

Medical History for the Masses: How American Comic Books Celebrated Heroes of Medicine in the 1940s

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SUMMARY: When comic books rose to mass popularity in the early 1940s, one segment of the industry specialized in “true adventures,” with stories about real people from the past and the present—in contrast to competing books that offered fantasy, science fiction, superheroes, detectives and crime, funny people, or funny animals. This study examines the figures from both medical history and twentieth-century medicine who were portrayed as heroes and role models in these comic books: first, to call attention to this very popular, if unknown, genre of medical history, and second, to illustrate how medical history was used at that time to popularize scientific and medical ideas, to celebrate the achievements of medical research, to encourage medical science as a career choice, and to show medicine as a humane and noble enterprise. The study explains how these medical history stories were situated in American popular culture more generally, and how the graphic power of comic books successfully conveyed both values and information while also telling a good story. Attention to this colorful genre of popular medical history enriches our picture of the mid-twentieth-century public’s enthusiasm for medical progress.

KEYWORDS: cartoons, comic books, medical history, medical heroes, popular culture, Golden Age, scientific method, medical research

Presentations of this research were made at the 73rd Annual Meeting of the American Association for the History of Medicine, Bethesda, Md., on 21 May 2000, and at Queens University, Kingston, Ont., on 10 October 2000. The research has been supported in part by the Mildred and George Weissman School of Arts and Sciences of Baruch College and by the PSC-CUNY Research Awards Program of The City University of New York. For comments on drafts, I am grateful to Roslyn Bernstein, Jacalyn Duffin, Deborah Erickson, Janet Golden, William H. Helfand, Robin Marantz Henig, Howard Markel, Edward T. Morman, and Michael Rhode. For suggestions and assistance with research materials, I wish to acknowledge the very helpful staff of Special Collections at the Michigan State University Libraries and to thank David Gaudette, Ron Goulart, Paul Jackson, Jay Maeder, Michael Sappol, Randall W. Scott, Lynn Sherman, Maggie Thompson, Amy Van Natter, and Judy Tzu-Chun Wu.

That the middle decades of the twentieth century were a “golden age” for American medicine has been widely recognized. Doctors’ high social status, the public’s confidence in miracle cures, the profession’s credibility, and an expansion of funding for medical research characterized this era, especially in contrast to new discontents that followed.¹ Far less noticed is the fact that this was also a “golden age” for medical history, at least among the general public. Beginning in the 1920s, medical history images and stories came to be widely disseminated in popular books and magazines, commemorations, Hollywood films, children’s literature, radio dramas, schoolbooks, corporate advertising, and the then-brand-new genre of comic books. Through countless renditions of medical history circulating in popular culture, not only those with college educations but also so-called general readers, their children, and their less-educated fellow citizens acquired a familiarity with medical figures of the past.

By a coincidence of language, 1938 to 1945 is also designated the “golden age” of comic books, the period when superhero comics first appeared and the industry achieved explosive growth.² If 1940s comic books constituted only one genre among several that published medical history, they are nevertheless important—if only by virtue of their very large circulation numbers. And they have been overlooked.³ Medical

1. John C. Burnham, “American Medicine’s Golden Age: What Happened to It?” *Science*, 1982, 215: 1474–79. Paramount in developing and popularizing the image was Paul Starr, *The Social Transformation of American Medicine* (New York: Basic Books, 1982). For a challenge to this view’s hegemony, see Rosemary A. Stevens, “Public Roles for the Medical Profession in the United States: Beyond Theories of Decline and Fall,” *Milbank Quart.*, 2001, 79: 327–53. Mark Schlesinger, “A Loss of Faith: The Sources of Reduced Political Legitimacy for the American Medical Profession,” *ibid.*, 2002, 80: 185–235, provides references to a substantial secondary literature on the question.

2. More precisely, the comic books of the Golden Age were published from June 1938 through 1945. The second period of novelty and success, which ran from September 1956 through 1969, is designated the “Silver Age,” while “Modern Age” comics are those from 1980 to the present. To fill the gaps around the main eras, other terms are used: Pre-Golden Age, Post-Golden Age, Pre-Silver Age, Post-Silver Age. See Robert M. Overstreet, *The Overstreet Comic Book Price Guide*, published annually; I have used the 26th ed. for 1996–97 (New York: Avon Books, 1996), pp. A92–A95.

3. The importance of looking at comic books for understanding science in popular culture was noted by Roger Cooter and Stephen Pumfrey in “Separate Spheres and Public Places: Reflections on the History of Science Popularization and Science in Popular Culture,” *Hist. Sci.*, 1994, 32: 237–67. The major examination of science in American comic books is the 1976 article by George Basalla discussed below in the section on the historiography of popular science (see n. 92). There have been no studies of medicine or health in American comic books; there is a study for France: Philippe Videlier and Piérine Piras, *La santé dans les bandes dessinées* (Paris: Frison-Roche, 1992).

history stories in children's comic books were engaging, upbeat, and instructive. Furthermore, by placing key events of contemporary medicine within a long historic tradition, they helped to reinforce the rising status of the American medical profession during the war and in the postwar era. They also actively promoted medical philanthropy and biological research. The medical history stories in comic books were thoroughly integrated into the mix of true-adventure stories. For example, on a typical cover, the pellagra research of "famine fighter Dr. Joseph Goldberger" was matched with the heroism of Leathernecks on Guadalcanal and the military leadership of General Eisenhower.⁴

These books and the stories they contained were remarkably popular. Huge numbers of teenagers had regular encounters with Louis Pasteur, Theobald Smith, Florence Nightingale, or Joseph Goldberger outside their schoolbooks. Books like *True Comics*, *Real Heroes*, and *Real Life Comics* were on the newsstand competing for young readers with *Superman*, *Batman*, and many other titles (see Fig. 1). If these true-adventure books sold in smaller numbers than those of the superheroes, they still sold in the hundreds of thousands each month. But numbers were not the whole story—comic books played a major role in the experience of American children and young adults from the late 1930s into the 1950s.⁵

4. Cover by unknown artist, *Real Life Comics*, no. 12 (July 1943). The unsigned story is "Famine Fighter: Dr. Joseph Goldberger," on pp. 15–22. (Among the comic books cited in this article, very few acknowledged by name the writers and the artists; they are cited herein if known, but the citation of stories generally begins with the title. In this era, volume numbers were used rarely and not consistently, but the issue number is essential and appears here immediately after the magazine title, followed by cover date of the issue and pagination of the story. Note that for comic books, the date as given on a cover or copyright page was conventional and must not be taken as a historically accurate date of publication; issues usually appeared on the newsstand one to several months earlier than the cover date.)

The comic books examined herein have not been reprinted and cannot be found in many libraries; about half are held in the collection of Michigan State University Libraries, and almost all are in the author's collection. A modest number of issues of two book titles are accessible online from Michigan State University Libraries: as of June 2003, color scans for all the pages in three issues of *Real Heroes* and a much larger run of *True Comics* are available at <http://digital.lib.msu.edu/onlinecolls/> (accessed 9 November 2003).

5. "For at least a quarter century, the comic book was the dominant element in the culture of American children—they read them, re-read them, collected them, traded them. During the same period, especially during World War II, when servicemen with limited off-duty time hungered for cheap and quickly readable material, it achieved great (though less publicized) popularity as reading matter for adults" (Dick Lupoff and Don Thompson, introduction to *All in Color for a Dime*, ed. idem [New Rochelle: Arlington House, 1970], p. 11).



Fig. 1. "Comiland," photographer unknown. Copyright 1948 Newsdealer Magazine, Inc.

In this article I will examine the medical history stories in 1940s comic books with several goals in view. I will document a significant corpus of medical stories in popular culture, and will illustrate the images and values conveyed in these stories of medical heroes. I will examine how the stories contributed to science education, and will suggest that these engaging, widely disseminated images of doctors and medical scientists may have encouraged medically oriented career choices among the young readers. The heroic narratives themselves will be explored after sections setting out the wider context of popular medical history of the 1930s and 1940s and orienting readers to the characteristic aesthetics of comics and the history of comic book publishing. I then look at the historiography of popular science, and conclude with an analysis of the patterns and themes in the comic book stories.

A Mass Audience for Medical History

From the 1920s through the 1940s, popular medical history blossomed in a remarkable number of books, films, and other media.⁶ The comic book versions of the 1940s gained momentum and resonance from the medical heroes celebrated in the other mass media. Paul de Kruif was the most famous writer of popular medical history—then and now—the most prolific, and perhaps the best.⁷ His writing career took off with a magazine profile of Jacques Loeb in 1923 and an anonymous series of articles in *Century* magazine in 1922, collected and published in a book under his name later the same year, *Our Medicine Men*. This led to his collaboration with Sinclair Lewis on *Arrowsmith*, published in 1925. Also appearing in 1925 was Harvey Cushing's two-volume work about William Osler, which received the Pulitzer Prize for Biography in 1926. *Arrowsmith* won the 1926 Pulitzer for fiction, though Lewis refused the prize. Articles by de Kruif appearing in *Country Gentleman* in 1925 were expanded into the book *Microbe Hunters* in 1926, which has stayed in print ever since.

6. These works for the general reader, the moviegoer, and the radio listener are distinct from the academic writings in medical history of that era, as well as from the academic medical history that has flourished since the 1970s.

7. For now, any appreciation of de Kruif depends mostly on an autobiography: Paul de Kruif, *The Sweeping Wind: A Memoir* (New York: Harcourt, Brace & World, 1962); and a short account by a colleague: Ben Hibbs, *Two Men on a Job* (Philadelphia: Curtis, 1938). Robin Marantz Henig has a study under way; a first installment of her project, "The Life and Legacy of Paul de Kruif," appeared in the newsletter of the Alicia Patterson Foundation, *APF Reporter*, 2002, 20, available online at: <http://www.aliciapatterson.org/APF2003/Henig/Henig.html> (accessed 10 November 2003).

Perhaps trying to capitalize on this phenomenal cluster of successes, publishers started offering a steady stream of titles that swelled substantially over the next twenty years.

Hollywood shared the enthusiasm and adapted many stories from medical history into feature-length films, mostly biographies, during the 1930s and early 1940s. Besides the fictional *Arrowsmith*, which opened in 1931, Americans flocked to see doctors from history in films like *The Prisoner of Shark Island* (1936) about Dr. Samuel A. Mudd and *The Story of Louis Pasteur* (1936) about the chemist who became famous as a healer. Responding to their success with *Pasteur*, Warner Brothers quickly produced *The White Angel* (1936) about Florence Nightingale. A movie *Yellow Jack* (1938) was based on the 1934 Broadway play of the same name written by Sidney Howard with the assistance of Paul de Kruif. *Nurse Edith Cavell* reached the screen in 1939. And in 1940 the public could enjoy both *Dr. Ehrlich's Magic Bullet*, an Academy Award nominee for best original screenplay, and the Pare Lorentz film *Fight for Life* (derived from de Kruif's book of that title), which received an Oscar nomination for its musical score. These were followed in 1944 by a far less successful medical history film, *The Great Moment*, about Dr. Morton and ether anesthesia (based on the 1938 book *Triumph over Pain* by René Fülöp-Miller). Although the film *Sister Kenny* (1946) featured a contemporary pioneer of polio therapy rather than a historical figure, it closely resembled the historical films and is best seen in that context.

Radio, a new mass entertainment medium of that era, carried an abundance of popular medical history, in both nonfiction and fiction formats. In the early 1930s, Dr. Howard W. Haggard of Yale presented regular radio talks from his book *Devils, Drugs, and Doctors*, sponsored by the Eastman Kodak Company and broadcast from coast to coast every Sunday evening. Another weekly program in the 1940s, *The Human Adventure*, dramatized "the achievements of scholars and scientists working in the great universities of the world," but it also included nonuniversity triumphs like variolation, first, and then vaccination for smallpox. Listeners to this program heard the voice of Cotton Mather defend variolation, eavesdropped on an exchange between Edward Jenner and "the great Dr. John Hunter," and then (after a musical transition) took in the conversation of Jenner with the two children he was vaccinating. Other medical-historical radio shows aimed first for entertainment, with education as an incidental effect: these were the radio plays common in the era, such as *Lux Radio Theater*, broadcast from 1934 to 1955; many of them were closely based on film scripts. Feature-length radio dramas on *Lux Radio Theater*, along with *Cavalcade of America*, *Encore Theater*, and *Academy Award Theater*, brought medical heroes into American living

rooms, often on several occasions over the years. Among them were Louis Pasteur, Martin Arrowsmith, Walter Reed and other heroes of the yellow jack story, Florence Nightingale, Paul Ehrlich, Samuel Mudd, Sister Kenny, and Edith Cavell. One very upbeat radio show in the 1940s, *This Is the Story*, presented whole dramas in just five minutes, including one on Louis Pasteur's work on spoiled beer and airborne germs. These books, films, and radio plays served in many cases as an inspiration or source for comic books, offering adults and children the same stories and heroes.⁸

The Art and the Industry of Cartoon Strips and Comic Books

Millions of teenagers and preteens during and after World War II were spending their hard-to-come-by dimes on books that entertained them with the adventures of Theobald Smith and Stephen Smith, Ambroise Paré and Louis Pasteur, Christian Eijkman and Paul Ehrlich, Robert Koch and Elizabeth Kenny, Florence Nightingale and Elizabeth Blackwell. To understand why these comic stories were so entrancing and how they conveyed information and pressed their images deep into readers' minds and hearts, we need to appreciate the visual rhetoric of comic strips, the means by which they turn the medium's constraints into opportunities and bring the stories to life. Note that in books, magazines, and print advertising, the images are almost always subordinate to the text and serve merely to illustrate it: meaning is carried in the verbal structure, and the images are used only to catch our attention, add emotional resonance, or show things also described in the words. For example, we might see a picture of a person's face where the text mentions a name. When we read of a young scientist studying hard, we may be offered a picture of a young man peering into a microscope. In most print media, the images rarely take the lead in providing the narrative.

