Public Health Chronicles

REFLECTIONS ON SINCLAIR LEWIS'S *ARROWSMITH*: THE GREAT AMERICAN NOVEL OF PUBLIC HEALTH AND MEDICINE

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As we enter a new millennium, an era in which one is deluged daily by a torrent of information on medical discoveries, public health, and the conquest of disease, it may be surprising to recall that it was only three quarters of a century ago that a medical scientist first entered American literary consciousness in the exalted role of hero. Sinclair Lewis's 1925 novel, *Arrowsmith*, chronicles a physician's relentless search for truth. Unlike other novels of this period or before it, the main character, Martin Arrowsmith, is no cleric, writer, or philosopher. He is not even a particularly great doctor. Lewis, aware of the wide public interest in medical progress—not unlike our current fascination with all things genetic—introduced millions of American readers to a young man who dedicated himself to the singularly hottest scientific field of his day: bacteriology. And in an age in which the authority of science is as much a part of our world view as an even "higher" authority once was for our grandparents, a hero inspired to stamp out disease is, as historian Charles Rosenberg observed, "one appropriate to twentieth-century America."[1]

The novel's influence extends well beyond its immediate critical and popular success. I well recall how as a first year medical student I raptly read about the adventures of Martin Arrowsmith when I should have been committing to memory the intricacies of the brachial plexus. Somehow it was comforting to recognize the same traits among Martin, his fellow students, and teachers—from the purely mercenary to the honorable—that I witnessed daily in the lecture halls and hospital wards. My battered paperback copy of *Arrowsmith* is annotated throughout with the same pen-scrawled comment: "Still true!" I am hardly alone: from its publication to the present, countless men and women have been inspired to pursue careers in research because of Martin's intense devotion to science. Indeed, it would be a fascinating (if difficult to properly design) study to survey physicians, medical scientists, and public health workers whose career paths were directed by Martin Arrowsmith over the past eight decades.

The novel records and predicts many of the successes and problems that torment the medical profession to this very day, including the competition of needs, goals, and resources between those who identify themselves as clinicians and those who are scientists; the commercial interests of pharmaceutical companies in the development of new medications and vaccines versus the need to seek out and verify scientific truth; the inherent political and social difficulties in developing programs that protect a community's public health; and the evolving role of the doctor in American society. In addition to being an enduring work of literary art and a scathing satire of the medical profession, *Arrowsmith* is a vibrant document of the history of American public health and medicine during the first two decades of the 20th century. The history behind the creation of this literary and historical document is a fascinating one.

After his stunning critical and popular success in 1920 with *Main Street* and shortly before the publication of *Babbitt* in 1922, Sinclair Lewis cast his literary eye on the American labor movement. That summer he began planning a novel with a protagonist based on Eugene Debs. Two friends and admirers, H.L. Mencken, the famed journalist (a notorious hypochondriac and aficionado of all things medical), and Dr. Morris Fishbein, the editor of the *Journal of the American Medical Association,* convinced him to turn instead to the world of medical research, the medical profession, and the role that science was beginning to play in daily American life.

To clinch the deal, the journalist and the doctor introduced the novelist to an unemployed bacteriologist named Paul DeKruif. DeKruif, who earned his PhD from the University of Michigan in 1916, had recently been dismissed from the Rockefeller Institute for Medical Research (now Rockefeller University) when it became clear that his hands itched for a fountain pen instead of test tubes. He was fired from his post by the Rockefeller's director, Simon Flexner, for writing a four-part series of articles on the medical profession entitled "Our Medicine Men," published in *The Century* magazine.[2] The unemployed scientist was still several years away from his string of best-selling books, including *The Microbe Hunters*, that popularized health topics ranging from germs to sex hormones. But as of the summer of 1922, he was officially at liberty to give up the dull drudgery of late nights in the laboratory for what he perceived to be the exciting life of a medical journalist.[3]

