

OVERCOMING CONTAMINATED WATER IN ANCIENT TIMES:  
THE USE OF BEER, WINE, AND SPIRITS TO MAKE WATER SAFER

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Adult human beings are comprised of approximately 60% water.<sup>1</sup> Replenishing the body's water is perhaps the single most important human activity besides breathing. Recognizing this, humans have endeavored to find safe, pleasant tasting water sources. Unfortunately, many water sources are not safe, nor are they pleasant to taste. Contaminants such as human waste, animal waste, and chemicals cause deadly diseases and/or make water unfit to drink. As Tom Standage points out in his epilogue to *A History of the World in 6 Glasses*, The World Health Organization estimates that approximately 80% of all world illnesses are caused by waterborne diseases.<sup>2</sup> While primitive humans did not know about bacteria, they probably learned rather quickly that the quest for potable water was essential to survival. Water allows life to thrive, yet it can also bring death if contaminated. To combat such an unfortunate reality, humans turned to beverages such as beer, wine, and spirits, finding that they made quenching the thirst safer and tastier.

Beer was likely discovered by accident when stored grain became damp, released natural sugars when it began to sprout, and began to ferment in the hot sun with the help of wild yeast. Thought to be a gift from the gods, it provided nourishment to ancients from Mesopotamia to Egypt as "liquid bread." Unlike modern beer, ancient beer had a lower alcohol content since it was often consumed before the fermentation process was completed. This made the beer high in vitamins and protein, a great compensation for the decline in meat consumption that occurred during the transition from hunting to farming.<sup>3</sup> Everyone who could obtain it, from child to adult, drank beer. What made beer particularly important to ancient humans, however, was that it was safer to drink than the available water. Because brewing beer requires heating water, the heat

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<sup>1</sup> "The Water in You," The USGS Water Science School, <http://ga.water.usgs.gov/edu/propertyyou.html> (accessed June 26, 2013).

<sup>2</sup> Tom Standage, *A History of the World in 6 Glasses* (New York: Walker & Company, 2005), 269.

<sup>3</sup> *Ibid.*, 21.

kills many of the bacterial contaminants, making the resulting mixture safer to drink than the original water.<sup>4</sup> While ancient people did not understand the reason why drinking beer was safer than drinking water, they certainly understood beer's lifesaving effects.

Over time, the accident that introduced beer to humans was studied, reproduced, and became an intentional effort to make beer on a large scale, which made water safer and tastier for the masses. Large-scale beer brewing was both a consequence of and a response to population increase. As beer made water safer, more people survived and thrived. As population increased and settlements became larger, nearby streams and ponds would have been more likely to become contaminated by waste. Brewing beer helped to counteract this by killing the bacteria in the waste. Therefore, as cities grew and more people lived in closer proximity to each other, beer became an increasingly important method of providing a safe alternative to water. Beer helped population to increase, while at the same time it helped keep the increasingly large population safe from the contaminated water that came with a larger population. According to Standage, bread and beer (the latter being the liquid form of the former) became so important to humanity that they "became synonymous with prosperity and well-being."<sup>5</sup> This is exemplified by the combination of the hieroglyphs for bread and beer to form the ancient Egyptian symbol for food. Beer helped to sustain life.

Like beer, wine also quenches the thirst in a safer and tastier way than water from a stream or a pond. In addition to alcohol, wine contains natural antibacterial properties, making it useful to the ancients as a medicine as well as a beverage. In the climates in which it could be grown, wine was the preferred beverage for the elite who could afford it. Later, particularly in Greece and Rome, wine became the drink of the commoner as well as the nobility. An interesting

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<sup>4</sup> Ibid., 21-22.

<sup>5</sup> Ibid., 37.

note about wine use in Greece was that wine was typically mixed with water. This had a double effect. On the one hand, the addition of water to the wine helped to dilute the potency of the wine and thereby keep the drinkers from becoming overly intoxicated. Conversely, the addition of wine to the water made the water safer to drink. Wine is free of pathogens and contains natural antibiotic properties that made the available water safer to drink when wine was added. As Standage notes, the Greeks were well aware of the dangers of contaminated water, so they drank from springs, deep wells, and rainwater cisterns.<sup>6</sup> When such clean water was in short supply or not available, the addition of wine made the available water more potable.

The Centers for Disease Control and Prevention recommends boiling potentially contaminated water after disasters such as hurricanes for one minute to make it “safe.”<sup>7</sup> Whether brewing beer, fermenting fruit to make wine, distilling wine into spirits, brewing ground coffee beans, or steeping tea leaves, water must be heated (if not boiled) for a period of at least one minute to make the desired beverage. This process, done unintentionally in ancient times and intentionally today, made water safer to drink when most available water was unsafe. After the discovery and refinement of beer and wine, distilled spirits emerged as perhaps the safest drink of all, with regard to having fewer bacterial contaminants. Distillation techniques dating back to Aristotle were used by Arab scholars to distill wine into spirits. The distillation process created condensation, which after being drawn off led to a beverage with a higher alcohol content. This higher alcohol content produced a lower boiling point, killing a greater number of bacteria with less effort. Some of the key benefits of distilled spirits were that it kept from spoiling on long voyages (an improvement over beer and wine), took up far less cargo room than beer or wine,

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<sup>6</sup> Ibid., 59.

<sup>7</sup> “Water-Related Emergencies & Outbreaks,” Centers for Disease Control and Prevention, [http://www.cdc.gov/healthywater/emergency/safe\\_water/personal.html](http://www.cdc.gov/healthywater/emergency/safe_water/personal.html) (accessed June 28, 2013).

and could be added to the often stale and putrid water stored on ships to make it more palatable and certainly safer. While most of the miraculous claims about *aqua vitae* or “water of life,” as distilled wine was known, were exaggerated, the use of distilled spirits did undoubtedly provide a safe alternative to water alone. Spirits went on to become an important trade good for hundreds of years.<sup>8</sup>

Humanity owes a debt of gratitude to the serendipitous events that led to the discovery of beer, wine, and the science that led to spirits. While these drinks were certainly misused by barbarians, quack doctors, slave traders, and drunkards, they played an important role in developing the civilization we know today. Beer and wine provided a source of nutrition and likely helped increase population due to the decrease in waterborne diseases. Spirits made water safer on ships and became an important trade good that fueled the first global age of commerce. The most important ingredient of all three drinks is water, which was made safer by heating, fermenting, and distilling. In modern times, water purification efforts employ the use of charcoal filtration, chlorination, reverse osmosis, and solar disinfection. In ancient times, however, water purification was largely an accident. Still widely consumed and appreciated today, these three drinks truly have been *aqua vitae*.

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<sup>8</sup> Standage, 98-99.

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