



A sketch by William Waud, ca. 1871,
dramatizes the toll yellow fever took on New Orleans.
THE HISTORIC NEW ORLEANS COLLECTION

GETTING (AWAY FROM) THE VAPORS

*The ancient medical theory behind the
Louisiana landscape's transformation*

BY

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Roughly half of Louisiana was originally wetlands of some sort, ranging from coastal saline marshes to inland freshwater swamps or broad, flat floodplains subject to occasional inundation. Over the centuries, roughly half that landmass, equating to some eight million acres, has been either lost to erosion or transformed through levees and drainage. Motivations for the dewatering were, and remain, ultimately economic, as agriculture and urbanization yield more immediate profits than the ecological services of wetlands.

But there was another historical impetus behind the draining of swamps and marshes, particularly those near cities. It invoked ancient notions of purity and salubrity which saw danger lurking in the morass, and sought to resolve that fear with a mix of scientific solemnity and religious zeal. It was called miasmatic theory.

The word *miasma* took a circuitous route from ancient Greece to Louisiana. According to scholar Jacques Jouanna, the word derived from *miaino*, meaning to stain, and first appeared in Greek tragedy “in connection with the stain of blood spilt in a crime.” It figured mostly into legal or religious contexts, and later came to imply defilement and pollution, which made it relevant to

physicians, such as Hippocrates, as they contemplated the causes of disease.

Lacking microscopy and any understanding of germs, bacteria, or viruses, the best physicians relied on what they could see and feel. Drawing upon Hippocrates’s writings, they understood human health to reflect a balance of four bodily “humors”—phlegm, blood, yellow bile, and black bile—and surmised that imbalances of these fluids resulted in malady.

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Extrapolating from the corporal to the environmental, they reasoned that diseases must thus arise from imbalances in nature, where excessive heat, water, moisture, or decomposition prevailed, at least in comparison to the temperate latitudes they knew and presumed to be normal.

Swamps in “torrid” climates topped the list of worrisome environments, as their damp humus was thought to emit steamy noxious vapors, which they termed “miasmas.”

It didn’t help that swamps also seemed to be dark, eerie places that impeded movement and precluded human habitation, all the more reason to view them as threatening.

The miasma perception spread as Europeans expanded their empires into the American subtropics such as the Gulf Coast, and into hydric places like Louisiana. “The hot and humid climate of Louisiana and the colony’s low-lying lands,” wrote historian Marion Stange, “were exactly what contemporaries considered to be an unhealthy environment.”

The “proof” was all around them. Indigenous peoples had perished in large numbers since as early as the 1540s, when the expedition of Hernando de Soto first spread European diseases through the region, to the point that Iberville himself reported that fully one-quarter of the Bayougoula in present-day Iberville Parish had recently perished of smallpox, leaving some 250 survivors at the time of his March 1699 visit.

As for French colonials, thousands had perished since Iberville first launched the Louisiana project, and by one 1725 estimate, only ten inhabitants out of a New Orleans population of nine hundred had not yet been afflicted by “fever.” Insalubrity and mortality beleaguered every aspect of colonial progress, from the rallying of new investors; to the in-migration

(forced or voluntary) of colonists and slaves; to house construction, agriculture, and resource extraction.

All this cast “excess” water as not merely irritating or menacing, but as “evil,” as one commentator in 1850 explicitly described the swamps near New Orleans—a “boiling fountain of death[,] dismal, low and horrid[,] belching up its poison and malaria[,] feeding the living mass of human beings [with] the dregs of the seven vials of wrath.” The conviction was as old as civilization. The Persians considered dirty water to be a sin; the Babylonians viewed urban uncleanness to suggest moral evil; and the Romans described the miasmas rising off the Tiber River marshes as “sickening air,” or *mal aria*—the etymology of the disease of the same name.

