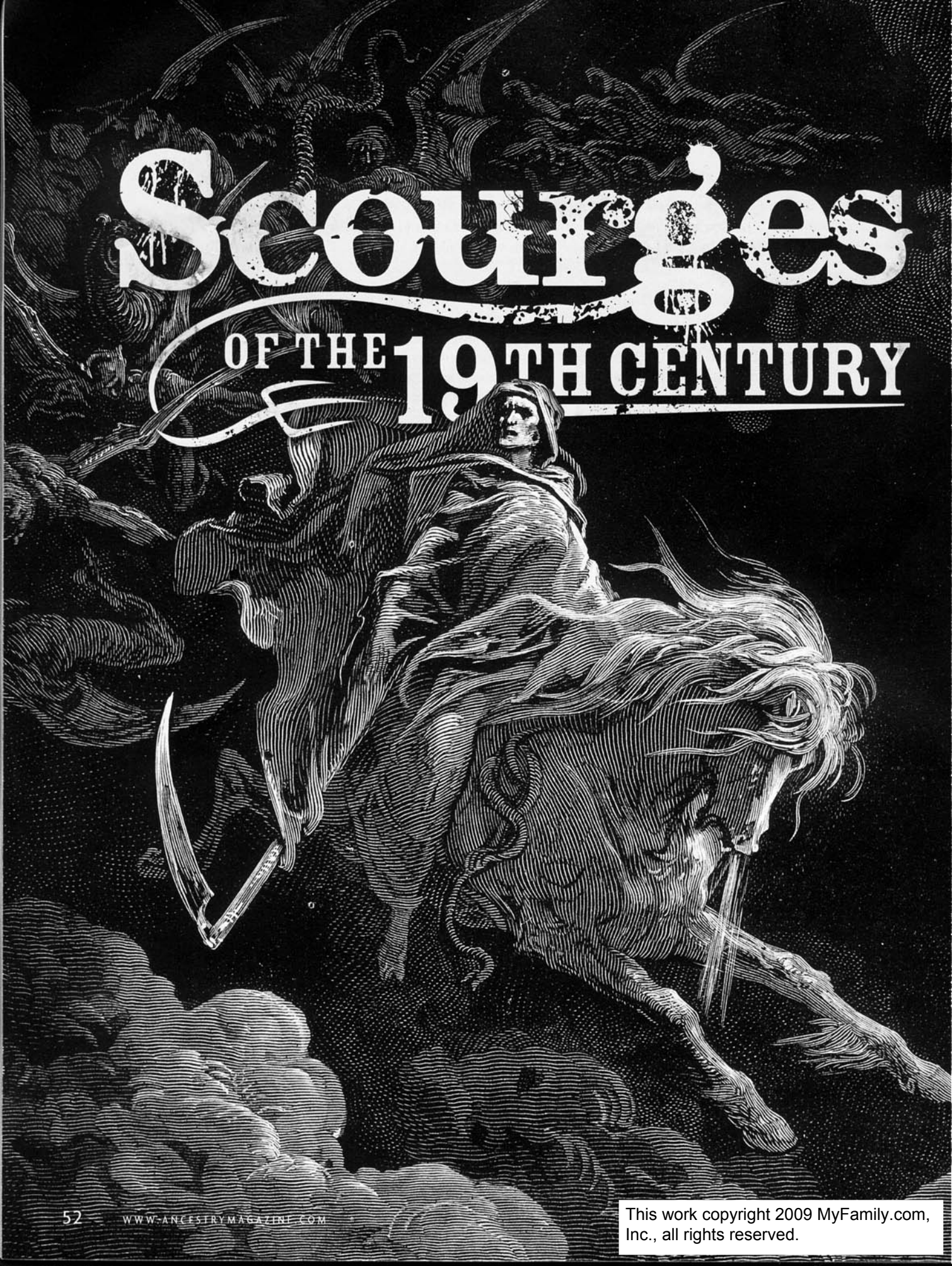
Scourges of the 19th Century



Oh, mothers, be careful and cautious
What milk for your children you buy,
Be careful 'tis not the swill poison,
That's sold in some carts that drive by.

