Pioneer Science and the Great Plagues

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The 1900 census revealed the U.S. population to be 76,212,168, a 21 percent increase in ten years. The geographic population center had moved west—six miles southeast of Columbus, Indiana. It was the Gilded Age, a time of turmoil and changing social patterns. While handshaking at the Pan American Exposition in Buffalo, President McKinley was shot by an assassin and died one week later on September 14, 1901. New president Teddy Roosevelt took office. It was a time of astonishing discoveries of infectious diseases. There were new microbes, bacterial vaccines, and sanitation methods. A concept of public health was emerging, but Americans were playing catch-up to Rudolf Virchow’s use of veterinarians to control zoonotic diseases on German farms in order to protect human health.

Farmers ignoring veterinary advice produced grim events. In Tennessee, farmer E. T. Richards vaccinated 105 mules with anthrax vaccine produced by the H. K. Mulford Company in Memphis. Three days later the mules began to sicken and die. By the end of the week, 41 were dead. Alleging that it had sold vaccine contaminated with live anthrax bacilli, Richards brought suit against the company. He lost. Farmer Richards had used non-sterile bottles and syringes and had left fluid vaccine open to dust. His mules had died of tetanus.

Some vaccines sold for human use were contaminated and caused serious problems that could have been prevented by veterinarians. In St. Louis in 1901, ten of eleven children inoculated with contaminated diphtheria antitoxin died of tetanus; the company producing the vaccine had no veterinarian, and the horse whose blood provided the antitoxin had died of tetanus. There were similar reports of contaminated smallpox vaccines in New Jersey. Anti-science
scalawags had a heyday. An ad in the *Commoner*, a weekly newspaper owned and edited by William Jennings Bryan in Lincoln, Nebraska, was headlined “Vaccinopathy: Is It a Medical Delusion?” and “What Profiteth Your Babies if Their God-Made Blood Is Periodically Tainted With Pus Vaccines.” All of this led to federal regulatory control of vaccine production—regulations welcomed by the manufacturer to restore public trust in its products. The 1902 Biologics Control Act was followed in 1906 by the Pure Food and Drug Act, which established the U.S. Food and Drug Administration.

To spread information about the benefits and safety of new science, sectional veterinary organizations were organized. The most powerful was the Missouri Valley Veterinary Association. It had a membership of seven hundred, greater than the American Veterinary Medical Association, and its organizers often took the lead in state associations in Iowa, Nebraska, Kansas, Missouri, and Oklahoma to improve practice laws and influence Congress.

District veterinary organizations comprising adjacent counties and even adjacent states appeared—the Keystone, New York County, Illinois-Indiana, and Eastern Iowa Veterinary Associations. The Eastern Iowa group originated two unique practices: publication of vital animal statistics in the Midwest and annual clinics not associated with its meetings. In October 1905 the Iowa-Nebraska Veterinary Medical Association began publishing a periodical bulletin with A. T. Peters, head of Animal Pathology at the University of Nebraska as editor. Cities also developed local veterinary associations but tended to deal with business matters—city ordinances, ethics, advertising, fees, and meat and milk inspection rules. The record for uninterrupted activity for city associations is held by the Chicago Veterinary Society.

Scientific advances were giving rural veterinarians real tools to deal with disease in horses. Cocaine and chloral hydrate for anesthesia came into general veterinary use in the 1890s. The new hypodermic syringe was available—especially the reusable syringe patented by H. J. Detmers—and caused morphine to replace laudanum for pain relief in animals. Tetanus antitoxin, produced by Roux and Nocard in France in 1893, was rushed into immediate use. Within a year, the Pasteur Institute laboratory was using 136 horses for antitoxin production. Louis Pasteur claimed to have discovered a bacterium that caused hog cholera, and vaccines were marketed for sale. But like many claims of the day, he was wrong. The best that veterinarians could do about rampant hog cholera or any other infectious disease of pigs was to quarantine and segregate animals
from farms and pastures affected by whatever was causing this lethal contagious disease.

**The Newspaper in Rutland County**, Vermont, reported in 1894 a new neurologic plague of children; it had killed eighteen and left twelve paralyzed. Physician Charles Caverly, noting single cases in large families, pronounced that polio “could not possibly be contagious.”

### 16. PRIVATE VETERINARY SCHOOLS: CHICAGO, KANSAS CITY, AND INDIANAPOLIS

By 1900, the livestock industry had moved west into the Corn Belt. At railheads in the Midwest, massive stockyards concentrated food animals and the industries they spawned. The Union Stock Yard and Transit Company in Chicago was employing twenty-three thousand people and producing over 80 percent of the nation’s meat. New by-product industries created leather, soap, glue, gelatin, fertilizer, buttons, perfume, and violin strings. Meatpackers named Armour and Swift moved in and by 1900 had developed refrigerated railway cars to ship beef carcasses. Veterinarians were in demand—the concentration of animals had created “shipping fever” and “stockyards pneumonia.”

Private veterinary schools in large cities of the Midwest were flourishing. The Chicago Veterinary College established in 1883, Kansas City Veterinary College in 1891, Indiana Veterinary College in 1891, and Chicago’s McKillip Veterinary College had dominated veterinary education for nearly a decade (see appendix II). The Chicago Veterinary College had a three-year curriculum in 1905 and billed itself as the largest veterinary school on the continent. It had access to the legions of horses required for urban transport in Chicago and to the meatpacking houses and massive stockyards along Halsted Avenue filled with cattle, sheep, and pigs. Many of them carried disease.