In comic strips (sometimes called "sequential art"), the action drawings dominate, and the words work best when they are limited to utterances or thoughts of the characters shown. Cartooning that depends on

8. Corporate advertising and juvenile literature are two other media that devoted substantial coverage to heroes from medical history. For example, the Metropolitan Life Insurance Company created a series of seven "Health Heroes"—Marie Curie, Edward Jenner, Robert Koch, Florence Nightingale, Louis Pasteur, Walter Reed, and Edward Livingston Trudeau—who appeared in pamphlets and film strips offered to customers and school teachers.

extensive description and narration outside the speech balloons is usually less successful. Well-designed comics resemble film and radio, where skillful dramatization will minimize voice-overs and the plot can be carried as fully as possible through speech and sound effects. The dramatic narrative in comics has a further peculiarity in being so heavily fragmented. A story in sixty panels can have as many as fifty-nine gaps in the narrative—but those gaps, representing the action that happens “in the gutter” between frames, actually make comics particularly engaging because they force a reader to participate in imagining the story. Unlike film, which conveys predetermined auditory and visual stimuli at every moment, sequential comic art forces the reader to picture the activity between the boxed panels and to mentally create the sound. By their nature, comics “jump” discontinuously—for example, from the knife in a moving hand to a person lying bloody on the ground. Silently, the reader creates for him- or herself a picture of the stabbing, and sometimes even its sound. Radio drama, by virtue of the pictorial dimension it lacks, likewise forces a listener to create mentally the complete visual scene of characters, setting, lighting, and so forth. This forced participation is what makes radio drama, radio ball games, and comic books particularly absorbing activities.⁹

Consider the initial frame, or “splash panel,” of a Walter Reed story (Fig. 2). We do not yet know “Whose arm?” “What insect?” “For what purpose?” or “What will happen now?”—but as readers we are likely to draw our arms in closer as if to get away from the biting insect; we might also hear in our head the buzzing of a mosquito. While the drawing is art, we do not apprehend it coolly like a painting in a museum. We spontaneously start to imagine possible narratives, and the situation becomes “real” to us mentally even though it is just a cheaply reproduced line drawing—and not even done in a realistic style.

The intense engagement of readers’ imaginations with comic book narratives arises partly from the highly syncopated form of storytelling

9. Will Eisner, *Comics and Sequential Art* (Tamarac, Fla.: Poorhouse Press, 1985); Scott McCloud, *Understanding Comics: The Invisible Art* (New York: Harper Perennial, 1994). See also Reinhold Reitberger and Wolfgang Fuchs, *Comics: Anatomy of a Mass Medium*, trans. Nadia Fowler (Boston: Little, Brown, 1972); Robert C. Harvey, “The Aesthetics of the Comic Strip,” *J. Pop. Cult.*, 1979, 12: 640–52; Joseph Witek, *Comic Books as History: The Narrative Art of Jack Jackson, Art Spiegelman, and Harvey Pekar* (Jackson: University Press of Mississippi, 1989). Earlier, Marshall McLuhan had suggested interesting ways that media differ from each other in the kinds of participation they demand, in *Understanding Media: The Extensions of Man* (New York: McGraw-Hill, 1964); my interpretation of listener/reader participation for radio and comics differs from his.



Fig. 2. Rudy Palais (artist), splash panel of “Walter Reed: The Man Who Conquered Yellow Fever,” *Science Comics*, no. 2 (March 1946): 26.

that makes a viewer fantasize to fill the missing intervals, as seen in two consecutive panels from a story about penicillin (Fig. 3). They show a point in the narrative when penicillin was still highly experimental, not yet widely known, of limited availability, and provided almost exclusively to military patients. While we see only policemen (drawn with cartooning’s conventional “motion lines”), reporters, a physician, and no patient, the two frames with the three small “speech balloons” effectively draw readers into picturing a definite series of actions in several locales over many hours.¹⁰

10. It was these structural features that made comics so attractive to children and impressed the stories and characters so deeply into their imagination and memory. Reitberger and Fuchs explained it this way: “In comics, just as in fairy tales, the unreal quality of scenery and action stimulates imagination. In contrast to film and television, which made an entirely passive reception possible, comics demand the cooperation of the reader in piecing together the pictures. The text alone does not furnish the story. The books for children which are always held up in preference to comics . . . are in no way superior. The after-effect on a child’s imagination is probably stronger with comics” (*Comics: Anatomy* [n. 9], p. 141).



Fig. 3. “The precious drug”: two panels of “Penicillin,” *True Comics*, no. 41 (December 1944): 22.

Even though cartoons and caricature have a very long history and narrative comic strips in newspapers date back to the 1890s, it was only in the 1930s that the modern comic book took shape. The earliest ones were simply reprinted strips from newspapers, given out as promotional items by companies. After a few uneven efforts by printers to sell such books instead of giving them away, comic books started catching on. The first big success was *Detective Comics* in 1937, followed by bigger ones with the introduction of a character type known generically as “superheroes”: Superman in 1938, and Batman in 1939.¹¹ Almost overnight, comic

11. The history of comics in American culture and society has recently been addressed by several strong scholarly studies that supplement the more numerous internalist histories of the comics. One or more chapters in each of these three books have been especially helpful: Ian Gordon, *Comic Strips and Consumer Culture, 1890–1945* (Washington: Smithsonian Institution Press, 1998); Amy Kiste Nyberg, *Seal of Approval: The History of the Comics Code* (Jackson: University Press of Mississippi, 1998); Bradford W. Wright, *Comic Book Nation: The Transformation of Youth Culture in America* (Baltimore: Johns Hopkins University Press, 2001). Important and useful works in the earlier scholarship on comic books include Ron Goulart, ed., *The Encyclopedia of American Comics* (New York: Facts on File, 1990); John L. Fell, *Film and the Narrative Tradition* (Norman: University of Oklahoma Press, 1974); Denis Gifford, *The International Book of Comics* (New York: Crescent Books, 1984); Ron Goulart, *Comic Book Culture: An Illustrated History* (Portland: Collectors Press, 2000); M. Thomas Inge, *Comics as Culture* (Jackson: University Press of Mississippi, 1990); idem, “Comic Strips,” in *Handbook of American Popular Culture*, ed. idem, 2nd ed. (New York: Greenwood Press, 1989), 3 vols., 1: 205–28; Russel Nye, *The Unembarrassed Muse: The Popular Arts in America* (New York: Dial Press, 1970), pp. 216–41; Reiterberger and Fuchs, *Comics: Anatomy* (n. 9); William W. Savage, Jr., *Comic Books and America, 1945–1954* (Norman: University of Oklahoma Press, 1990), repr. as *Combies, Cowboys, and Jungle Queens* (Hanover, N.H.: Wesleyan University Press, 1998).

books became a major publishing phenomenon and a multimillion-dollar industry.¹² The form was quickly standardized into a booklet of soft newsprint paper, roughly eight by ten inches, printed in flat, saturated colors over black line drawings (often carelessly printed with uneven registration). Each book contained several different stories. The glossy covers imitated the style of circus posters. While the quality of actual printing was usually poor, the graphic art ranged in quality from sloppy and amateur work up to the best in graphic design. If adults sometimes criticized them for being bad reading that hurt children's eyes, the children seem not to have noticed.¹³

Comic books became a national passion.¹⁴ The 60 or so titles being published in 1938 rose to 108 in 1940 and swelled to 168 in 1942.¹⁵ Average sales were 200,000 to 400,000 copies per issue, though issues of *Action Comics* with a Superman story often sold about 900,000 and bi-monthly issues of the book titled *Superman* averaged sales of 1.3 million copies.¹⁶ Ten million comic books were being sold each month in 1940.¹⁷ They were found everywhere. They were known to everyone; and if read mostly by children, they were read by almost all of them. Basing her research on quantitative studies made in the early 1940s, Amy Kiste Nyberg states that "more than 90 percent of the children in the fourth, fifth, and sixth grades reported that they read comic books regularly, averaging at least ten comics a month. . . . Readership was lower among

12. The rapid growth of Superman's popularity is astounding. See Wright, *Comic Book Nation* (n. 11), p. 14.

13. Concerns about how comic book reading helped or hurt children's ability to do other reading surfaced early. In the 1940s there was much public debate and quite a number of research studies, usually by educational psychologists, reading teachers, and librarians. No consensus emerged from the scientific studies, and it is important to note that a number of prominent scientists supported comics as helpful, or at least not damaging, to the development of reading abilities. A useful, recent analysis of this literature is found in Nyberg, *Seal of Approval* (n. 11), pp. 5–18.

14. To better understand the power of these cartoon images, which in today's world of technicolor, electronics, and streaming video seem calm and almost quaint, we need to remind ourselves of the quieter styles of other mass media of the early 1940s. In the early forties, television, even in black and white, was still in the future. Movies with sound and full color had been around for less than fifteen years, and the Technicolor process was only ten years old. Color images had become common on *Time* magazine covers only in 1938. It was not until 1947 that more than a few *Life* magazine covers bore a color photograph.

15. Nye, *Unembarrassed Muse* (n. 11), p. 239; Nyberg, *Seal of Approval* (n. 11), pp. 3–4.

16. Wright, *Comic Book Nation* (n. 11), pp. 13–14.

17. Nyberg, *Seal of Approval* (n. 11), pp. 3–4. Nye, *Unembarrassed Muse* (n. 11), p. 239, reports a rise to more than twelve million per month for 1942.

adolescents and adults; still, 30 percent of young adults reported reading comic books.”¹⁸

True Stories

Superheroes in fantasy stories and detective fiction had such spectacular success in comic book format that publishers tried other kinds of stories to tap into the same huge market. Along with funny animals and funny people, “true” adventures began to be offered in several new titles, jam-packed with tales of “real people” from both history and the present. These books shifted attention from supermen to humans, from fantasy heroes to real people, but without abandoning heroism or the biographical narrative. They were founded on the premise that truth could displace fantasy; and although many were gory, especially in war time, the genre has been well characterized as “wholesome adventures.”¹⁹ In these comic books, the medical history stories appeared cheek by jowl with fierce battles and exotic adventures. This new group of comic books tried to entertain with information.²⁰ Their intentions were educational, yet they were generally not stodgy and were often rather fresh, even raw, like the action stories and adventures with which they competed for space and attention on the newsstands.

The “true” subgenre was born in April 1941 with *True Comics*, whose cover bore this motto: “TRUTH is stranger and a thousand times more thrilling than FICTION.” The first issue featured Winston Churchill on the cover and included a story about Dr. Walter Reed and his colleagues. *True Comics* had been scheduled to appear every two months, but after the premier issue sold out its 300,000 copies, it soon became a monthly. For a few years starting in 1942 it also appeared as a newspaper strip.²¹

18. Nyberg, *Seal of Approval* (n. 11), p. 1.

19. Roger Sabin, *Comics, Comix and Graphic Novels: History of Comic Art* (London: Phaidon, 1996), p. 89.

20. On this subgenre generally, see Ron Goulart, *Ron Goulart's Great History of Comic Books* (Chicago: Contemporary Books, 1986), chap. 14; Benjamin F. Towle, “An Examination of Historiography in the Comics Medium,” *International Journal of Comic Art*, 2003, 5: 262–80; and Witek, *Comic Books as History* (n. 9), chap. 1. Towle’s recent study examines history stories in comics, not the history of the medium. For examples of unsubstantiated negative judgments about this subgenre, see Gifford, *International Book of Comics* (n. 11), pp. 172–73; Reitberger and Fuchs, *Comics: Anatomy* (n. 9), p. 139; Wright, *Comic Book Nation* (n. 11), pp. 27–28, 61.

21. That 300,000 copies of *True Comics* sold out in ten days was reported in “Cartoon Magazine for Children Big Success,” *Pub. Weekly*, 8 March 1941, p. 1127, which also noted that a run of 40,000 for Canada under the title *True Picture Magazine* was selling well, and the publisher was printing 10,000 more of *True Comics* and 25,000 more of its Canadian

Before the end of the year, *True's* publisher added two similar books to its roster: *Real Heroes* and *Calling All Girls*. The “true comics” idea was quickly copied by others, with *Real Life Comics* debuting in the summer of 1941, followed in a few years by a sister publication, *It Really Happened*. In 1941, a third publisher’s magazine entered this market under the title *Trail Blazers*. Although the fictional *Wonder Woman* comic was distinct from the “true comics” genre, from its inception in the summer of 1942 this magazine published a regular biographical feature, usually two to four pages long, “Wonder Women of History.” Because this book reached the same readership as the true-adventure books, its medical figures are included in the present study: a high proportion of its “Wonder Women of History” were famous as medical, nursing, or public health pioneers. After the war, publishers attempted to add further titles in the “true comics” genre, but none succeeded.²²

The “wholesome adventure” comics did not achieve the high circulation numbers of books like *Batman* and *Superman*, which sometimes sold more than a million copies an issue. But the growth of the “true comics” genre was impressive. In less than twelve months, a combined circulation of 750,000 was achieved for *True Comics*, *Real Heroes*, and *Calling All Girls* at this single publishing house (these numbers measured books sold for each different issue, not a cumulative total of books per year).²³ For 1944, audited monthly circulation figures of *True Comics* alone had risen from its 1942 average of around 325,000 up to a circulation high of 559,625, with a low that year of 490,439.²⁴ This was no mean success, even when

counterpart. Ron Goulart, “True Comics,” in *Encyclopedia of American Comics* (n. 11), p. 369, includes some information about its syndication in newspapers. There is now a useful history of the books available at <http://www.library.vcu.edu/jbc/speccoll/blake1.html> (accessed 9 November 2003), “William E. Blake, Jr. Collection of True Life 1940s Era Comics.” The quotation from publisher George J. Hecht comes from an interview in the late 1970s with William E. Blake, Jr., and was presented in an unpublished lecture from 1980 now posted on the internet; see Blake, “A View of History: True Comics, 1941–1945,” at <http://www.library.vcu.edu/jbc/speccoll/blake2.html> (accessed 9 November 2003).

