

## The Scientific Underpinnings of the 1906 Pure Food and Drugs Act: Microbe Mania



by Suzanne White Junod, Ph.D.



*Another Patient for Pasteur* (18 PUCK no. 458 (Dec. 16, 1885)).— This *Puck* frontispiece refers to the aftermath of the presidential election of 1885 in which Senator James G. Blaine lost to Grover Cleveland. The loss came as a result of defections from the reform element of the Republican Party, including George W. Curtis of *Harper's* magazine, Carl Schurz, and E.L. Godkin of the *New York Nation*. These men were the original “mugwumps.” Their critics characterized them as “unreliable Republicans” and they were colorfully described as having had their “mugs” on one side of the fence and their “wumps” on the other during the election. The leading Mugwumps are taking a steamer to Paris so that Pasteur can treat them for the “madness” of the 1885 presidential race. *Print courtesy of William Helfand.*

“The germ theory seems to have boosted cleanliness into first place, with godliness pretty much distanced.”<sup>1</sup>

Government Chemist Wiley is reported as saying: “I have found that the foods we daily consume are so fraught with germ life of a harmful nature that I am almost afraid to go to the table.”<sup>2</sup>

*Disregard my advice if you dare  
And your daring you're certain to rue;  
You must sterilize all that you wear  
Or look at, or taste of, or chew.  
The Bacillus don't stop to ask “Why?”  
And the deadly Spirillum is coiled.  
Micrococci are hanging around too.  
So water must always be boiled!*<sup>3</sup>

“Some genius will tell the world how to utilize the microbe,” prophesized the editors of *Puck*, in 1908.<sup>4</sup> Had they already forgotten the enduring and pervasive influence of the man dubbed the “White Knight of Science,” Louis Pasteur? Pasteur, who had died less than a decade earlier in 1895, had revolutionized both the food industry and the drug industry around the globe. From the practical commercial improvements in beer, wine, and milk made possible by Pasteur’s fermentation studies to his studies of anthrax and the germ theory making immunization against deadly diseases

<sup>1</sup> 69 PUCK no. 1534 (July 25, 1906).

<sup>2</sup> 59 PUCK no. 1521 (Apr. 25, 1906).

<sup>3</sup> *A Bacteriological Ballade*, 46 PUCK no. 1184 (Nov. 15, 1899).

<sup>4</sup> 63 PUCK no. 1633 (June 17, 1908).

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(including rabies) both possible and increasingly practical, Pasteur's influence on both the food supply and the practice of medicine by the turn of the 20th century was both revolutionary and pervasive.

It was in the United States, however, that Pasteur's earliest microbiological discoveries on wine, beer, and milk were eagerly embraced, almost from their inception.<sup>5</sup> His methods of manufacturing and preserving beer and wine received U.S. patents, and his treatment for rabies that saved four children in the "Newark[Delaware] Dog Scare of 1885" won him the adoration of the U.S. public. Rene Dubos, author of *Pasteur and Modern Science*, lists over

30 major modern food and drug corporations that benefited directly from Pasteur's legacy, including General Foods, Johnson & Johnson, etc.<sup>6</sup>

Pasteur's insights lay at the heart of the U.S. food supply revolution, which began in the late 19th century and was largely completed by 1917. These were the peak years of U.S. immigration—up to World War I. It was Pasteur's insight into food spoilage, coupled with Progressive era political reforms (e.g., passage of the 1906 Pure Food and Drugs Act) that U.S. businessmen seized upon for the sustenance of the expanding urban population during these years. Likewise, immunization and pasteurized milk also had a tremendous

<sup>5</sup> Pasteur himself had been elated and a bit surprised to learn that California wine-growers—relative newcomers to the winemaking business—had professed such faith in his earliest pasteurization experiments that they immediately subjected 100,000 liters of their wine to the heat preservation techniques he had pioneered for French winemakers. RENE DUBOS, *PASTEUR AND MODERN SCIENCE* 60 (Science Tech Pub. 1988). By the turn of the century, the American philanthropist Nathan Straus had become a strong promoter of milk pasteurization, pasteurizing milk in his New York City dairy and distributing it in public milk stations throughout the city. *Id.* at 64.

