ale," provided it makes the same abbreviation but spares a lot of letters. So, "CAMRA" now stands for "Campaign for Real Ale.") CAMRA's goals were set as follows: the preservation and long-term development of real ale (and later — cider and perry as well) and pubs as a part of the cultural heritage of the United Kingdom. Starting the next year, in 1972, the Campaign published its own magazine ("What's brewing"), and in 1974, its own book ("The Good Beer Guide"). From 1977 on, the Great British Beer Festival has been held.

CAMRA's impact on the British (and even global) industry is hard to underestimate. The Campaign instantly became highly popular (five thousand members in just two years), and was soon transformed into a power to be reckoned with. It was CAMRA that pushed the adoption of the so-called *Beer Orders* (formally — "Supply of Beer Order 1989") to break the stranglehold of the industry oligopoly, which we mentioned in the previous chapter. Six major beer producers unilaterally controlled almost all pubs in the country, thus making it complicated, nigh impossible for the smaller competitors to gain a foothold on local taps.

From CAMRA's point of view, “Real Ale” must be “live,” e.g. contain enough active yeast and sugars to continue fermenting in its storage vessel. Most notable “real ales” are cask-conditioned (e.g. kept in a small “cask” barrel) at normal atmospheric pressures (e.g. the excess carbon dioxide dissipated): cask ales are considered the true ones.[1]

How to Taste It

Ideally — go to the UK, find a bar that participates in the Campaign (fortunately, today it's not a problem at all), and have a pint of fresh cask ale. Meanwhile, CAMRA preserves not only beer (and cider, and perry) but also authentic bar interiors. All these cultural treasures (both bars and interiors) are listed in the Good Beer Guide that the Campaign issues (also available in the app).[2]

If you can't make it to the UK, you might try “real ale” in a bottle, as CAMRA also bestows the “Champion Beer of Britain” award. The list of champions might be found here; let us point out a few of the most auspicious ones:

- the multi-winner in almost every category, Fuller's with its flagship *London Pride*, *ESB*, *1845*, *Vintage Ale* beers
- Greene King — *Old Speckled Hen*, *Abbot Ale*, *Olde Suffolk*, *IPA*
- Harviestoun — *Old Engine Oil*, *Ola Dubh*
- Adnams — *Broadside*, *Ghost Ship*, *SSB*
- Orkney — *Skull Splitter*, *Dark Island*
- Oackham — *Citra*, *Green Devil IPA*, *Jeffrey Hudson Bitter*
- Caledonian — *Deuchars IPA*, *McEwan's India Pale Ale*, *John Courage Amber*.

Let us be crystal clear that “real ale” is not a beer style but rather a set of rules on making and storing beers. CAMRA names 12 primary British beer styles, and a lot of sub-styles to each of them — of every taste, color, and aroma.

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Chapter 29. American English

It was the beginning of the 1970s, and the Anchor Brewing Company's situation remained uncertain. Maytag managed to make his enterprise profitable, but the necessity to expand and modernize the production lines forced him to increasingly draw from his savings. In search of additional sources of income, Fritz decided to enrich his beer assortment, and his attention logically fell upon another beer style with deep roots in American soil: porter. In 1974, he brewed the first batch of *Anchor Porter*. That same year, Maytag traveled to Great Britain and with some amusement learned that porter had not been produced in Great Britain for two decades already;[1] we may remember this from the "Beer of the Industrial Revolution" chapter. (Later, Anchor would add pale ale to the roster, and after that, barleywine — two typical English beers).

Meanwhile, the winds of change steadily blew in California, and other enthusiasts joined Maytag. In 1976, New Albion Brewery opened — the first brewery since Prohibition (formally, a winery: since the same time, homebrewing was still banned in the US). The founder, Jack McAuliffe was deeply impressed by British beers which he had developed a taste for during overseas military service. He had visited Maytag's Anchor Brewing Company and with enthusiastic inspiration convinced Susie Stern and Jane Zimmermann to invest in a brewing startup. The three of them created the second craft brewery in the world, located in the town of Sonoma, California — as they couldn't afford San Francisco rent rates.

The New Albion founders considered American beer "a national disgrace." It all tasted the same, and to make production cheaper, the major manufacturers were shameless in their use of preservatives, cheap grain substitutes, stabilizers, and a multitude of the most recent developments in food chemistry. McAuliffe declared his goal was to make *quality* beers equal to the best English ales. The startup's limited funding forced them to literally build everything from scratch — fermentation tanks were refurbished 200-liter cola syrup barrels, labels were glued to bottles

manually with the vintage mechanical device made in 1910, etc. Nonetheless, the startup founders had achieved their goal.[2]

New Albion Brewery started to make porter as well (and other English specialties such as stout and pale ale), thus completing the passing of the baton. While English breweries stagnated, their famous porters and Burton ales disappearing, the Americans began rebuilding the tradition.

The years 1975 to 1980 turned out to be the tipping point in the history of craft brewing. Several important events happened within this timeframe:

- CAMRA organized the first Great British Beer Festival in 1975.
- New Albion Brewery opened in 1976.
- Inspired by CAMRA, the British beer enthusiast and first contemporary beer historian, Michael Jackson (not the pop singer!), on the heels of raising public interest in ales,[3] issued the first edition of his famous "World Guide to Beer" in 1977.
- Homebrewing was officially re-legalized in the US in 1978. The same year, amateur brewers came out of hiding and, thanks to the efforts of Charlie Papazian, the American Homebrewers Association was founded. Papazian also started issuing the homebrewer's journal "Zymurgy" and the first recipe almanac "Joy of Brewing".
- A year later, the US held its first national homebrewing competition.[4]
- Finally, two more craft breweries opened in California (DeBakker Brewing Company and California Steam). Two more opened in other states: in Boulder, Colorado (simply named Boulder Brewing Company) and in Albany, New York (William S. Newman Brewing Company).[5]

The advanced degrees and professional occupations of almost every newly established brewer had nothing to do with beer. McAuliffe, an ex-submarine crewman, worked as an optical engineer. Two of the Boulder Brewing founders, David Hummer and Randolf Ware, were astrophysics teachers. Papazian was a schoolteacher as well. Zimmermann later became a distinguished therapist.