22. *Real Fact* was introduced in 1946 and lasted twenty-one issues. *Science Comics* published its only five issues between January and September 1946. Four numbers of *Marvels of Science* were published from March through June 1946. In 1947, *Picture Stories from Science* folded after its second issue.

23. The circulation of 750,000 was reported in “Superman Scores,” *Business Week*, 18 April 1942, pp. 54–56. The same article also noted that “advertisers have not yet realized the possibilities of these magazines for goods aimed at the juvenile demand” (p. 56).

24. These numbers are taken from the records of the Audit Bureau of Circulation. As the ABC allows only hand copying of data from its microfilms, they were transcribed by Russ Maheras and then posted on the Internet. See <http://www.hoboes.com/pub/Comics/About%20Comics/Business/Top%20Comics%20and%20Publishers/Comic%20Book%20Circulation%20Data> (accessed 9 November 2003).

compared to the blockbusters. An estimation of the impact of comic books must also take into account that they were often reread and were regularly shared among friends. For example, collecting and sharing were especially popular among GIs, and the military was forced to include comics in the magazine packets shipped overseas. At military post exchanges, comic books “outsold *Life*, *The Reader’s Digest*, and *Saturday Evening Post* combined at ten to one.”²⁵

Like all newsstand comics, the books in this genre were commercial endeavors, with full-page advertisements for bubble gum, candy, toy rifles, and so on. They competed for purchasers in the mass market.²⁶ *True Comics*, however, was established and owned by a different kind of publisher: Parents’ Institute, Inc., the publisher of *Parents’ Magazine*. *True Comics* listed as “junior advisory editors” such celebrities as Mickey Rooney, Shirley Temple, and Eddie Cantor’s daughter, Janet, along with “senior advisory editors” like George H. Gallup, Hendrik Willem van Loon, and two Columbia University professors, Arthur T. Jersild and David S. Muzzey.²⁷ Comic-book historians have given short shrift to the “wholesome adventure” comics—perhaps partly due to the role of *Parents’ Magazine*, but mostly, I believe, because these were not the biggest sellers and they did not contain any of the fantasy characters, like Superman or Mickey Mouse, who reappeared in successive issues and became celebrities with long histories and millions of fans. Nor did the “true comics” usually use the better artists or allow them to sign their own stories. Nonetheless, even if the true-adventure comics were smaller in circulation, in artistic stature, and in the making of loyal fans and devoted historians, they created a remarkably large readership for medical history among America’s young people.

The success of true-adventure comics was not sustained beyond the mid-1940s, and this genre declined and disappeared along with the other “golden age” comic books. What ended in the late 1940s were not only

25. Nye, *Unembarrassed Muse* (n. 11), p. 239. See also Gordon, *Comic Strips* (n. 11), pp. 139–51, on World War II, with pp. 139–41 providing data on the reading habits and comics purchases of service personnel.

26. Furthermore, they had no lock on the market, as did later classroom comics—especially the *Treasure Chest of Fun and Fact* comic books in the 1960s, which were offered by subscription to students in Roman Catholic schools, with nuns and other teachers taking the subscriptions and distributing the comics. At least two medical history stories appeared in *Treasure Chest*: “Yellow Jack: The Story of Dr. Walter Reed” (vol. 23, no. 16, 4 April 1968) and “Man against Disease: The Story of Louis Pasteur” (vol. 24, no. 10, 23 January 1969). David Gaudette provided information about how *Treasure Chest* was circulated.

27. An interesting account of the secular humanism that characterizes this venture is given in Blake, “View of History” (n. 21). On Hecht, see also Nyberg, *Seal of Approval* (n. 11), p. 31.

the huge sales numbers and the quality of the books, but youth culture's universal passion for comics and their commanding place in culture more generally. The prominence and centrality that comic books had held in mass culture from the late 1930s disappeared as a result of political attacks and the rise of television.²⁸ Still, for most of the 1940s, "wholesome adventure" comics were enormously popular, and they were peopled with the likes of Paré, Pasteur, and the penicillin scientists.

Heroes of Medical History

A sampling of the stories will allow us to notice the character of the science lessons embedded in the heroic narratives, as well as the social and personal values that the figures exemplified. Not only were the individual doctors and nurses "real heroes," but the quest for discoveries was portrayed as a form of heroism as valiant as that of the battlefield, and often described in the same terms. Even the most unusual people in these stories were portrayed as potential role models, and ordinary children were helped to identify with them because the stories almost always began with the heroes' humble origins and recounted how these individuals first became curious about science or medicine during their childhood.

Louis Pasteur and Walter Reed were the most popular of the medical figures in the "wholesome adventures" genre of comic book, just as they were in the other popular media purveying the history of medicine.²⁹ It

28. Their dominance was challenged first by an anticomics crusade that included book-burnings in schoolyard bonfires in the summer of 1948 (Goulart, *Great History* [n. 20], p. 263), and then by the fierce attacks of the psychologist Fredric Wertham culminating in his book, *Seduction of the Innocent* (New York: Rinehart, 1954). Even the U.S. Congress held major public hearings on the dangers of comic books. The industry was seriously hurt, and it established self-censorship with an industry code of approval; see Nyberg, *Seal of Approval* (n. 11). By the 1950s, the rise of television was deeply undercutting the commanding position of comic books in young people's entertainment. In the mid-1950s comics still circulated in large numbers, but they were no longer such a ubiquitous feature of American popular culture in general; gradually the industry became more fragmented, and its books were diversified into distinct submarkets and subcultures so that none was universally appreciated as an icon of general culture. In time, comics disappeared from the newsstands and lost their preteen and teenage mail subscribers, with distribution being reorganized into specialized comic book stores, patronized by devoted fans who were primarily men in their late teens and twenties.

29. This section is based on the roughly sixty medical history stories that I have found in comic books of the 1940s. Since few comics are held in libraries (except at Michigan State University) and individual stories are rarely catalogued separately, it is impossible to review the corpus systematically to find them all. After years of sleuthing, and with inquiries

was probably not just coincidence that each had been featured in a major Hollywood film of the mid-thirties, as well as in Paul de Kruif's writings and countless magazine articles. A postage stamp commemorating Reed was issued in April 1940. A few years earlier, he had been placed with Columbus, Sam Houston, Abraham Lincoln, Woodrow Wilson, Dolly Madison, and about fifty others in a popular work for children, *A Book of Americans* by Rosemary and Stephen Vincent Benét.³⁰ Reed's story was perfect for the era: he was a soldier, an American, and the man credited with solving the problem of yellow fever in the context of a government-sponsored investigation. And, as was well known, the breakthrough understanding of yellow fever transmission was indebted to heroic soldiers who volunteered themselves for exposure to a deadly disease. Reed was not only popular in the comics, he was the first of the comic book medical heroes, for "Yellow Jack" appeared in the premier issue of *True Comics*.³¹ When "Major Walter Reed, an army doctor," was introduced to readers on the second page of the story, the drawing would have been familiar to many, for it was an exact replica of the portrait on the stamp issued twelve months earlier. The story line in this comic was the familiar one of guesses, observations, hypotheses, and dangerous experiments, including the death of Dr. Jesse Lazear, "a martyr to science." The experiments were explained fairly clearly and made visually prominent (Fig. 4). For pedagogy, the story nicely illustrated how experimental controls worked in the testing of hypotheses; for entertainment, it provided a thrill of horror by showing some disgusting and frightening

reaching a point of diminishing returns, I am confident that I have found the overwhelming majority of the relevant examples and that the main features of the phenomenon can be discerned with confidence, even if a few examples may have been overlooked. Note that any numerical statements in this section (e.g., "Sister Kenny has three stories" or "Pasteur and Reed are most popular") should not be interpreted as absolute determinations. As a comprehensive listing of medical history stories in comic books is beyond the scope of this article, I am publishing an inventory separately; see Hansen, "True-Adventure Comic Books and American Popular Culture in the 1940s: An Annotated Research Bibliography of the Medical Heroes," forthcoming in the *International Journal of Comic Art*, Vol. 6, No. 1 (Spring 2004).

30. Rosemary and Stephen Vincent Benét, *A Book of Americans* (New York: Farrar and Rinehart, 1933).

31. Harold de Lay (artist), "Yellow Jack: How the Cause of Yellow Fever Was Discovered," *True Comics*, no. 1 (April 1941): 37–43. Wartime patriotism and militarism probably affected comic books' choice of subjects, but nationalism should not be overemphasized. For example, two issues later, *True Comics*, no. 3 (August 1941) had a cover story entitled "Death Fighter" about Robert Koch. Even as late as May 1943, a major story devoted much attention, all of it favorable, to Loeffler, Behring, and Koch: Gus Herman (artist), "The Conquest of Diphtheria," *Real Life Comics*, no. 11 (May 1943): 30–36.

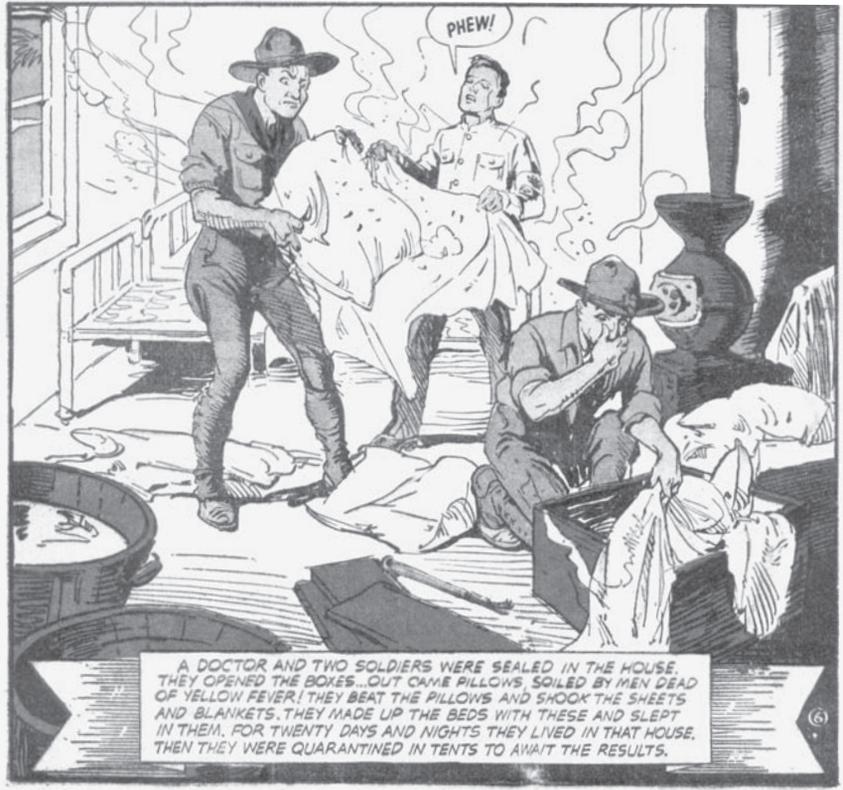


Fig. 4. Harold de Lay (artist), “Phew!”: panel of “Yellow Jack: How the Cause of Yellow Fever Was Discovered,” *True Comics*, no. 1 (April 1941): 42.

things as befitted its place in an adventure comic for a largely male, adolescent and preadolescent readership.

A second story about the yellow fever breakthrough by Reed and his colleagues appeared in *Real Life Comics*, where Reed shared the magazine’s cover with Jacob Riis and the Fighting Seabees.³² With comic strips’ characteristic conciseness, four panels on the last page of this story showed the sick soldier Moran carried out of the experiment’s “clean house” as Reed announced that “a filthy house without mosquitoes can’t cause yellow jack—but a clean house with one mosquito is a death trap.” The next panel showed Dr. Gorgas ordering the removal of stagnant

32. “The Conquest of Yellow Fever,” *Real Life Comics*, no. 19 (September 1944): 7–14; cover art by Alex Schomburg.

water from the streets, and the final one proclaimed: “Ninety days later—for the first time in two hundred years there was not a single case of yellow fever in Havana! Major Walter Reed and his daring associates had won another battle in the endless war against disease!”³³

Pasteur made his comic book debut in October 1942 in *Trail Blazers*, followed quickly by a story in *Real Heroes* the following month. While *Real Heroes* told only a single story about “sick wine,” *Trail Blazers* recounted quite a number of important episodes, which had also appeared in the 1936 film: homesickness making a youthful Pasteur abandon study in Paris, his later return to study at the École Normale, a chemistry professorship at Strassburg, spoiled wine, disease among silkworms, airborne germs and disease, the public anthrax vaccine experiment, rabies vaccine and Pasteur’s anxiety over its first use in a human being, his election to the French Academy, and the benefits we all gain from pasteurized milk.³⁴ The story was sketchy, factually loose, cliché-filled, and incomplete, but it conveyed a great deal in only forty-four frames on nine pages. Filling in the gaps may have been easy for readers because so much of the story had been told many times in books, films, and radio dramas. This story’s drawings by Gary Gray had an unusual style for the true-adventure comics, for he gave the characters a very twentieth-century appearance—or, more accurately, the appearance of modern comic strip figures. Louis Pasteur and Madame Pasteur were thin and as handsome as movie stars, and their facial features and their 1940s hairstyles could have appeared in “Blondie” or “Dick Tracy” (though without the latter’s physiognomic exaggerations).³⁵

33. *Ibid.*, p. 14. Similar stories appeared as well in two specialized comic books: Rudy Palais (artist), “Walter Reed: The Man Who Conquered Yellow Fever,” *Science Comics*, no. 2 (March 1946): 26–31; Morris Nelson Sachs (writer) and Don Cameron (artist), “The Conquest of Yellow Fever,” *Picture Stories from Science*, 2 (Summer 1947): 29–32. While these latter two magazines maintained the focus indicated by their titles and did not include other kinds of adventures, they were nonetheless commercial ventures for newsstand distribution, not schoolbooks. And they both included a fair amount of medical history—including Louis Pasteur, of course.