—"Swill Milk #2," by G. W. Anderson (1855)

BY JENNIE KAUFMAN

It was 1869. Irish immigrants Joseph and Bridget Moore and their three daughters (Mary, 4; Jane, 3; and baby Agnes) took an apartment at 97 Orchard Street, New York.

They were moving up, says David Favaloro, research director of the Lower East Side Tenement Museum, getting out of the notorious Five Points district and into a six-year-old building with an actual sewer line from the outhouses in the privy yard.

Touring the museum's re-creation of the Moores' 325-square-foot apartment, you see a small bedroom, crammed with bedding and luggage, and a kitchen with a big coal stove and a washbasin. Finally, you enter the neatly furnished front room, set up for a funeral vigil with a tiny coffin. Baby Agnes died when she was five months old.

The cause of death was marasmus, a form of malnutrition. It's likely that her illness was caused or worsened by contaminated milk.

Dairy Problems

Bad milk wasn't an uncommon occurrence. "Swill milk," which came from cows fed distillery waste, or swill, was widely distributed in urban areas. And swill milk and the process that created it was neither healthy nor safe for cow or baby.

Cows fed swill were undernourished and sick: they lost their teeth, they were covered in sores, their tails rotted off. The milk they produced was bluish and thin; distributors would add everything from flour to chalk to make it appear white.

Swill milk wasn't the only problem. Milk—whether it started out good or bad—was subject to human handling. Conditions were anything but sanitary. Containers used for transport and delivery were often reused by customers and milkmen without cleaning. The product itself was carted through filthy city streets, often uncovered. Milk was often watered down, providing inadequate nutrition. And, in the days before pasteurization became mandatory, bovine tuberculosis could be passed to humans through milk.

To make matters worse, many poor urban women didn't breast-feed their children. Their belief? That cow's milk was better for the child.

Infant Mortality

Infant mortality was frighteningly high in the latter half of the 19th century. In New York City, 20 percent of children never reached their first birthday. Nationwide, in 1900, 18 percent of children died before age five. They died of pneumonia, gastroenteritis, diphtheria, and malnutrition.

Treatments were more hopeful than specific. According to Favaloro, "Disease isn't disease, a doctor isn't a doctor, a hospital isn't a hospital as we understand it today."

Modern medicines hadn't been developed yet, and most diseases weren't understood. Because physicians paid house calls to the wealthy, hospitals carried the stigma of poverty and were mainly a place the sick went to die, Favaloro continues.

People relied on patent medicines. These included

"soothing syrups" containing morphine, heroin, opium, or laudanum; they were effective in making babies stop crying, but they were addictive. And they failed to address the cause of the problem.

As for the Moores, they had eight daughters in all. Only four reached adulthood. Bridget herself died at 36, apparently of a heart ailment.

Epidemics

In the crowded tenements in U.S. cities, poor sanitation helped disease thrive. The late 19th century saw epidemics of typhoid, typhus, smallpox, influenza, and bubonic plague, among others. A lack of understanding of the cause and means of prevention helped two epidemics—cholera

"Death rides a cootie."

Doctor Joseph Lyon of the University of Utah's School of Family and Preventative Medicine warns his epidemiology students that "when estimates of mortality include lots of zeroes, we're guessing."

But when it comes to how our ancestors died on a large scale, it's actually the little things—microscopic organisms—that have made the difference. The smallpox virus, for example, killed more people in the 20th century than all of that century's wars combined, and the bacteria behind epidemic typhus has been more effective at decimating armies than the cavalry charge.

From the black death to yellow fever, here are some of history's most ruthless killers:

What: Smallpox
When: first recorded epidemic 1350 B.C.
Body count: 300+ million in 20th century
Where: worldwide
Modus operandi: viral infection

In terms of killers, Dr. Lyon agrees that "smallpox probably ranks about number one." Smallpox was among the diseases that decimated native populations in the New World, but it also has the distinction of being the first—and to date only—disease to be eradicated by human beings (as of 1979) after an intensive vaccination program.

What: Plague
When: 1347–51
Body count: 25+ million
Where: Europe
Modus operandi: viral infection

The most famous epidemic in Western culture is the Black Death, which wiped out some 25 million western Europeans between 1347 and 1351. The plague, caused by a viral infection transmitted via fleas, followed trade routes out of China, through the Middle East, and up into Russia, and estimates range from 75 to 200 million victims worldwide in the 14th century.