Still, what did all of them offer to the American beer lover? What we know as the British specialties:

- Boulder was brewing bitters, stouts, and porters.[6]
- DeBakker brewed porter.[7]
- The first issue of "Zymurgy" featured the recipes of "Vagabond Black 'gingered' Ale" and "Black Lava Ale."[8]
- The first National Homebrew Competition bestowed awards in four categories: beers and lagers, ales, stouts, and "unusual brews."[9]
- Bill Newman was producing cask ales in the English manner, and buying UK hops.[10]

How to Taste It

Alas, none of the craft startups have survived until today. DeBakker and California Steam were short-lived. New Albion closed in 1982. Despite gaining great authority among homebrewers, McAuliffe, Stern, and Zimmermann were unable to build a sustainable business. However, they made a definitive impact on future craft brewing by vividly demonstrating how a private microbrewery might be founded and launched — without buying a whole factory. More precisely, they *had invented* microbrewing as a modern concept. Boulder Brewing Company even went public in 1980 but declared bankruptcy a decade later (and was re-launched then as Boulder Beer Company). Wm. S. Newman Brewing Company held on longer than others but closed in 1993.

Still, the American porter remains one of the most popular craft beer styles. Maytag and McAuliffe brought American boldness to the brew. Unlike the Brits, American porters are more complex, aromatic, and even daring. They experiment a lot with ingredients and recipes. Unrestrained, one might say.

With the New Albion, DeBakker, and Boulder versions no longer available, the most worthy challenge is to find *Anchor Porter*. Of course, any self-respecting American brewery has one in its portfolio nowadays. The experts value greatly, for example, *Everett Porter* and *Twilight Of The Idols* by

Hill Farmstead, *Maple Bacon Coffee Porter* and *Last Snow* by Funky Buddha, *Edmund Fitzgerald* by Great Lakes, *Black Butte Porter* by Deschutes, etc.

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Chapter 30. USDA 56013

By 1980, the craft revolution, though opposed to mass production, still hadn't made anything truly revolutionary. The English-style ales and porters by Anchor, New Albion, Boulder, Newman, and DeBakker represented the classical styles, maybe with just some peculiarities and regional twists. The situation began to change at the start of the '80s, with the third wave of craft startups coming.

In the 1970s, Anchor Brewing Company used every occasion to promote its products. In 1975, such an occasion handily arrived: the bi-centennial anniversary of the US independence from Britain. To mark this date, Maytag conceived a plan to brew a special celebration ale; and as Fritz had just visited the Timothy Taylor brewery in West Yorkshire, England, he chose traditional English pale ale as a model for his upcoming beer (oh, the irony!). The first effort (a limited batch under the *Liberty Ale* brand) was mediocre and received overt criticism. Maytag persevered and produced a second batch (dubbed *Christmas Ale*) for Christmas of 1975. He abolished two elements outright: adding sugar to the wort and German hops.[1] In search of a Hallertau replacement, Maytag contacted a farmer named John Segal, known for his expertise in hops. A fortunate coincidence occurred as Segal was just cultivating an experimental specimen No. 56013: a part of the United States Department of Agriculture (USDA) program aimed at developing new crop varieties. Researchers from Oregon State University, led by Jack Horner, bred the new hops by cross-breeding *Fuggle* with Russian *Serebryanka* (and some unknown third variety).

These hops (which soon got their own name: *Cascade*, after the Cascade mountains) turned out to be very interesting. First, they were bitter enough to suit Maytag's goal. Second, apart from bitterness, they demonstrated a unique grapefruit-citrusy aroma and taste.

It's interesting

The program to develop experimental hops kicked off back in 1933, but *Cascade* was the first variety that saw any common usage.

The Chemistry of Hops

The properties of hops (the taste and the corresponding bitterness) depend on the organic compounds they contain. These compounds might be divided into three groups:

- Alpha acids are isomerized after heating and give the bitter taste to beer and also provide some antiseptic qualities.
- Beta acids act in the same manner but in the heat are oxidized, not isomerized.
- Essential oils — the various compounds (most notably humulene, caryophyllene, and myrcene) are responsible for "citrusy," "piney," "flowery," etc., flavors.

Depending on the proportion of these compounds, hops are classified as bittering (typically, boiled with the wort to give bitterness to beer), aromatic (added after boiling and cooling the wort — in a course of so-called "dry hopping"), or dual-use (suit both needs).[2]

Classical European "noble" hops, such as *Hallertau* and *Saaz*, contain 4% alpha acids and a bit more (around 5%) beta acids. Kent hops, namely *Fuggle* and *Golding*, contain more of the latter but less of the former. *Cascade* turned out to be richer in all three components![3]

Hop variety	Alpha acids	Beta acids	Essential oils, in 100 g
Hallertau	3.5%	3.5-4,5%	0.6-1.2 ml
Saaz	2.5-4.5%	4.0-6,0%	0.4-0.8 ml
Golding	5.0-6.0%	2.0-3.0%	0,9 ml
Fuggle	2.4-6,1%	2.1-2.8%	0.4-0.8 ml

Hop variety	Alpha acids	Beta acids	Essential oils, in 100 g
Cascade	**4.5-8.9%**	**3.6-7.5%**	**0.8-1.5 ml**

Christmas Ale by Anchor Brewing Company differed strikingly from British ales (and even more so compared to contemporary light lagers). It was quite bitter (around 50 IBU; it was definitely an IPA to the British consumers, and to Americans, accustomed to fivefold less bitter pilsners, it should have tasted like hell) yet at the same time aromatic, crisp, and elegant beer.

Initially, the advents and retirements of *Christmas Ale* (Anchor had been carrying on experimenting, releasing new batches with updated recipes every December) made exactly zero impact on connoisseurs as simply nobody knew about the beer.[4] New Albion and Boulder (as well as mainstream Coors) were also using *Cascade* which was "trendy," but few remember that either. It's not enough to just add aromatic hops to wort. One needs to fit the beverage to encompass all the qualities of the hops.