<sup>6</sup> *Id.* at 70. The complete list of companies with microbiological and biotechnological interests, sales in billions, and areas of major interest follows: Exxon, \$88, oil, chemicals; Mobil, \$55, oil; duPont, \$35, chemicals; Std. Oil Indiana, \$28, oil, chemicals; Shell, \$19.7, oil, chemicals; Phillips Petroleum, \$15.2, oil, chemicals; Proctor and Gamble, \$12.4, consumer products, foods; Dow Chemical, \$11, chemicals, agriculture; Allied Corp., \$10.3, conglomerate; Beatrice Foods, \$9.0, foods, consumer products; General Foods, \$8.0, foods; PepsiCo, \$7.8, beverages; 3-M, \$7.0, chemicals, minerals;

Coca-Cola, \$6.9, beverages; Consolidated Foods, \$6.5, foods; Monsanto, \$6.3, chemicals, agriculture; W.R. Grace, \$6.2, fertilizers, chemicals, agriculture; Anheuser-Busch, \$6.0, brewing; Nabisco Brands, \$5.9, foods; Johnson and Johnson, \$5.9, healthcare; General Mills, \$5.5, foods; Ralston Purina, \$4.9, foods; Colgate-Palmolive, \$4.9, consumer products; Archer-Daniels-Midland, \$4.3, chemicals, high-fructose syrup; Borden, \$4.3, foods; CPC International, \$4.0, chemicals, foods; Bristol-Myers, \$3.9, pharmaceuticals; Pfizer, \$3.7, pharmaceuticals, chemicals; H.J. Heinz, \$3.7, foods; Pillsbury, \$3.7, foods; American Cyanamid, \$3.5, pharmaceuticals, chemicals; United Brands, \$3.5, foods; Owens-Illinois, \$3.4, chemicals; Carnation, \$3.3, foods; Campbell Soup, \$3.3, foods; Merck, \$3.2, pharmaceuticals; SmithKline Beckman, \$3.1, pharmaceuticals; Warner-Lambert, \$3.1, pharmaceuticals; Eli Lilly, \$3.0, pharmaceuticals; Abbott Laboratories, \$2.9, pharmaceuticals; National Distillers, \$2.3, alcoholic beverages; Upjohn, \$1.9, pharmaceuticals, Rohm and Haas, \$1.9, chemicals, agriculture; Baxter Travenol, \$1.8, pharmaceuticals; Schering-Plough, \$1.8, pharmaceuticals; Squibb, \$1.8, pharmaceuticals. *Id.* at 71.

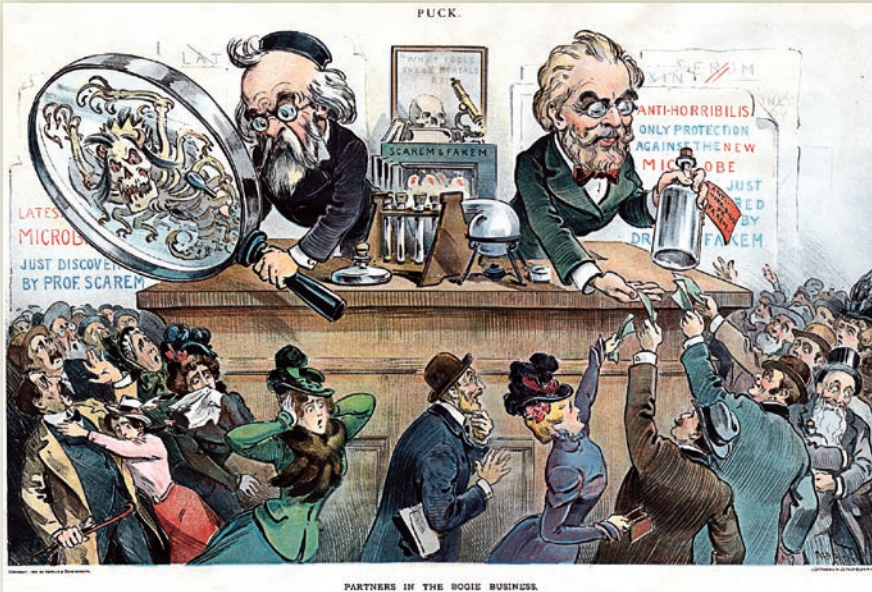


*Scientists Assert that All Diseases Can Be Prevented by Inoculation* (17 Puck no. 433 (June 24, 1885)).—Fanciful images of immunization being employed as a preventative treatment for another American cultural malady—bank corruption. Gerald Geison, a renowned Pasteur scholar at Princeton, has concluded that “few scientists indeed, have so captured the public imagination, and fewer still have had such a dramatic effect on everyday life.” (GERALD L. GEISON, *THE PRIVATE SCIENCE OF LOUIS PASTEUR*—PRINCETON 266 (Princeton Univ. Press 1995)). Print courtesy of William Helfand.

