The process of distillation (from the Latin 'de-stillare' for 'drip or trickle down") is the separation of a liquid by evaporation and condensation. The simplest example of this is when steam from a kettle becomes deposited as drops of distilled water on a cold surface.

Distillation is used to separate liquids from non-volatile solids, as in the separation of alcoholic liquors from fermented materials, or in the separation of two or more liquids having different boiling points, as in the separation of gasoline, kerosene and lubricating oil from crude oil. Other industrial applications include the desalination of seawater.

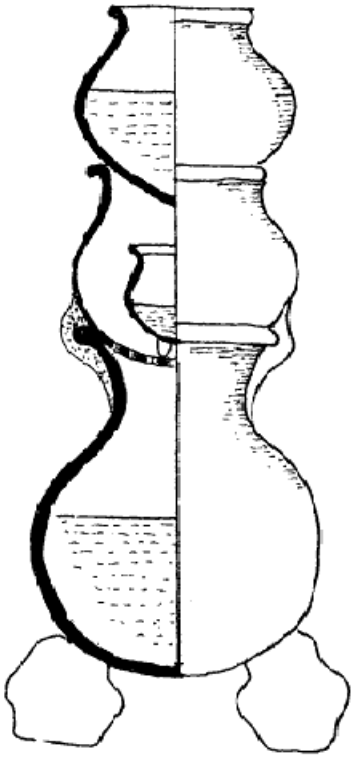
Unlike wine and beer, which are historically connected to early advances like the cultivation of crops (grapes and barley), spirits require a very specific second step after fermentation: distilling. Fermentation can happen by accident—wild yeast could easily stumble upon some rotted fruit and ferment the sugars into alcohol. But distilling requires very specific intentions, which is why we only got to distilling through alchemy—yes, that thing where scientists try to turn lead into gold.

It is an age-old process which may have began as early as 2000 BC. Some say that the first use of distillation occurred in India, Egypt, or Mesopotamia for medicinal purposes as well as to create balms, essences, and perfumes.

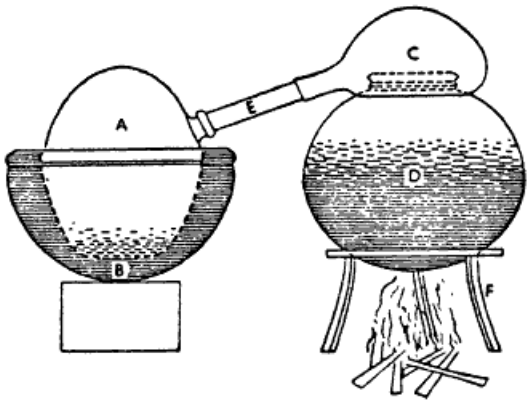
About 1800 B.C. in Mesopotamia, the perfumery of King Zimrilim is reputed to have employed this method to make hundreds of liters of balms, essences and incense from cedar, cypress, ginger and myrth every month. These were used to embalm the dead and for spiritual, medicinal and cosmetic purposes.

Certainly the Ancients had the technology both pottery and bronze working to achieve distillation and in some funerary stele such at the one below we see a pot with a fire under it. Often described as a man drinking beer with a straw, it can also easily be seen as an early still. It is still pure speculation as to when or even if ancient Egyptians had distillation in any form we might recognise today. However it is know that they had the technology and the raw materials for several millennia.

In his article: *India: The Ancient Home of Distillation*? (New Series, Vol. 14, No. 1 (Mar., 1979), pp. 55-63) F. R. Allchin makes a compelling argument for distillation in India dating back to at least 500BC and possibly further. The ancient styles of stills shown below have been in use for millennia and there is good anecdotal and archaeological evidence for their use well into antiquity



Indian tribal still from Bihar (after Mahdihassan, 1972). This is an example
ertical type of still sometimes referred to as the Mongol still.



. Still reconstructed from finds at Taxila, Punjab (after Marshall, 1951). This apparatus dates from 1st century B.C.–A.D.

The Mongol still shown above is still used to this day to make the distilled version of Kumis or airag. Herodotus in *Histories* describes the Scythians making and drinking Kumis in 500BC and traces of mares milk have been found in pottery vessels from the Botai culture from Kazakhstan from as early as 3500BC. This puts them very firmly in the race for the earliest potential distillers in history.