What: Typhus
When: 1489
Body count: 18,000
Where: Granada
Modus operandi: bacterial infection (via body lice feces)

Typhus, which in one month decimated a Spanish army laying siege to the Moors in Granada in 1489, has changed the course of wars and the tides of history. Spread by body lice, typhus thrives in close quarters and unsanitary conditions: jails, ships, urban slums, and army camps—including Napoleon's Grand Armée, which typhus helped drive from Moscow. Tens of thousands died from typhus during Ireland's Great Famine, while thousands more perished from "ship fever" crossing the Atlantic. Russia saw 3 million die of epidemic typhus from 1917–23 in the midst of the Socialist Revolution.

What: Yellow fever
When: August–October 1793
Body count: 5,000
Where: Philadelphia, Pennsylvania
Modus operandi: viral infection (via mosquito)

In three months, almost one-tenth of the population of Philadelphia and its suburbs died of a fever the city's physicians were powerless to treat. The 1853 yellow fever outbreak in New Orleans killed more than 8,000; an 1878 epidemic left more than 5,000 dead in Memphis and bankrupted the city. An 1800–03 epidemic in Spain took 60,000 lives.

What: Cholera
When: 7 pandemics between 1817 and 1970
Body count: 25+ million
Where: from India to the world
Modus operandi: bacterial infection (transmitted via water systems)

Cholera started in India, and the last two centuries have witnessed 7 pandemics. Cholera can kill in hours, with a mortality rate of up to 50% even among its healthiest victims. The 1832 pandemic in New York City left 3,500 of the city's 250,000 residents dead. In Paris, 18,000–20,000 perished in a matter of months.

What: Influenza
When: 1918–19
Body count: 20–50 million
Where: worldwide pandemic
Modus operandi: viral infection

This flu gets the top spot for sheer efficiency. Dr. Lyon points out that this outbreak demonstrated the classic qualities of an epidemic: "It was not there previously. It hit, killed a lot of people, and then disappeared over time." Scientists still don't know exactly what made this virus so deadly. Other flu pandemics occurred in 1957 (Asian flu) and 1968 (Hong Kong flu).

and yellow fever—become particularly difficult and persistent.

Cholera

Cholera reached the United States in the 1830s, as steamship travel and immigration increased. Public sentiment on the diseases, wrote historian Charles Rosenberg in *The Cholera Years: The United States in 1832, 1849, and 1866*, was that cholera "was a scourge not of mankind but of the sinner" and that the disease would target people who engaged in what was considered morally reprehensible activity. "Most Americans did not doubt that cholera was a divine imposition," said Rosenberg.

However, cholera is a bacterial disease usually spread through contaminated water. Its progress is fast and horrifying: victims experience sudden and severe diarrhea and vomiting resulting in drastic dehydration. The skin turns blue and facial features become gaunt. In early epidemics, half of those stricken died, often within hours.

Yellow Fever

Yellow fever, a mosquito-borne virus, came to the United States on ships from the Caribbean. The disease, which can cause jaundice, hemorrhaging, heart arrhythmias, and liver and kidney failure, killed more than 8,000 in New Orleans in 1853, although numerous other cities in America and elsewhere also reported outbreaks.

In 1878, despite a federal quarantine act, yellow fever spread up the Mississippi River, killing 20,000 people. Half the population of Memphis fled; the epidemic cost the city $15 million, leaving it bankrupt.

Public Response and Trial and Error

Officials could do little more than call for quarantines, but those could easily backfire. During Norfolk, Virginia's 1855 yellow fever epidemic, other towns tried to keep residents of Norfolk from entering their towns. But, wrote Norfolk pastor George D. Armstrong at the time, "The prospect of being trapped with the disease sent many people fleeing the town in panic."

And because quarantines took such a severe toll on a city's economic well-being, there was an incentive to hide disease. When bubonic plague struck San Francisco in March 1900, residents of the affected Chinatown area denied it for years, as did business leaders and California's governor. More than 100 people died before the next governor took steps to bring it under control.