34. Gary Gray (artist), “Louis Pasteur,” *Trail Blazers*, no. 4 (October 1942): 11–19.

35. It seems likely that these drawings are heavily indebted to the 1936 film, as some resemblances are striking, even with a strange displacement. While the comic book version of the young Pasteur in courtship kissing his future wife does not look like either the film Pasteur or the historical Pasteur, the drawing has a strong similarity to the color still on one of the lobby cards of the film, where we see the young Dr. Jean Martel kissing Pasteur’s daughter Annette, his future wife: in the two images, the placement of their heads for the kiss is identical, as are the man’s shirt, tie, jacket, and hairstyle; and both women are blonde with ringlets.

“Louis Pasteur and the Unseen Enemy” in *Real Heroes* offered a clear narrative about the puzzle concerning good French wine that often spoiled when shipped to England, with the expected show of Pasteur’s cleverness, and the successful test of heated and unheated wines.³⁶ The microscope played a prominent role, and readers learned that wines with different problems had different groups of microbes. Though unsigned, this story had a distinctive style, with the highly exaggerated body language often found in comics and a successful use of worm’s-eye and bird’s-eye views to add action to the scenes. When Pasteur made his appearance in the newspaper comic strip version of *True Comics*, the drawings were clearly by this same unidentified artist.³⁷ Pasteur’s work was also included, of course, in a thematic comic book, *Picture Stories from Science*.³⁸ And he showed up as well in an unusual series of noncartoon stories by Nat Schachner that ran in several comic books, such as a 1948 account of the work of Waldemar Haffkine.³⁹ This story’s non-cartoon drawings show Haffkine in the lab, Pasteur talking with him, and impoverished Asians dying of disease in the roadway. Along with the obligatory story of mysterious diseases overcome with discoveries fostered by cleverness and determination, readers learned that the Jewish Haffkine was invited by Elie Metchnikoff to work with him in Odessa, an opportunity blocked by the Russian government’s anti-Semitic policies. When Haffkine told Pasteur of his plans to work on cholera, he was reminded that even Pasteur and his colleagues had worked on it for years without success. Haffkine did manage to develop a cholera inoculation, tested it on himself under Pasteur’s care, and then took it to India. “It should have been enough for one man. But Haffkine was not content. There was that other scourge—the bubonic plague!”⁴⁰ After years of work, he had another triumph. “In the midst of the raging plague, [he] inoculated his hundreds of thousands. Again, the plague retreated before him and fled this lonely human being who, single-handed, had fought through and won where hundreds of others had failed. Waldemar Haffkine, whom

36. “Louis Pasteur and the Unseen Enemy,” *Real Heroes*, no. 7 (November 1942): 20–25.

37. The original drawing for a four-frame Pasteur sequence on the rabies breakthrough in the author’s collection is dated 16 March, but with no year indicated. I have not yet been able to locate this Pasteur sequence in a newspaper.

38. Morris Nelson Sachs (writer) and Don Cameron (artist), “Fighting Germs with Germs,” *Picture Stories from Science*, no. 2 (Summer 1947): 25–28.

39. Nathan Schachner, “Healer of Men—A True Story of a Great Scientist,” *Real Life Comics*, no. 44 (May 1948): 28–30.

40. *Ibid.*, p. 30.

Russia had once dismissed because of his religion, had banished from earth two of the worst diseases that had ever plagued mankind!”⁴¹

In these stories of Reed and Pasteur, as in so many of the others, the centerpiece was a permanent medical breakthrough. Triumphalism was ever-present. Hard work and virtue were always rewarded; but in the comics, even in the “true” comics, consistency and historical accuracy were not paramount values—with results at times that could make historians shudder. In one book, Horace Wells received credit for anesthesia;⁴² and in two others, it was William G. Morton.⁴³ In several stories, the personnel in nineteenth-century operating rooms were wearing white scrubs, even when the story itself made clear that the germ theory had not yet been established. One smallpox story confused vaccination with variolation, reporting absurdly that George Washington vaccinated his troops in 1778, even though Jenner’s vaccination dates only from the 1790s.⁴⁴ In many stories, a scientific doctor won out against laymen’s superstition, ignorance, and obscurantism. The optimistic march of progress that pervades these stories (perhaps excusable in wartime) steps unhesitatingly over the dead patients, the sacrificed animals, and even the men who died from experimentally induced yellow fever. The clear distinction between good guys and bad guys may have been historically naive, but it fitted well—and was perhaps justifiable—given the main goals of the endeavor: the stories had to be short, they were for children (though read by teenagers and adults), they aimed to inspire and entertain,

41. *Ibid.*, p. 30. Schachner published at least three other similar textual stories in comic books: “The Magic Mold” (about Dr. Ernest Chain, who shared a 1945 Nobel Prize with Alexander Fleming and Howard Florey for developing penicillin), *Real Life Comics*, no. 31 (May 1946): 26–28; “Master of Medicine—A True Story of Scientific Achievement” (about Dr. Simon Flexner and the establishment of the Rockefeller Institute for Medical Research), *ibid.*, 41 (September 1947): 30–32; and a story about Franz Boas: “A Foe of Prejudice,” *It Really Happened*, no. 6 (December 1946): 22–24. Schachner was a chemist who had done work in public health and in chemical warfare. He then became in turn a lawyer, a very successful science-fiction writer in the 1930s, and a historical biographer with books on Burr, Hamilton, Jefferson, and the founding fathers. He also wrote *The Price of Liberty: A History of the American Jewish Committee* (New York: American Jewish Committee, 1948). This biographical information on Nathaniel Schachner (1895–1955) was drawn from a Web site, Internet Speculative Fiction DataBase, “an effort to catalog works of Science Fiction, Fantasy, and Horror,” edited by Al von Ruff: http://www.isfdb.org/cgi-bin/ea.cgi?Nat_Schachner (accessed 9 November 2003).

42. “The Conquest of Pain,” *Science Comics*, no. 3 (May 1946): 23–27.

43. “The Story of Medicine,” *Real Life Comics*, no. 17 (May 1944): 7–16; “Miracle against Pain,” *True Comics*, no. 51 (August 1946): 26–30.

44. “Plague Vanquished,” *Real Heroes*, no. 15 (July 1946): 30–32.

and they placed a higher premium on teaching the clarity of science than the complexity of history.

Despite a substantial and unacknowledged dependence on the writings of Paul de Kruif, the range of medical history heroes was fairly wide. Among those who had their own separate stories, Ambroise Paré was the historically earliest figure.⁴⁵ He appeared as well in a survey, “The Story of Medicine,” in which medical progress was the main cover story, depicted by a scene of battlefield care of the wounded where a prominent feature was the bag of a blood product hanging from the butt of a rifle which stood upright with its bayonet in the ground, a frequently repeated image in these books.⁴⁶ Both Paré stories focused on his observation that soldiers’ wounds healed faster in the situation where doctors had run out of the hot oil normally used to cauterize them: progress came from open-eyed observation and a willingness to reconsider tradition. Edward Jenner with his vaccine against smallpox appeared twice on his own, and was mentioned in passing in other stories.⁴⁷ Both biographies feature the anecdote of Napoleon’s consenting to release prisoners when he saw Jenner’s name on the petition. One version carelessly put Jenner on the list of prisoners, rather than on the list of petitioners! The introduction of vaccination to Russia was erroneously attributed to Catherine the Great in her comic book biography. Her efforts to prevent smallpox actually employed variolation, as vaccination had not yet been invented. Despite this important error, the general picture of her triumph holds true. She became convinced by animal experiments that the new technique was safe, overruled the skeptical local physicians in favor of Dr. Dimsdale from London, and had herself variolated so that she could safely minister to her people and serve as proof of its value: “In the weeks that followed, Russians of high and low estate flocked to Moscow to receive the magic immunization.”⁴⁸

“Death Fighter” Robert Koch, with beard and microscope, was a cover figure on the third issue of *True Comics*, containing a didactic but lively eight-page story centering on anthrax as the transformative episode in his career.⁴⁹ This major story illustrated staining, the general techniques of distinguishing microbes from each other, Koch’s identification of the

45. August M. Froehlich (artist), “Ambroise Paré: Famed Surgeon,” *Real Life Comics*, no. 33 (July 1946): 44–48.

46. “The Story of Medicine,” *Real Life Comics*, no. 17 (May 1944): 7–16.

47. “Dr. Edward Jenner: Plague Fighter,” *Real Life Comics*, no. 15 (January 1944): 34–39; “Plague Vanquished” (n. 44).

48. “Catherine the Great,” *Real Life Comics*, no. 18 (July 1944): 28–33, quotation on p. 32.

49. “Death Fighter: Dr. Robert Koch,” *True Comics*, no. 3 (August 1941): 12–19.

cholera germ, his work in Asia and Egypt, and his Nobel Prize. In the closing frame, on a scroll with Aristotle heading the list of honored scientists, Koch's name was inscribed and he was designated as "the father of bacteriology." Robert Koch reappeared in May 1943 as "Herr Doktor" in another lengthy and rich account, "The Conquest of Diphtheria," where readers also met Émile Roux, Friedrich Loeffler, and Emil August Behring as the key figures of the 1890s, and the account ended with a new development and a magnificent triumph.⁵⁰ "Decades later, Dr. Park of New York achieved the final victory!" by replacing antitoxin therapy with a new injection that allowed children to build their own immunity rather than receiving it from horse serum: "In New York State alone, diphtheria deaths dropped from 4,500 in 1922 to less than 60 in 1940—with healthy children everywhere providing a living memorial for Loeffler, Roux, and Behring!"⁵¹ Even during the war, German doctors were still honored for their exciting achievements, as was the Italian Giovanni Battista Grassi, who shared a story about malaria later that same year with the British physician Ronald Ross.⁵²

The search for a beriberi germ was the starting point for the adventures of the Dutch physician Christian Eijkman in the East Indies, where he observed the surprising contrast between men sick and dying in a clean prison where they were fed high-quality white rice, and generally healthy prisoners in the "poor, ill-kept Jangro prison . . . a miserable place."⁵³ He received permission to have two batches of prisoners switch places, and confirmed that food was a more likely cause of the illness than filth or germs. Two prisoners died in this experiment. The story continued with his research on beriberi in chickens, his experiments with brown and white rice, and the failed search to isolate the key "something" in the brown casing of whole rice kernels that kept people well. This story about "The Discoverer of Hidden Hunger" ended with his being awarded the Nobel Prize for discovering the cause and cure of beriberi. A caption noted that "Dr. Eijkman began the work which gave

50. Herman, "Conquest of Diphtheria" (n. 31).

51. *Ibid.*, p. 36. The "Dr. Park" mentioned was William Hallock Park of the New York City Health Department, and the unspecified improvement was the introduction of a toxin-antitoxin combination. For the non-comic-book history, see Evelyn M. Hammonds, *Childhood's Deadly Scourge: The Campaign to Control Diphtheria in New York City, 1880–1930* (Baltimore: Johns Hopkins University Press, 1999).

52. "The Conquest of Malaria: Ross + Grassi = Victory!" *Real Life Comics*, no. 14 (November 1943): 32–37.

53. "The Discoverer of Hidden Hunger," *True Comics*, no. 15 (August 1942): 37–41, quotation on p. 38.

us our knowledge of the vitamins we all need for good health,” and promised “another vitamin story” soon—and the very next issue brought another vitamin triumph, this time the story of an American chemist working in the Philippines, Robert R. Williams, who devoted twenty-five years of study to rice bran, but finally succeeded in isolating Vitamin B₁ and showing how to put it back into prepared foods.⁵⁴

Filth and germs were prominent again in a story of Stephen Smith, one of the less famous historical figures, whose triumph—as much political as scientific—was honored with a full telling. Smith was introduced as a man appalled by urban disease, who developed a powerful “vision of a healthful city” and waged “a heroic battle that gave America her first public health laws!”⁵⁵ As a young doctor in 1858, he noticed the high prevalence of typhoid in filthy slum settings, but was rebuffed in his demand that a rich landlord keep the tenements cleaner. “A smouldering revulsion in young Stephen Smith burst into a fire of action!”⁵⁶ He compiled facts and figures and drew up a law for New York State, but it was blocked by sleazy politicians. He came back again and again, with more and bigger studies, the backing of more doctors, and newspaper editorial support. In time he triumphed when a new legislature made history by passing legislation, just as cholera was approaching. In the closing panel, readers were addressed directly by a man approaching his ninety-ninth year, reading from “the proudest entry” in his diary: “I have seen my health bill, after forty-five years, become the model for such bills all over the nation.”⁵⁷

Stories of a different doctor Smith furnished interesting microscopic details and the controlled experiments of medical microbiology: bacteriologist Theobald Smith was featured in two substantial stories. Part mystery and part adventure, the earlier story appears within a group of seven issues (five in a row) with strong medical history characters.⁵⁸ “Mysterious death stalked among America’s teeming herds—until a young

54. “The Modest Miracle,” *True Comics*, no. 16 (September 1942): 49–53. The closing frame indicated this was “a true story based on the motion picture, ‘The Modest Miracle’ produced by Standard Brands Inc. in the interests of the National Nutrition Program.”

