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King-Thom Chung. *Women Pioneers of Medical Research: Biographies of 25 Outstanding Scientists*. Jefferson: McFarland, 2010. vii + 212 pp. \$35.00 (paper), ISBN 978-0-7864-2927-1.

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“More Remarkable” Success: Women’s Struggles and Achievements in Medical Science

In an age of concern about medical ethics, as well as problematic relationships between medical research, science, and politics, it can be refreshing to revisit the lives of those who successfully navigated—or transcended—the problems of their respective ages. Take, for instance, the famous medical researchers and physicians who lived during the twentieth century: Jonas E. Salk, Albert Schweitzer, Paul Ehrlich, and Harvey Cushing. In that century, those physicians witnessed the rise of the medical establishment, around the world, to its greatest heights. Even when one concedes the inequalities of the era, both in the medical profession and among those receiving care, it is uplifting to review the century’s successes.

That period’s successes and challenges, in relation to women, are captured in King-Thom Chung’s 2010 book, *Women Pioneers of Medical Research*. Though its twenty-five biographies stretch back chronologically to the late seventeenth century, nearly two-thirds look at women who lived out their adult and professional lives at the turn of, or fully in, the twentieth century. Chung’s purpose, or thesis, is to underscore “the importance of the human side of science” (pp. vii, 6). Indeed, his criteria for selection and emphasis are sound in relation to that thesis: he focuses on these twenty-five women researchers for their “dedication to science” and devotion to “the betterment” of the human condition (p. 1).

While Chung, a biology professor, centers his study on women who spent a great deal of time in academia, he

is not interested in developing an explicit, self-identified philosophy of history—relating to science or any other historical subdiscipline. *Women Pioneers* is not that kind of history. There is no Thomas Kuhn (*The Structure of Scientific Revolutions* [1962]) nor any of his successors in this work. And no explicit feminist theory, such as that articulated by Joan Scott in relation to women, gender, and power, underlies Chung’s thinking.[1] *Women Pioneers* operates under a straightforward “these are the women and facts about them that should not be forgotten” framework.

Even so, the book does serve as a counterweight to the “great man theory of history”—a problem that has apparently not been stamped out of the history of science. This is done in two ways. First, Chung focuses on women as a counterweight to men. Second, he does not generally set up each woman to be a hero who worked alone; these women researchers were extraordinary historical actors within networks and institutions. Drawing his thesis together with the immediate topic, Chung focuses on the theme of struggle. This theme is clear in the text and implied in this inspirational passage: “Women throughout history have displayed as much such [*sic*] dedication as men—and often had to work harder to even be allowed to pursue their passions. As a rule, to succeed, women have to fight conscious or unconscious discrimination. Thus, everything else being equal, their successes are more remarkable than those of men” (p. 1).

In spite of this passage’s clear feminist sympathies,

it is worth reiterating that the book is not ideologically driven. Indeed, Chung's stories succeed because they address each woman's biography, struggles, and achievements in a succinct, fair fashion (i.e., without unnecessarily degrading other women and men in each story). If this book is not driven by theory, it is also not constructed as an outdated, Whiggish story of glory and progress.[2] While his stories are generally positive, Chung relays a number of unsolved problems for women medical researchers in the narratives, as well as personal failings related to each (when evident).

In terms of style, the book presents all biographies in chronological order by birth year (Mary Wortley Montagu, b. 1689, through Alice Shih-Hou Huang, b. 1939). Chung does not distract the reader with too much scholarly apparatus. Whenever possible, chapters end with a "Further Reading" section, discussing both primary and secondary sources. These lists are thick and thin in relation to the prominence of the woman under consideration (there are no extra reading citations for Sara Elizabeth Branham and the aforementioned Huang, but Elizabeth Blackwell and Rosalind Elsie Franklin have predictably long lists). In addition to suggestions for further reading, there is also a thirteen-page appendix of "Important Persons Mentioned in the Text" that outlines dates lived and significant contributions to science.

Because of Chung's straightforward style and the fact that theory is not strictly necessary to his subject matter, it might be tempting, at times, to see his book as merely a reference compilation. But that view would not account for at least two contextual factors. First, women's history is still too often buried or undervalued as an empowerment tool. Second, many of the sources used by Chung are either in obscure science journals or held privately by him (apparently as personal interviews). If he availed himself of archives, they are not indicated in his notes. Apart from these considerations, the fact that Chung crafts stories for each of the women moves the book away from being only a reference tool.

The author's scholarly background—he is a biology professor, focusing on microbiology and molecular toxicology at the University of Memphis—explains the absence of historical theory (feminist and science, per the discussion above) in his book. But it enables him to underscore the significant scientific achievements of each of his chosen women. This is valuable spade work for later historians of medicine and science who will integrate these women into their broad, highly contextualized surveys of their fields.

What is in the book? Who makes it into Chung's pantheon of researchers? For those familiar with the history of medicine, some predictable figures appear: Florence Nightingale, Elizabeth Blackwell (Emily Blackwell is not given a unique entry), and even Madame Marie Skłodowska Curie. While Nightingale and Curie might seem to stretch the definition of researcher by today's standards, the "pioneer" label cannot be denied.