Orphanages arose in the wake of epidemics, although most parentless children found homes with relatives or friends. But children also lost their mothers when fatal germs were spread in maternity wards, or "lying-in hospitals."

TREATMENT AS THEY ARRIVE. Immigrants deemed too unhealthy to leave Ellis Island were sent to the immigration center's hospital.

Deaths in childbirth often came after childbirth, usually resulting from postpartum infections leading to sepsis, or blood poisoning. When Oliver Wendell Holmes suggested in 1843 that puerperal fever was being spread from patient to patient in maternity wards by doctors who failed to disinfect their hands and clothes, his theory kindled resentment. Dr. Charles Meigs of Philadelphia dismissed this "contagion of which I cannot form any clear idea." Doctors were gentlemen, he said, and gentlemen's hands were clean.

Discoveries

Germ theory made all the difference to addressing public health crises, but acceptance took time.

In 1882, the German scientist Robert Koch identified the microbe that caused tuberculosis, the leading cause of death in New York City that year. In 1889, Dr. Hermann Biggs of New York, convinced by Koch's work that

tuberculosis was preventable, wrote a report for the Health Department in which he advised measures including disinfection, disposal of sputum, reporting of all pulmonary cases, and educating the public. The report met with resistance.

In 1892, the threat of cholera returned. It had been raging from Persia and Russia westward; on 30 August 1892, the ship *Moravia* arrived in New York after a voyage during which 22 passengers died.

This time, the state health department sprang into action, creating a division of pathology, bacteriology, and disinfection and imposing a quarantine. Under Dr. Biggs' direction, staff examined patients' feces to confirm diagnosis, then sent crews to scrub and treat patients' surroundings. They cleaned public areas, disinfected water pipes, and launched a public information campaign on prevention and treatment.

The result? "Only nine people died," report Edwin G. Burrows and Mike Wallace in their book *Gotham*. "The epidemic—which had killed 2,500 a day in Russia for weeks at a time—had been completely defeated."

Turn of the Century

The victory over cholera spurred municipal involvement in preventive medicine. Dr. Biggs established a system of mass diagnosis from cultures. Diagnosing diphtheria, for instance, revealed that nearly half of presumed cases weren't diphtheria at all.

Still, progress was slow. Realizing the importance of clean water and proper sewage disposal was one thing; instituting them was another. And then there was the milk. Pasteurization was invented in 1864, but it was 1908 before Chicago passed the country's first law requiring it.

And an epidemic worse than any the nation had seen was still to come.

The Flu

In September 1918, influenza invaded a military camp in Boston, then spread from east to west across the nation, infecting more than a quarter of all Americans. By destroying protective cells in victims' bronchial tubes, the virus paved the way for bacterial pneumonia, causing thousands of deaths in every major city, especially among young adults. Some people died within hours of their first symptoms.

The pandemic took 12 years off the average U.S. life expectancy. Worldwide, it killed an estimated 20 to 50 million people, more than died in World War I.

At the time, however, it did not inspire fear in proportion to its effects. This may have been because the pandemic came at the time World War I was ending; officials in some cities initially downplayed the threat to forestall panic, even as other cities quickly closed schools and theaters and mandated face masks.

Another reason may be that the affliction was simply less grotesque than others. As J. N. Hays writes in his book *Epidemics and Pandemics*: "Deaths from influenza-related pneumonia were painful enough, but left no victims suddenly and shamefully collapsed in the street in their own excrement, as cholera had done."

Ellis Island Hospital

The Statue of Liberty famously greeted the shiploads of immigrants who arrived a hundred years ago. But before they could taste that liberty, steerage passengers had to face the health inspection at Ellis Island.

The exam, says documentarian Lorie Conway, began at the bottom of a set of stairs; at the top were doctors with stethoscopes, alert to those who were short of breath after climbing. While these rapid exams provoked criticism, as Conway points out, after seeing thousands of people a day, the doctors "became pretty good diagnosticians." They were checking mainly for communicable diseases, such as tuberculosis or trachoma, which could wreak havoc.

About one in five immigrants failed this screening exam and received a second look in private. Most of them were cleared. But there were still plenty who failed.