55. “Stephen Smith,” *Real Life Comics*, no. 30 (April 1946): 37–40, quotation on p. 37.

56. *Ibid.*, p. 39.

57. *Ibid.*, p. 40.

58. “Fever Fighter: Dr. Theobald Smith,” *Real Life Comics*, no. 13 (September 1943): 48–53. Issue 11 of *Real Life Comics* had offered the conquest of diphtheria; issue 12 told of Joseph Goldberger; issue 13 had Theobald Smith; issue 14 featured Ronald Ross and Giovanni Battista Grassi; and issue 15 portrayed Edward Jenner, followed by issue 17’s multicharacter “Story of Medicine” and then issue 19’s yellow fever triumph.

scientist sought the cause!”⁵⁹ Six pages of colorful drawings showed field trials with labeled stock pens, close-up views of ticks both young and of egg-laying age, bacilli in the circle that conveyed a microscope’s field, and the triumphant cleansing of disease-bearing ticks from cattle in insecticidal troughs. The closing frames portrayed Smith’s proof of an insect-borne disease as a clue that made possible David Bruce’s tracking of sleeping sickness to the African tsetse fly and Giovanni Battista Grassi’s discovery of the source of malaria. The later story, “Theobald Smith and Texas Fever,” had stronger cartooning, but the same inquisitive young scientist in settings taken from cowboy movies. The story opened with a herd of longhorns and a concise overview:

Fifty years ago, northern cattle shipped to graze in the south got sick and died from a mysterious disease the cattlemen called Texas fever. Southern cows shipped to the north trailed this disease with them, killing more northern cattle. To explain this riddle, Theobald Smith devoted several years of his life, experimenting in the laboratory and on the range. He was the first and greatest of all American Microbe Hunters!⁶⁰

As in the earlier account, Smith’s triumph was linked to further discoveries, and in this case it opened “the way for Dr. Walter Reed’s conquest of yellow fever . . . as well as other important advancements in the science of microbe hunting!”⁶¹

While many of the comic book stories took their lead and their language from Paul de Kruif’s books, there were many medical history heroes without a Dekruifian antecedent, such as Edward Livingston Trudeau and the several medical men of the Mayo family. Trudeau was well known for his personal recovery from tuberculosis through a bracing outdoor life in the Adirondacks, and for his opening a sanitarium at Saranac Lake to successfully treat thousands of fellow sufferers. But when *True Comics* recounted his biography, they turned him into a microbe hunter. Reading in a medical journal that a German, Doctor Koch, has found the germ that caused tuberculosis, he tells himself: “If I could learn to grow that germ outside the body, and then give the disease to animals, maybe I could find the cure for humans”; he then builds himself “a small, rude laboratory with home-made equipment.”⁶² This account

59. “Fever Fighter” (n. 58), p. 48.

60. “Theobald Smith and Texas Fever,” *Science Comics*, no. 5 (September 1946): 17–23, quotation on p. 17.

61. *Ibid.*, p. 23.

62. “Conqueror of the White Plague,” *True Comics*, no. 19 (December 1942): 54–59, quotations on p. 57.

made later events in the clinician's life and work dependent on a modest experiment that he undertook with two groups of five rabbits, all ten injected with the newly discovered tubercle bacillus: these groups were placed in either good or bad conditions, and another five were kept as an uninfected control in bad conditions with little food (Fig. 5). Frames prior to the ones reproduced here showed him injecting the rabbits with a large needle and syringe; like so many of the other scientific doctors portrayed in these stories, he casually experimented on animals as if no one had ever raised an objection, and with no attempt to protect youthful eyes from drawings of the sacrificed animals. Just after the frame with the groups of rabbits, which gave the data, Trudeau drew his conclusion for both the reader and himself:

Now I know my treatment is right! Bad living conditions alone do not cause the disease, or the third lot would have died. Fresh air and sunlight, good food and rest cured all but one of the first lot—they will cure human beings, too, in most cases of tuberculosis.⁶³

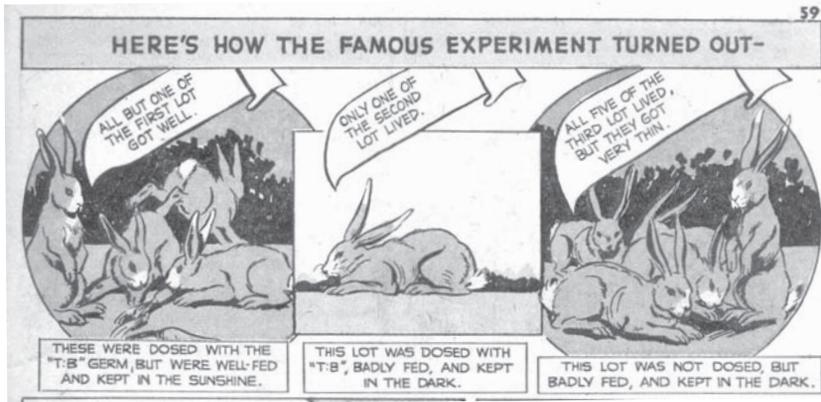


Fig. 5. "Here's how the famous experiment turned out": panel of "Conqueror of the White Plague," *True Comics*, no. 19 (December 1942): 59.

Despite the popularity of medical researchers in these comic books, other kinds of medical heroes were also present, such as the Mayo brothers, whose careers embodied a long series of institutional achievements. Will and Charlie began medical study in their father William's practice before entering medical school. Their story presented a familiar model of hard work, inventiveness, determination, vision, and generosity. From the surgical techniques that they gained from advanced study

63. *Ibid.*, p. 59.

elsewhere and brought back to Minnesota, they built a great institution where they served the rich and poor equally. And since their practices yielded more than they needed to live on (but they had to continue to take fees so as not to interfere with other doctors' practices), they made a huge donation to the University of Minnesota to support the advanced medical training offered at their institution.⁶⁴ However important the achievement, the story was strangely bloodless in its comic book incarnations and lacked the kind of concrete detail that made most of the other medical history adventures engaging enough to compete with soldiers and seafarers. Writers of the medical history stories were perhaps more skilled at animating science lessons than moral lessons.

Medical figures who risked death to help humanity constituted a second group of nonresearchers. Examples here include Clara Barton, Samuel Mudd, David Livingstone, Wilfred Grenfell, a dog named Balto, and Edith Cavell. None of them was prominent in the main canon of medical history, but their stories were popular in several media.

The comic book story of Clara Barton illustrated not only the help she brought to the Civil War wounded, but the feminist struggle she fought to be allowed to serve there. It also told about her later work to establish the American Red Cross.⁶⁵ Samuel Mudd was celebrated for his valor in fighting a deadly epidemic—while he was in federal prison for having given medical care to John Wilkes Booth: he had treated Booth in the hours after the shooting of President Lincoln before news of the shooting had reached him; he was then pardoned for his selfless care of sick and dying prisoners and guards.⁶⁶ The British missionary doctor David Livingstone offered a jungle adventure, typical of that era, complete with dangerous animals and naive natives.⁶⁷ For the Canadian country doctor Wilfred Grenfell, a popular writer of adult and juvenile books, one comic book story focused on his perseverance when, in traveling to treat a sick child, he and his sled dogs found themselves floating out to sea on an ice

64. The Mayo brothers garnered a rare two-part story, "The Mayo Family: Medicine's Miracle Men," *True Comics*, no. 25 (July 1943): 8–12; no. 26 (August 1943): 18–22. They appeared again in "The Mayo Brothers: Doctors Courageous," *Real Life Comics*, no. 42 (November 1947): 13–16.

65. She appeared first in "Clara Barton, Angel of the Battlefield," *Wonder Woman*, no. 2 (Fall 1942): 31–34; and then in "Angel of the Battlefield," *True Comics*, no. 34 (April 1944): 16–22.

66. "The Doctor Who Came Back: Dr. Samuel Mudd," *True Comics*, no. 21 (February 1943): 36–41. Hollywood's feature film about Dr. Mudd was *The Prisoner of Shark Island*, directed by John Ford; it opened in 1936. A radio version of the film story was broadcast on 13 August 1946.

67. "Dr. David Livingstone," *It Really Happened*, no. 4 (1944): 7–15.

pan that was breaking apart; his survivalist skills and steely courage saved him and at least some of his dogs.⁶⁸ Balto, a Siberian husky, was featured in two comic books for leading a team of sled dogs that brought precious antitoxin to control a diphtheria epidemic in Nome, Alaska. This rescue captured headlines across the United States for a suspenseful week in January 1925, and the story of this triumph has been popular with children and adults ever since.⁶⁹ The British Nurse Edith Cavell provided care for those injured in the First World War, without respect to which side they were on, but after helping some soldiers return to their own army, she was executed by the Germans. Cavell made her comic book appearance among the “Wonder Women of History.”⁷⁰

Several medical heroes were featured in the comics for making some founding contribution to health care, such as Jeanne Mance, Florence Nightingale, Elizabeth Blackwell, and Mary Walker. It was not accidental that the category of firsts was dominated by women, who were so thoroughly excluded from professional positions in medicine and faced high barriers to participation and who were honored in scholarly history as well as in popular history as the first this or the first that. The earliest of these “firsts” to have a story-length profile in these books was the seventeenth-century heroine Jeanne Mance, “Canada’s pioneer nurse, whose courage inspired the founding of the city of Montreal and its famous hospital, Hôtel Dieu.”⁷¹ The nursing pioneer Florence Nightingale and the first woman to earn the M.D. in America, Elizabeth Blackwell, both made their comic book appearances only as “Wonder Women of History.”⁷² Wartime heroism joined feminist pursuit of opportunity as

68. “Adrift on an Ice Pan,” *True Comics*, no. 10 (March 1942): 26–31.

69. “Balto the Heroic Husky,” *Heroic Comics*, no. 38 (September 1946): 28–31; “Balto of Nome,” *Real Heroes*, no. 16 (October 1946): 6–8.

70. Cavell’s story appeared in *Wonder Woman*, no. 3 (February/March 1943): 31–34. (A Hollywood film, *Nurse Edith Cavell*, was released in 1939; a radio play of the same title was broadcast in 1946.) Nightingale (discussed below) had inaugurated the “Wonder Women of History” series. Barton (discussed above) was in issue 2. Nurse Lillian Wald was featured in the fourth installment of this series, as “The Mother of New York’s East Side,” *Wonder Woman*, no. 4 (April/May 1943): 31–34. A living contemporary, Sister Elizabeth Kenny (discussed below), made it into issue 8. The next medical hero in the series was Elizabeth Blackwell (discussed below). Though they appeared after the period studied in this article, two more examples of medical “wonder women” may be noted: Marie Elizabeth Zakrzewska, in *Wonder Woman*, no. 57 (February 1953): 13–15; and Florence Rena Sabin, *ibid.*, no. 65 (April 1954): 20.

71. “Canada’s Pioneer Nurse: Jeanne Mance,” *True Comics*, no. 24 (May–June 1943): 15–18, quotation on p. 15.

72. Florence Nightingale, “The Lady with the Lamp,” was not surprisingly the first example in the premier issue, *Wonder Woman*, no. 1 (Summer 1942): 29–32. An Elizabeth Blackwell story was published in *Wonder Woman*, no. 19 (October 1946): 13–16.

themes of Dr. Mary Walker's comic book biography. In other genres, Walker's later career (lady in top hat and trousers) was the centerpiece, but here it was her youth and her service in the Civil War. She chose her calling early: "I don't want to do girls' work. I want to be a doctor like my daddy."⁷³

Contemporary Medicine Portrayed as History

Although this study's primary focus is on history in the 1940s comics, a glance at some of the stories about contemporaries shows how these books extended the tradition of Pasteur, Koch, Nightingale, and the doctors Smith into the present, placing new discoveries like penicillin in the canon of medical history, and glorifying present-day medicine with the aura of a golden past. The most substantial examples of modern medical celebrities in the comics were Dr. Alexander Fleming and Sister Elizabeth Kenny. Doctors Norman Bethune and Margaret Chung were also significant, and each garnered a major story; while Bethune had recently died, Chung was at the peak of her career when she appeared in a comic book.⁷⁴

73. "First Lady of the Army Medical Corps," *True Comics*, no. 31 (January 1944): 30–33, quotation on p. 30. Even with her medical degree, Dr. Walker was restricted at first to nursing duties in the Civil War, though she was better skilled than some of the doctors under whom she was serving. In time her skills were recognized. In the comic book, her dress-reform interests were noted without being sensationalized, and her efforts on behalf of women's struggles for voting, entry to the professions, and so forth were highlighted. She was shown receiving the Congressional Medal of Honor for her wartime service and looking back with satisfaction at what women had achieved by the end of her lifetime.