Chicago Veterinary College was at its prime, with large classes and a new building using the entire block at 2537 South State Street. Enrollment was at record levels, close to 500 students. It even had a football team that played suited up in red and gold. A second school in Chicago, McKillip Veterinary College, enrolled over 340 students. McKillip had an enormous veterinary practice: the school report for 1899 listed 37,562 cases treated with 3,800 surgical
and 1,320 dental operations. In 1903, Mignon Nicholson graduated from McKillip Veterinary College, the first women to receive a veterinary degree in the U.S.

The Chicago Veterinary College seniors received the DCM degree (for Doctor of Comparative Medicine). In 1907 there were 115 graduates, 20 from Iowa—one was Charlie Titus from Edenville, the brother of Harry, who had been the house surgeon at Iowa State College. That same year other private colleges had similar numbers: the Kansas City Veterinary College graduated 77 (2 from Iowa) and the Indiana Veterinary College in Indianapolis had 28 graduates. In stark contrast, the state-supported, university-associated veterinary schools were struggling. At Iowa State College only 8 seniors graduated from the veterinary school; the new veterinary schools at Washington State and Kansas State Colleges had only 4 and 7 graduates in 1907.
The Indiana Veterinary College at 459 East Washington Street in Indianapolis was also prospering. It had been chartered by the state in 1892 and had a large student body. Its advertisement in the *American Veterinary Review* in 1905 offered tuition at $75 per semester; $200 got you tuition for all three years.

Kansas City Veterinary College, led by Iowa Agricultural College graduate Sesco Stewart, graduated its first class of three in 1892 with the Doctor of Veterinary Science degree after six months of study. The college grew rapidly; the school magazine for 1912, the *Kansas City Veterinary Quarterly*, shows a student body of 380 taught by a faculty of 23. The school advertised an extraordinary academic program directed to fieldwork: 40 percent of the Bureau of Animal Industry veterinarians were graduates of the school. It had a band and glee club, installed the veterinary fraternity Alpha Psi, and fielded teams for football and basketball as well as gymnastics and wrestling. Teams wore uniforms with the school colors of blue and old gold that displayed an Atlas supported by crossed femurs.

The Kansas City Veterinary College and the Western Veterinary College, a second school in Kansas City, were the backbone of the fledgling Kansas City Animal Health Corridor. The Corridor began in 1867 with the first cattle drive up the Chisholm Trail from Texas. Like Chicago, the Kansas City Stockyards were built in 1871 to provide better prices for the cattle and meatpacking industry. Today, the Corridor includes many corporations serving animal health and nutrition.

Kansas City Veterinary College’s dean, Sesco Stewart, as president of the American Veterinary Medical Association in 1903, criticized the new private veterinary schools popping up all over the country. He cited his competitor in Kansas City, the Western Veterinary College, that had only five students attending in fall term of the 1902–1903 session yet had graduated seventeen in the spring. Stewart recommended that the AVMA send representatives to inspect academic institutions. There was no action.

**When the Private Veterinary Colleges** in Chicago, Kansas City, and Indianapolis were at peak enrollment, the federal government was facing a serious problem in Chicago, Kansas City, and New York. Stockyards, slaughterhouses, and dairies of the big cities were being accused of producing contaminated meat and milk. The force behind the revelation was an Indiana native and former Purdue University chemist, Harvey Washington Wiley, who had been hired as chief of the chemistry division of the U.S. Department of Agriculture in 1883.10
Wiley’s first target was the dairy industry. Several crooked dairies in large cities were diluting milk with water and adulterating it with plaster of Paris (to make spoiled milk look white) and pureed animal brains (to give the appearance of a heavy cream layer). Wiley spent over twenty years concentrating on safe milk, butter, and canned meats, promoting accurate labeling and removal of dangerous preservatives—formaldehyde, borax, and copper sulfate were common additives to prevent putrefaction. His political acumen and flair for publicity helped him survive blistering attacks by trade groups, but his campaign was often blocked by powerful industry titans.

New U.S. president Teddy Roosevelt was a major proponent of legislation for food safety. His distrust of the meatpacking industry came from the putrid meat sold to the Army that he was forced to serve his troops during the Spanish-American War. Fortified with formaldehyde to prevent decay, canned meat earned the name “embalmed beef” from the press. Roosevelt also knew that the U.S. was the only industrialized nation without strict laws forbidding the sale of contaminated and adulterated food. Then came unexpected support from an extraordinary book.

*The Jungle,* published serially by Upton Sinclair in 1905, was an exposé of unsanitary conditions and deception in the meatpacking industry. The book contributed to the passage of the Pure Food and Drug Act of 1906. Exaggerated in many areas, the crude prose established Sinclair as a muckraker. In *The Jungle,* Sinclair wrote of ethnic groups showing how unrestrained capitalism had created destructive forces that suppressed culture and family morals. The publicity led to systematized meat inspection by veterinarians within the USDA Bureau of Animal Industry.  

11. PUBLIC VETERINARY SCHOOLS: THE SECOND-GENERATION PIONEERS

At Iowa State College, Dean Stalker was asked to step down and President Beardshear took the reins, acting as dean of the Division of Veterinary Medicine. His first goal was to build a faculty. From the University of Pennsylvania, Beardshear hired J. H. McNeil (for anatomy and surgery) and L. A. Klein (for medicine and sanitary science) to begin in September 1900. With them came the latest German-based methods of teaching, the science of