The general offensive of *Cascade* upon the beer lovers' taste buds occurred in 1981 as Ken Grossman and Paul Camusi released the first batch of *Sierra Nevada Pale Ale*: light, *Cascade*-hopped, bottle-conditioned. The new ale was a hit as sales doubled in one year. Two years later, Maytag made his special pale ale a regular brew — and started to sell it under the restored *Liberty Ale* brand.

The success of the Sierra Nevada's creation wasn't merely fortuitous. As Grossman later told, he and Camusi had a clear vision of the highest-quality aromatic ale they were going to make,[5] and had spent half a year improving the recipe. The 11th try produced the result that finally satisfied them.[6]

How to Taste It

The beer style inspired by *Anchor Christmas/Liberty Ale* and *Sierra Nevada Pale Ale* is now known as American Pale Ale (APA). Unlike British pale ales that use hops for bittering, American pale ales must be moderately bitter but utterly aromatic.

Some authors (Mitch Steele in particular) do not consider *Liberty Ale* a true APA but rather an IPA, unlike *Sierra Nevada Pale Ale*. Though it's rather hard to mark the exact demarcation between the two styles, we can't but stress that both beverages are very similar to one another, both formally (5.9% ABV / 47 IBU versus 5.6% / 38 IBU) and taste-wise (at least in the author of this book's taste).

Both “breakthrough” beers are still made today. *Anchor Liberty Ale* enjoys the fame of the first craft beer in history as it marked an important milestone: the incipient craft subculture had for the first time made a totally new product, not a replica of an existing one. *Sierra Nevada Pale Ale* is less revered but is still one of the highest-selling craft beers in the world.

Apart from those two, we might recommend several other American pale ales made with Cascade: *Alpha King* by Three Floyds, *Pale Ale* by Founders, *Mirror Pond Pale Ale* by Deschutes, etc. In general, many craft breweries make APAs, and *Cascade* remains one of the most popular hop varieties.

...Then They Laugh at You

The Sierra Nevada Brewing Company's history at a first glance appears typical for those *early days*. The founders were homebrewers, revered Maytag with his new-old beers, and talked a lot to McAuliffe about how New Albion Brewery was organized. Most notably, they did one key thing differently: they planned for future growth.

In the 1970s, no bank or venture capitalist imagined funding a beer startup. New Albion Brewery, being formally profitable, wasn't able to raise capital to scale the production, which eventually resulted in the closing of the company. Maytag had to draw from the family budget and spend his personal capital in order to save Anchor. By contrast, Sierra Nevada was

initially built in a manner that would allow future expansion once the planned production capacity started generating income. Furthermore, the estimation proved correct, and Sierra Nevada Brewing Company is worth more than a billion dollars today.

Grossman and Camusi's success had marked a new era in the Craft Revolution history: brewing startups — new-wave, rational, and ambitious ones — were not just surviving but expanding and increasing outputs. In 1981, the RedHook brewery opened, in 1983, Kalamazoo Brewing Company (later renamed Bell's Brewery), in 1984, the Boston Beer Company (the founder of which, Jim Koch, even had a Harvard MBA); all of them are functioning today.

In the meantime, a relentless Papazian organized the Great American Beer Festival (GABF), which name gives a clear hint of what campaign was taken as a role model. In 1982, the first GABF was held in the very same Boulder, Colorado: 22 participants showcased their products to 850 attendees for 5 hours. Not very impressive by today's standards, but that was only the beginning. (Also, a year later, GABF started to bestow awards based on visitors' votes. *Sierra Nevada Pale Ale* got the first prize, while Sierra Nevada's and Anchor's porters got the second and third places.)

References

[1] Steele, M. (2012), see chapter 7

[2] https://beermaverick.com/types-of-hops-aroma-noble-bittering-dual-purpose/

[3] http://www.hopslist.com/

[4] Acitelli, T. (2013), see chapter “The Most Influential Beer”

[5] https://www.foodandwine.com/beer/craft-beer/25-most-important-american-craft-beers-ever-brewed?slide=ff26a990-6ab3-48f6-9cc0-0b7d3ea33e5b#ff26a990-6ab3-48f6-9cc0-0b7d3ea33e5b

[6] Acitelli, T. (2013), see chapter “The West Coast Style”

Chapter 31. The 4 C's

Right after the American interpretation of British pale ale was born, Sierra Nevada Brewing Company made an American IPA as well — stronger, more bitter and more aromatic. The American movement had found its own signature: a love for immensely bitter and fragrant hop beverages. In the 90s, almost every brewery added at least one IPA to their repertoire, and the most innovative ones went much further than this: “Belgian IPA” emerged (fermented with Belgian yeast strains), then “Black IPA” (made from darker malt), and also “double,” “triple,” and “Imperial” India pale ales. In 1999, IPAs constituted the majority of beers at the Great American Beer Festival (maybe even earlier as we haven't found prior records).

Some researchers tell about the “Four C's Revolution”: after *Cascade*, in the 80s and 90s, *Chinook*, *Columbus*, and *Centennial* hit the market (the latter was even advertised as “Super-Cascade”). The proportion of alpha acids and essential oils broke *Cascade*'s record by more than double. But it was still not enough for modern horticulturalists as many new hop varieties demonstrate even more impressive numbers.[I]

Hop Variety	Alpha acids	Beta acids	Essential oils, in 100 g
Cascade	4.5-8.9%	3.6-7.5%	0.8-1.5 ml
Centennial	9.5%-11.5%	3.5%-4.5%	1.5-2.5 ml
Chinook	12%-14%	3%-4%	1.5-2.7 ml
Columbus	14%-18%	4.5%-6%	1.5-4.5 ml
Citra	10%-15%	3%-4.5%	1.5-3.0 ml
Amarillo	8%-11%	6%-7%	1.5-1.9 ml
Mosaic	11.5%-13.5%	3.2%-3.9%	1.0-1.5 ml
Apollo	15%-20%	5.5%-8%	1.5-2.5 ml

But it's not only about increasing the alpha acid and essential oil content: soon plant breeders started to search for varieties featuring specific flavors. Depending on exactly which essential oils are dominant, hops will have different aromas:

- caryophyllenes give a “herbal” and “spicy” smell and taste.
- myrcene — pine, citrus, fruit
- farnesene — fresh greens, woody
- geraniol — flowers, berries.