74. Canada's Dr. Norman Bethune was celebrated as "blood bank founder" in a six-page story, "They Shall Not Perish," featured on the cover of *True Comics*, no. 30 (December 1943), with story on pp. 14–19. (The designation is misleading; credit for the mobile blood bank or plasma transfusion unit would have been more accurate.) The story followed his career from Canada to Spain and then China, where he died from operating with a cut on his hand. Dr. Chung was featured in *Real Heroes*, no. 9 (February/March 1943): 9–14, as "Mom Chung and Her 509 'Fair-Haired Foster Sons.'" She was probably the first Asian American woman to earn a medical degree in the United States. She received substantial media coverage in her long career, but was perhaps more famous outside medicine for raising funds and support for American soldiers who helped in the Chinese struggle against the Japanese invasion, before and during World War II. Since she was unmarried, the boys were usually called her "bastard sons"—renamed here as "foster sons" for children's viewing. See also Judy Tzu-Chun Wu, "Was Mom Chung a 'Sister Lesbian'? Asian American Gender Experimentation and Interracial Homoeroticism," *J. Women's Hist.*, 2001, 13: 58–82; and her forthcoming book, *Dr. "Mom" Chung of the Fair-Haired Bastards: The Life of a Forgotten Wartime Celebrity* (Berkeley: University of California Press, Fall 2004).

Penicillin started receiving significant newspaper and magazine coverage only in 1943, as the scale-up to industrial production was making headway. By 1944 the story of the miracle drug was being explained in the comic books in the same manner as discoveries from earlier times. It appeared first in *True Comics* in December 1944, and then in *Science Comics* two years later; in both magazines the story garnered a mention on the cover.⁷⁵ Penicillin stories could not be presented exclusively as biography because they needed to convey Alexander Fleming's discovery in England, its being set aside and later reconfirmed by Ernest Chain and Howard Florey, followed by the animal and human tests, and finally the American development of production in the quantities demanded by the war. The *True Comics* story included a very recent event from just the prior year, when Patsy Malone's special treatment made the news in daily papers in August 1943. Her story was retold some months later, with a photograph of her, in the *Time* magazine that featured Fleming as the cover story.⁷⁶ Little Patsy Malone had been dying of a blood infection when her father appealed to friends at a New York newspaper after he read about the use of penicillin in treating victims of a nightclub fire in Boston, where more than three hundred people were killed that night and another two hundred died from burns within two weeks; when Patsy was treated and survived, the medical miracle generated further press coverage with a happy child at the center of touching human-interest stories (see Fig. 3 above).⁷⁷

Even a decade before Jonas Salk and the March of Dimes would provide the vaccine breakthrough for infantile paralysis, the stories about the disease were still remarkably upbeat. Efforts to deal with polio were turned into success stories in the comics, and much attention was given to the Kenny method as a firmly established and universally recognized

75. "Penicillin," *True Comics*, no. 41 (December 1944): 18–22; "White Magic: The Miracle of Penicillin," *Science Comics*, no. 1 (January 1946): 9–15. Not surprisingly, *Science Comics* focused primarily on the laboratory work, explaining much more about molds and bacteria, the difficulties of industrial production, and the need to develop strains that would grow submerged instead of just on the surface of the nutrient medium, and it gave less attention to the human-interest side of penicillin's history.

76. "Dr. Alexander Fleming: His Penicillin Will Save More Lives than War Can Spend," *Time*, 15 May 1944, cover and pp. 27–30.

77. David P. Adams, "The Penicillin Mystique and the Popular Press (1935–1950)," *Pharm. Hist.*, 1984, 26: 134–42, is an important study of coverage in about ten magazines (not including *Life*), but does not attend to newspaper stories; some of these are cited in his later book, which includes much of interest on the public's image of doctors, scientists, and medical research: *The Greatest Good to the Greatest Number: Penicillin Rationing on the American Home Front, 1940–1945* (New York: Lang, 1991).

successful therapy. Not surprisingly, the story of President Franklin D. Roosevelt's overcoming disability and various efforts of the National Foundation were narrated in naturalistic cartoons. The polio victim as hero was exemplified in the story of a hardy young soldier, Philip Hawco, in *True Comics*. The structure of this story was highly artificial, with little plot, but the device of a soldier chatting with his buddies allowed for a fair amount of information to be memorably conveyed in a limited number of frames because of the way a well-designed comic strip gets the readers to imagine for themselves each situation that is suggested by a snapshot image and a line or two of dialogue or a short "voice over" text. Phil told his army buddies all about "The Fight Against Infantile Paralysis," when prompted by the exclamation: "We can't believe you've ever had infantile, Phil! Why, you're just like us!"⁷⁸ Phil described the loneliness he had experienced as a cripple at home until sent to a special hospital for free treatments, through which he recovered completely. He then told his buddies about the 1916 epidemic, with people's widespread helplessness and their fear of catching it from fleeing city-dwellers. He noted the absence at that time of any central agency from which to receive help. They then learned of Warm Springs, Georgia, and a new foundation to support treatment there (Fig. 6). Other panels illustrated the founding of the National Foundation in 1938, the role of Basil O'Connor, the work of Sister Elizabeth Kenny, and the participation of celebrity performers in fund-raising. Phil even explained how funds were spent by the National Foundation, and he asserted the patriotic need for all Americans to pull together to continue what "hard work and generosity have accomplished."⁷⁹ A remarkably rich and coherent account was achieved in only eighteen panels on four pages.

In that general account of polio, Sister Kenny's contributions to therapy were acknowledged in just one frame. But in three other books, she had stories of her own.⁸⁰ And her biography, when recounted at

78. "The Fight Against Infantile Paralysis," *True Comics*, no. 32 (February 1944): 26–29, quotation on p. 26.

79. *Ibid.*, p. 29.

80. "Australian Bush Nurse," *Real Heroes*, no. 5 (July 1942): 22–27; "Sister Elizabeth Kenny," *Wonder Woman*, no. 8 (Spring 1944): 32–35; "Sister Kenny," *It Really Happened*, no. 8 (April 1947): 14–20. The popularity of the Kenny story (high in frequency along with those about Pasteur and Walter Reed) and the substantial number of pages she was given would appear to be due to several factors, including the public's familiarity with infantile paralysis, the attention her work had received in the news media, the large role that children play in her story, and the fact that her approach was an active regimen of massage, exercise, and hot packs—more emotionally appealing than the competing immobilization technique. While most of the comic book stories in this study followed appearances in other media and

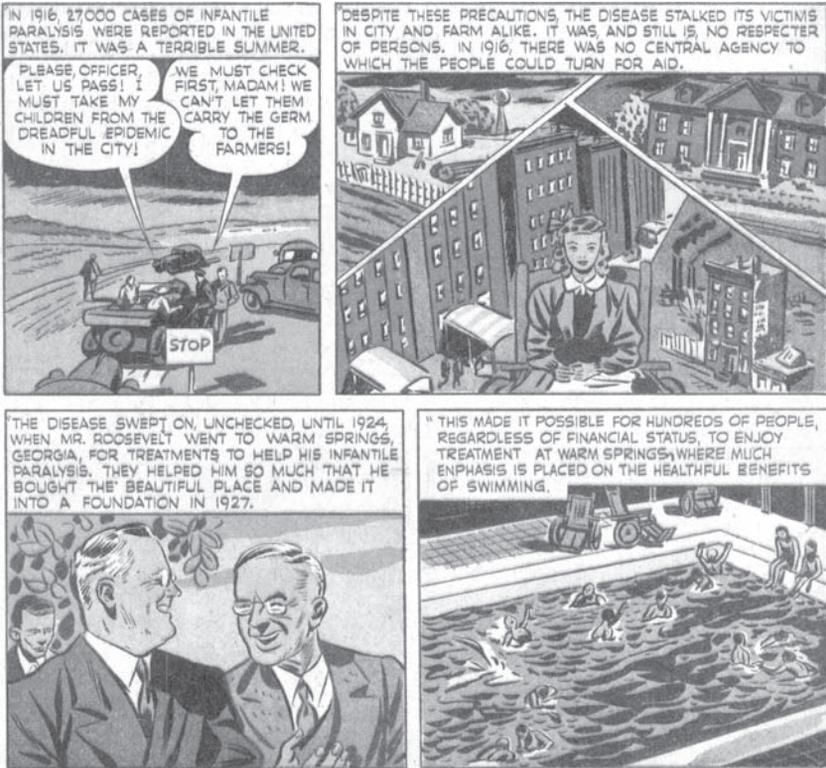


Fig. 6. "Please, officer": four panels of "The Fight Against Infantile Paralysis," *True Comics*, no. 32 (February 1944): 27.

length, was molded to resemble that of a Dekruifian hero: showing a lively mind as a youth; then moving from obscurity in her work to a passion for discovery and achievement, often in the face of benighted opposition from established authorities; triumphing through persistence; and receiving great public acclaim.⁸¹

were often derived from books, films, and radio broadcasts, the pattern is a little different here: The initial comic book story was dated July 1942. A radio drama followed in November 1942. The next year saw the publication of Kenny's autobiographical book, *And They Shall Walk: The Life Story of Sister Elizabeth Kenny*, written in collaboration with Martha Ostenso (New York: Dodd, Mead, 1943). The second comic book story appeared in 1944. Hollywood's film, starring Rosalind Russell, was screened in 1946. The third comic book appearance followed in 1947.

81. This general pattern of overcoming obstacles is, of course, not unique to de Kruif; it is also the structure of most hero tales in folk cultures around the world. See, for example, Roger D. Abrahams, "Some Varieties of Heroes in America," *J. Folklore Inst.*, 1966, 3: 341-62.

A second cluster of contemporaries who were spotlighted as medical heroes in several true-adventure comic books were just ordinary folks, especially boys and girls, elevated to a moment of fame by their heroic actions in a crisis situation. One young man climbed the stairs of the Empire State Building to bring first aid when a plane crashed into the building; he was honored with a scholarship to medical school in Michigan.⁸² A Philadelphia medical student's quick thinking saved the life of a man who fell on broken glass.⁸³ A nurse lost her life while rescuing patients from a burning hospital.⁸⁴ "Chick Doctor" profiled a woman named Doris Mae Gnauck, whose childhood hobby of studying poultry diseases led to career success as "The Wizard of Chickenology."⁸⁵ Notably, several of these stories featured youthful aspirants to medical or scientific careers—in line with the books' goal of providing role models.⁸⁶

In considering all the comic books' medical hero stories as a group, their general lack of originality is obvious; they are often formulaic, uncritical, and sometimes erroneous. Still, such deficiencies are beside

82. In 1945 Don Molony was a seventeen-year-old hospital apprentice in the Coast Guard, with the ambition of becoming a doctor. By chance, he happened to be nearby when a plane crashed into the Empire State Building. (The crash was on 28 July 1945; in the comic, it is dated only as shortly before V-J Day.) Grabbing first-aid supplies from a drug store, he climbed seventy-nine stories to help the injured. For this he received national acclaim and a scholarship to medical school at the University of Michigan: see Charles M. Quinlan (artist), "Teen Age Trues," *Real Life Comics*, no. 41 (September 1947): 28–29.

83. Quick action by Dean Shore, a twenty-two-year-old student at Jefferson Medical College in Philadelphia, to stop severe bleeding saved the life of a workman who had fallen into a pile of broken glass: see "Broken Glass," *New Heroic Comics*, no. 72 (May 1952): 27–28.

84. Nurse Esther McElveen was the cover subject for "Nurse Without Fear," *New Heroic Comics*, no. 44 (September 1947): 32–33. She saved thirty-four patients from a burning sanatorium in South Carolina, but then lost her own life in the effort to save more.

85. "The Wizard of Chickenology," *True Comics*, no. 53 (October 1946): 36–37. I am grateful to the family of the late Doris Gnauck White for sharing copies of newspaper and magazine clippings documenting her youthful renown.

86. Since these examples all appeared in 1946 or later, it seems possible that they represent a shift away from stories about the big names of history. We lack information as to whether this might have been because the audience was no longer so responsive to heroes of the past, or whether the publishers just ran out of examples. These are also the years in which the genre of true-adventure comics was in decline. Three other examples of this celebration of medical heroism in daily life may be noted: Pfc. Desmond Doss was a Seventh-Day Adventist and conscientious objector who earned the Congressional Medal of Honor for his bravery as a medic; see "Hero Without a Gun," *True Comics*, no. 48 (April 1946): 1–5. Dr. Harry Archer was a socially prominent physician who rushed to all of New York City's three-alarm fires to aid the injured firemen without accepting a fee; see "Odd Jobs: The Fireman's Doctor," *It Really Happened*, no. 6 (December 1946): 45–47. Pat O'Connor of the Bronx Zoo, America's only woman zoo doctor, was featured in "Odd Jobs: Lady at the Zoo," *It Really Happened*, no. 8 (April 1947): 33–35.

the point, and the stories reveal much about ordinary people's notions of medicine and medical science. Unlike the disinterested, academic medical history of recent scholarship, these repeated stories were active commemorations of medicine's past, and they were widely circulated in mass media. A culture's values are incorporated in the ways a society creates and remembers its heroes, and we can better understand ordinary people's attitudes by choosing not the era's fine art or high literature, but what has been called its "formula literature."⁸⁷ An analysis of the themes and values embodied in these particular stories is offered below, after a review of historical scholarship about the place of science and medicine in popular culture more generally.