Louisianans blamed miasmas for maladies ranging from malaria and typhoid to dengue and cholera, but the one they feared the most was yellow fever. Between 1796 and 1905, over one hundred thousand Louisianans lost their lives to this arboviral disease; in New Orleans, annual death rates that generally ranged around 7 percent in the late 1700s and 4.3 percent throughout the 1800s peaked at around 10 percent during seasonal yellow fever epidemics.

Medical communities formed to try to understand the plagues. Creole and “foreign French” doctors formed *La Société Médicale de la Nouvelle Orléans*, while Anglo-Americans organized the Physico-Medical Society, and together they devised desperate measures with the specter of miasmas floating in their heads. Among them were treatments of chlorine, sulfurous acid gas, carbolic acid, and lime to areas associated with outbreaks, as well as the burning of tar and, on at least one occasion, the firing of cannon. All were futile, and some were dangerous.

Another tactic, taken by those with means, was simply to leave town. So many departed at first rumor of an epidemic that summertime resort communities formed in places like Grand Isle, Chenière Caminada, and Isle Dernière in the parishes of Jefferson, Lafourche, and Terrebonne,

and in coastal Mississippi and Texas, where sea breezes were thought to disperse miasmatic vapors. Others took refuge across Lake Pontchartrain to St. Tammany Parish, where medics perceived that pine forests released medicinal balsam, and where electricity in the atmosphere (understood as ozone, a sort of antithesis to miasmas) could “purify the air by destroying malignant microscopic organisms,” as the *Picayune* put it in 1900. Advocates for St. Tammany dubbed their parish “the Ozone Belt” and made health tourism a big part of the parish economy well into the twentieth century.

Another tactic to battle miasmas was to attack them at their alleged source—that is, to drain the swamplands, starting with those closest to populated areas. It is in this regard that the ancient medical belief of miasmatic theory most affected the Louisiana landscape.


The 1853 yellow fever epidemic—worst in Louisiana history, claiming over eight thousand people in New Orleans alone—catalyzed new thinking on public health, urban sanitation, and government responsibility for drainage. Leading the effort was a commission headed by Dr. Edward Hall Barton, who, according to an 1853 *Picayune* article, wanted answers on “the subject of sewerage and common drains . . . and their influence on health” and sought “a thorough examination into the sanitary condition of the city.”

A pioneer in quantitative methods and graphical representation, Barton surveyed communities throughout Louisiana and the Gulf and Caribbean basins, in Ecuador and Brazil, and analyzed a vast array of data. His scientific approach permeated the commission’s final report, released in 1854, and a close read of the document reveals Barton subtly distancing himself from miasmatic theory. While the report does allude to miasmas, evil, vice (“insalubrity and immorality have a similar paternity”), and the “hand of God,” Barton spent much more time documenting geophysical problems, overlaying timelines, and discussing what today would be called

urban water management. He even mentioned mosquitoes four times.

It would take another half-century to solve the riddle of yellow fever, through contributions by pioneering researchers like Carlos Finlay of Cuba and Walter Reed of the US Army, among others. Mosquitoes, namely *Aedes aegypti*, proved to be the true culprit, not miasmas, and while standing water created habitat for this vector, it was really small puddles and water droplets—not swamps—where *Aedes aegypti* bred best and nearest to human blood meals. Swamps had been erroneously maligned by an ancient hypothesis proven wrong.

By the turn of the twentieth century, when municipal drainage had become a region-wide imperative, economic reasons replaced medical motivations as main drivers of dewatering. Between the early 1890s and the late 1910s, most of modern-day metro New Orleans had some level of surface drainage to remove the last of the true swamps, and many areas had subsurface pipes installed to enable urban development. Similarly, drainage elsewhere in Louisiana served to create cropland and pasture, oftentimes as part of flood control projects.

These dewatering efforts have brought wealth and prosperity to Louisiana (or at least some parts and to some people), but they have come at a cost—of soil subsidence, of luring people into flood zones, of loss of wildlife habitat, of loss of space for storm surge absorption and rainfall retention. In effect, Hippocrates had been right about the problem of fluid imbalances; he just applied it to the wrong realm. 

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