It is claimed by some scholars that Queen Cleopatra knew about distillation and is thought to have given an account of the process in a text which is now lost. In the first century, a Greek physician Pedanius Dioscurides made mention of this process after he noticed the condensation on the lid of a vessel in which some mercury was being heated

Aristotle wrote about the process in his *Meteorologica* and even that "Seawater can be made potable by distillation as well and wine and other liquids can be submitted to the same process." and "ordinary wine possesses a kind of exhalation, and that is why it gives out a flame". Later evidence of distillation comes from Greek alchemists working in Alexandria in the 1st century AD. Distilled water has been known since at least c. 200, when Alexander of Aphrodisias described the process

The earliest recorded wine distilling recipe is traced by some scholars to Anaxilaus of Thessaly, who was expelled from Rome in 28 B.C. for practicing magic.
“There is sea-foam (salt) that has been heated in an earthenware wine-jar with new wine. When this has been boiled, if you apply a burning lamp to it, seizing the fire it sets itself alight, and if poured upon the head it does not burn at all. “

“Boiled” was the Greek term for distilling, and salt was a common ingredient in medieval distilling recipes, for it raises the boiling point of wine by a few degrees.

Distilling itself is based on the concept that different substances turn to vapor at different temperatures. This was known to the Greeks for centuries before the sophisticated stills of the Egyptian philosopher-chemists. For example, ancient Greek sailors evaporated drinkable water from sea-water. They also learned that if wine was boiled in an open container, the fiery alcohol vapor escaped first. How to capture this elusive substance? The Greeks learned that if wine was heated slowly in a vessel with a small mouth covered by a bowl, alcohol would collect as condensed vapor inside the bowl, much as a pot lid collects droplets of condensed steam. The addition of a downward-slanted tube to the apparatus facilitated the cooling and condensation of the vapor and its collection in a handy receiving vessel. Thus our word “distill” comes from the Latin verb “destillare,” meaning “to drip down.”

At this time, distilling was not practiced solely for drinking enjoyment, but as part of the mystery religions of the era. Dionysus, the god of wine, was a revered deity who was honored with elaborate ceremonies at Delphi and other northern Greek cities from the 5th c. B.C.

Poems, notably in Euripides’ play The Bacchae describe how the maenads, female followers of Dionysus, would carry bronze stillheads during biennial rituals. Spirits were also flamed over the heads of initiates in rituals demonstrating the presence of the god. (When sulphur was added to the spirit, its theatrical flaming properties were increased, leaving hair and clothing safe and unmarked.) *It is worth noting that this is a quite liberal interpretation of the source material and the author is not 100% convinced that it is not more wishful thinking than actual fact.*

This practice was later taken over by the Gnostic Christian cults, who practiced a similar baptism by fire. In addition, the fact that spirits could preserve human flesh seemed to

confirm for them the notion that they could confer long life or immortality when drunk. Interestingly, a 3rd century Coptic text may indicate that a botanical mixture including juniper, saffron, and cinnamon was infused into a distillate, which would make it the first known gin.

Philosopher-chemists in Alexandria, Egypt practiced distilling from around the 2nd century B.C. They employed three or four different still types by the 1st century A.D . Their goal was not to distill spirits, but to obtain substances such as sulphur, mercury, and arsenic in order to alter the external composition of base metals and colour them gold.

This was part of a ritual practice, “a healing and release for all pain from the soul.” (*Phusika kai mustika, 200 B.C*.) In the process of bringing forth “fire” from base metal, it was thought, the alchemist’s soul would in turn become increasingly “fiery,” or closer to heaven.

Writings in the 4th century A.D. also attribute the development of the tribikos—or three-armed pot still—to “Maria the Jewess,” the first documented Western alchemist. (Whether she actually invented it is unclear.)

But it wasn’t until the 8th century A.D. that Arabic alchemist *Abu Musa Jabir ibn Hayyan* designed the alembic pot still, a contraption that allowed for the effective distillation of alcohol.

Of course as Jabir states in his Book of Stones (4:12) that "The purpose is to baffle and lead into error everyone except those whom God loves and provides for". His works seem to have been deliberately written in highly esoteric code , so that only those who had been initiated into his alchemical school could understand them.