Fishbein, Lewis, and DeKruif went to lunch, and

they began drinking, first at one bar and soon at another. After a long, alcoholic day that included a narrow escape from a barroom brawl and a fruitless attempt to visit Eugene Debs, then convalescing in a sanitarium outside of Chicago after one of his frequent collapses from physical exhaustion, DeKruif and Lewis agreed to collaborate on a medical novel. Within weeks the two sold the book to Lewis's publishers Harcourt and Brace and booked passage on a steamship to the West Indies where they could work without distractions. According to DeKruif's memoirs, *The Sweeping Wind*,[3] the original contract he signed with publishers Harcourt and Brace specified that Lewis and DeKruif were to be listed as the novel's co-authors. Soon enough, however, Lewis had second thoughts about sharing the limelight with an unknown and convinced DeKruif that a "collaboration" might hurt book sales. Aware of his 25% stake in what would become a best-selling novel, DeKruif wisely kept silent and allowed Lewis to be listed as sole author. Nevertheless, by January 1923 Lewis was exclaiming to his publishers that DeKruif was "perfection . . . in all there's a question as to whether he won't have contributed more than I shall have."[4] Indeed, DeKruif was essential to the novel. Nearly all the scientists, physicians, and medical institutions portrayed in *Arrowsmith* were drawn from his experience as a graduate student at the University of Michigan and, later, as a research investigator at the Rockefeller Institute for Medical Research. And while DeKruif did not receive the authorial credit he most likely deserved, Lewis did dedicate the novel to him in a rather splendid manner:

> To Dr. Paul H. DeKruif, I am indebted not only for most of the bacteriological and medical material in this tale but equally for his help in the planning of the fable itself—for his realization of the characters as living people, for his philosophy as a scientist. With this acknowledgement I want to record our months of companionship while working on the book, in the United States, in the West Indies, in Panama, in London and Fountainebleau. I wish I could reproduce our talks along the way, and the laboratory afternoons, the restaurants at night, and the deck at dawn as we steamed into tropic ports.[5]

Given Lewis's genius to mine the rich quarry of the American Middle West, it is not surprising that the favorite son of Sauk Centre, Minnesota (and the actual son of a doctor) sets much of *Arrowsmith* in the heartland. For example, Martin's medical school, the University of Winnemac, is a precise pen-portrait of the University of Michigan during the first decade of the 20th century:

> It is not a snobbish rich-man's college, devoted to leisurely nonsense. It is the property of the people of the state, and what they want—or what they are told they want—is a mill to turn out men and women who will lead moral lives, play bridge, drive good cars, be enterprising in business, and occasionally mention books, though they are not expected to have time to read them. It is a Ford Motor Factory, and if its products rattle a little, they are beautifully standardized, with perfectly interchangeable parts.[5]

Many of Martin Arrowsmith's professors are easily identifiable from the faculty roster of the University of Michigan Medical School during this period, even down to the material they presented in their lectures. It is also at the University of Winnemac that Martin comes under the spell of an immunology professor named Max Gottleib, who is an amalgam of DeKruif's mentor at Michigan, the professor of bacteriology Frederick Novy, and his idol at the Rockfeller, biologist Jacques Loeb. It is while toiling in Gottleib's laboratory late at night and into the early hours of the morning that Martin first decides to devote his life to the pursuit of scientific knowledge. Before doing so, however, Martin makes a few detours, including completing his internship at the Zenith General Hospital, marrying a student nurse he meets there named Leora Tozer, and a brief sojourn as a general practitioner in Leora's hometown, Wheatsylvania, North Dakota. Lewis's descriptions of the rigors, politics, and boredom of general medical practice during this era are as good as one is going to find. For example, Martin drives back and forth 50 miles late one night to obtain diphtheria anti-toxin for his 7-year-old patient, only to administer the life-saving elixir too late. This compelling scene combines the high drama of a life and death situation with the advent of a new biological agent that could potentially cure an all-too-common killer:

> . . . the healer bulked in the room, crowding out Gottlieb the inhuman perfectionist. Martin leaned nervously over the child on the tousled bed, absent-mindedly trying her pulse again and again. He felt helpless without the equipment of Zenith General [Hospital], its nurses and [his medical colleague] Angus Duer's sure advice. He had a sudden respect for the lone country doctor. [5]

But general practice does not hold Martin's interest and he is soon drawn to a position as a junior public health officer in Nautilus, Iowa, under an enthusiastic physician named Almus Pickerbaugh, who "looked somewhat like President Roosevelt, with the same squareness and the same bristly mustache."[5] Although