Popular Culture, Science Popularizing, and Pop Science

Research on the popularization of science—with emphasis on the dissemination of scientific ideas—has become a lively subdiscipline of the history of science. The popularization of medicine has received far less attention. Among studies of popular science and medicine, the great majority focus on the dissemination of technical content (ideas, theories, facts, and information), rather than on imagery of and attitudes toward science and medicine. Books by John Burnham and Marcel LaFollette are important exceptions in giving attention both to content and to imagery.⁸⁸ The history of popular images of medicine has been studied

87. John G. Cawelti, *Adventure, Mystery, and Romance: Formula Stories as Art and Popular Culture* (Chicago: University of Chicago Press, 1976). As Judith Yaross Lee observed: "Studies of popular culture have taught us to seek the clearest expression of a culture's values and assumptions in its formula literature: the highly predictable stories, factual and fictional, appearing in periodicals and books aimed at a mass audience. The stereotyped characters and plots of formula stories reveal the broadly shared attitudes that get lost amid the carefully delineated, unique characters and incidents of high literature" (Judith Yaross Lee, "Scientists and Inventors as Literary Heroes: Introduction," in *Beyond the Two Cultures: Essays on Science, Technology, and Literature*, ed. Joseph W. Slade and Judith Yaross Lee [Ames: Iowa State University Press, 1990], p. 256). See also Paul Theerman, "National Images of Science: British and American Views of Scientific Heroes in the Early Nineteenth Century," *ibid.*, pp. 259–74.

88. John C. Burnham, *How Superstition Won and Science Lost: Popularizing Science and Health in the United States* (New Brunswick, N.J.: Rutgers University Press, 1987); Marcel C. LaFollette, *Making Science Our Own: Public Images of Science, 1910–1955* (Chicago: University of Chicago Press, 1990). LaFollette's chap. 6 is especially strong on magazine images and on the stereotypes of men and women scientists. These two books are important and perceptive; they both, however, discuss comics only in terms of George Basalla's results (discussed below). Other interesting studies of science popularization in this era include David J. Rhees, "A New Voice for Science: Science Service under Edwin E. Slosson, 1921–

less frequently.⁸⁹ With respect to the general public's images of doctors and medicine, I have recently argued that, near the end of the nineteenth century, wide popular enthusiasm for new medical breakthroughs helped create expectations of new discoveries and public support for laboratories, vivisection, and other investments to support their continuation.⁹⁰ Charles Rosenberg illuminated key aspects of the heroism of medical science as portrayed in *Arrowsmith*.⁹¹

For mid-twentieth-century American culture, the most significant scholarly study of popular impressions of science and medicine was the groundbreaking article by a historian of science, George Basalla, in 1976.⁹² His

29" (M.A. thesis, University of North Carolina, 1979), available at the Smithsonian Web site <http://americanhistory.si.edu/scienceservice/thesis/> (accessed 16 November 2003); Spencer R. Weart, *Nuclear Fear: A History of Images* (Cambridge: Harvard University Press, 1988).

89. The interesting and substantial article by Anne Hudson Jones, "Medicine and the Physician," in Inge, *Handbook* (n. 11), 2: 721–44, states that "comic books have featured few practicing physicians as heroes, although some use scientist-physicians, such as Dr. Andrew Bryant, Dr. Hugo Strange, and Dr. X" (p. 724). Medical ideas in popular culture are also examined in Rima D. Apple, *Vitamina: Vitamins in American Culture* (New Brunswick, N.J.: Rutgers University Press, 1996); Nancy Tomes, *The Gospel of Germs: Men, Women, and the Microbe in American Life* (Cambridge: Harvard University Press, 1998); Ronald G. Walters, ed., *Scientific Authority and Twentieth-Century America* (Baltimore: Johns Hopkins University Press, 1997); Terra Ziporyn, *Disease in the Popular American Press: The Case of Diphtheria, Typhoid Fever, and Syphilis, 1870–1920* (New York: Greenwood, 1988).

90. Bert Hansen, "America's First Medical Breakthrough: How Popular Excitement about a French Rabies Cure in 1885 Raised New Expectations of Medical Progress," *Amer. Hist. Rev.*, 1998, 103: 373–418; idem, "New Images of a New Medicine: Visual Evidence for Widespread Popularity of Therapeutic Discoveries in America after 1885," *Bull. Hist. Med.*, 1999, 73: 629–78. These studies include both verbal and graphic imagery and provide citations to the wider literature. For popular graphic images of medicine, see also Bert Hansen, "The Image and Advocacy of Public Health in American Caricature and Cartoons from 1860 to 1900," *Amer. J. Pub. Health*, 1997, 87: 1798–807; and numerous studies by William H. Helfand, especially *Medicine and Pharmacy in American Political Prints (1765–1870)* (Madison: American Institute of the History of Pharmacy, 1978) and *Quack, Quack, Quack: The Sellers of Nostrums in Prints, Posters, Ephemera, and Books* (New York: Grolier Club, 2002).

91. On Arrowsmith and on heroes more generally, see Charles E. Rosenberg, "Martin Arrowsmith: The Scientist as Hero," *Amer. Quart.*, 1963, 15: 447–58, also reprinted in his collection, *No Other Gods: On Science and American Social Thought*, rev. ed. (Baltimore: Johns Hopkins University Press, 1997), pp. 123–31.

92. George Basalla, "Pop Science: The Depiction of Science in Popular Culture," in *Science and Its Public: The Changed Relationship*, ed. Gerald Holton and William A. Blanpied, Boston Studies in the Philosophy of Science, vol. 33 (Boston: Reidel, 1976), pp. 261–78. Comic strips or books were examined to a modest extent in Weart, *Nuclear Fear* (n. 88); in articles by John C. Burnham reprinted in his *Paths into American Culture: Psychology, Medicine, and Morals* (Philadelphia: Temple University Press, 1988); and in Geoffrey C. Bunn, "The

analysis demonstrated that, in addition to the phenomenon of popularized scientific ideas, which was already receiving scholarly attention by historians and educators, images of and attitudes about science circulating in the mass media and shared by large sections of the American public also deserved serious examination. He dubbed this body of depictions “pop science.” His analysis documented pop science in feature films, television, newspaper comic strips, and comic books; and he delineated widely shared pictures of scientists and their work. His work was especially important in suggesting a possible “correlation between the image of science in popular culture and public understanding of science or public willingness to support scientific education and research.”⁹³

Basalla’s approach was perceptive and salutary, and I wish to acknowledge my long-standing debt to his study, even as I challenge some of his results. He argued that in the popular media of the forties, fifties, and sixties the dominant image of a scientist was a wild-eyed, white-coated, egotistical maniac; and he noted its earlier roots, reaching back to Dr. Frankenstein. Basalla’s search turned up virtually no medical scientists; and, for the most important one he did find, he observed that the doctor celebrated as a scientist in *Arrowsmith* (Max Gottlieb, modeled on Frederick G. Novy and Jacques Loeb), much like the mad chemists and physicists in films and comics, was deficient in human qualities (“He was so devoted to Pure Science, to art for art’s sake, that he would rather have people die by the right therapy than be cured by the wrong”).⁹⁴ His study suggested, however, that clinical medicine was not associated with the same negative image as was science—namely, the isolated, antisocial nerd—because pop medicine had many flattering exemplars of humane care, such as in television shows like *Marcus Welby, M.D.* and *M*A*S*H*.⁹⁵ While Basalla’s sources did include some comic books, his picture was unbalanced by an overweighting on fantasy narratives and science fiction, and it was incomplete due to his missing the true-adventure comics of the 1940s with their numerous doctors and scientists.

By overlooking this substantial corpus of material, Basalla’s study erred in concluding that comic books’ depiction of scientists was overwhelmingly negative. Since he missed the dozens of historical doctors in the 1940s comics discussed here, he found very few stories of medical

Lie Detector, *Wonder Woman*, and Liberty: The Life and Work of William Moulton Marston,” *Hist. Hum. Sci.*, 1997, 10: 91–119, about the science popularizer who created *Wonder Woman*.

93. Basalla, “Pop Science” (n. 92), p. 276.

94. *Ibid.*, pp. 273–74.

95. *Ibid.*, pp. 271–72.

doctors as scientific researchers and he missed the consistently positive valence that medical figures carried in these books.⁹⁶

Patterns and Themes

Eliciting the themes and patterns of the stories helps to clarify their historical significance as part of medicine's mid-twentieth-century "golden age." In my view, comic books of the 1940s had the kind of effect described by Basalla, namely, the encouraging of support for science—a notion confirmed both by the magnitude of the phenomenon described here and by the content of the stories themselves. Just as art history's presentation of fine art cultivates familiarity leading to appreciation, it seems likely that comic book history of medicine, whether this was incidental or intentional, cultivated an appreciation of medicine. My research has not yet tried to document the effects of stories on individual readers, but given the great number of medical scientists who have claimed a role for de Kruif's *Microbe Hunters* in forming their interest in science, it would be surprising if these comic book stories did not occasionally have some effect on career goals. Not only did many comic book stories of the greats begin with childhood experiences and aspirations, but several of the heroes in everyday life mentioned above either were in medical school or aspired to it. Role modeling is explicit in a reader's letter from Harold Copeland of the Bronx, New York, published in *True Comics*: Harold was a thirteen-year-old who wanted to become a doctor and wrote to thank the editors for a story about the Red Cross in an early issue; the editors asked whether he had also liked their recent story about Dr. Grenfell, and promised that more like it would soon be coming.⁹⁷

96. Likewise overlooking the true-adventure comics of the 1940s, Roslynn Haynes, in a much more wide-ranging study than Basalla's article, makes a similar claim: "popular belief and behavior are influenced more by images than by demonstrable facts. Very few actual scientists (Isaac Newton, Marie Curie, and Albert Einstein are the only significant exceptions) have contributed to the popular images of 'the scientist.' On the other hand, fictional characters such as Dr. Faustus, Dr. Frankenstein, Dr. Moreau, Dr. Jekyll, Dr. Caligari, and Dr. Strangelove have been extremely influential in the evolution of the unattractive stereotypes that continue in uneasy coexistence with the manifest dependence of Western society on its scientists" (Roslynn D. Haynes, *From Faust to Strangelove: Representation of the Scientist in Western Literature* [Baltimore: Johns Hopkins University Press, 1994], p. 1). While the comic books of just one decade in one country do not overturn this perspective, they do offer a strong caution: first, that popular imagery of the scientist was based not only on fiction, but sometimes on fact; and second, that—at least at some times and in some places—highly attractive images were widely dispersed and widely shared.

97. "You Edit This Magazine!" *True Comics*, no. 12 (May 1942), inside back cover. An example from outside the United States also offers explicit evidence. Recently the bio-

Biography

Medical history in these little books usually appeared in a biographical guise, a common approach elsewhere in the popular media. Even when the story's topic was a disease, not a person, either the points were connected through an individual like Phil Hawco, the soldier who recovered from polio, or the story was broken into several subnarratives about individuals, like the doctors in the yellow fever and diphtheria stories. Usually we have a lone hero like Sister Kenny or Ambroise Paré facing a scornful world, but several examples showed how collaboration and group effort advanced human knowledge and medical care. I would call attention to the pattern that appeared so frequently in the biographical mode, where many of the narratives had the same basic structure: initial, often youthful, puzzling about some observation or problem; the adventurous process of discovery; struggle against social ignorance and opposition (more frequently than from nature itself); some "humanizing" element that helped readers identify with these men and women even in their exceptional situations and their personal greatness; lives saved, a new therapy or preventive technique, or some other long-term gain from discovery; honor and fame.⁹⁸ Where scientific discovery was absent, it was replaced by special valor or nobility, as seen in several emergency intervention stories and in the lives of Mary Walker, Samuel Mudd, the Mayo brothers, and others.

chemist Dr. Manuel Patarroyo of Colombia recalled: "I was 8 years old when my father gave me a comic [book] to read. . . . It was just a booklet, really. And that booklet had Louis Pasteur's story and I was fascinated. Then, like any other child who wants to be a priest or wants to be a policeman or a bomber or a pilot, I wanted to be a scientist and didn't want to do anything different from what Pasteur did. Since then I have devoted my life to that" (David Spurgeon, *Southern Lights: Celebrating the Scientific Achievements of the Developing World* [Ottawa: International Development Research Centre, 1995], chap. 7, found at <http://www.idrc.ca/library/document/101742/chap7e.html> (accessed 16 November 2003)). Spurgeon explains that Dr. Patarroyo, a biochemist, "developed the world's first safe and effective malaria vaccine" (*ibid.*). Since Patarroyo was born in 1947, it seems possible that one comic he might have been reading, at least at age nine, was the Mexican comic book *Vidas Ilustres*, which ran a Pasteur story in 1956.

98. The same pattern appears in a recent account of the work of vaccine biochemist Manuel Patarroyo, who was mentioned above as getting started on a scientific career after reading a Louis Pasteur comic book: "Quoting his boyhood idol, Louis Pasteur, Patarroyo continued: 'In every big discovery there are three stages: first, to convince yourself; second, to convince your friends; and third—the least productive but the most enjoyable one—to try to convince your detractors. And that's what I have been doing for the last 6 years'" (Spurgeon, *Southern Lights* [n. 97], chap. 1, at <http://www.idrc.ca/library/document/101742/chap1e.html> (accessed 16 November 2003)).

The use of biographies could have powerful effects beyond the question of internal narrative structures. First, children could identify more closely with role models who started out as ordinary children. Second, the stories taken together established a canonical list of heroes. Furthermore, the list gained an apparent objectivity through the continual reappearance of the same figures both within this genre and across genres (comics, films, radio dramas, advertising, magazine articles, and books). Who was on the list or who was left out is less important in gauging effects in popular culture than the simple fact that the public kept encountering a fairly consistent list, thereby establishing a shared sense of what medical progress was about.