The list goes on. Though one might easily create one's own classification, approximately ten different hop flavors are differentiated[2]:

Flavor	**Example hops**
Citrus	*Cascade*, *Centennial*, *Amarillo*, *Citra*, *Simcoe*, *Galaxy*
Tropical fruit	*Mosaic*, *Idaho 7*, *Azacca*, *Citra*, *Simcoe*, *El Dorado*
Stone fruit	*Idaho 7*, *Eureka*
Berries	*Nelson Sauvin*, *Simcoe*
Floral	*Cascade*, *Centennial*, *Ella*
Resin / Pine	*Centennial*, *Chinook*, *Mosaic*, *Saaz*
Herbal	*Sabro*, *Nugget*, *Columbus*, *Hallertau*, *Ekuanot*
Spice	*Columbus*, *Chinook*, *Magnum*, *Saaz*, *Hallertau*

Some hop varieties are purposely bred bearing a very specific (and sometimes exotic) aroma in mind. For example, *Nelson Sauvin* has a “vinous” taste (or more precisely, the taste of Sauvignon Blanc grapes) and *Sorachi Ace* is like matcha tea. Others were created to encompass an entirely different palette of flavors in one hop cone. Examples include *Sabro*, *Apollo*, and *Mosaic*.

How to Taste It

The most logical and convenient approach to understanding the impact of new hop strains on beer taste is trying several “single hop” beers from one series. This implies the brewery makes several identical beers that differ only in hops. For example, the Mikkeler *Single Hop* series comprises almost a dozen of different kinds of hops. Such sets are also featured by Hill Farmstead (*Single Hop Pale Ale*), Toppling Goliath (*Pseudo Sue*), Flying Dog (*Imperial IPA Single Hop*), De Molen (*Single Hop*), and Sierra Nevada (*Single Hop*).

References

[1] http://www.hopslist.com

[2] https://beermaverick.com/the-science-behind-identifying-hop-aromas/

Chapter 32. New Belgium

As strange as it may sound, American craft brewers, indefatigable in their rally to recreate classic British recipes, had ignored for quite some time the tradition of another "beer Mecca": Belgium. By the early 90s, the only Belgian-style ale produced in the US was *Redhook Ale*, and its creation was quite anecdotal. Yeasts for the new ale of 1982 were borrowed from the University of Washington. They gave the beer a cloying overripe-banana taste. Consumers thought the beer simply spoiled. It was Michael Jackson, the beer writer, who saved the business by designating the Redhook product "Belgian-style ale," as they soon thereafter advertised.[1]

The real advent of a Belgian tradition on American soil is tied to the name of Jeff Lebesch. Jeff was an electrical engineer and one of Papazian's first pupils when Charlie was giving homebrewing master classes (by the way, illegal at that time) in his kitchen. In 1988, Lebesch realized his old dream. Inspired by Jackson, he spent his vacation traveling Belgium by bike, guided by Jackson's almanac. From this journey, he brought back a journal full of notes on Belgian brewing, and a firm determination to make Belgian-style beers of his own. In 1991, Josh and his wife Kim Jordan launched a craft startup in the basement of their Fort Collins home. The logo of the new brewery featured a bike, and the first beer they made was named *Fat Tire*. It was an amber ale in the *Spéciale Belge* style (see the corresponding chapter). Soon, Lebesch started to brew a second beer, *Abbey*, in the Trappist *dubbel* style.

New Belgium Brewing Company was an instant success. In 1993, *Abbey* was awarded a gold medal at the Great American Beer Festival - in the "Various, Special" category as nobody in the US had heard anything about "dubbel." Ten years later, the brewery was generating a fantastic (for craft brewing) 180 million dollars in annual sales.

Almost immediately, other “Belgian” craft startups popped up: Canadian Unibroue was founded in 1993, Allagash Brewing Company in 1995, Brewery Ommegang and Russian River Brewing Company in 1997. Also, Pierre Celis opened Celis Brewery in 1992 as he had moved to the US after selling Hoegaarden to Artois; though calling his *witbier* a traditional Belgian beer is rather a stretch (see the “Orange Zest, Coriander, and the Hoegaarden Milkman” chapter).

Interestingly, the boom of US “Belgian” craft brewing preceded the boom of Belgian beer exports by a decade. Even in 2005, when New Belgium alone was producing 70 million liters of beer per year, real Belgian beer exports to the US comprised a modest 2 million liters, and it was mostly Stella Artois and Jupiler lagers.[2] In fact, American craft brewers reinvented Belgian beer totally independently (as they did with British beers twenty years before that).

How to Taste It

The author of this book considers craft Belgian pale ales such as let's say, *Gnommegang* by Brewery Ommegang or *Damnation* by Russian River, a beer style in its own right, in some sense more “Belgian” than real Belgian beers. Craft versions are more individually characteristic; the “Belgian” traits are more extreme. We suggest readers draw their own conclusions.

References

[1] Hindy, S. (2014), see chapter 1

[2] Persyn, D., Swinnen, J.F.M., Vanormelingen, S. (2010), pp. 11, 34

Chapter 33. The Alchemist from Vermont

Beer is a democratic beverage: we have never heard ecstatic stories about the finest harvest of 1967 used to make a single batch of beer, each bottle worth ten thousand euros (but don't let them deceive you: only the barley from the southern slope counts). Yes, there are rare and hard-to-reach beers like Westvleteren or Cantillon; however, first, you might find them for something like 20 euros if you try hard enough, and second, to be frank, craft varieties of the same beers are hardly distinguishable from the originals. In the '80s, it was much more complicated. One needed to travel to Belgium and reach remote monasteries by bike. In every big city in the 21st century, one could get literally everything they want.