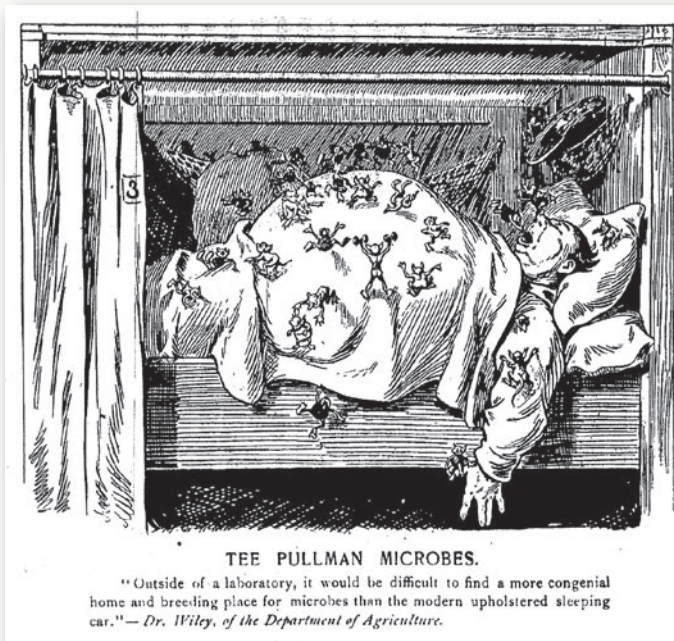
effect upon the health of the urban population centers in the United States, as a healthy populace became an increasingly productive populace.

Microbes and immunization were two of the most popular subjects in *Puck* around the turn of the century. Once again, bad jokes and bad doggerel on the subject of mi-

crobes were abundant; whereas adulterated foods, pervasive advertising, and patent medicines were portrayed in *Puck* as objects of scorn, Pasteur's influence—whether acknowledged or not, and even when portrayed humorously—was accorded a respect rarely evident in the magazine's treatment of other public issues of the day.



*Partners in the Bogie Business* (47 Puck no. 1199 (Feb. 28, 1900)).—Concerns about quackery invading the microbial realm proved more illusory than real, although by 1900, over 18 serious microbial pathogens had been correctly identified including anthrax, cholera, tetanus, plague, *salmonella enteritidis*, dysentery, botulism, typhoid fever, and pneumonia. *Print courtesy of William Helfand.*



*Tee Pullman Microbes* (64 Puck no. 1662 (Jan. 6, 1909)).

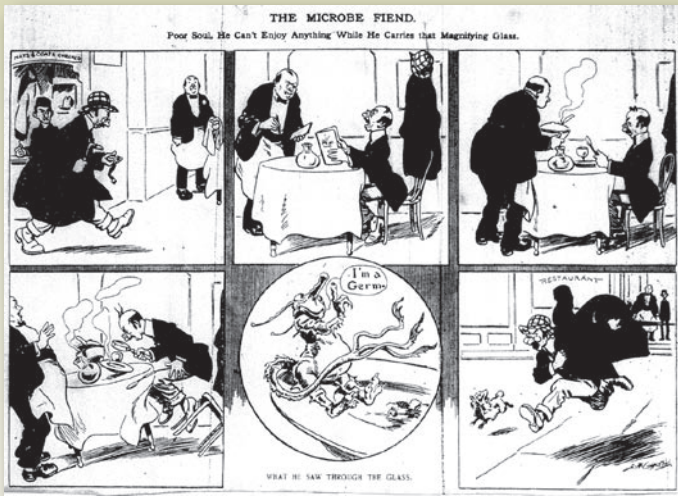
### *The Germ Theory*<sup>7</sup>

*There's germ life in the milk we drink,  
 And also in the food we eat;  
 And what do vegetarians think  
 Of eating microbes with their wheat?  
 They're plastered thick on every fruit,  
 And floating in the air to boot.*