Pickerbaugh understands the need for scientific research in improving the health of a community, he is a firm subscriber to the "Billy Sunday" approach to spreading the gospel of public health. To this end, he has organized his eight daughters into the Healthette Octette, who sing "health hymns" at county fairs, has made countless, rousing speeches on hygiene at YMCA picnics and other public gatherings; and has written a series of public health poems earning him the sobriquet, "the two-fisted fightin' poet-doc." One excellent example of Pickerbaugh's literary metier should suffice:

> Boil the milk bottles or by gum
> You better buy your ticket to Kingdom Come.[5]

While Dr. Pickerbaugh leads a health crusade that by the novel's end lands him a post in the President's Cabinet as the "first Secretary of Health and Eugenics," Martin becomes enamoured with the daily drudgery of a working public health officer. The young physician eagerly sets about testing local milk supplies, performing Wasserman syphilis tests, making vaccines and performing diphtheria cultures for the local doctors. Sadly, after Pickerbaugh is elected to the US House of Representatives and leaves the Nautilis health department under the charge of his assistant, Martin is a bit overzealous in protecting the town's public health and the town elders dismiss him from his position. Although this section of the novel is a splendid example of Lewisian satire pointed at local health departments and the public's resentment of too much encroachment on their private (if unhygienic) lives, Pickerbaugh's bombastic crusades and carnival-like approach also represent a fairly accurate mirror of these institutions throughout the United States during the early decades of the 20th century.[6]

Eventually, Martin is called to a post at the prestigious McGurk (read Rockefeller) Institute in New York, where his former mentor, Max Gottlieb, is now a prominent research director. Again DeKruif's experience shines in terms of Lewis's descriptions of the search for scientific knowledge, the philosophy of the research investigator, the sumptuously plush research facilities courtesy of the greatest robber baron of them all, and some rather hilarious caricatures of such medical luminaries as Simon Flexner, Peyton Rous, and others.

Perhaps the novel's greatest strength is its veracity of detail about a life in medicine, from the conflicts that arise between commerce and altruism to the design of scientific experiments. Nowhere is this more clearly drawn than during a bubonic plague epidemic raging on the mythical island of St. Hubert in the West Indies that affords Martin an opportunity to test his newly discovered magic bullet, bacteriophage. Martin's wife, Leora, insists on joining him on this dangerous trip. Soon enough, Martin immerses himself in a meticulous experiment in which half the island's inhabitants receive bacteriophage and the rest a placebo. Bacteriophage was no fictional device. A viral parasite that kills bacteria, it was the talk of the bacteriology world soon after its real-life discovery by Felix d'Herelle of the Pasteur Institute in Paris in 1917.[7,8] One of many marchers in the parade of great medical hopes that continues to the present, bacteriophage was eventually cast aside for something even more miraculous: antibiotics.

Late one night, a lonely Leora finds a cigarette Martin left behind on his makeshift laboratory bench. Unaware that the housekeeper had accidentally spilled some plague culture on the cigarette, she smokes it in an effort to be closer to her absent husband and dies a miserable death before sunrise. Overwhelmed with grief, Martin damns science and gives bacteriophage to all who want it. While the epidemic wanes and he receives international acclaim, Martin knows he botched the experiment. Again we encounter DeKruif's touch in this plot twist. In February 1901, DeKruif"s bacteriology professor, Frederick Novy, returned to Ann Arbor with some specimens after investigating a plague epidemic in San Francisco's Chinatown. Some weeks later his laboratory assistant, a second-year medical student named Charles B. Hare, who rolled his own Bull Durhams, unknowingly contaminated a cigarette he was about to smoke. As a result he developed pneumonic-form plague in early April 1901. Hare was quarantined in the pest house behind the University of Michigan Hospital for several weeks, where he was treated by the eminent internist, and one of William Osler's favorite former pupils, George Dock. Unlike the fictional Leora, however, Hare did recover and graduated from Michigan with his medical degree in 1905. His bout with plague, however, caused severe heart damage, and Dr. Hare died at the age of 50.[9]

Integral to the novel was Lewis's insistence that Martin be both a physician and a scientist, personifying a conflict that continues to trouble doctors and their patients to the present. Who is more important in the conquest of disease: the compassionate, sympathetic healer caring for a sick individual or the cold, obsessive investigator trying to ascertain the cause of disease and, if successful, render the doctor obsolete?