That makes the story that happened right before our eyes in the provincial town of Waterbury, Vermont, even more fascinating. In 2003, John and Jen Kimmich opened a small bar named "The Alchemist" with an on-site brewery. For his bar, John made a special IPA he called *Heady Topper*. Brew schedules were irregular — just two times a year, then three times, then four.

The Kimmichs never advertised *Heady Topper* and didn't care about marketing. However, they soon found patrons making lines outside of their bar. Beer lovers from all across the country headed to Vermont to try this beer, spreading the word along the way. Furthermore, some unscrupulous buyers were secretly pouring the beer into bottles to re-sell at an exorbitant price.

In 2011, John convinced Jen to start selling *Heady Topper* in cans and installed a small packaging line. (Ironically, the same week, Tropical Storm Irene washed the pub away.) In the first year, the output increased four times and the next year, another six. In 2013, *Heady Topper* stormed the BeerAdvocate rating, ending the year in fourth place and since then never left the top five.[1]

What was the alchemy that John Kimmich manifested in this small Vermont pub? He actually did the following: brewed a double IPA with no bittering hops, but for aroma and flavor only. And yes, he had to conjure a lot of magic! For this process, heating wort with hops needs to be at all costs avoided, dry hopping applied multiple times, and special hops selected to balance flavors.

This beer style is now known under many names: Vermont IPA, NE IPA (NE = New England, a Northeastern US region that includes Vermont), East Coast IPA (opposed to the West Coast where the classic California American IPAs originated), DDH IPA ("Double Dry Hopped"); also "hazy" or "juicy" IPA — because of the best examples of the style, including *Heady Topper*, feature a mostly tropical fruit juice aroma. There is (usually) no real juice in the recipe. The "hazy" adjective is the result of the general cloudiness and opaqueness of the drink.

For a long time, classifiers failed to recognize NE IPA as a beer style in its own right. The dam got busted in 2018 when the Great American Beer Festival organizers finally introduced separate "juice or hazy" pale ale categories — which immediately dislodged the traditional IPAs as the most popular beer style by the number of entrants.

How to Taste It

Ideally — find the very *Heady Topper* (or another beer in this style from The Alchemist named *Focal Banger*), but that's still quite complicated. Among the US brewers, Hill Farmstead, Tree House, and Trillium are considered experts in making superb Vermont-style ales.

Other beers marked as "NE IPA" shall be treated with a certain degree of incredulity, as many "NE IPA"-marked beers are just regular IPAs, thanks to the immense popularity of the style and the complexity of producing a proper product. The "DDH" mark is usually more reliable, as double dry hopping at least guarantees the rich aroma and flavor. In general, there is no such question as "how to distinguish NE IPA from IPA": proper NE IPA

should be hardly distinguishable in its appearance from orange or pineapple juice.

References

[I] Riches, S. (2017) *The Story of Heady Topper, America's Most Loved Craft Beer*. Longreads and Food & Wine Magazine | March 2017
https://longreads.com/2017/03/01/the-story-of-heady-topper-americas-most-loved-craft-beer/

Chapter 34. The Three Whales of the Craft Revolution

In the five decades that passed since Maytag reinvented Anchor Brewing Company, the craft movement has made a huge step forward and is nowadays a large heterogenous subculture. Describing all the current styles, trends, and tendencies in craft brewing is rather a lost cause as new ones occur in real-time, and at a much faster pace than the author of this book's writings.

Frankly speaking, we don't actually aim to describe *every* existing kind of beer. As we have told readers many times in the previous chapters, beer is a democratic beverage. For many years already the credo of a true beer lover is very simple: drink local. Drink what is made here and now.

Still, to help you, dear reader, to navigate the modern craft scene, let us describe the main trends — the “three whales” of craft brewing.

1. Preserving cultural tradition

Craft enthusiasts do love history and make great efforts to preserve and revive it: from porter, pale ale, and lambic — to Dutch *kuyt*, German *mumme*, and Ancient Egyptian *zythos*, to authentic British pubs and hoary Norwegian village breweries. Among modern historians, there are *practical* researchers who not only read the elder annals but reenact Medieval technology to clarify dubious and obscure wording. We describe many such reconstructions in Part I of this book.

2. Brewing bitter beers

Breeding hops and making bitter ales is the signature trademark of the American (and worldwide-adopted) craft subculture. IPA and its derivatives continue to reign over craft beer styles both in terms of popularity and sales. Since the 1990s, countless variations of the recipe

were invented:

- Double / Triple / Imperial IPA, with its higher alcoholic content; history started in 1994 when Russian River Brewing Company created *Pliny the Elder* — the first modern strong IPA.
- Black IPA, made with an addition of dark or black malt; invented by the Vermont Pub & Brewery in the early 90s.
- Belgian IPA, brewed with Belgian yeast strains; first made by the Belgian brewery Urthel after its brewmaster toured the US in 2005.
- New England / Vermont / East Coast / Hazy / Juicy / DDH IPA — see the previous chapter.
- Brut IPA, a full antithesis to the previous one — a crystal clear beer with all the sugars and other residual compounds removed; invented by the Social Kitchen and Brewery in 2010.
- Sour and "Wild" IPA, fermented with *Brettanomyces* / *Lactobacillus* / packages of microorganisms akin to Belgian spontaneously fermented beers; introduced by New Belgium Brewing in 2011.
- Red, Brown, Rye, and White IPA, brewed with amber, brown, rye, and wheat malt, respectively.
- "Session" / "Micro" IPA, with its alcoholic content reduced down to 4% / 2% ABV, respectively.

3. Experimentation!

As one may have guessed from the previous paragraph, experimenting with recipes is like catnip for a craft brewer. It was imaginers from the Goose Island brewery who defined the fashion in the early 90s by concocting bourbon barrel-aged stouts — which are still now solidly occupying the top ratings.