Of those who failed the follow-up, approximately 1 percent were deported for medical reasons. The rest entered the Ellis Island hospital complex. Some of these patients' stories are told in Conway's documentary *Forgotten Ellis Island*, scheduled to air on PBS on 2 February.

Hospitalization could be a traumatic experience. There weren't enough translators to cover every dialect, and some patients and families didn't understand what was happening. The average hospital stay was two weeks, at a cost of $2 a day; some lasted longer. Immigrant aid societies stepped in to help the immigrants who couldn't pay the fee.

Conway calls the system "a safety net with holes," especially in regard to tests of mental fitness (the label "feebleminded" was often hastily applied). And about 3,500 sick patients died.

But 350 babies were born on Ellis Island, and at a time of massive immigration, the hospital did its job. Overall, Conway believes, "The hospital was a place of hope and healing."

For more information on *Forgotten Ellis Island*, visit ‹www.forgottenellisisland.com›.

—Jennie Kaufman

But by the time the flu had run its course, as many as 675,000 Americans had died.

Better Days

Eventually, however, the epidemics and pandemics and public health conditions that wrecked havoc on previous generations have resulted in improved health today.

For example, cholera and typhoid were both eventually found to be waterborne diseases; neither is a problem today in the United States thanks to various disinfectants in the nation's public water supplies. Methods of processing, packaging, and delivering milk, as well as mandatory pasteurization of commercially sold milk, has dramatically increased the safety of the product. And a greater understanding of the causes of specific diseases and how they're spread has resulted in vaccinations and other preventive measures to keep them at bay.

Late last year, scientists studying the immune systems of survivors who were exposed to the 1918 flu pandemic discovered that 90 years later, the survivors are still producing antibodies to that specific strain of influenza, although the strain has mutated sufficiently to no longer be considered a threat.

Back at the tenement museum, visitors can view the the difference a handful of decades made. The apartment next door to the Moore's was occupied by the Russian-Jewish Katz family in the 1930s. Their daughter drank pasteurized milk, and the museum has a chart showing the hygiene checks administered in schools. Times were better outside, too. The infant mortality rate had dropped below 7 percent, largely thanks to improved sanitation.

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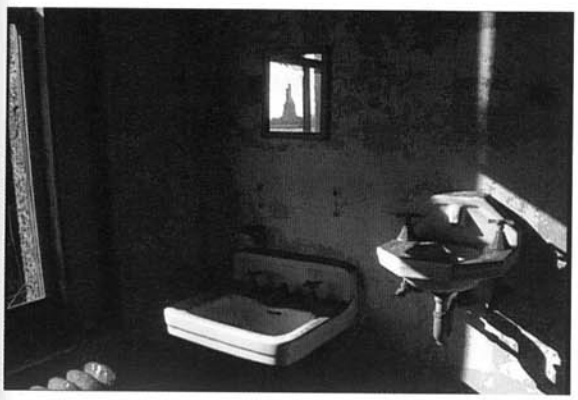

Photo courtesy of Boston Film and Video Productions

Croup—3 days. Found dead. Cholera—5 minutes.

There is something both intimate and raw about the information found in census mortality schedules.

Mortality schedules were included in the federal census from 1850–1900 to record information about deaths that had occurred in the year prior to the census enumeration (typically June 1–May 31). The schedules for 1890 and 1900 were destroyed, and surviving schedules are a bit scattered, but they can be worth tracking down.

Mortality schedules include not only names of people who would not otherwise appear on the census but also age, sex, color, whether widowed, place of birth, occupation, and month and cause of death. Later schedules also included questions about the parents' place of birth, and some asked about length of illness or other details.

Mortality schedules can introduce you to both new people and new information—or maybe even the beginnings of an investigation when a cause of death is listed as "Poisoned." While deaths tended to be underreported in the schedules, some states did not yet require that deaths be recorded and the mortality schedule could be the only record of a particular death.

The schedules are a bit scattered. Ancestry.com has approximately 100 out of the 170 known existing schedules in their *U.S. Federal Census Mortality Schedules, 1850–1880*, database and will be adding more as they become available. You can find microfilms of schedules by state at NARA; just search "mortality schedules."