Interestingly, the other best-selling book about medicine published in 1925 was Dr. Harvey Cushing's painstakingly detailed *Life of Sir William Osler.*[10] It was published only a few years after Osler's death, but Osler had already entered the pantheon of medical heroes. Both books won the Pulitzer Prize in 1926 (though

ADDITIONAL READING OF INTEREST

On the first meeting of Lewis and DeKruif:
Schorer M. Sinclair Lewis: an American life. New York: McGraw-Hill Co.; 1961. p. 337-41; 361-73.
Mencken HL. My life as an author and editor. New York: Alfred A. Knopf; 1993. p. 275-82.
Fishbein M. Morris Fishbein, M.D.: an autobiography. Garden City (NY): Doubleday; 1969. p. 99-104
Lewis GH. With love from Gracie. Sinclair Lewis, 1912–1925. New York: Harcourt, Brace and Co.; 1955.

For a description of Eugene Debs's frequent bouts of depression:
Salvatore N. Eugene Debs: citizen and socialist. Urbana (IL): University of Illinois Press; 1982.

For biographical material on Novy:
Garrett CGB. Frederick Novy. In: Garraty J, editor. Dictionary of American biography, supplement 6, 1956–1960.

For biographical material on Loeb:
Pauly PJ. Controlling life: Jacques Loeb and the engineering ideal in biology. New York: Oxford University Press; 1987
DeKruif PH. Jacques Loeb, the mechanist. Harper's 1923:146;182-90.
DeKruif PH. Jacques Loeb. The American Mercury 1925:5;273-79.

On the Rockefeller Institute:
Corner GW. A history of the Rockefeller Institute, 1901–1953: origins and growth. New York: Rockefeller Institute Press; 1964.
Brown ER. Rockefeller medicine men: medicine and capitalism in America. Berkeley (CA): University of California Press; 1979.

On Charles B. Hare case of bubonic plague:
Bubonic Plague File, Frederick Novy Papers, Bentley Historical Library, Ann Arbor (MI).
Benscoter WA. Ann Arbor's case of bubonic plague. Detroit News-Tribune, April 12, 1901; p. 2.
Davenport HW. Doctor Dock: teaching and learning at the turn of the century. New Brunswick (NJ): Rutgers University Press; 1987. p. 255-59.
Cummings JG. The plague: a laboratory case report. Military Med 1963:128;435-9.
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Lewis, famously, turned his down). To the forward-thinking scientists revered by Lewis and DeKruif, the frock-coated, mustachioed Dr. Osler was a quaint relic. As Michael Bliss notes in his biography, *William Osler: A Life in Medicine*, Cushing accepted his prize hoping Osler's benevolent bedside manner would overshadow Arrowsmith's glorification of medical research.[11] But Cushing misinterpreted the exquisite tension that Martin negotiates as both a healer and a scientist. Martin understands the imperative to conduct objective experiments that definitively prove a hypothesis. But unlike many of his laboratory-based colleagues, he often sides with the healers when confronted by the immediate demands of the sick bed.

While hilariously assailing the Babbittry of the medical profession, Lewis captures the absolute passion for discovery required of a successful scientist. This is no mere job. It's a religion. One of *Arrowsmith*'s most moving scenes depicts Martin in his laboratory praying:

> God give me unclouded eyes and freedom from haste. God give me a quiet and relentless anger against all pretense and pretentious work and all work left slack and unfinished. God give me a restlessness whereby I may neither sleep nor accept praise till my observed results equal my calculated results or in pious glee I discover and assault my error. God give me strength not to trust in God![5]

A satire of Judeo-Christian expressions of the ideal life, perhaps, yet one cannot help but be troubled by how much things have changed over the past century. Up until recently, scientists worked decidedly toward the greater good of humankind. The opportunity to contribute to the battle against illness was reward enough for an exciting and honored position in society. Sadly, today one cannot fathom a research scientist praying for anything so noble when there are patent applications for newly discovered genes to fill out and stock options to consider. As the ties between medical scientists and the biotechnology industry become increasingly intertwined, the doctor in me wishes he could prescribe a page or two of *Arrowsmith* each day to his more profit-driven colleagues. Perhaps "Dr. Lewis" could restore some health to the ailing condition of scientific idealism.

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