If you subscribe to some craft beer resource's mailing list, you will soon discover myriad novelties. The last such email the author of this book received included a proposal to try:

- barleywine aged in rum barrels
- sour ales with blueberries and raspberries

- Imperial dessert stout
- *tripel* with cardamom, orange zest, and coriander
- *lassi gose* — literally, sour salty beer prepared like the Indian beverage *lassi* utilizing mango puree, yogurt, and *Lactobacillus*
- Imperial *gose* with raspberries, peanut butter, vanilla, and lactose
- "smoky" *quadrupel*.

And I may assure you that *some* of those beverages deserve your attention!

Then You... Win?

As the 1960s were the worst time for a beer lover to live, the 2020s look like the best of all possible worlds. According to the BeerAdvocate annual report, they counted 20 thousand breweries in the world (half of them outside the cradle of the craft revolution — the United States of America). And if this number is actually comparable to what we had at the beginning of the 20th century, another figure is completely mind-blowing: in 2020 alone more than 67 thousand new beers hit the market.[1]

Still, a complete victory is definitely not fully realized. Despite the impressive numbers, the share of "non-mainstream" beer in total sales is embarrassingly low (12% in the US, even lower than that in other countries). The bad news is that this share is actually decreasing slowly.[2] The "Big Brewers" continue the endless process of mergers & acquisitions, protracting more and more former craft breweries into their gravity wells. Many major brands in the craft beer market lost their independence years ago: AB InBev controls Goose Islands and many smaller producers, Heineken owns Lagunitas, Kirin Brewing Company — New Belgium and Brooklyn Brewery, Sapporo Breweries — Unibroue and the legendary Anchor Brewing Company.

Will we end this book with this premonition? Well, we actually do believe that the future diversity of our beloved drink is safe, as long as there are people who prefer real tasteful beers over identical insipid chemical compounds. And we hope that after reading this book, there is one more

such a person in the world.

References

[1] https://www.beeradvocate.com/articles/18304/the-year-in-beer-breaking-down-2020/

[2] https://fortune.com/2021/04/06/craft-brewers-2020-sales-market-share-closings-beer-independent-brewers-association/

APPENDIX

Chapter 35. On Beer Styles, Ratings, and Recommendations

This book is written in a form of “lecture-tasting”: there are recommendations in each chapter, which beer style to try to fully understand the subject.

Today, there are several comprehensive and influential classifications of beers:

- “The World Guide to Beer” by Michael Jackson[1]
- “The Oxford Companion to Beer”[2]
- Beer Judge Certification Program (BJCP) guidelines[3]
- beer style guidelines by the Brewers Association.[4]

All those, beyond any doubt, monumental works are, regrettably, equally monumentally contradict each other, and, even more regrettably, do not take into account the historical aspect: how all these beers emerged and what evolution underwent. That leads to anecdotical situations when the classifications sometimes recognize outright marketing hoaxes — for example, the “Irish Red Ale” which was simply invented by the French Pelforth brewery in 1974.[5]

That's why in our recommendations we're trying to outline, first, modern beers closest to the historical styles (which frequently doesn't go well even with the most elaborate classifications; for example, Burton Ale or “entire-butt” porter haven't earned their place in the guidelines yet); and, second, the best modern interpretations of the style, sharing the same spirit with the original ones.

As for selecting the “best” or “most notable” beers, we're relying on different sources, namely, the most popular web services that provide beer ratings. Today, there are three of them:

- beeradvocate.com
- ratebeer.com
- untappd.com

These three sites are of the most use if you seek for recommendations. However, one needs to learn the basics of working with them first:

- stronger brews are usually much higher rated, so the consolidated top is not very relevant as almost every Imperial stout will have higher grades than almost every session IPA;
- tops by style are more demonstrative but are susceptible to another problem: they might easily comprise obscure beers with a dozen “A” grades given by brand enthusiasts.

All three services feature their own classifications of beer styles (needless to say, all three differ from one another, and from the above-mentioned guidelines as well). Ratebeer also provides a system of “tags” that is much more convenient for searching non-standard beers than “styles.”

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[3] Beer Judge Certification Program 2015 Guidelines
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[5] Cornell, M. *How one Irishman's ginger beard helped launch an entirely bogus style of beer*

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Chapter 36. The Summary of Recommended Beer Pairings by Chapter

For every chapter, the closest beer style in the BJCP guidelines is provided, as well as links to the beer-rating websites. If there are several rows in the table, they are sorted by historical accuracy (descending).

At the Dawn of Civilization

The best choice:

- Dogfish Head *Midas Touch*
- Dogfish Head *Kvasir*
- Williams Bros. *Fraoch*
- *Thornbridge Hall Bracia*
- Brasserie Dupont *Posca Rustica*
- Birra del Borgo *Etrusca*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Ancient Herbed Beer	Subtype of 27. Historical Beer	Subtype of Traditional Ale — Other	Subtype of Gruit / Ancient Herbed Ale, Herb and Spice Beer	Subtype of Historical Beer — Other, Gruit / Ancient Herbed Ale

There is no separate category or tag for “ancient” beer, read the descriptions carefully.

The Barbarian Booze

The best choice: Aecht Schlenkerla *Rauchbier Märzen*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Rauchbier	6B. Rauchbier	Smoked — Rauchbier	Lager — Rauchbier	Rauchbier
Smoked Beer	32. Smoked Beer	Smoked — Other	Smoked Beer	Smoked Beer

Bog Myrtle

The best choice:

- Scratch Brewing Company *Mumm*
- Schiøtz *Mørk Mumme*
- 7 Fjell / Vaat *Alte Hansa Mumme*
- Kongens Bryghus *Julemumme*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Mumme	Subtype of 27. Historical Beer	Subtype of Flavored — Other, Traditional Ale — Other	Subtype of Gruit / Ancient Herbed Ale, Herb and Spice Beer	Mumme
Gruitbier	30A. Spice, Herb, or Vegetable Beer	Gruit	Gruit / Ancient Herbed Ale	Gruit / Ancient Herbed Ale

Mumme is recognized as a separate beer style only on Untappd. There is the special "mumme" tag on Ratebeer. Otherwise, look for a dark thick beer with the word "mumme" ("mumm," "mum") in descriptions.