Social Diversity

From an early twenty-first-century perspective that prizes diversity yet does not expect to see it strongly favored in the mid-twentieth century, one has to notice here a surprisingly large number of American women and Canadian men and women, despite the dominance of European and American men. I have not found evidence of the publishers' intentions in this regard, but some of this inclusiveness was probably due to wartime pressures to support allies, a larger role for women in the labor force, and the changing opportunities in selling to a Canadian market. In addition to the appearances of the Canadians Bethune, Grenfell, and Mance mentioned above, almost every issue had a story about a Canadian, frequently an air force ace or a Mountie.⁹⁹ Also notable was that, even during a war against Germany and Italy, medical heroes from those countries were not omitted. I have not found, however, any stories about two Japanese medical scientists who were well known in America: Shibasaburo Kitasato and Hideyo Noguchi. Given the limited attention to African American doctors and nurses in any medical history writings of that era, one cannot be surprised that these books seem to have only one example of a black medical leader, Mabel K. Staupers, a pioneering nurse, who organized aggressively for major social and institutional changes in and out of medicine. Her triumphs included gaining a place

99. At various times, because of trade imbalances, there were restrictions in Canada on the sale of American comics and other imports, first during World War II and again in the late 1940s. In some cases, publishers added a "Not for Sale in Canada" caption to the covers and worked with Canadian publishers to do special Canadian editions—usually three or four months later, sometimes with different numberings, usually with thirty-six instead of fifty-two pages, and often without any advertising. See *Overstreet Price Guide* (n. 2), pp. 103–4; and *Canuck Comics*, ed. John Bell (Montreal: Matrix Books, 1986).

for Negro nurses in the armed forces.¹⁰⁰ That this absence derived more from historiography than from any editorial or audience prejudice is confirmed by the numerous stories of other kinds of black heroes and notables in the true-adventure comics, including Mary McLeod Bethune, George Washington Carver, Frederick Douglass, Joe Louis, Paul Robeson, Jackie Robinson, Harriet Tubman, and Booker T. Washington.

Dramatization

By the very nature of comic strip art, the heroism had to be dramatized. We were presented with people in action and were given striking tableaux. Even when sitting alone and still, a person in a comic frame could be undergoing a change, as in the image of Edward Livingston Trudeau reading about Robert Koch's discovery (Fig. 7). Youthful readers saw men actively taking the steps to observe phenomena for themselves, to invent new concepts, and then to test them out. Though these stories were less didactic than science textbooks, many of the concepts were explained rather well in a very compact form (as in Figs. 4 and 5 above). Comic book art turned didacticism into dramatic situations that could nicely convey both scientific information and moral inspiration in these wholesome adventures.

Empiricism and Scientific Method

In a graphic medium, stories automatically emphasized specific details about nature and science. But these stories supplemented those facts with rather few scientific theories, except for a generalized notion of a universal scientific method.¹⁰¹ Readers learned little of how cells or germs live and die, how immunity or vaccination works, how vitamins are essential to physiological processes. But they repeatedly learned that

100. In addition to the presence of stories about African Americans in many true-adventure comics, a separate publication reprinting them was created by the National Urban League under the title *Negro Heroes*; but Spring 1947 and Summer 1948 were the only issues published. *Negro Heroes*, no. 2 (Summer 1948), included "Dynamic Fighter: Mabel K. Staupers," pp. 25–28. This particular story might not have been a reprint like the others in this book, as I have found no evidence of its appearance anywhere else.

101. This popularization of a simplified version of the experimental method seems to me an important achievement, however much historians and philosophers of science properly show that actual scientific research rarely proceeds in accord with the basic model. Further, it appears that this attempt to foster rationality and materialism was exactly what George J. Hecht, the originator and publisher of *True Comics*, had in mind. Hecht's liberal humanism is described in Blake, "View of History" (n. 21).

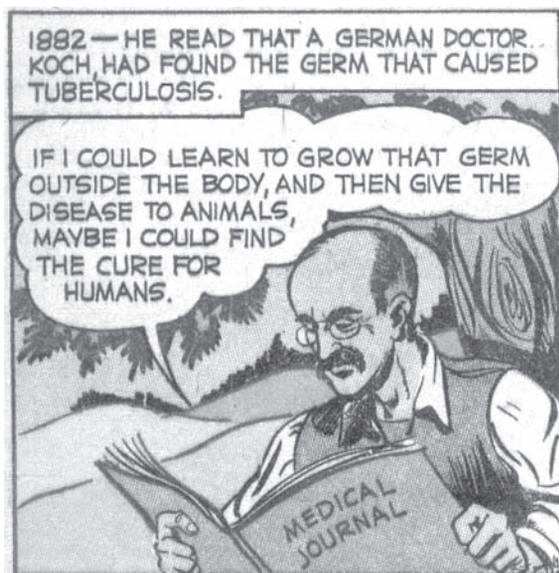


Fig. 7. “If I could learn to grow that germ”: panel of “Conqueror of the White Plague,” *True Comics*, no. 19 (December 1942): 57.

evidence, properly interpreted, was the only foundation for knowledge or cure. Hunches and intuition, guesses and lucky breaks were important, but they all needed to be verified by experiments. Again and again, comic book readers were taken through the steps of a controlled experiment. As noted, comic book stories focused on the concrete. Explicit physical details were unavoidable in cartoon graphics, even unpleasant ones like deaths, pain, suffering, and vivisection, as in experiments to understand pellagra (Fig. 8); their prominence may be explained partly by the demands of the graphic medium and partly by the violence that was being depicted routinely in the battle stories during the war.¹⁰² Purely verbal accounts, in contrast, could more easily have obscured those potentially distressing aspects of the stories.¹⁰³

102. As Reitberger and Fuchs observed, “the Second World War had a brutalizing effect on the output of all the mass media, including comics. Things that would have been judged sadistic in 1940 were deemed accurate reporting in 1945” (*Comics: Anatomy* [n. 9], p. 19).

103. In the bulk of de Kruijff’s *Microbe Hunters*, for example, one can easily pass over the multitude of animals sacrificed in the research, and the dying patients. The two exceptions are places where the author chooses to emphasize those actions: first, the suffering and deaths of human experimental subjects in the yellow fever research; and second, the extensive vivisection in Roux’s and Behring’s development of antitoxin for diphtheria, an image that de Kruijff uses in the chapter’s title: “Massacre the Guinea-Pigs.”



Fig. 8. "They may have gotten dog pellagra!": four panels of "Famine Fighter: Dr. Joseph Goldberger," *Real Life*, no. 12 (July 1943): 22.

Support for Research

While the research activities themselves held center stage, the forces supporting them were often spotlighted as well. In these stories, cattle ranchers and wine merchants invited laboratory workers to solve their practical problems. Parents and doctors fretted over dreaded ailments incurable without new knowledge. When the Mayo brothers became wealthy they funded a large research center. And even two nonmedical stories about the financier and statesman Bernard Baruch emphasized the value of funding medical progress. In the first story, readers learned that "in 1944, he provided \$1,100,000 for medical research"; one scientist told another, "With Baruch's money we can do research that will help returning veterans."¹⁰⁴ The next panel's caption explained that "he also

104. "Doctor Facts," *True Comics*, no. 52 (September 1946): 1–5, quotations on p. 5.

spends thousands of dollars on private investigations,” and Baruch instructed a colleague: “I want a thorough report on the methods of making artificial limbs for veterans.”¹⁰⁵ In a different comic book the following year, Baruch was credited with building a hospital after World War I and then with supporting research after World War II. The seventy-six-year-old visitor asked a hospitalized veteran, “How are you coming along? That arm any better?” The bandaged patient replied: “Yes, Sir! We vets sure appreciate the MEDICAL RESEARCH you’re sponsoring, Mr. Baruch!”¹⁰⁶ Similarly, the penicillin and polio stories strongly emphasized the good things that came when substantial resources were devoted to research and development. Even in a biographical genre that highlighted an individual’s heroism, the need for intellectual collaboration and for social and financial support was repeatedly demonstrated.

Uncritical Enthusiasm and Universal Esteem

In these Golden Age comics, no one found ambivalence about medical progress.¹⁰⁷ No hesitation about vivisection was visible; in many of the stories animals were illustrated as being used in experiments or sacrificed.¹⁰⁸ Concerns about medical ethics, medical costs, and access to health care were absent. Experiments on humans were accepted with no qualms. The only discord permitted was that introduced by benighted opponents of the hero, traditionalists who scoffed at novelty until they were won over

105. *Ibid.*

106. “Presidential Aide: Bernard M. Baruch,” *Real Life Comics*, no. 39 (May 1947): 3–7, quotation on p. 7.

107. Only later would medicine’s reputation for progress be challenged by highly visible problems like the tragedy of thalidomide, revelations about the Tuskegee syphilis experiments, the patients who died after receiving transplanted or mechanical hearts, the runaway costs of medical care, and the inability to deliver a quick triumph over AIDS.

108. Further evidence that children of this era were not shielded from vivisection is found in a special edition of Paul de Kruif’s *Microbe Hunters* for use in schools: “Text Edition,” ed. Harry G. Grover, Dickinson High School, Jersey, City, N.J. (New York: Harcourt Brace, 1948). “Massacre the Guinea Pigs” remains the uncensored title of the chapter on diphtheria; what is omitted from this edition, however, is the entire chapter about Paul Ehrlich’s work on a magic bullet to combat syphilis. There is another piece of evidence showing that antivivisection sentiments were excluded from the comic book stories: *True Comics*, no. 16 (September 1942), includes “Friend of Animals” (pp. 22–27), a very sympathetic account of Henry Bergh, founder of the American Society for the Prevention of Cruelty to Animals; though Bergh fought often and aggressively with doctors over animal experimentation, this aspect of his work is entirely omitted from this comic book account—as it is from a later textual story in another comic book: “Friend of Animals,” *True Animal Picture-Stories*, no. 2 (Spring 1947 [cover says “Summer Issue 1947”]): 28–29.

by evidence, therapeutic success, or gallant performance under stress. As in the wider culture, doctors in these comics were seen as entirely honorable and worthy of respect; what may have been distinctive about the comic book version compared to the portrayal of medicine in the wider culture was that researchers were elevated to heroic stature as peers of the greats in the military, culture, statesmanship, business, and sports.

Conclusion

Do these patterns in the history stories suggest they had some effect on peoples' thinking and feeling about medicine? Did stories about the past have effects on attitudes toward the present and the future? It seems likely that they did, for several reasons: First was the powerful consistency of the image across all the stories. Second, by mixing the historical heroes with contemporaries, these colorful books helped to aggrandize the medical profession and medical research for postwar America. Third, the images in the comic books resonated strongly (as did the stories themselves, which echoed radio shows, films, books, and magazines) with ideas about medicine in the wider culture. Further, these forms of popular medical history were a substantial part of American mass culture, drawing more attention from ordinary folks than medical history had garnered before—or has garnered since.

I believe the optimism and triumphalism we observe in the medical history stories were a key to their effects within the wider culture. These were the popular images and values that helped raise funds for the March of Dimes and its research projects for many years before its successful vaccine emerged. They were also the attitudes that shaped reactions to the polio vaccine trials in the early 1950s. They were also the values, it seems to me, that helped shape responses to the heart transplants and the trials of the first artificial hearts, for reporters and readers at the time of these breakthroughs had been children or teens during the heyday of "golden age" comics and the "real heroes" portrayed therein. While it would be claiming too much to attribute new funding for biomedical research, especially the great expansion of the National Institutes of Health in the later 1940s, to the optimistic image of medical progress found in children's magazines, the power of resonance and reinforcement of common themes in a wide mass culture should not be discounted.

In weighing the impact of these comic book stories, the depiction of medicine they offered in the 1940s probably had more social power than it would have had in another era just because the elements of popular culture were ubiquitous. While it would be wrong to exaggerate consen-

sus for politics or intellectual life in that era, the imagery of comic books, radio, film, and magazines pervaded the culture and provided a unifying complex of shared impressions. People had more in common in this era, when popular culture was more unified and people sat together near a “common hearth” and consumed together the iconic photographs in *Life* magazine as a universally held image of what America looked like, than later when American popular culture became more fragmented.¹⁰⁹ People shared values, they shared heroes, they shared icons (whether in the comics or on the ball field or in the White House), and they shared notions of progress. They shared an understanding that the medical profession was dependable both for humane service and for scientific advances. In the comics, as in the wider culture, this was medicine’s Golden Age.

109. To radio has been attributed the cultivation of “a tribal unity” across America, of which President Franklin D. Roosevelt’s “fireside chats” were a prominent example. McLuhan, *Understanding Media* (n. 9), was the source of the phrase “tribal unity.” On the metaphor of a “common hearth” around which Americans gathered, even as they were physically dispersed in their homes, see Erik Barnouw, *A History of Broadcasting in the United States*, 3 vols. (New York: Oxford University Press, 1966–70), 2: 5–7. Others have extended the metaphor as a “national hearth” to describe people’s connecting with network television news: see Frank Rich, “And That’s the Way It Was,” *New York Times Sunday Magazine*, 19 May 2002, pp. 34–39, 65–66, 82, 85 (esp. pp. 66, 82). On the power of shared visual images, signs, and symbols, see Warren I. Susman, *Culture as History: The Transformation of American Society in the Twentieth Century* (New York: Pantheon Books, 1984), esp. p. xvii; and all the essays in Erika Doss, ed., *Looking at LIFE Magazine* (Washington, D.C.: Smithsonian Institution Press, 2001).