Experimenting with Radium Therapy: In the Laboratory & the Clinic

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In 1932 a leading American cancer specialist, physician Francis Carter Wood, addressed the New York Academy of Medicine about the state of cancer therapy and research.¹ For the treatment of cancer, he said, surgery and radiation were the only effective options. Though considered effective, Wood spoke of the need for research aimed at improving the practices of both surgery and radiation therapy. He noted a particular need for animal experimentation conducted by scientists in laboratories since, as he stated, “human patients bearing cancer cannot be experimented upon. They must be given the best treatment known to science.”² As Wood stood before his colleagues, he painted a picture in which cancer patients and the treatment they received benefitted from scientific experimentation, but were separate from it. On the contrary, the development of radium therapy as a cancer treatment in the United States from the mid-1910s to the mid-1920s reveals that physicians’ efforts to provide their patients with “the best treatment known to science” meant that patients were not, in fact, separate from scientific experimentation. Rather, as physicians worked with scientists – mostly physicists – to create technologically sophisticated cancer therapies, they blurred the practices of clinical therapy and scientific experimentation. As a result, patients became objects of study. They served as experimental subjects that helped advance a process through which physicians and physicists collaborated in an effort to establish radium therapy as an effective and scientific cancer treatment. The collaborative work of physicians and physicists also fuelled the development of biomedical science.

While this paper draws attention to the dual role of cancer patients as both patients and subjects, its primary focus is on the relationship established between physicians and physicists. Physicians who sought to exploit the therapeutic value they believed existed in radium enlisted the help of physicists to

develop radium therapy in the tradition of scientific medicine. The proliferation of scientific medicine in the nineteenth century had, as historian William Bynum argues, a transformative effect on the medical profession. For Bynum, the development of research-based medical knowledge was integral to the modernization and professionalization of medicine. Bacteriology, for instance, informed public health measures that sufficiently reduced the occurrence of infectious disease. Contributions from chemistry, such as anaesthesia and antiseptics, had a profound impact on surgery. These and other advances in medical research and practice bolstered the reputation of physicians, whether they were personally engaged in scientific research or not. Hoping to further the development of scientific medicine and medical professionalization, many physicians pushed for reform within medical education in the late nineteenth century. They sought to incorporate more training in pre-clinical or biomedical sciences in a concerted effort to make clinical practices more scientifically informed.

The transformative effects of scientific medicine were also evident in the evolution of hospitals. Hospitals were once considered the treatment centers for the poorest members of society – those who could not afford to pay for a visit from a doctor. By the twentieth century, the stigma associated with hospital-based health care was rapidly disappearing. Hospitals had become the locus of medical education and were often the only site at which patients could access sophisticated technologies. In his examination of medical technologies, historian Joel Howell suggests that the greater use of technology within hospitals was a key means through which physicians self-consciously

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3 Bynum’s study is not exclusive to the United States, though his argument about the role of science in transforming medicine is the same for the three regions he studies: the United States, the United Kingdom, and Germany. See, William F. Bynum, *Science and the Practice of Medicine in the Nineteenth Century* (New York: Cambridge University Press, 1994); see also, Harry M. Marks, *The Progress of Experiment: Science and Therapeutic Reform in the United States, 1900–1990* (New York: Cambridge University Press, 1997). Like Bynum, Marks attributes medicine’s modernity to its reliance on the physical and biological sciences.


5 The terms “biomedical” or “biomedicine” did not come into being until the twentieth century. The development of biomedical science is examined thoroughly in Robert E. Kohler, *From Medical Chemistry to Biochemistry: The Making of a Biomedical Discipline* (New York: Cambridge University Press, 1982). On the role of biomedical science in medical education see, Kohler and George Weisz, *Divide and Conquer: A Comparative History of Medical Specialization* (New York: Oxford University Press, 2006).