Word on Hops

The best choice:

- Klavervier *Koyt* — *Kuit* — *Kuyt*
- Oedipus *Shampoo*
- Jabeerwocky / Nepomucen *High Oats*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Koyt	Subtype of 27. Historical Beer	Subtype of Traditional Ale — Other	Subtype of Gruit / Ancient Herbed Ale, Herb and Spice Beer	—
Bock / *bockbier*	Subtype of 6C. Dunkles Bock	Subtype of Bock — Dunkler Bock	Subtype of Bock — Traditional	Subtype of Bock — Single / Traditional

There is no separate category for either *koyt* or warm-fermented *bock*. *Koyt* beers usually have the "koyt" ("kuit," "kuyt") word in their names (the one exception is Jopen *Koyt*). There is the "koyt" tag on Ratebeer. As for *bock*, any Dutch or Belgian one will do (note that it's frequently classified as a subtype of Strong Ale).

The Cold of Alpine Caves

The best choice:

- Weltenburger *Barock Dunkel*
- Spaten *Dunkel*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Dark Munich Lager	8A. Munich Dunkel	Subtype of Dark Lager — Dunkel / Tmavý	Lager — Munich Dunkel	Lager — Munich Dunkel

Ratebeer doesn't have a separate category for Bavarian dark lagers.

The Beer Purity

The best choice:

- Schneider Weisse *Mein Aventinus* (*Tap 6*)
- Weihenstephaner *Vitus*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Weizenbock	10C. Weizenbock	Weissbier — Weizenbock	Bock — Weizenbock	Bock — Weizenbock
Dark *Weissbier*	10A. Weissbier, 10B. Dunkles Weissbier	Weissbier — Hefeweizen, Weissbier — Dunkelweizen	Wheat Beer — Hefeweizen, Wheat Beer — Dunkelweizen	Hefeweizen, Dunkelweizen

Barrels and Bretts

The best choice: Greene King *Strong Suffolk / Olde Suffolk*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Stock Ale	Subtype of 28A. Brett Beer	Subtype of Old Ale	Subtype of Brett Beer	—
Old Ale	17B. Old Ale	Old Ale	Old Ale	Old Ale

There is no specific designation for stock ale, look for the words “stock ale” in the description. Not every Old Ale fits: ideally, take the one that indicates the usage of *Brettanomyces*.

The Beer of the Industrial Revolution

The best choice: Salopian *Entire Butt*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Entire-butt	Subtype of 27. Historical Beer	Subtype of Porter	Subtype of Porter — English	Subtype of Porter — English
Porter	13C. English Porter	Porter	Porter — English	Porter — English
Stout	15. Irish Beer, 16. Dark British Beer	Stout	Stout — English	Stout — English

There is no category for the original "entire-butt" porters; the reconstructions are just named "entire-butt."

It's All About Water

The best choice:

- Young's *Winter Warmer*
- Fuller's *1845*
- Ballantine *Burton Ale*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Burton Ale	Subtype of 17A. British Strong Ale	Subtype Strong Ale — English	Winter Warmer	Burton Ale, Winter Warmer

Burton ale is a thick dark subtype of British strong ales, sometimes marked as "winter warmer." There are the "burton-ale" and "winter-warmer" tags on Ratebeer, and there are the "Winter Warmer" and "Burton Ale" categories on Untappd. However, Burton ales might fall into almost every

category of British strong beer, including Old Ale, Bitter / Extra Strong Bitter, Barleywine, and British / English Strong Ale.

The Red Triangle

The best choice:

- Allagash *Brett IPA*
- Stone *Enjoy After Brett IPA*
- Ballantine *India Pale Ale*
- Worthington's *White Shield*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Brett IPA	Subtype of 28A. Brett Beer	Subtype of IPA — Sour / Wild	Subtype of Brett Beer	Subtype of IPA — Brett
IPA	12C. English IPA	IPA — English	IPA — English	IPA — English

The most authentic variants are strongly hopped British IPAs (IBU > 60, ideally made with Golding or Fuggle hops). There is the "brett-ipa" tag on Ratebeer.

The Age of Empires

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Russian Imperial Stout	20C. Imperial Stout	Stout — Imperial	Stout — Russian Imperial	Stout — Imperial / Double

A Series of Unfortunate Events

The best choice: *Pilsner Urquell*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Pilsner	3A. Czech Pale Lager	Pilsener — Bohemian / Czech	Pilsner — Bohemian / Czech	Pilsner — Czech

Orange Zest, Coriander, and the Hoegaarden Milkman

The best choice: *Hoegaarden*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Witbier	24A. Witbier	Witbier / Belgian White Ale	Wheat Beer — Witbier	Wheat Beer — Witbier

White, Yellow, Brown

Style	Manufacturer
Peeterman	Breda *Peeterman*
Uitzet	Paeleman *Uitzet 1730*
Seef	Antwerpse Brouw Compagnie *Seefbier*
Jack-Op	Brouwerij F. Boon *Jack-Op*
Zoeg	Brouwerij De Vlier *Zoeg Tienen*

Each of these beers is made by just one brewery and is not recognized by official guidelines.

Biology and Chemistry

The best choice:

- Cantillon *Gueuze*
- 3 Fonteinen *Oude Geuze*
- Lindemans *Faro*
- Oud Beersel *Oude Geuze*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Faro	—	Lambic — Faro	Lambic — Faro	Lambic — Faro
Lambic	23D. Lambic	Lambic — Unblended Jonge / Oude	Lambic — Traditional	Lambic — Traditional
Gueuze	23E. Gueuze	Lambic — Gueuze	Lambic — Gueuze	Lambic — Gueuze

For unknown reasons, BJCP does not recognize *faro* as a separate beer style.