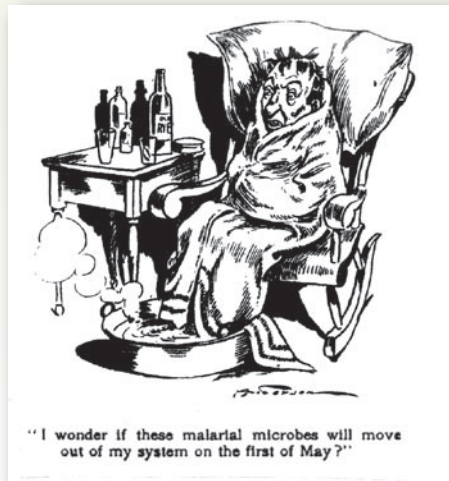
*There's bold bacilli in the cake,  
 And macrococci in the cheese;  
 There's others in the pies we make  
 And in the butter, if you please.  
 For water pure naught will suffice  
 Unless we take and boil the ice.*

*Milk is the stuff they like the most,  
 Unless, perhaps, we count the bread;  
 They flourish in our tea and toast—  
 The marvel is we're not all dead.  
 And yet our forebears ate, 't is clear,—  
 I truly wonder how we're here.*

<sup>7</sup> 59 Puck no. 1521 (Apr. 25, 1906).



*The Microbe Fiend* (71 Puck no. 1830 (Mar. 27, 1912).—This popular perception of microbes everywhere constituting a threat to all types and manners of food was still being published as late as 1912.



*"I wonder if these malarial microbes will move out of my system on the first of May?"* (42 JUDGE no. 1072 (May 3, 1902)).—Protests against temperance measures frequently relied on the argument that alcohol was a medicine. The reference probably is to a well-known (to Puck readers at least) temperance measure that was going to take effect on May 1 and somehow affect access to alcohol or alcoholic medicines.

*First Microbe:* Doing any execution these days?

*Second Microbe:* No; darn it. Everybody's on to me;— the doctors spotted me and put my picture in the yellow papers.<sup>8</sup>

*An Idle Wish*<sup>9</sup>

*Oh, give me back the good old days;  
I want the simple life,  
The care-free times before we knew,  
bacteria were rife.*

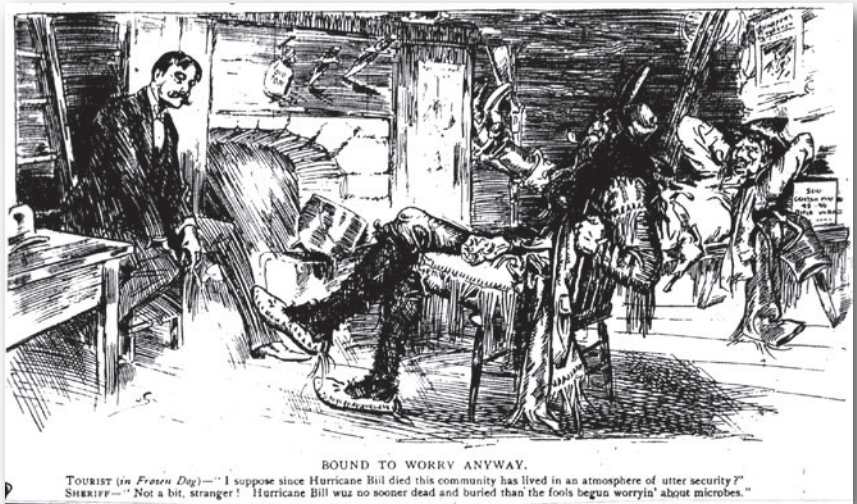
*We never boiled the crystal stream,  
The oaken bucket drew  
And if our mud pies reeked with germs,  
At least we never knew.*

*But now we boil, and bake, and steam,  
And disinfect and burn;  
We wash and spray and shake and stir  
And fume and scrape and churn.*

*We think it will prolong our days  
No nook or cranny shirk,  
And just as every microbe flees,  
We die of overwork. Δ*

<sup>8</sup> "Yellow" refers to the so-called "yellow journalism" of the day, whose aim was to attract readers by distorting or exaggerating the truth. In this context, it probably refers to the newspapers run by William Randolph Hearst. 47 Puck no. 1197 (Feb. 14, 1900).

<sup>9</sup> 57 Puck no. 1466 (Apr. 5, 1905).



*"Bound to Worry Anyway"* (40 Puck no. 1013 (Mar. 16, 1901)). —This regional quip highlights Western threats to public health. Old threats stemming from the lawlessness of the old frontier had quickly given way to concerns about the new microbial threats.