It is therefore difficult at best for the modern reader to discern which aspects of Jabir's work are to be read as ambiguous symbols, and what is to be taken literally. Because his works rarely made overt sense, the term gibberish is believed to have originally referred to his writings

Not that Jabir (corrupted into “Geber”) was interested in recreational alcohol, even when he discovered a clear, flammable vapor from the distillation of wine. A forefather of modern chemistry, Jabir was driven by science. Even when fellow alchemist Muhammed ibn Zakaryia Razi began refining the practice of distilling alcohol specifically in the 9th century, the goals still had little to do with recreation—distilled alcohol was used primarily for ritual or medicine.

The Persians practiced distilling at the medical school in Jundishapur in the 6th century, where it was used to make herbal tinctures. The Arabs used large, elaborate stills to make rosewater and other herbal compounds, and to conduct innovative alchemical experiments in the 9th and 10th centuries, creating solvents for base metals and also attempting to discover an "elixir of life." They apparently succeeded in distilling spirits, for the poet Abu Nuwas described a wine that "has the color of rainwater but is as hot inside the ribs as a burning firebrand."

Cathar missionaries from the Balkan region brought the Anaxilaus recipe for wine distilling with them to Western Europe in the 12th century, as well as the practice of baptism by fire. Clear evidence of the distillation of alcohol comes from the School of Salerno in the 12th century. Fractional distillation was developed by Tadeo Alderotti in the 13th century.

The church eventually overcame its opposition to distilled spirits and by the early 14th century allowed monasteries to house stills for making aqua vitae, or "water of life". The infirmaries and herb gardens surrounding the monasteries provided medicines and formulae for special healing concoctions, the progenitors of modern liqueurs such as Benedictine and Chartreuse.

Distillers who supplied aqua vitae directly to the public were found in Italy as early as 1378, and royal houses began to employ distillers on their staff. By the fifteenth century, German authorities had become concerned about the ills of public spirits consumption, as people with no medical experience began to set up stills at home and sell their wares on holidays in front of their homes.

1437, "burned water" (brandy) was mentioned in the records of the County of Katzenelnbogen in Germany.[12] It was served in a tall, narrow glass called a Goderulffe.

Claims upon the origin of specific beverages are controversial, often invoking national pride, but they are plausible after the 12th century AD, when Irish whiskey and German brandy became available. These spirits would have had a much lower alcohol content (about 40% ABV) than the alchemists' pure distillations, and they were likely first thought of as medicinal elixirs. Consumption of distilled beverages rose dramatically in Europe in and after the mid-14th century, when distilled liquors were commonly used as remedies for the Black Death.

Around 1400, methods to distill spirits from wheat, barley, and rye beers, a cheaper option than grapes, were discovered. Thus began the "national" drinks of Europe: jenever (Belgium and the Netherlands), gin (England), Schnaps (Germany), grappa (Italy), horilka (Ukraine), akvavit/snaps (Scandinavia), vodka (Poland and Russia), ouzo (Greece), rakia (the Balkans), and poitín (Ireland). The actual names emerged only in the 16th century, but the drinks were well known prior to then.

In 1494, the Scottish Exchecquer rolls cite the provision of eight bolls of malt to a friar for the making of aqua vitae; the use of cereals to distill spirits was already widespread in northern Europe. There was a distinction between simple aqua vitae, which was not redistilled over botanicals to prepare medicinal waters, as was often done in England and in the monasteries. The Gaelic translation of water of life, “uisquebaugh” was current among Gaelic speakers and was valued as a warming remedy in damp, cold climates.

The first printed book on producing distilled waters to treat a variety of ailments appeared in Germany in 1477 German alchemist Hieronymus Braunschweig published *Liber de arte destillandi (The Book of the Art of Distillation)* the first book solely dedicated to the subject of distillation, followed in 1512 by a much expanded version.

A spoonful of aqua vitae is recommended each morning to prevent illness, and if a little was given to a dying person, it was said he would speak before he died. Pictures in the book show a woman operating a still over a charcoal fire, surrounded by herbs, confirming the role of wise women who provided folk medicine to those too poor to see a physician. Around this time, distilled spirits also began to appear in cookbooks as a means of enhancing the presentation of foods, e.g., ignited spirits could be made to shoot from the mouth of a roasted peacock, sewn back into its skin and feathers.

The alembic gradually improved. In 1526, Paracelsus used a water bath (called balneum Mariae by the alchemists) for the first time. It prevented the flask from cracking while heating up, and stabilized the liquid's temperature.

In 1651, John French published *The Art of Distillation* the first major English compendium of practice, though it has been claimed that much of it derives from Braunschweig's work. This includes diagrams with people in them showing the industrial rather than bench scale of the operation.

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