March

The best choice:

- *Saison de Pipaix*
- *Silly Saison*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Saison	25B. Saison	Saison / Farmhouse / Grisette	Farmhouse Ale — Saison	Farmhouse Ale — Saison, Grisette
Bière de Garde	24C. Bière de Garde	Bière de Garde / de Mars / Brut	Farmhouse Ale — Bière de Garde	Farmhouse Ale — Bière de Garde, Farmhouse Ale — Bière de Mars

Turning Red

The best choice:

- Rodenbach *Alexander*
- Liefmans *Oud Bruin*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Flanders brown ("red") ale	23B. Flanders Red Ale, 23C. Oud Bruin	Sour Flemish Ale — Flanders Red / Oud Bruin	Sour — Flanders Red Ale, Sour — Flanders Oud Bruin	Sour — Flanders Oud Bruin, Sour — Flanders Red Ale

Spéciale Belge

The best choice:

- *Palm*
- De Koninck *Bolleke*
- De Ryck *Special*
- Contreras *Tonneke*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
The Belgian Special	24B. Belgian Pale Ale	Subtype of Belgian Ale — Dark / Amber	Subtype of Pale Ale — Belgian	Subtype of Pale Ale — Belgian

Though *Spéciale Belge* is an amber ale, BJCP, BeerAdvocate, and Untappd call it "Belgian Pale." Furthermore, in the BJCP guidelines, the Belgian Special is the only type of beer in this category, while all other pale Belgian beers fall into the "25A. Belgian Blond Ale" category; at the same time, BeerAdvocate and Untappd mark no difference between the Belgian Special and other

Belgian pale beers. Finally, Ratebeer classifies *Spéciale Belge* as a part of the "Belgian Ale — Dark / Amber" category, but at least it also features the "speciale-belge" tag.

The Rose of Brussels

The best choice:

- Cantillon *Rosé De Gambrinus*
- Cantillon *Kriek Lambic*
- Cantillon *Fou' Foune*
- 3 Fonteinen *Schaarbeekse Kriek*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Fruit *Lambic*	23F. Fruit Lambic	Lambic — Flavored	Lambic — Fruit	Lambic — Kriek, Lambic — Framboise, Lambic — Fruit

Not Brewers

The best choice: *Westmalle Dubbel*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Dubbel	26B. Belgian Dubbel	Dubbel	Dubbel	Belgian Dubbel

The White Cap

The best choice:

- *Westmalle Tripel*
- *Witkap Pater Tripel*
- *Tripel Karmeliet*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Tripel	26C. Belgian Tripel	Tripel	Tripel	Belgian Tripel

The Valley of Gold

The best choice: *Orval*.

Formally, *Orval* is classified as a Belgian strong pale / golden ale, but in fact, *Orval* is a beer style in its own right. Craft replicas of *Orval* might be found on Ratebeer by the "orval-clone" tag.

Gradus ad Parnassum

The best choice:

- Chimay *Grande Réserve* (*Bleue* / *Blue*)
- *Trappistes Rochefort 10*
- *Westvleteren XII*
- *St. Bernardus Abt. 12*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Belgian Strong Dark Ale	26D. Belgian Dark Strong Ale	Belgian Ale — Strong Dark	Strong Ale — Belgian Dark	Belgian Strong Dark Ale
Quadrupel	26D. Belgian Dark Strong Ale	Quadrupel / Abt	Quadrupel (Quad)	Belgian Quadrupel

BJCP doesn't recognize *quadrupel* as a separate Belgian beer style.

The Devil for Sale

The best choice: *Duvel*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Belgian Strong Pale Ale	25C. Belgian Golden Strong Ale	Belgian Ale — Strong Pale	Strong Ale — Belgian Pale	Belgian Strong Golden Ale

The Chronicles of the Catastrophe

The best choice: *Anchor Steam*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
Steam beer	19B. California Common	California Common / Steam Beer	California Common / Steam Beer	California Common

The Revitalisation

The best choice: Fuller's *London Pride*.

“Real ales” have their own classification as it's the set of requirements for beer production, not a specific beer style.

American English

The best choice: *Anchor Porter*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
American Porter	20A. American Porter	Subtype of Porter	Porter — American	Porter — American

Ratebeer doesn't recognize American porter as a separate category but does have the closely related “robust-porter” tag.

USDA 56013

The best choice:

- *Sierra Nevada Pale Ale*
- *Anchor Liberty Ale*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
American Pale Ale	18B. American Pale Ale	Pale Ale — American (APA)	Pale Ale — American	Pale Ale — American

BJCP, BeerAdvocate, and Untappd classify modern *Anchor Liberty Ale* as IPA, not APA; BJCP even stresses that the initial *Liberty Ale* of 1975 was much closer to the APA style.

The 4 C's

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
American IPA	21A. American IPA	IPA — American	IPA — American	IPA — American

For this chapter, we recommend trying several beers of the same lineup made with different hops. There is the “single-hop” tag for such beer series.

New Belgium

The best choice:

- New Belgium Brewing Company
  - *Fat Tire*
  - *Abbey*
  - *Le Terroir*

    - *La Folie*
- Unibroue
    - *La Fin du Monde*
    - *Trois Pistoles*
    - *Maudite*
    - *Terrible*
- Allagash Brewing Company
    - *Tripel Reserve*
    - *Interlude*
    - *Curieux*
    - *Evora*
    - *White*
- Brewery Ommegang
    - *Abbey Ale*
    - *Fleur De Houblon*
    - *Tripel Perfection*
    - *Gnomegang*
- Russian River Brewing Company
    - *Supplication*
    - *Damnation*
    - *Redemption*
    - *Perdition*

There is no category for American varieties of Belgian ales, as it's basically any craft beer in the Belgian style.

The Alchemist from Vermont

The best choice: The Alchemist *Heady Topper*.

Style	BJCP guidelines	ratebeer	beeradvocate	untappd

Style	BJCP guidelines	ratebeer	beeradvocate	untappd
New England IPA	Subtype of 21A. American IPA	IPA — Hazy / New England (NEIPA), IIPA DIPA — Imperial / Double Hazy (NEIPA)	IPA — New England	IPA — New England, IPA — Imperial / Double New England

BJCP doesn't recognize NE IPA as a separate style.

The Three Whales of the Craft Revolution

The best choice: try something new!

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