Chung's work on the most recent women researchers should prove especially attractive to educators and historians. Some informed readers will be aware of Rosalind Franklin's work—still generally unknown—on the deoxyribonucleic acid (DNA) molecule. Others might even know of the APGAR score (and its mnemonic significance) but not that the system was developed by Virginia Apgar (1909-74), daughter of a New Jersey couple, the father being an insurance salesperson and amateur scientist.[3] But I suspect few readers, historians or otherwise, will have heard of Gladys Lounsbury Hobby (1910-93), discoverer of Terramycin and antibiotic researcher. Few probably know about Gertrude Belle Elion (1918-99), a researcher for Burroughs Wellcome Laboratories (now Glaxo-Wellcome), whose work on "chemotherapy, pharmacology, immunology, and biochemistry" earned her a 1988 Nobel Prize shared with two other scientists (p. 144). Whether their inclusion was accidental or purposed, Chung's work also highlights the color-blind nature of late twentieth-century scientific achievement, if not recognition. He relays the successes of (and obstacles overcome by) two African American women, Jane C. Wright (1919-) and Jewel Plummer Cobb (1924-), as well as the Chinese-born U.S. citizen Huang.

Despite the credentials and prominence (i.e., Nobel Prize winners) of some of Chung's U.S. science figures from the twentieth century, I was surprised that I had seen none in a book like Kenneth M. Ludmerer's well-read, well-known text on U.S. medical education, *Time to Heal: American Medical Education from the Turn of the Century to the Era of Managed Care* (1999).[4] I have said this not to indict Ludmerer but to praise Chung. It is my belief that the absence of Chung's researchers in Ludmerer suggests a curious gap between histories of university-based medical training and university-based medical research. Cobb's story, however, reveals how both historical strains may come together.

Cobb taught at the University of Illinois Medical School (1952-54), worked at the New York University Tissue Culture Research Laboratory (1954-60), taught again at Sarah Lawrence College (1960-69), held a professor-

ship and deanship at Connecticut College (1969-76), obtained another deanship at Douglass College of Rutgers University (1976-81), and then became president of California State University at Fullerton (1981-90). She served as an administrator but “continued to combine scientific research and college teaching and continued to publish frequently” (p. 181). Through Cobb, and the biography genre as a means of integrating topics, a reader may understand how medical education, medical research, and the general trajectory of the history of medicine work together. Though brief and simply written, Chung’s stories provide a potential methodological approach for historians of the medical profession (i.e., historical biography and highly contextualized life stories).

In the twenty-first century, the bar for entering medical research—for both women and men—is understandably high. The costs of training and research, as well as potential profits, are immense. To enter the field one must often acquire credentials in both medicine (i.e., Medical Doctor [MD] or Osteopathic Doctor [DO]) and research (the PhD). The competition and vetting processes are intense. Many of the women covered by Chung, however, earned their respective credentials and worked their way up the research hierarchy. As a result, Chung’s stories are less practically helpful for today’s aspiring women researchers. Even so, the symbolism and idealism of these women will be useful to educators and aspirants.

Despite the distance between the past and the present, the fairness, brevity, and readability of Chung’s book will make it a success in upper-level high school and lower-level college curricula. Given a chance, the book will be a nice addition to both classes introducing the sciences and medicine to candidates, as well as to interdisciplinary studies courses. Indeed, this book should work nicely with an introductory history text like James H. Cassedy’s brief, but male-dominated, *Medicine*

in America: A Short History (1991). Chung’s book should also find a home on reference shelves in high schools, colleges and universities, and public libraries. *Women Pioneers* should reap benefits from the international nature of the women profiled. While the book is written in English, translations ought to be considered for libraries outside of English-speaking countries.

Women Pioneers has the potential to find a wide audience. The material is accessible and of interest to educators trying to provide a human entry-point into the sciences. Finally, historians of medicine and the sciences will appreciate Chung’s work as a ready reference to previously neglected historical figures. The book’s clear prose and straightforward presentation are its greatest virtues.

Notes

[1]. Joan Scott, “Gender: A Useful Category of Historical Analysis,” in *Feminism and History*, ed. Joan Scott (New York: Oxford University Press, 1996), 152-180. This collection contains numerous other examples of approaches to women’s history, as well as gender in historical analyses.

[2]. Peter Novick, *That Noble Dream: The “Objectivity Question” and the American Historical Profession* (New York: Cambridge University Press, 1988), 13.

[3]. APGAR is short for Appearance (skin color), Pulse rate, Grimace (reflex), Activity (muscle tone), and Respiration (breathing rate). Deirdre O’Reilly, “APGAR,” *A.D.A.M. Medical Encyclopedia* via Medline Plus by the National Library of Medicine (NLM) and National Institutes of Health (NIH), <http://www.nlm.nih.gov/medlineplus/ency/article/003402.htm> (accessed December 30, 2010).

[4]. I cross-checked Chung with Ludmerer, and none of Chung’s researchers appear in the latter’s index.

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